

# Notified Concession Officer's Report to Decision Maker

**Officer's Report to Decision Maker:** Michael Slater, Director, Operations, Western South Island

**Notified Application for a Lease, Easement and a Licence for a Hydro Scheme on the Waitaha River**

**Applicant:** Westpower Limited (Westpower)

**Permission Record Number:** WC-34113-OTH

**File:** PAC-11-04-115

The purpose of this report is to provide a thorough analysis of the application within the context of the legislation, the statutory planning framework and actual and potential effects, so the Decision Maker can consider the application; and confirm that it should be notified; and make a decision in principle whether it should be granted or declined.

## 1.0 Summary of proposal

### Information about the applicant:

1.1 Westpower Limited (Westpower) is a 100% West Coast community owned company with its head office in Greymouth. Westpower owns 88% of Amethyst Hydro Limited. The latter currently holds active concessions WC-23915-OTH, WC-23916-OTH and WC-19634-OTH for the Amethyst power scheme. The Amethyst power scheme is a run of the river hydro-electric power scheme on the Amethyst River north of Hari Hari. The Amethyst Hydro Scheme was commissioned in June 2013 and has been operating successfully since. Westpower also holds a number of other concessions for activities including easements, radio transmitters and telecommunication sites.

### Type of concessions sought:

1.2 The proposed Concession types would be for a notified Easement, Licence and Lease as shown in the table below;

	<b>Scheme Component</b>	<b>Indicative Concession Type sought</b>
<b>Headworks</b>		
Permanent structures	Weir, diversion, intake channel, intake portal and upper tunnel portal.	Lease
	Short intake access road between tunnel portal and intake and associated protection works.  Foot access track between existing DOC foot access track on the true right and main tunnel entrance	Easement
Temporary structures	A raised platform for staff facilities and work area. A site for assembly and storage of machinery above flood levels. Access route between intake site and storage/assembly areas. Foot access from existing DOC	Licence

	foot tracks on true right and contractor's facilities platform.	
<b>Subsurface structures</b>	Tunnels and sediment settling basins.	Lease
<b>Powerhouse site</b>		
Permanent Structures	Tunnel portal, penstock, powerhouse and surrounds, switchyard, tailrace, stop-bank and flood protection works.	Lease
Temporary structures	Staging/storage areas and treatment pond.	Licence
<b>Access road and transmission line</b>		
Permanent structures	Access road from tunnel to power house across Macgregor Creek, including associated drainage and protection works Overhead power lines.	Easement

**Term sought:**

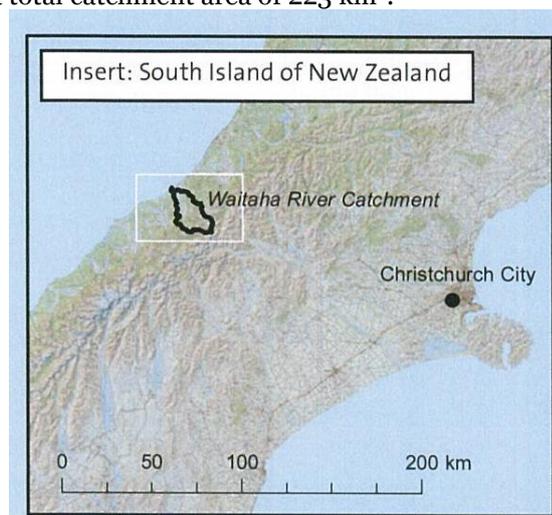
1.3 Westpower is seeking a term of 49 years. Westpower submits that the size of the overall capital investment and life of the proposed scheme requires a concession of long term duration to provide for adequate security of the asset for the community. West power states further that

*It is appropriate in this instance to provide for this level of security for the community in terms of investment in the infrastructure and planning for the long term needs of the community.*

**Description of the proposed activity (brief overview):**

1.4 Westpower is applying for concessions to construct, operate and maintain a run-of-river hydro-electric power scheme on the Waitaha River, which is located within public conservation land managed and administered by the Department of Conservation (the Department).

1.5 The Waitaha River is located 38 km south of Hokitika and extends from the Main Divide of the Southern Alps to the Tasman Sea on the West Coast. The Waitaha Catchment falls 2640 m over a length of 40 km with a total catchment area of 223 km<sup>2</sup>.



1.6 The proposed Scheme would be located within and on the true right bank of the Waitaha River between the lower end of Kiwi Flat and Macgregor Creek within the Waitaha Valley, and within

the northern half of the Westland District. It would be predominantly on Stewardship Land managed by the Department. Sections of the access road, at or on the north bank of Macgregor Creek, would be located on land that is privately owned or Crown land administered by Land Information New Zealand (LINZ).

Proposed size and cost of scheme

- 1.7 The proposed Scheme will produce approximately 110-120 GWh per annum with a maximum or peak output of about 16 – 20 MW. This is equivalent to providing electricity for approximately 12,000 households.
- 1.8 The maximum project footprint on the surface is proposed to be 4.94 ha and the operational footprint on the surface is proposed to be 3.87ha (3.62 ha would include permanent vegetation clearance). The proposed operational subsurface area is 2.6ha.
- 1.9 The hydro scheme would be a run-of-river scheme with no instream storage. The scheme would consist of two separate and discrete surface installations: a weir and diversion structure at the upstream end of Morgan Gorge. A tunnel approximately 1.5 km long and 8m wide would provide for settling basins and a penstock to convey water from the intake to a powerhouse located below Morgan Gorge and above Macgregor Creek on the true right of the Waitaha River. The powerhouse is proposed to be 15m x 30m with a 20 x 20m switch yard. The diverted water would be returned to the Waitaha River via a tailrace from the power station.
- 1.10 An access road, 2.0km of which would be located on public conservation land, would be required to access the powerhouse site from the end of the existing public Waitaha Road. This road would provide access for the construction of the tunnel, powerhouse and associated structures which would be all located on the true right of the river. If the Scheme was commissioned, this proposed road would be retained for routine maintenance and inspection of the Scheme infrastructure. The parts of the proposed transmission route within public conservation land would follow this access road route.
- 1.11 The total construction cost of the scheme is estimated between \$80-\$100 million.

Scheme Component(s)	Construction (ha)	Permanent (ha)	Riparian (Construction, ha)
<i>Area 1: Headworks and Associated Infrastructure Item(s)</i>			
Weir.	0.0050	0.0010	0.0
Intake Channel.	0.0325	0.0163	0.0
Intake Structure and Intake Portal.	0.0478	0.0278	0.0294
Tunnel Portal Entrance.	<u>0.0121</u>	<u>0.0121</u>	0.0
<u>Intake Access Road.</u>	<u>0.0118</u>	<u>0.0118</u>	<u>0.0059</u>
<u>Contractors' Work Area.</u>	<u>0.0075</u>	0.0	<u>0.0</u>
<u>Contractors' Storage/Assembly Area &amp; Access Route.</u>	<u>0.0442</u>	0.0	<u>0.0040</u>
<u>Pedestrian Track.</u>	<u>0.0120</u>	<u>0.0120</u>	0.0
Flushing Tunnel Outlet.	0.0100	0.0100	0.0100
<i>Area 1 Sub-totals</i>	<b><u>0.1829</u></b>	<b><u>0.0909</u></b>	<b><u>0.0493</u></b>
<i>Area 1 Sub-totals Rounded Up</i>	<b><u>0.19</u></b>	<b><u>0.10</u></b>	<b><u>0.05</u></b>
<i>Area 2: Infrastructure Item(s)</i>			
Tunnel Portal Exit and Construction Apron.	0.2480	0.1800	0.0
Access Road and Transmission Line Parallel.	2.5470	2.4198	0.0450
Waterway Training and Flood Protection at Alpha Creek.	0.3375	0.1688	0.1750
Powerhouse, Switchyard and Hard-fill Area.	0.3150	0.3150	0.0
Powerhouse to Tunnel Portal Exit Access Road and Penstock.	0.1275	0.1275	0.0
Tailrace.	0.2000	0.2000	0.0250
Stopbank as River Protection for Powerhouse, Switchyard, Tailrace, Penstock and Access Road.	0.1755	0.1169	0.1755
<i>Area 2 Sub-totals</i>	<b><u>3.9505</u></b>	<b><u>3.5280</u></b>	<b><u>0.4205</u></b>

<i>Area 2 Sub-totals Rounded Up</i>	<b>3.96</b>	<b>3.53</b>	<b>0.43</b>
Scheme Totals	<b>4.1334</b>	<b>3.6190</b>	<b>0.4698</b>
Scheme Totals Rounded Up	<b>4.14</b>	<b>3.62</b>	<b>0.47</b>

*Note: Areas given as rounded sub-totals and totals in the above table are rounded up to two decimal places in every case so as to avoid dropping any area as could occur if using conventional rounding of figures less than five. Riparian (construction) and permanent areas are a subset of the total construction footprint.*

#### Water Flows and Proposed Water Take

- 1.12 The water flows in the Waitaha River are influenced by periods of intense rain and the effects of snow and ice. The river flows high in spring and early summer. Flow recedes as the temperature cools over autumn into winter when flows drop to very low levels.
- 1.13 The seasonal effect can be seen when looking at the monthly median flows at the top of Morgan Gorge. The median might be described as the ‘normal flow’, as half of the time the flows are below this level, and half above. The monthly median flow reaches a peak of 31.8 cumecs in December as rising temperatures melt the seasonal snowpack (along with some ice), and the river is continuously discoloured, either showing the milky colour of snowmelt, or the darker colour of flood flows. By March the median flow has dropped to 20.8 cumecs, as much of the available snow is gone, but the river still has a milky appearance. Flows continue to drop with reduced temperatures and reach a low point in July, when the median flow is 10.3 cumecs. At this time, with no snow or ice melt occurring, the river runs clear if no recent rain has fallen.
- 1.14 In December the lowest flows on average reach 17.8 cumecs, in March they are 16.0 cumecs, while in July they are 8.2 cumecs.
- 1.15 The average flow for the Waitaha at the bottom of Kiwi Flat is 34.6 cumecs, and the median flow is 19.7 cumecs.
- 1.16 Floods occur throughout the year every 8.6 days on average and it is typically around 2 days from flood onset before river levels drop back to the point where the grey/brown flood discoloration reverts to the usual milky colour, although this depends on the nature of the heavy rainfall.
- 1.17 It is proposed that the maximum volume of water to be diverted would be 23 cumecs (23m<sup>3</sup>/s) but the water take would vary depending on the flows in the river and the minimum residual flow. Westpower is proposing a minimum residual flow of 3.5 cumecs (or 3.5m<sup>3</sup>/s) immediately below the intake. The abstraction reach between the intake at the top of Morgan Gorge and the tailrace located adjacent to Alpha Creek would include approximately 2.6 km of the Waitaha River, including the Morgan Gorge.

#### Development Envelope Approach

- 1.18 Westpower is taking a ‘development envelope’ approach and is seeking concessions within a development envelope within which the scheme would be constructed. Westpower considers that the envelope approach would provide the ability to take into account a range of site factors such as topography, geology, water ways and vegetation, it would allow for fine tuning of the design to help with efficiency of design and the ability to avoid or mitigate localised effects through the construction process. The potential effects identified in the application take this approach into account and therefore Westpower claims the potential effects on natural values would not change as a result of the final design, layout or construction.
- 1.19 The proposal states that any *“Final design changes would fit within this maximum envelope and would not be out of character or scale with, or raise higher levels of potential effect than, the matters outlined in the application. There is the potential for final construction designs to have less effect than those assessed.”*

#### **Description of locations where activity is proposed:**

- 1.20 The Scheme components comprised in this application would be located within the Waitaha Forest conservation unit, which is classified as Stewardship Land and is public conservation land administered by the Department. The Scheme would be located on land legally described as Reserve 1672 and Section 1, Survey Office Plan 12094 (Conservation Act 1987) and would

include components within the bed of the Waitaha River and part of Macgregor Creek. See the application volume 2, appendix 1, Map 2 for a map of the conservation parcel boundaries.

1.21 See Appendix 4 Map for a Map of the sites under application.

## **2.0 Information available for consideration**

### **Information received:**

#### **From Westpower:**

- 2.1 An application was received on 30 July 2014. This consisted of Application forms 1a, 3c and 3b and four volumes of attachments including 'Application for Concessions and Assessment of Effects July 2014' and appendices 1-23.
- 2.2 (a) Further Information was provided by Westpower as a result of requests for further information from the Department under section 17S (3) of the Conservation Act 1987. This included;
- Response to questions on hydrology, sediment and benthic ecology, fish and in stream habitat, dated 26 January 2015.
  - Response to questions raised in relation to an alternative recreation track alignment options, dated 16 January 2015.
  - Response to questions raised in relation to the natural character, landscape and visual effects of the proposal. Includes 'Addendum- Amended Headwork's Proposal', dated 5 March 2015.
  - Response to further information requested on the number of 'no take' days and 'weir design', dated 30 April 2015.
- (b) A revised Landscape proposal was provided by Westpower on 15 April 2016 in relation to design and mitigation to improve the integration of the intake and powerhouse into their respective environments.
- 2.3 A copy of the application and the further information supplied can be located on Westpower's website at <http://www.westpower.co.nz/news/article/application-concessions-and-assessment-effects>
- 2.4 Westpower has also provided comments pursuant to section 17S (5) of the Conservation Act, in response to information provided by White Water New Zealand. This information is discussed in this section of the report below under section 17S (5) 'Information from Westpower Limited Received under section 17S (5).'

#### **From Iwi**

- 2.5 The application area is in the Takiwa of both Te Runanga o Ngati Waewae and Te Runanga o Makaawhio. Notification of the application was sent to Ngati Waewae and Makaawhio on the 19 August 2014.
- 2.6 Comment was received from Ngati Waewae on 23 September 2014. Ngati Waewae stated that they had received a copy of the application and they supported the application and that any concerns have been addressed directly with the applicant.
- 2.7 The Department met with both iwi on 1 December 2015 and provided an update of the process. Ngati Waewae reconfirmed their comment in July 2016. Makaawhio also confirmed a neutral position in respect of the application in July 2016.

#### **From Conservation Board:**

- 2.8 The application was sent to the West Coast Conservation Board in August 2014. The Board requested a copy of the draft report which was provided on the 23 November 2015.
- 2.9 Its comments are given below:

*Overall there are no major objections to this application. There should be a reporting line established for species management, pest and weed control during the construction of the scheme, with a post-construction/implementation monitoring programme to assess the impact of the scheme during its initial operation.*

**From Department staff and external technical contractors:**

	<b>Date</b>	<b>Information</b>	<b>Report Number</b>	<b>DOCCM</b>
Freshwater comments from Technical Advisor	4 September 2014	Initial comments and clarification required	<a href="#">2369938</a>	
	2 October 2014	Comments and further questions on hydrology, sediment and benthic ecology	<a href="#">2552401</a>	
	8 October 2014	Comments on aquatic plants, invertebrates and fish reports	<a href="#">2369977</a>	
	13 March 2015	Final comments on aquatic related aspects	<a href="#">1584531</a>	
Terrestrial Ecology Comments from Technical Advisor	10 February 2015	Terrestrial Ecology Report 5/1/2015	<a href="#">1537396</a>	
	17 July 2015	Lizards	<a href="#">1244228</a>	
	10 July 2015, 1 October 2015	Birds and Bats	<a href="#">2540411</a>	
	7 August 2015	Invertebrates	<a href="#">2567968</a>	
	10 July 2015	Blue Duck	<a href="#">2539210</a>	
Final Recreation Comments from Technical Advisor	27 May 2015	Updated Recreation Assessment including on Further information provided by Westpower P35-50	<a href="#">1558575</a>	
Jeremy Head Landscape Architect Ltd – peer review	23 October 2014	Initial comments on Further information required	<a href="#">2370684</a>	
Jeremy Head Landscape Architect Ltd – peer review	15 April 2015	Peer review of the Assessment of Natural Character Landscape and Visual Amenity effects.	<a href="#">2370713</a>	
Jeremy Head Landscape Architect Ltd – peer review	4 May 2016	Updated peer review of the Assessment of effects on Natural Character Landscape and Visual Amenity effects.	<a href="#">2774512</a>	
Resource Development Consultants Limited – Peer Review	30 October 2014	Peer Review of Geotechnical Aspects of application	<a href="#">2370736</a>	

**Section 17S(4)(a) Conservation Act 1987**

**Information from White Water New Zealand received under section 17S(4)(a):**

2.10 Information was sought from Whitewater New Zealand by the Department pursuant to section 17S(4)(a) of the Conservation Act 1987. This provides that the Minister may:

*Commission a report or seek advice from any person on any matters raised in relation to the application, including a review of any information provided by the applicant.*

2.11 Information was requested from White Water NZ to help the Department assess the values of the Waitaha River to whitewater kayakers, including an understanding of the flow regimes that are needed by kayakers to paddle the Morgan Gorge and Waitaha River.

- 2.12 As a result of this request, Whitewater New Zealand provided a report on 2 February 2015 - 'Impacts of the Proposed Waitaha River - Westpower Hydro Scheme On White Water and Kayaking Values', January 2015, (DOCCM-[2422543](#))

**Information from White Water New Zealand/Tony Baldwin received Under Section 17S(4)(a) and (b)**

- 2.13 On 1 May 2015 Whitewater NZ provided a number of other items/reports to the Department including a report prepared by Tony Baldwin. Whitewater NZ asserted this information was provided in accordance with section 17S(4). On 16 March 2016, Mr Baldwin set out his legal views in a letter relating to future financial viability. [DOCCM-2758681](#)
- 2.14 The Department has considered the following items under section 17S(4)(a) and/or (b);
- (a) 'Proposed Waitaha Hydro Scheme: Assessment of Reasons, Financial Viability, and Alternative Locations' by Tony Baldwin – Law and Economics Consultant. The Department considered in particular that the financial viability information in this report to be 'Existing Relevant Information on the proposed activity'. Refer Baldwin report [DOCCM-2345375](#)
  - (b) Relevant sections of 'A supplementary Report from Whitewater NZ on the proposed Westpower Hydro Scheme' where the information was supplementary to the report; 'Impacts of the Proposed Waitaha River - Westpower Hydro Scheme On White Water and Kayaking Values', January 2015, prepared as a result of the Department seeking information from Whitewater NZ under section 17S(4)(a).
  - (c) Relevant section of a letter dated 16 March 2016 with legal opinion relating to future financial viability.

**Section 17S (5)**

**Information From Westpower Limited Received under section 17S (5):**

- 2.15 Under section 17S (5) any information obtained by the Minister under section 17S (4) must be supplied to the applicant who may comment on it within such time as may be specified by the Minister.
- 2.16 The information provided by Whitewater NZ and Tony Baldwin under section 17S (4) was provided to Westpower for comment.
- 2.17 Westpower provided a response to the report from Whitewater NZ 'Impacts of the Proposed Waitaha River - Westpower Hydro Scheme On White Water and Kayaking Values', dated January 2015 on 30 April 2015 [doccm-1598373](#). Westpower also provided a response dated 12 November 2015 to the report entitled 'A supplementary Report from Whitewater NZ on the proposed Westpower Hydro Scheme' where the information was claimed as being supplementary to the report requested by the Department titled; 'Impacts of the Proposed Waitaha River - Westpower Hydro Scheme On White Water and Kayaking Values', January 2015.
- 2.18 An analysis of these reports and the responses from Westpower has been carried out by the Department for the effects on recreational values and incorporated into the assessment of effects discussion within this report.
- 2.19 Westpower also provided a response to the Report: 'Proposed Waitaha Hydro Scheme: Assessment of Reasons, Financial Viability, and Alternative Locations', initially on 29 June 2015, [doccm-2535726](#) as a letter from Westpower and then again on 23 September 2015 containing the following items:

[doccm--2744471](#)  
September 2015

Westpower Response to Baldwin Report – letter from Westpower, 23

[doccm-2744482](#) Response to the Department of Conservation – The New Zealand Electricity Industry and Market, 21 September 2015, Asset Rock Limited (called the Boyle report)

[doccm-2744474](#) Letter reviewing the ‘Response to the Department of Conservation – The New Zealand Electricity Industry and Market, 21 Sept 2015’ Brown, Copeland & Co limited

- (a) A report entitled; ‘Waitaha Hydro Scheme – Response to the Department of Conservation – The New Zealand Electricity Industry and Market’ dated 21 September 2015;
- (b) A report on the financial viability of the proposed hydro scheme and entitled ‘Waitaha Hydro Scheme Financial Performance Analysis’ dated 23 September 2015;
- (c) A ‘review of the Financial Viability of the Waitaha Hydro Project’ September 2015.

### **DOC Comment on information received under section 17 S4(a) and (b) in relation to Financial Viability and section 17S(2)**

#### **2.20 Financial Viability**

The ‘Baldwin Report’ was provided to the Department under section 17S (4)(b) for consideration. This report was then provided to Westpower under section 17S (5) for comment and Westpower provided the information outlined above. The Department has considered this information and has decided that a further independent review of this information is not required.

- 2.21 The Department considers that Westpower has used appropriate methodology and rigor to demonstrate that the Waitaha Hydro project is of a low risk financially to the Department in terms of the Department’s ending up with the cost of running the scheme, or removing it and undertaking possible site remediation by default. The Department also considers that, in the unlikely scenario that Westpower became financially unviable, there is a high likelihood that there would be a purchaser for the asset.

#### **Requested information not received:**

- 2.22 A number of items of further information were sought from Westpower as detailed above. There is no outstanding information not supplied.

### **3.0 Acknowledgement of complete application (s17S)**

- 3.1 An application is deemed complete once all information required under section 17S has been received.

#### **Comment**

- 3.2 All information requested or required under 17S has been received. This application is deemed to be complete for the purposes of the Act.

### **4.0 Analysis of proposal (s17T, 17U, 17V, 17W, 17X, 17Y)**

#### **Section 17 T(2)**

- 4.1 Section 17T(2) requires the Minister to decline an application within 20 working days of it being deemed complete, if “...the application does not comply with or is inconsistent with the provisions of this Act or any other relevant conservation management strategy or plan...”

#### **Comment**

- 4.2 Because section 17T(2) imposes a deadline of 20 working days to decline, the Department considers its application is limited to those instances where the non-compliance or inconsistency is able to be assessed in that short timeframe. In most cases, including applications of significant complexity (such as this), it is not possible to carry out the assessment within the 20 day timeframe. This assessment, therefore, is provided in this report.

### **Section 17T (3)**

4.3 Section 17T(3) states that:

*Nothing in this Act or any other Act shall require the Minister to grant any concession if he or she considers that the grant of a concession is inappropriate in the circumstances of the particular application having regard to the matters set out in section 17U.”*

### **Comment**

4.4 This report contains a full analysis of the matters to be considered under 17U.

### **Section 17T (4), (5) and (7) Public notification:**

4.5 Section 17T(4) requires that before granting a lease, or a licence with a term exceeding 10 years the Minister must give public notice of her intention to do so. This application is for a lease and license for more than 10 years. It must, therefore, be publicly notified pursuant to section 49 of the Conservation Act if the Minister forms an intention to grant it.

4.6 In addition, pursuant to section 17T(5), the Minister may give public notice of an intention to grant easements, having regard to their effects. The Department recommends that any intention to grant any easement for the hydro scheme be publicly notified under section 17T(5) as the effects make this appropriate. The activity is considered to be of national interest in terms of the potential effects on some of the conservation values, particularly those effects on the natural character of the area under application and recreational values.

4.7 Section 17T(7) provides that section 49 applies to a public notice given under s 17T(4) or (5). Section 49(1) requires that for an activity of national interest a public notice should be placed in the local newspaper and at least once in each of 4 daily newspapers published in Auckland, Wellington, Christchurch and Dunedin. If you form an intention to grant the application, it is therefore recommended that the intention to grant the proposed Waitaha Hydro application be notified in the following newspapers;

Hokitika Guardian and West Coast Messenger  
The Dominion Post in Wellington  
The New Zealand Herald  
The Christchurch Press  
Otago Daily Times

4.8 The report would also be available to the public on the Department’s website where all interested parties would be able to view the report regarding the intention to grant. Any person or organisation may object in writing to the Director-General before the date specified in the public notice, being a date not less than 40 days after the date of publication. Submissions or objections would be received at the Hokitika Shared Service Centre for consideration.

### **17U Matters to be considered by Minister:**

4.9 In considering any application for a concession the Minister must have regard to the matters listed in section 17U(1), namely:

- (a) the nature of the activity and the type of structure or facility (if any) proposed to be constructed;
- (b) the effects of the activity, structure, or facility;
- (c) any measures that can reasonably and practicably be undertaken to avoid, remedy, or mitigate any adverse effects of the activity;
- (d) any information received by the Minister under section 17S or section 17T;
- (e) any relevant environmental impact assessment, including any audit or review;
- (f) any relevant oral or written submissions received as a result of any relevant public notice issued under section 49;
- (g) any relevant information which may be withheld from any person in accordance with the Official Information Act 1982 or the Privacy Act 1993.

An analysis of section 17U (1)(a) to (g) follows.

### **Section 17U(1)(a) The nature of the activity and the type of facility proposed to be constructed.**

4.10 The overview of the proposed Hydro scheme is well described in sections 5 and 6, pages 32-65 of Volume 1 of the application and includes the description of the operational infrastructure, construction activities, construction programme and methods. This section of the application is considered to be a thorough description of the nature of the activity and type of facilities proposed.

[Link to: Overview of infrastructure and Construction - Volume 1 page 32-65 of the application](#)

4.11 The following table provides a summary of the key features:

<b>Feature</b>	<b>Description</b>
<b>Headworks</b>	
Intake and weir	Elevation 238 m asl Intake water diversion channel, 4m width, 4.5m high sides Low level weir 4-5m above river bed, 1m width No storage of water (no dam) Intake and intake portal
<b>Subsurface Structures</b>	
Sediment Settling basin(s)	Settling basins sited underground Flushing tunnel outlet approximately 400 m down Morgan Gorge
Tunnel	Approximately 1.5 km long Maximum dimensions 8 m wide x 7 m high Includes service road to run alongside penstock
Penstock	Maximum 2.7 m diameter Approximately 1.7 km long Bifurcated and buried between tunnel exit portal and powerhouse Or alternatively a pressure tunnel
<b>Powerhouse Site</b>	
Powerhouse	Elevation 130 m asl Total area approx 1.7ha Power house footprint approximately 15 m x 30 m Maximum height above ground 8 m 5 m underground Shape and size determined by generating equipment housed within Fenced Switchyard area approximately 20 m x 20m Area surrounding powerhouse about twice size of power house and switchyard.
Tail Race/Stopbank	Tailrace: Open canal 120m long, 5m wide at base, 3m deep with a 20m top width Stopbank to protect powerhouse site: 1m high above ground level, 4 m wide and 195m
Turbines	2 turbines
<b>Main Access Road</b>	Located between the end of Waitaha Road and the powerhouse and lower tunnel portal exit Approximately 2.0 km on conservation land, It is not clear what the temporary clearance is for the width of the road, however the access road footprint is 2.6ha while the operational road

	footprint is 2.4ha. A total cleared width corridor of maximum 20m is proposed to allow for both the road and adjacent transmission line. The finished road width would be no greater than 10m wide.
<b>Transmission Route</b>	66 kV line Follows alongside road access route within conservation land. Transmission line footprint width approx 10 m
<b>Maximum Peak Output</b>	16 – 20 MW
<b>Annual output</b>	115 – 120 GWh
<b>Maximum water take</b>	23 m <sup>3</sup> /s (cumecs)
<b>Minimum Residual flow</b>	3.5 m <sup>3</sup> /s (cumecs) immediately below intake
<b>Gross Head</b>	Approximately 100 m

## ANALYSIS OF EFFECTS SECTION 17U(1)

**Section 17U(1)(b) and (c) of the Conservation Act 1987 require a consideration of the effects of the activity, structure or facility and any measures that can reasonably and practicably be undertaken to avoid, remedy, or mitigate any adverse effects.**

### Westpower's Assessment of Effects

4.12 Westpower has provided an assessment of effects. Westpower has commented that the potential effects on the environment associated with the Scheme fall into two general phases: construction and operational. Construction is expected to take 3 - 4 years at a minimum and has a higher level of effect than the operational phase.

4.13 The Effects Analysis in this report is broken down into topics:

- (a) River Dynamics & Natural Hazards
- (b) Natural Character, Landscape and Visual Amenity
- (c) Vegetation
- (d) Birds and Bats
- (e) Lizards
- (f) Invertebrates
- (g) Aquatic Ecology/Benthic Communities and Fish
- (h) Blue Ducks
- (i) Cultural
- (j) Recreation and Tourism local/Regional
- (k) Noise
- (l) Historical and Archaeological

#### **(a) River Dynamics & Natural Hazards**

4.14 Section 7.2 of the application (pp67-71) contains Westpower's analysis of the potential effects on river dynamics and natural hazards. The effects on river dynamics are broken down further into the following subtopics:

4.15 Potentials effects of the Scheme under this topic that have been considered are the:

- (a) natural river processes and features;
- (b) Waitaha River channel stability;
- (c) formation of backwater due to presence of weir;
- (d) aggradation of Kiwi Flat upstream of the weir and intake structure;
- (e) loss of sediment into waterways during construction;
- (f) fine sediment build-up in the abstraction reach from sediment discharges from the flushing tunnel during operation of the Scheme;
- (g) erosion due to powerhouse stopbank; and
- (h) seismic risk to the environment and river users has provided the following summary of potential effects on river dynamics and natural hazards.

4.16 Table 12 on page 125 of the application provides a summary of what Westpower sees as the potential effects on river dynamics and natural hazards.

**Summary of Assessment of River Dynamics and Natural Hazards affects by Westpower**

4.17 Westpower concludes that the scheme would not alter the existing suite of natural processes and

Natural, Historic or Recreational Value	Scheme Phase	Potential Effect	Westpower's Assessment of Effects (post avoidance, mitigation and monitoring measures)	Avoidance, Mitigation and Monitoring
River Dynamics & Natural Hazards	Construction	Loss of sediment into waterways during construction	Minor	<i>See Section 9 (of application) for suite of suggested conditions derived from recommended avoidance, mitigation and monitoring.</i>
	Operation	Alteration to natural patterns of floods, freshes and fluvial processes	Nil	
		Stability of waterway	Nil	
		Formation of backwater due to presence of weir	Minor and temporary	
		Aggradation of Kiwi Flat upstream of the weir and intake structure	Minor and temporary	
		Fine sediment build-up in the abstraction reach from sediment discharges from the flushing tunnel	Minor	
		Erosion due to powerhouse stopbank	Minor	
Additional seismic hazards or seismic risk	Nil - due to no storage of significant amounts of water			

fluvial features that occur with the Waitaha River, or the frequencies of their occurrence or physical characteristics.

4.18 Westpower further states that *“Since the proposed project will have no significant effect on the discharge of water and bedload from Kiwi Flat during floods, it should also not affect channel processes, characteristics, and stability in the reach between the Scheme’s take and return point at the tailrace.”*

4.19 Westpower comments that sediment losses during construction and operation would be managed via a Wastewater, Groundwater, Erosion and Sediment Management Plan which would incorporate measures to minimise sediment losses to the Waitaha River and protect the Stable Tributary.

4.20 Westpower states further that *“The Scheme is unlikely to induce fine sedimentation to occur at a level dramatically different than occurs naturally but monitoring will be undertaken.”*

4.21 Westpower contends that the stopbank protection works required at the powerhouse site would have no more than minor effect on flood capacity of the river at this location, or erosion of the opposite bank in regard to the modelled flood flow.

4.22 Westpower also states *“As the Scheme does not involve storage of significant amounts of water the proposed construction of the various Scheme components will not create additional seismic hazards or seismic risks to either the local environment or river users.”*

**Seismic Risk**

4.23 Westpower in its application states:

*“The Geology Report considers a range of geological hazards which may affect the Scheme i.e. flooding, landslides at various scales and earthquakes. Some of these potential hazards are localised and intended for Westpower to consider through the design process and some are wider ranging and are for the purposes of Westpower decision making and risk assessment.*

*An important geological feature of the area is the Alpine Fault and related faults. The Scheme location avoids the Alpine Fault zone with its network of active fault traces. The closest identified Alpine Fault trace is approximately 250 m downstream from the proposed powerhouse. There are other faults in addition to the Alpine Fault that are previously mapped in the area or apparent in the field. It is possible these other faults are also active structures.*

*The report concludes that there are significant risks to the Scheme from natural hazards in the area, in particular the future possibility of an Alpine Fault earthquake during the lifetime of the Scheme.*

*However the main impact of future fault rupture and/or large earthquakes in the Scheme area is on the future maintenance and operation of the Scheme itself, and not on the environment. Because there is no proposed significant new water storage structure the construction of the various Scheme components will not create additional seismic hazards or seismic risks for either the local environment or river users.”*

- 4.24 As a result of the analysis in the Geology Report Westpower proposes a number of special conditions to avoid, remedy and mitigate potential effects. These are detailed in section 9 of the application and include the following conditions;

CONDITIONS	1.1-1.2, 4.3, 5.16, 6.3, 7.1-7.4, 8.1-8.7, 8.14-8.17, 8.20, 18.1-18.4, 18.9, 18.10, 19.1-19.2
------------	---

- 4.25 These can be found in full in Appendix 1 of this report along with a set of conditions the Department recommends if the Concession is granted.

**Department Comment**

- 4.26 The Department’s assessment of effects on the aquatic ecology later in this report covers potential effects of sediment in waterways, and sediment build up in the abstraction reach. The aggradation of Kiwi Flat is also considered in terms of effects on instream habitat conditions at Kiwi Flat under the aquatic ecology section.

- 4.27 In terms of the geotechnical aspects of the application the Department engaged RCDL, a geotechnical engineering company, to review Westpower’s Geological Feasibility Report as it relates to geotechnical risk and the suitability of Westpower’s methods or geotechnical assessment. RCDL comments that the geology of the area under application comprises schist and mylonitised schist with potentially large scale faults including the Alpine Fault in close proximity.

- 4.28 RCDL states that Westpower’s geology report “is based on walkover during at least 2 field trips and provides good general description of:

- geological structure and potential risk of intersecting additional structures,
- earthquakes,
- landslides, and
- rockfall.”

**Health and Safety**

- 4.29 RCDL states that “Health and Safety aspects of the proposed development are not covered in the proposal. Tunnelling and excavation operations will at the least and may not necessarily be limited to meet the requirements of the:

- Health and Safety in Employment (Mining Operations and Quarrying Operations) Regulations 2013,
- Health and Safety in Employment (Tunnelling Operations – Excluded Operations) Order 2013,
- relevant Approved Codes of Practice, and
- any New Zealand based Guidelines as may be applicable.”

- 4.30 RCDL considers that the proposed project presents a low risk to the Department as it relates to the geotechnical aspects of the scheme, and that the method of evaluation is normal and in line with good practice.

4.31 RCDL states that:

- *“The application is well written, clear and precise in nature,*
- *The scheme proponent (Westpower) has recent successful experience with a similar project on the Amythest River, near Harihari, and*
- *The geotechnical and scheme engineers (Geotech Ltd) are experienced in the region, have a successful track record with Westpower and appear well integrated into the project team.*

*The geotechnical aspects of the project are currently at Feasibility level, being based on walkover and experience, with detailed design to be based on additional investigation.*

*For the tunnel, the main risk at this stage is in the unknown ground conditions, particularly for the intake area including stilling basin with relatively wide spans. There may also be unknowns due to poor ground associated with faults. The risk is in potential instability and requirement for ground support above estimate.*

*Mitigation as proposed is for specific geotechnical drilling for detailed design. Once that is complete, we expect sufficient engineering work will be enabled to reduce the risk during construction, and to improve cost estimation for ground support.*

*For the access roads, we see little risk of instability as the land is described as “rolling”, and because of the high quality of the geomorphological assessment. Further, the detailed layout of the road will be developed based on improved survey, with a view to avoiding or reducing any potential issues associated with it.”*

4.32 RCDL concludes that there is a low to very low risk in the development of the power station, switchyard and transmission lines.

4.33 RCDL makes the following recommendations:

*“The geotechnical investigation work detailed to take the project into pre-construction is required, appropriate and should address the main risk items of tunnel instability.*

*As part of construction, compliance with the relevant new Health and Safety Acts (2015) and Approved Codes of Practice, which although perhaps not a direct responsibility of DoC, should be an overt condition of operation as a responsible land administrator.”*

4.34 As the standard Concession conditions in the Department’s lease and licence documents cover Health and Safety aspects, it is considered that no further conditions are required on this matter. It is considered that Westpower’s proposed condition 13 is not required.

### **Departments Conclusion**

4.35 The Department concludes that in respect of the river dynamics and natural hazards Westpower appears to have used appropriate methodology and analysis for this stage of the proposal. Geotechnical aspects are currently at feasibility stage and further work including drilling would be required to address potential geotechnical risks.

### **(b) Natural Character on Natural Character, Landscape and Visual Amenity**

4.36 Section 7.3 p72-77 of the application summarizes the potential effects of the proposed scheme on natural character, landscape and visual amenity effects. Appendix 9 of the application gives the full assessment of effects on the natural character, landscape and visual amenity assessment.

4.37 The actual and potential effects identified by Westpower on the natural character, landscape and visual amenity values of the Upper Waitaha Catchment are:

- Natural Character effects on river flow through the abstraction reach, specifically within Morgan Gorge from reduced river flows;

- Broad scale landscape effects on the whole Upper Waitaha Catchment as an Outstanding Natural Landscape and on Morgan Gorge as an Outstanding Natural Feature;
- Local scale landscape effects on the Scheme Areas within the Upper Waitaha Catchment as an Outstanding Natural Landscape; and
- Visual amenity effects at intake and powerhouse sites from tracks, including the access road.

4.38 The author of the report by Westpower’s Landscape consultants is of the opinion that, given the landscape qualities and values found within this part of the catchment and the high level of naturalness in the absence of such a district or regional wide study, it is likely that the Upper Waitaha Catchment would be considered an outstanding natural landscape at both a district and regional scale. Morgan Gorge itself is considered to be an outstanding natural feature within this landscape, due to its exceptional biophysical and perceptual values. The report also notes the hot springs (Waitaha River Springs) at the bottom of the Morgan Gorge and their recognition by the Geopreservation Society.

4.39 The potential effects are summarized by Westpower as follows:

Natural, Historic or Recreational Value	Scheme Phase	Potential Effect	Assessment of Effect (post avoidance, mitigation and monitoring measures)	Avoidance, Mitigation and Monitoring	
Natural Character	Construction Operation Operation	Intake Works	High Moderate to Low (Broad scale) High (Local scale)	<i>See Section 9 (of application) for suite of suggested conditions derived from recommended avoidance, mitigation and monitoring.</i>	
	Construction Operation Operation Operation	Powerhouse (including access road)	High Moderate to Low (Broad scale) High (Local scale)		
	Operation	Reduced River Flow (Abstraction Reach)	Low (Abiotic & Biotic natural character) Moderate (perceptual aspects of natural character)		
Landscape	Construction Operation Operation	Intake Works	High Low (Broad scale) High (Local scale)		
	Construction Operation Operation	Powerhouse (including access road)	High Low (Broad scale) Moderate (Local scale)		
Visual Amenity	Construction Operation Operation Operation	Intake Works	High Low (Broad scale) High (Local scale - near) Low (Local scale - distant)		
	Construction Operation Operation Operation	Powerhouse (including access road)	High Low (Broad scale) High (Local scale - near) Low (Local scale – distant)		

### Assessment of Effects on Natural Character, Landscape and Visual Amenity

*“The Scheme as a whole will modify the landscape and introduce structures that currently are not present in the area. There will be a physical ‘presence’ of the Scheme at the intake area and at the downstream powerhouse site which will affect the remote-like characteristics of the area. The natural elements, patterns and processes of the river within the abstraction reach will be modified during periods of low flow. However, it is considered that despite the Upper Waitaha Catchment being an outstanding natural landscape and Morgan Gorge being an outstanding natural feature, the Scheme is an appropriate development (with respect to natural character, landscape and visual amenity), as the underlying values which comprise/define the outstanding natural landscape and outstanding natural feature are protected.”*

4.40 In terms of the effects of the Scheme on the natural character, landscape and visual amenity values, Westpower states that the report provided by its Landscape consultant provides the following conclusions:

- (a) *“At a broad Upper Waitaha Catchment scale, the effects on natural character, landscape and visual amenity would be low or moderate to low. This is principally due to the small and defined footprint of the Scheme, which avoids damming the river, avoids the formation of a lake and avoids creating large cuts for access roads from the lower valley into the upper valley. Remoteness values would be affected, however as noted the Scheme is not occurring within a National Park or one of New Zealand’s highest rated conservation areas. The Scheme is also in close proximity to the boundary with the Lower Waitaha Catchment, and away from the truly wild and more remote areas further upstream beyond Waitaha Gorge.*
- (b) *The effects of the Scheme on Morgan Gorge, whilst smaller in scale than the Upper Waitaha Catchment, will not affect the overall biophysical, associational and sensory values of the gorge to a significant degree and therefore not reduce its ‘outstandingness’ as an outstanding feature. Essentially, the weir will appear close to the entrance of the gorge, along with the intake structure. The river will maintain its course through the gorge despite reduced flows. The associated cliffs and natural eroding of the broader Morgan Gorge by fluvial processes will continue.*
- (c) *For more local effects and despite the Scheme’s small footprint, it is considered that there would be high natural character effects at both the intake and powerhouse sites. This is predominantly due to the introduction of two nodes of intensified industrialised-style modification occurring within an area containing very little modification and holding high natural character values.*
- (d) *In terms of river flow, there would be a moderate level of effect on the perceptual aspects of natural character effects through the abstraction reach. This level of effects was concluded based on the managed water flow through the abstraction reach. Natural freshes and floods would continue to occur and there would be no lake. The river would essentially continue to operate as it does naturally, albeit with reduced river flows during drier periods. Sediment would continue to be transported by the river. Abiotic and biotic natural character effects would be minor for the abstraction reach.*
- (e) *For landscape there would be a high level of effects, again at the local scale. At a broader scale, this would drop to low. There would be no effect to the landscape values associated with the Waitaha River Springs within the gorge.*
- (f) *For Visual Amenity the Photo Simulations (Appendix 9) demonstrate that the Scheme would have high visual effects from a number of close viewpoints, notably Photo Simulation IN1 and IN2 for the intake area and Photo Simulation PH1, PH2, PH4 and PH6 for the powerhouse site, reducing to moderate to low levels of visual effects for more distant viewpoints, including Photo Simulation IN3 and IN4 for the intake area and Photo Simulation PH3 and PH5 for the powerhouse site.*

(g) *Under the WDP (Westland District Plan), it is considered that the Scheme is consistent with the protection of the necessary values of the Upper Waitaha Catchment under Policy (C) of Policy 4.8. The landscape values associated with Morgan Gorge would however be affected, but not to a significant degree, insofar that it would remove the ‘outstandingness’ of the natural feature.’*

### **Summary of Assessment of Natural Character, Landscape and Visual Amenity Effects**

- 4.41 Westpower concludes that there would be effects to the natural character, landscape and visual amenity aspects of the Upper Waitaha Catchment at a variety of scales that would be more than minor. Westpower also states that the scheme would have an industrial appearance.
- 4.42 As a result of its analysis Westpower has proposed a number of special conditions to avoid, remedy and mitigate potential effects. As a result of this analysis Westpower has proposed a number of special conditions to avoid, remedy and mitigate potential effects on Natural Character, landscape and visual amenity.
- 4.43 These are detailed in section 9 of the application and section 4.4 of the Addendum dated March 2015 and in the J Bently memorandum provided in the revised Headworks Proposal dated April 2016 received as further information and can also be found in full in Appendix 1 of this report along with a set of conditions the Department recommends if the Concession is granted, Westpower’s proposed conditions on Natural Character, landscape and visual amenity include the following;

CONDITIONS	1.1-1.2, 5.1, 5.2, 5.13-5.16, 7.1-7.4, 8.10, 8.12, 8.17, 10.1-10.4, 11.1-11.6
------------	---

- 4.44 Further information was supplied from Westpower as a result of a request from the Department. This information is titled ‘Addendum: Concession Application and Assessment of Effects Amended Headworks March 2015. This report is located on Westpower’s website at; <http://www.westpower.co.nz/news/article/application-concessions-and-assessment-effects>
- 4.45 Further Information was supplied by Westpower on 15 April 2016 which also describes further revisions to the Intake and Powerhouse sites and includes updates to the photosimulations. These revisions include a number of design changes which would further mitigate potential effects on the landscape and are also located on the Westpower website as above.

### **Department’s comment on the assessment of effects on the natural character, landscape and visual amenity effects**

- 4.46 The Department contracted independent landscape architect, Jeremy Head Landscape Architect Limited, to provide a peer review of the assessment of effects on the Natural Character values of the proposed hydro scheme. Following an initial assessment, further information from Westpower was requested.
- 4.47 As a result of this request, Westpower refined its conceptual design of the location of the upper portal, access road and contractors’ facilities that was proposed in the original application with a number of key revisions.
- 4.48 Both the application and the further information provided by Westpower, along with information on the track realignment options to avoid the powerhouse, were also reviewed by the Department’s landscape consultant and his comments cover:
- landscape methodology;
  - Isthmus External Review;
  - description of the existing landscape;
  - description of the proposal;
  - analysis of effects;
  - measures taken to avoid, remedy or mitigate adverse effects;
  - response in Westpower’s revised application taking into account findings from the Isthmus review;

- Memorandum in response to the 23 October 2014 Department's request for further information concerning the infrastructure above the Morgan Gorge aspect of the proposal;
- Information prepared in response to a request for information concerning the proposed alignment of the public track near the powerhouse site.
- Information provided on 15 April 2016 with revisions to the proposed Intake and Powerhouse site including additional proposed conditions.

### **Landscape Methodology**

4.49 The Department's landscape consultant considered that the methodology used to assess the Natural Character, Landscape and visual amenity Effects of the scheme, as outlined in the application, is sound for the same reasons outlined in the Isthmus review (appendix 9 of application) and has been appropriately applied. Also of note is reference to alternative sites that were considered by Westpower. The assessment methodology is usefully and thoroughly explained in appendix 1 of the 'Natural Character, Landscape and Visual Amenity Effects' (Appendix 9 of the Application).

### **Isthmus external review of the natural character, landscape and visual amenity assessment**

4.50 Westpower asked Gavin Lister from Isthmus to peer review a Boffa Miskel report called 'The Natural Character, Landscape and Visual Amenity Effects (NCLVAA)'. This report acknowledges the findings in the Isthmus review in Appendix 9, 1.5 of the application. Seven outstanding matters are responded to by Isthmus briefly in turn via a short summary of each point.

4.51 The Department's consultant provided further comment on the following:

- (a) matters not covered in the application;
- (b) matters where the Department's consultant disagrees with comments in the Isthmus review;
- (c) matters raised in the Isthmus review that are not responded to adequately in the final application document. In part, the Isthmus review was concerned that the remediation and mitigation measures proposed were aspirational rather than providing certainty of outcome and that conditions would be required to convert aspirations to outcomes.

### **Description of Existing Landscape**

4.52 The NCLVAA describes the existing landscape including its geomorphology, biota and cultural patterns in thorough detail extending from a regional appraisal through to district and (Waitaha River) catchment scales. Other reports included in the application are referred to in further detail to help describe and underpin the descriptions of the resulting natural landscape character.

4.53 The Waitaha River catchment is then broken down into three main sub-catchments (upper, lower and Kakapotahi River)<sup>1</sup>. This catchment methodology is now widely accepted as a useful and relevant framework to help define and describe the environment in which development may occur. The Department's consultant states that the Environment Court has stated that the hydrological catchment is a useful and scientifically based starting point for most analyses.

4.54 Further detail is then provided on the hydrology and variable appearances of the Waitaha River depending on river flows. These descriptions are consistent with the more limited observations of the area by the Department's consultant.

4.55 The description of Morgan Gorge is accepted.

4.56 The NCLVAA then covers off the various relevant statutory documents and describes the landscape implications of each, appending relevant policies<sup>2</sup>. Correctly identified is the fact that while outstanding landscapes are identified as requiring protection in the Regional and District Plans, these statutory documents have to date not mapped any outstanding natural areas / features.

<sup>1</sup> See Figure 6 in Appendix 9 of the Application - Catchment Areas (on page 6 of the graphic appendices)

<sup>2</sup> Appendices 2- 4 of Appendix 9

- 4.57 Under the heading “Natural Character and Landscape Values”, a natural character evaluation under section 6(a) of the RMA has been carried out for the Waitaha River and its margins. This assessment is thorough and relies on various relevant workshop findings and most recent Environment Court case law<sup>3</sup>. Following on from this is an assessment of the broader project area under section 6(b) of the RMA to determine whether the landscape meets the test as an outstanding natural landscape (ONL) (or not). Relevant principles in how to assess this are identified and explained from various Environment Court cases, including current best practice as per the New Zealand Institute of Landscape Architect’s “Best Practice Note”. This is a thorough and accurate approach.
- 4.58 It is acknowledged that, in the absence of an overall district-wide Outstanding Natural Landscape study being undertaken, an independent study of the upper and lower Waitaha River catchments has been carried out using criteria from the District and Regional Council’s policies. This assessment then organizes the findings under three main landscape headings (i) biophysical, (ii) perceptual/experiential and (iii) associative. These criteria represent current NZILA best practice.
- 4.59 The Isthmus report generally agrees with the conclusions reached with regards to the descriptions of the existing landscape character and outcomes of the Section 6(a) and 6(b) tests. The Department’s consultant is also in agreement with these findings. Of note, despite small amounts of modification, it is agreed that the upper Waitaha River and its margins hold very high, near pristine levels of natural character.
- 4.60 The Upper catchment including the gorge is found by Westpower’s consultant and peer reviewer as likely to meet the requirements of an Outstanding Natural Landscape, while the lower catchment is, by contrast, settled and farmed and therefore less natural.
- 4.61 The NCLVAA confirms that the power station site would be located in an area that has high landscape values (although perhaps not as high as the catchment above and including the gorge). It is considered that if the proposed hydro scheme is granted Westpower should ensure that this structure is as compatible with its setting as far as practically possible. Further comment on the mitigation measures around the power station site is provided below in this section.

#### **Department’s Analysis of Effects on Natural Character, Landscape and Visual Amenity Effects**

- 4.62 The Department’s consultant considers that Photo simulations help demonstrate the effects of the proposal. A ‘disclaimer’ is included in the report of Westpower’s consultant regarding the limitations inherent in photo simulations. The Department considers this is reasonable, although photo simulation can/does not always include the full contextual setting where the activity is to be located, and is often focused on the primary area of change. Furthermore, the photo simulations do not show the entirety of the changes at the intake or power station sites in a single frame, but rather hone in on specific areas. This has ‘disjointed’ the overall visual effects of the proposal somewhat and while it affords better detail of individual parts, it is less helpful in seeing how all the changes appear as one. As a 2D representation, photo simulations also tend to relegate everything within the image frame with the same focal ‘priority’ – compared to the reality, where one’s scrutiny would focus more frequently on the elements in the setting that ‘stood out’ more.
- 4.63 The Isthmus review is critical of the fact that the structures appear as a ‘clean insertion’ into their setting, with no disturbance of the immediate surrounding area. In the March 2015 memorandum (further information provided by Westpower with revised proposed Headworks), a revised image (IN1a) has been produced illustrating a revised proposal. It is considered that IN1a also shows the proposal as a ‘clean insertion’ into its setting. However the revised scheme appears to involve much less site disturbance than in the initial application and it is possible that much of the adjacent terrain could now be retained. This would be a preferred outcome in that if the bulk of the surrounding terrain including the large loose rock slabs would be retained

---

<sup>3</sup> It is acknowledged that there may be more recent case law available since the Westpower’s assessment was written in March 2014.

in situ it would help balance and mitigate the similar horizontally proportioned weir and diversion structures and ensure a better compatibility in this location.

- 4.64 The effects assessment is scale based. That is, effects on landscape character and visual effects, or visual amenity, have been assessed at the broad and local scales. The Department's consultant considers that there are two fundamental requirements to assess landscapes. The first is an assessment of the potential effects on landscape character. This relates to broad changes to the landscape which may not necessarily be visible, but could be perceived. The second is the assessment of potential effects on visual amenity. This relates to changes or additions to the landscape that concern scale, shape, bulk, line, texture, colour, activity and so forth. And these types of quantitative changes can be clearly indicated via photosimulations such as is the case here.

#### Broader – Catchment based scale of Effects

##### Broad scale effects

- 4.65 Westpower states that at a broad scale, the effects on natural character, landscape and visual amenity would be low or moderate to low.
- 4.66 The Department's consultant states *“on the broader catchment-based scale, the level of built intervention is relatively small, with much of it subterranean. Any effects on landscape ‘character’ would therefore be confined largely to altered flow rates of the river within the abstraction reach. And while the origin of the change (the weir and intake) may not even be visible from many parts of the catchment, it could be perceived that there has been some modification to the river and thus effects on the landscape character. These changes may be perceived more acutely by people who are familiar with the river’s more subtle states, such as kayakers, rather than ‘one-off’ visitors for example. And the effects on landscape character would be more heightened for those who eventually observe the built changes, and therefore understand why river flows may have altered.”*
- 4.67 The Department's consultant comments that the Isthmus review disagrees with the overall conclusion of Westpower's consultant that the effects on landscape character at the broad scale (as an outstanding natural landscape) would be low. The Isthmus review asserts that the effects would be greater than this and should be regarded as 'greater than low'. The Department's consultant agrees that the effects on landscape character at the broad scale should be considered to be 'greater than low'.

##### Local Effects

##### Morgan Gorge/River Flow – Outstanding feature

- 4.68 The Department's consultant also stated that he agreed *“that the Morgan Gorge would likely meet the test of an outstanding natural feature within an outstanding natural landscape. It is a dramatic, deeply incised feature that has clearly been shaped through regular high energy river flows. It forms the ‘gateway’ between the upper and lower catchments, and is currently perceived as an unaltered, very highly natural and wild place. For some, the presence of the proposal could be perceived as curtailing and ‘taming’ the wild riverine processes.”*
- 4.69 The Department's consultant states that changes in river flows are quantified and scientifically presented. The consultant concludes: *“there would be a ‘moderate’ effect on landscape character within the abstraction reach. Given the degree of natural fluctuation of river flows throughout the year and the relatively inaccessible nature of the gorge and abstraction reach, even to advanced kayakers, this is a fair conclusion.”*
- 4.70 The consultant states further that; *“The Isthmus review adds that the powerhouse would trigger people’s awareness that the river flow has been modified.”* However, it is considered by the Department's consultant that this would not necessarily be the case, particularly where people enter the area for the first time from the west. *“Other than the water being discharged back into the river via the spillway, the building would not necessarily appear ‘connected’ with changes in river flows. For most people, the building may simply appear as an incongruous large structure in an otherwise unbuilt landscape.”*

- 4.71 The Departments consultant agrees with the following point made in the Isthmus review: *“The Isthmus review maintains that people upstream of the gorge and crossing the swing bridge who observe the weir and intake structure would appreciate that river flows may be altered. The Department agrees with this point.”*

Headworks site (Intake, weir, upper portal, access road, temporary contractors’ yard and facilities)

- 4.72 The design of the headworks upstream of the gorge has been substantively altered and clarified since the initial proposal and subsequent March 2014 assessment of effects was prepared. These changes partly responded to the Department’s request for further information that concerned landscape matters pertaining to: the location and appearance of the upper portal, location and extent of the intake access road, location and extent of vehicle maneuvering areas and the location and extent of any earthworks and vegetation removal. The Departments consultant notes that the revised scheme is also the result of more detailed topographical survey by the applicant with the aim of further reducing environmental impacts and implementation costs, while still meeting operational requirements. Subsequent to this Westpower provided a further iteration of the headworks dated 15 April 2016, and include a more naturalized ‘organic’ form to the headworks elements and general reduction in the scope of the changes in this area.
- 4.73 The upper portal is the upstream end of an access tunnel linking the intake area with the powerhouse site. The upper portal is located near to and slightly above the intake structure. The report states that the upper portal would be up to 5m x 5m in diameter and is shown with a curved top although the photosimulation shows it nearer to 5m x 3m (wide). The report also states that final dimensions of the portal may reduce during construction, but that the maximum size would not exceed 5m x 5m.



Intake Structures – IN1 April 2016



Intake Structures - IN1 April 2016

- 4.74 Westpower's consultant finds in his 2014 report that at a broad scale, the intake structure "...will affect the remote values of Morgan Gorge and introduce a small node of industrial activity into an otherwise remote area." The Department's consultant agrees with this conclusion and states that "it wouldn't alter following the 2015 scheme revisions" supplied in the further information dated 5 March 2015. However the Department's consultant considers that, at the broad landscape scale, the intervention of the headworks area on Natural Character remains small.
- 4.75 The proposed changes, both as a result of the request for further information and later information supplied in April 2016, to the headworks area are described in detail and other than the addition of the contractors' platform and shed (which are not included in the photosimulation), the permanent changes are considered to be satisfactorily shown in the new photosimulations dated 15 April 2016.
- 4.76 The Department's consultant considered that the intake structure and weir still appeared largely 'inserted' into the rocky terrain to the true right of the entrance to Morgan Gorge and retain a low profile, sitting amongst the rocks. The initially proposed access way from the river bed to the portal has now been removed which is a considered a minor improvement. This new alignment avoids the previously proposed switchback traversing the steep backslope, necessitating extensive cut and fill.
- 4.77 Of note the Department's consultant also states that "the proposal has been further improved" with the revisions dated 15 April 2016 and include:
- a) "Design changes to the portal and intake structures to better help them read as a 'pair' This would reduce any potential and unfavorable random, disjointed appearance (this can be demonstrated when comparing the earlier photosimulations IN1a with the latest IN1, see latest IN1 Above)
  - b) Retention of surrounding site rock and roughening any formed concrete surfaces. This will help the built works sit less separated from existing rock surfaces. Roughening the surfaces will encourage vegetative growth which overtime will 'dull' the appearance of the concrete structures.

- c) Lowering the height of and aligning the face of the tunnel portal flush with the surrounding rock face. This will help with its cohesion in the landscape as the forms won't 'jut out' potentially appearing separated from the surroundings.”
- d) Removal of a small access track to the river by lowering the level of the tunnel portal which also reduces the footprint slightly.”

4.78 The Department’s landscape consultant considers that facing the visible parts of the intake, weir and portal structures with site rock would also be an effective way to significantly improve the appearance of these structures. He comments that using local site rock to face the formed concrete structures would have an immediate benefit, and over time would provide an excellent textured surface for vegetation to establish, further helping these structures blend into their surrounds. Westpower comments however in the 15 April 2016 information that “it is considered impractical to face all the visible parts with site rock. This is principally due to the high energy environment and the likelihood of something looking very obviously unnatural if placed incorrectly. There may be opportunities to place site rocks to some disturbed areas, for example above the high level intake to reduce any potential disturbance that may occur during the construction phase. The extent and practicalities of doing this will need to be determined after the site disturbance has occurred.” The consultant still believes this to be an option. It is recommended therefore that if the application is approved, a condition requiring the facing of visible parts of the intake weir and portal structures be explored once the structures have been constructed and where practical undertaken.





- 4.79 The access route (see 'B' on Map 5 of Addendum- Amended Headworks proposal March 2015, which is inserted above) alignment between the storage assembly area and the headworks area, is proposed to be located largely near river level and would likely appear as another (albeit constructed) small river terrace. Furthermore, as it is located largely near river level, where vegetation is scant, any vegetation removal would go largely unnoticed reducing the area of rehabilitation.
- 4.80 Westpower's consultant comment's that, after five years, vegetation growth would naturally establish in formed niches in the disturbed parts of the construction site and on-fill material around the structures would further reduce their visual effect. The Department considers that this assumption is accurate given how quickly natural processes occur in the local climate.
- 4.81 Westpower's consultant considers that the entrance to the gorge is a sensitive landscape feature and that the built changes to the area "...maintain a high magnitude of adverse natural character effects". This is based on the fact that the intake structure is an artificial element in a highly natural setting. The Department agrees with this assessment and conclusion.

#### Helipad and Contractor Facilities

- 4.82 Other works in the vicinity of the intake site are described next. Items include a helipad; a low-profile temporary deck like timber structure to be laid on the ground to provide a stable surface and would be located at river level adjacent to the river. Area C (shown in map 5 above) would be used for the storage of equipment and machinery safely above flood levels and would be approximately 15m x15m. A temporary track would extend from area C down a dry tributary to the Waitaha River and from here continue downstream via a benched track to the upper portal and intake site.
- 4.83 The contractors' facilities are proposed to be provided on an elevated platform, anchored to the rock and hillside, above and/or adjacent to the upper portal. This platform would be a steel structure up to 7m in height and approximately 10m x 10m and would contain a site office, toilet and some storage of construction materials.

- 4.84 Following completion of construction, the contractors' facilities platform, helipad and temporary access route would be removed and the disturbed areas rehabilitated.
- 4.85 A new pedestrian track linking the true right side of the swing bridge to the upper portal would be maintained for practical reasons. The Department agrees with the consultant that this additional permanent item (the pedestrian track) would have negligible landscape effects other than at close quarters and that with appropriate conditions put in place the other areas (contractors' platform, helipad and track) would contribute only limited site disturbance and could be readily rehabilitated.

Power Station site, Flood Protection and Main Access Road

- 4.86 Westpower describes the powerhouse site as: The tunnel portal exit, penstock, powerhouse, switchyard, tailrace and flood protection which would all be established within the existing mostly grassed flood plain between cliffs and Alpha Creek located below Morgan Gorge, as shown on Appendix 1, Map 6 of the original application. This area is approximately 1.7 ha (70 m at widest point, 345 m at longest point). This area can be considered a construction or staging area, which, through the course of development of the Scheme would become part of the operational footprint.
- 4.87 The Departments consultant lists a number of the changes made to the design of the powerhouse in the 15 April 2016 Westpower information which would he states "*go some way towards lessening any perceived effects of the river change*" these include;
- a) *Stepping the building façade which will help modulate the form, lessening its apparent bulk and scale.*
  - b) *Reduction in building height by 2m which will reduce bulk and scale.*
  - c) *Incorporation of mono-pitch roof which will further reduce the building's utilitarian shed-like form.*
  - d) *Reduction in unnecessary architectural motif to help the building achieve a better compatibility within this highly natural landscape.*
  - e) *Utilising a rough surface texture and dark recessive colour to achieve low reflectivity values and help the structure recede into the landscape, rather than dominate it.*
  - f) *Relocation of the switchyard to the rear of the building – reducing the evidence that the building is hydro related.*
  - g) *Changes to the transmission corridor (removal of switchyard tower, partial undergrounding of power lines) also reducing the evidence that the building is hydro-related and thus improving its 'acceptance' in the landscape.*
  - h) *Reduction in hardstand area and subsequent increase in available planting area which will further mitigate the built forms through buffering and screening and blending into surrounding natural patterns.*
  - i) *Naturalisation of the bund form to help it appear less 'engineered' and therefore more compatible in this natural riverine landscape."*
- 4.88 The Department's consultant considers that the changes to the power station area following completion of the powerhouse and surrounds are described fairly in the application and in the April 2016 information. It is also considered that the existing site character of the location is accurately described. It is agreed that Natural character is high and he states "*This is largely attributed to the areas less enclosed topography coupled with less dense vegetation patterns comprising generally young colonising species. There is also more evidence of exotic colonising species around these more accessible river flats located on the edge of the settled plains.*"
- 4.89 A series of photosimulations<sup>4</sup> in Appendix 9 of the original application have been produced but have since been updated in the information provided on 15 April 2016. These indicate how the area would change following implementation of the proposal from viewpoints near and far. The powerhouse was originally proposed to be 10m tall and is considered that it would generate the greatest landscape effects of the scheme. The powerhouse is now however proposed to be an 8m tall building with a monopitch roof. Westpower's consultant concludes that the visual effects of

---

<sup>4</sup> Appendix 9 of Original Application, PH-6, pgs 31-51.

the powerhouse would be 'high'. The Department's consultant agrees with this finding that there would be high effects at the powerhouse site.



**Photosimulations of Powerhouse Structures April 2016**

### **Mitigation**

4.90 Mitigation is discussed at 6.2, Appendix 9 of the original application and in the information provided 15 April 2016. A cross section of a rehabilitation planting plan and bund profile has been provided in the 15 April 2016 information and a comprehensive list of native plants are provided with various areas/habitats identified in the plan<sup>5</sup>. The Department's consultant states that *"rehabilitation planting proposed would, over time, cover the surface of the constructed bunds/stopbank structure located between the building and the river."* And that *"This would help the new landform blend with the existing terrain which at first would appear as raw soil/gravels."* The bund for flood protection is proposed to be up to 1m above existing ground levels and would be 4m wide at its crest. *"This suggests a more compatible gentle rounded landform rather than an overtly steep sided landform which could look conspicuous in this more horizontal river terrace setting .... with rehabilitation planting laid out informally to*

---

<sup>5</sup> Waitaha Hydro Revised Photographic Simulations, April 2016 (Pg 4).

*better mimic natural patterns.*” The consultant considers that the planting strategy and species list proposed is robust, appropriate to place and represents good practice.

- 4.91 The Department’s consultant recommends that the colour for the entirety of the building including doors and trim be ‘Ironsand’. *“A single, uniform colour would allow the building to better recede into the landscape, and allow natural patterns (vegetated scarp backdrop at the rear of the building, additional rehabilitation vegetation and the river itself) to predominate, which is preferable.”* This is now being proposed in the latest information and includes roughening of the concrete walls and reducing unnecessary architectural details.
- 4.92 With regard to the alignment of the proposed walking track on the true right of the river<sup>6</sup>, the initial application did not specify a track location. Following a request for more information from the Department, the proposal (see Westpower’s response to the Department’s request for more recreation information) is to realign a section of the track up the edge of Alpha Creek, then traverse the contour above and inland of the Waitaha River (via routes ‘A’ or ‘B’ in Westpowers response). It is proposed that the final route choice and alignment would be selected in collaboration with the Department. This would serve to separate walkers from the section of Waitaha River where the powerhouse would be located. It is considered that whether routes A or B were selected, the outcome of either would help mitigate any potential adverse visual effects of the powerhouse area for walkers.
- 4.93 The Department’s consultant states that *“The earlier Isthmus review also picked up on the ‘general’ nature of the remediation and mitigation measures, and was critical that these ‘aspirations’ were not enough to provide certainty of outcome. The Isthmus report was not as concerned with the effects generated at the powerhouse site as it was at the intake site, although did recommend that conditions be put in place to better secure outcomes.”*
- 4.94 It is therefore recommended that if this activity is granted it should include the following additional special conditions:
- a) *The Concessionaire must implement the works consistent with the updated revisions including the wording provided by James Bentley in his memorandum dated April 2016 and the revised photographic simulations prepared by Boffa Miskell April 2016.*
  - a) *The Concessionaire must implement the planting rehabilitation plan for the flood protection bund at Alpha Creek and around the powerhouse/bund area provided on page 4 of the ‘Revised Photographic Simulations’ prepared by Boffa Miskell April 2016 and this should form part of the proposed ‘Construction and Rehabilitation Management Plan’.*
  - b) *The Concessionaire must ensure that all structures and activities associated with the Scheme are to be constructed and coloured in a manner that is in keeping with their surroundings*
  - c) *Further to condition X the Concessionaire must ensure the power house building, walls, doors and trim be coloured: ‘Ironsand’ and the concrete walls roughened reducing unnecessary architectural details.*
  - d) *The Concessionaire must avoid erecting any transmission tower at the switchyard and bury the transmission lines for no less than 200m downstream of the powerhouse*
  - e) *The Concessionaire must explore the practicality of facing the visible parts of the intake weir and portal structures once the structures have been constructed and carry this out where practical.*
- 4.95 Other aspects associated with the powerhouse are described in the application. These include the tailrace and a 20m wide cleared access ‘corridor’ which includes the road and transmission line. However, the powerhouse building would form the primary visual change to the site where effects would be greatest. The Department’s consultant considers the other elements (road, tailrace, transmission line) are relatively minor interventions in this landscape and tend to originate and expand northwards through an increasingly less natural landscape.

---

<sup>6</sup> This route is currently used by walkers, but is not formally constructed.

### **Summary – Natural Character, Landscape and Visual Amenity**

- 4.96 The Department agrees with the Department's consultant that Westpower's Assessment of Effects is substantive and thorough. Assessment methodology represents best practice according to the New Zealand Institute of Landscape Architects and the Environment Court.
- 4.97 The Department agrees with the Department's consultant that the Waitaha upper catchment would meet the accepted test of an outstanding natural landscape, and the Morgan Gorge would more than likely be worthy of inclusion as an outstanding natural feature.
- 4.98 Effects on a broad scale and local scale landscape, visual amenity and natural character (abstraction reach, intake and powerhouse sites) have been considered in detail. A series of photosimulations have been used to good effect. The findings in the assessment are considered to be fair, measured and credible.

#### Broad scale landscape effects

- 4.99 Westpower considers that, at a whole of Upper Waitaha catchment scale, the effects of the Scheme on natural character, landscape and visual amenity would be low or moderate to low. The Department considers the effects at a broad scale to be greater than low.

#### Local scale landscape effects

- 4.100 Westpower considers that at a local landscape level, the effects of the Scheme within the Upper Waitaha catchment would be high. The Department agrees with this assessment.

#### Visual amenity effects

- 4.101 Westpower considers visual amenity effects (from close viewpoints) at the intake and powerhouse sites to be high because of the introduction of industrial-style modifications. The Department agrees.

#### Natural character effects

- 4.102 Westpower considers the natural character effects on river flow through the abstraction reach to be moderate. The Department agrees.
- 4.103 Westpower considers the local natural character effects at the intake and powerhouse sites to be high. The Department agrees.

#### Mitigation

- 4.104 The additional conditions are considered to be both reasonable and practical and would help to provide better certainty of outcome and reduce potential adverse effects at both the intake and powerhouse sites. There does not appear to be any mitigation measures concerning the change of water flow in the abstraction reach; and despite Westpower reducing the potential effects at both the headwork's/intake site and at the power house through reviewing their initial proposed mitigation and proposing additional mitigation measures during the application process, the effects at both the intake site and the power house would remain high.
- 4.105 The Department and Westpower largely agree about the nature and extent of the effects as they relate to landscape, visual amenity and natural character. As some adverse effects would be high you will need to consider;
- a) whether the proposed mitigation measures are adequate and where there are no or inadequate mitigation measures you will need to consider whether the effects are such that the proposed hydro scheme should be declined pursuant to section 17(2)(b) of the Conservation Act and;
  - b) Whether granting the proposed activity would be contrary to the provisions of the Conservation Act or the purposes for which the land is held pursuant to 17U(3) of the Conservation Act 1987.

## C Assessment of Effects - Vegetation

- 4.106 Section 7.4 p78-82 of the application summarises the potential effects of the proposed scheme on vegetation. Appendix 15 of the application gives the full assessment of effects on vegetation.
- 4.107 The actual and potential effects identified by Westpower on vegetation in the areas under application are:
- vegetation clearance or disturbance, including within riparian margins, during construction activities within the project footprint;
  - the permanent removal of vegetation, including within riparian margins, in areas permanently occupied by Scheme components; and
  - the potential effect of weed incursion and dispersal and establishment of weeds in an area particularly during construction.
- 4.108 The following table 10 from the amended Headworks proposal (March 2015) supplied as further information provides a summary of the areas of vegetation that would potentially be affected by the Scheme.

Scheme Component(s)	Construction (ha)	Permanent (ha)	Riparian (Construction, ha)
<i>Area 1: Headworks and Associated Infrastructure Item(s)</i>			
Weir.	0.0050	0.0010	0.0
Intake Channel.	0.0325	0.0163	0.0
Intake Structure and Intake Portal.	0.0478	0.0278	0.0294
Tunnel Portal Entrance.	<u>0.0121</u>	<u>0.0121</u>	0.0
<u>Intake Access Road.</u>	<u>0.0118</u>	<u>0.0118</u>	<u>0.0059</u>
<u>Contractors' Work Area.</u>	<u>0.0075</u>	0.0	<u>0.0</u>
<u>Contractors' Storage/Assembly Area &amp; Access Route.</u>	<u>0.0442</u>	0.0	<u>0.0040</u>
<u>Pedestrian Track.</u>	<u>0.0120</u>	<u>0.0120</u>	0.0
Flushing Tunnel Outlet.	0.0100	0.0100	0.0100
<i>Area 1 Sub-totals</i>	<b><u>0.1829</u></b>	<b><u>0.0909</u></b>	<b><u>0.0493</u></b>
<i>Area 1 Sub-totals Rounded Up</i>	<b><u>0.19</u></b>	<b><u>0.10</u></b>	<b><u>0.05</u></b>
<i>Area 2: Infrastructure Item(s)</i>			
Tunnel Portal Exit and Construction Apron.	0.2480	0.1800	0.0
Access Road and Transmission Line Parallel.	2.5470	2.4198	0.0450
Waterway Training and Flood Protection at Alpha Creek.	0.3375	0.1688	0.1750
Powerhouse, Switchyard and Hard-fill Area.	0.3150	0.3150	0.0
Powerhouse to Tunnel Portal Exit Access Road and Penstock.	0.1275	0.1275	0.0
Tailrace.	0.2000	0.2000	0.0250
Stopbank as River Protection for Powerhouse, Switchyard, Tailrace, Penstock and Access Road.	0.1755	0.1169	0.1755
<i>Area 2 Sub-totals</i>	<b><u>3.9505</u></b>	<b><u>3.5280</u></b>	<b><u>0.4205</u></b>
<i>Area 2 Sub-totals Rounded Up</i>	<b><u>3.96</u></b>	<b><u>3.53</u></b>	<b><u>0.43</u></b>
<b>Scheme Totals</b>	<b><u>4.1334</u></b>	<b><u>3.6190</u></b>	<b><u>0.4698</u></b>
<b>Scheme Totals Rounded Up</b>	<b><u>4.14</u></b>	<b><u>3.62</u></b>	<b><u>0.47</u></b>

*Note: Areas given as rounded sub-totals and totals in the above table are rounded up to two decimal places in every case so as to avoid dropping any area as could occur if using conventional rounding of figures less than five. Riparian (construction) and permanent areas are a subset of the total construction footprint.*

- 4.109 The effects on vegetation are summarised by Westpower as follows:

*“The scale of proposed works and the levels of disturbance within both Area 1 and Area 2 are considered in the context of the project footprint, a local base area, the Waitaha Catchment and Wilberg Ecological District. The indigenous forest assemblages also occur extensively in catchments of similar valleys throughout central Westland.”*

- 4.110 Westpower states that:

*Area 1 - Headworks*

4.111 *“The scale of vegetation clearance is well within the spatial scale of natural disturbances typical of this environment i.e. does not represent clearance of large areas in conjunction with a change in land use and cover type. The nature of vegetation disturbance (removal) caused by the proposed work is considered to be consistent with natural disturbance events e.g. slips, at this or similar sites. Construction involves clearance or at least some disturbance to approximately 0.19 ha of indigenous vegetation. This area, based on the Land Cover Database (LCDB) land cover classes, is an extremely low proportion of types present being:*

- *0.05% of the c. 396 ha of the similar indigenous forest vegetation (385 ha)/sub alpine shrubland (11 ha) assemblages contained in the zone below the 400 m contour and on the true right of the Waitaha River/true left of Macgregor Creek carrying vegetation typical of that in the project footprint, containing and surrounding the project footprint and considered its general locale;*
- *0.002% of the 8,583 ha of their counterparts in the Waitaha Catchment; and*
- *0.004% of the 45,172 ha of their counterparts in the Wilberg Ecological District.*

*The headworks operational footprint is significantly less again, being approximately 53% of the project footprint for headworks. Following the construction phase, the activity becomes relatively benign, with low likelihood of requiring disturbance of vegetation at any of the areas. Therefore, the proposed activity is not considered to have any long term detrimental effect on vegetation surrounding the various sites. Natural regeneration should occur across any areas affected by construction (except those areas occupied by structural components).*

*The report therefore considers the Scheme effects on indigenous vegetation in Area 1 as negligible.*

#### *Area 2 - Powerhouse/Switchyard, Access Road & Transmission Line, Tunnel, Protection Works*

*For the Scheme components in Area 2, the scale of proposed works is well within the spatial scale of natural features contributing to discontinuity in vegetation cover because:*

- a) the narrow linear footprint of the access road/transmission corridor, at 20 m maximum, is less than half the width of the Waitaha River bed at its narrowest in the portion that the road parallels. (Note: for purposes of estimating vegetation clearance for the road/transmission line an average of 15 m has been used); and*
- b) the alluvial flat area on which the proposed powerhouse, switchyard, access road to the tunnel portal exit, tailrace and stopbank are located is of similar width to the Waitaha River bed adjacent to it (and it is already predominantly open, i.e. not carrying closed-canopy vegetation cover).”*

4.112 The application states that the finished road would be no greater than 10 m wide. The indicative road layout is shown in Appendix 1 map 7. However the application states further that an additional 10m is required to allow for the transmission line to allow for the transmission line, to provide sufficient clearance from the road edge and allow for vegetation clearance for power poles and overhead lines. The departments understanding is that a total cleared corridor width of 20m maximum would be required for construction but it is noted that that “*vegetation will only be cleared as required.*” The proposed transmission line would be 66kv.

4.113 Westpower states further that:

*“Construction involves clearance or at least some disturbance to 3.96 ha of indigenous vegetation that, based on LCDB land cover classes, is an extremely low proportion of the types present being:*

- *1.0% of the c. 385 ha of the similar indigenous forest vegetation assemblages contained in the Base Area, a zone below the 400 m contour and on the true right of the Waitaha River/true left of Macgregor Creek carrying vegetation*

typical of that in the project footprint, containing and extending beyond the project footprint and considered its general locale;

- 0.09% of the 4,334 ha of their counterparts in the Waitaha Catchment; and
- 0.01% of the 27,903 ha of their counterparts in the Wilberg Ecological District.”

Natural, Historic or Recreational Value	Scheme Phase	Potential Effect	Assessment of Effect (post avoidance, mitigation and monitoring measures)	Avoidance, Mitigation and Monitoring
Natural Character	Construction & Operation	Area 1 - Vegetation clearance or disturbance (including riparian): Weir Intake Channel Intake Structure and Intake Portal Tunnel Portal Entrance Intake Access Road (Portal to Intake) Road to Contractors' Facilities Area Contractors' Facilities Area Flushing Tunnel Outlet Cumulative clearance and disturbance	Negligible Negligible Negligible Negligible Negligible Negligible Negligible Negligible	See Section 9 for suite of suggested conditions derived from recommended avoidance, mitigation and monitoring.
	Construction & Operation	Area 2 - Vegetation clearance or disturbance (including riparian): Tunnel Portal Exit and Construction Apron Access Road and Transmission Line Alpha Creek - Training and Flood Protection Powerhouse and Switchyard Access Road and Penstock - Powerhouse to Tunnel Portal Tailrace Stopbank Protection - Powerhouse, Switchyard, Tailrace, Penstock & Access Road Cumulative clearance and disturbance	Negligible Minor Negligible Negligible Negligible Negligible Minor	See Section 9 for suite of suggested conditions derived from recommended avoidance, mitigation and monitoring.

4.114 And:

“As for Area 1, following the construction phase, the activity becomes relatively benign, and again appears to have low likelihood of requiring disturbance of vegetation. Therefore, the proposed activity is not considered to have any long term detrimental effect on vegetation surrounding the various sites. Natural regeneration should occur across any areas affected by construction (except those areas occupied by structural components).

Forming and maintaining an access road to the powerhouse and tunnel portal exit affects the greatest area and range of vegetation. While no uniqueness in terms of overall vegetation type(s) is attributable to the general area in which the proposed access routes to these facilities would be located, defining a route that results in least damage to all vegetation, and especially large hardwood trees taken as being 60+ cm diameter at breast height (**dbh**) and large podocarp trees taken as being 30+ cm dbh is a priority. This should be achievable because large hardwood and podocarp tree densities across the recent terrace landforms the access road would mainly traverse are very low. Appropriate final route delineation and ground survey will be key activities in achieving this.”

4.115 Westpower comments that the ecology report concludes the Scheme effects on indigenous vegetation in Area 2 are therefore considered minor.

**Westpower’s Summary of Assessment of Effects on Vegetation**

4.116 Westpower concludes that only a very small total area of indigenous vegetation is affected. Westpower states further that the proposed “*Infrastructure location largely avoids areas that carry mature podocarp/hardwood forest or higher densities of large hardwood trees in those types where podocarp presence is reduced. The access road/transmission line, intake access road and access road to the contractors’ facilities area traverse a variety of vegetation types and together incorporate most of the Scheme project footprint as it affects vegetation.*”

4.117 Westpower comments further that overall, the report concludes the effects of the Scheme on vegetation contributing to high natural heritage values under the CMS would be minor (negligible for Area 1 and minor for Area 2). “*This is based on the small amount of clearance (approximately 4.14 ha) that will occur within the surrounding contiguous area and within the combined indigenous forest and shrubland cover of the Base Area of c. 396 ha, combined with measures to avoid affecting important habitat components (e.g. large forest trees) and minimise weed incursions.*”

4.118 As a result of this analysis Westpower has proposed a number of special conditions to avoid, remedy and mitigate potential effects on vegetation. These are detailed in section 9 of the application and can also be found in full in Appendix 1 of this report along with a set of conditions the Department recommends if the Concession is granted, Westpowers proposed conditions on vegetation include the following:

<b>CONDITIONS</b>	<i>1.1-1.2, 4.1-4.5, 4.10, 5.1-5.8, 5.11, 5.13-5.16, 7.1-7.4, 8.10, 11.1-11.6, 12.1-12.5, 13.2, 18.1-18.4, 18.21</i>
-------------------	--

**DOC Comment on the Assessment of Effects on Vegetation**

4.119 The Department considers that the terrestrial ecology report in Appendix 15 of the application (TACCRA 2010) provides adequate and appropriate information on:

- the location and size of the individual elements of the structure
- plant species and vegetation association present in each part of the structure
- the ecological significance of the proposed footprint using criteria supported by the Westland District Plan
- the effects of the proposal on the ecological values.

4.120 The ecology report identifies that vegetation clearance through the construction phase and permanent vegetation removal for the operation phase are the principal effects on terrestrial vegetation values. A detailed account of the vegetation removal (updated in the further information provided, Amended Headworks Proposal March 2015) specifically identifying the riparian zone vegetation, identifies permanent removal of 3.62 ha of terrestrial vegetation. The Department considers that the vegetation removal would directly affect the ecological values of intactness and naturalness.

4.121 The ecology report assesses the amount of the vegetation associations held within the public conservation lands using the LCDB2 vegetation classification, within appropriate scales and concludes that all associations are well represented within the public conservation land.

4.122 Using the Land Environments of New Zealand classification (Leathwick et al 2002) has similar results for the forested areas of the footprint. The land environment O2.1 where the proposed infrastructure will be in gorge head is well represented within the public conservation land with about 90% of this land environment within this Ecological District is in native vegetation in public conservation land. In total there is 4100ha of this in the ecological district of which 3900 is in native vegetation in public conservation land.

- 4.123 The seral vegetation in the O1 land environment within the footprint at the lower power station site, is less well protected than the forest environments. There are approximately 6500 ha of seral vegetation on O1 land environments within the Ecological District and only 11% of this is in native seral vegetation in public conservation land; the bulk of this land environment falls outside of public conservation land. The same land environment within the footprint at Kiwi Flat is in the Wilberg Ecological District, most of which is within public conservation land.
- 4.124 The ecology report analyses the site in terms of criteria suggested by both the Regional and District Council plans and the West Coast Conservation Management Strategy (CMS). The report concludes that the site does trigger the criteria for significance (sensu RMA) for what is essentially site intactness. Naturalness (the dominance of native vegetation) is another recognised criteria for assessing significance, and although not directly referred to in the ecology report, is an important consideration to address in public conservation land.
- 4.125 Although no rare or threatened flora have been identified by the ecology report, the Waitaha River is a known site for species at their southern limits that may be expected in either the forest, or seral vegetation such as *Clematis forsterii* and *Coprosma tenuicaulis*. As there is no assessment of the bryophyte flora the relative significance of this element of the vegetation is unknown.
- 4.126 The Department agrees with the conclusion of the ecology report that the proposed scheme would not have a major impact on the values identified but it would result in an overall loss of conservation value albeit in a minor way.

#### **Proposed Road/Power Station Site**

- 4.127 The vegetation and flora are described as common and typical for the Wilberg Ecological District, at both the intake and the outlet/power station end of the project. The power station site is within the Wilburg Ecological District however the site is characteristic of the neighbouring Hari Hari Ecological District. The Wilberg E.D. is characterised by the metamorphic geology and glaciated ranges, as is found at the inlet site, whereas the Hari Hari Ecological District is characterised by the outwash surfaces and recent alluvial valleys with loamy to gravelly soils, which better describes the powerhouse site. The vegetation of both Ecological Districts are characterised by the lack of beech forest.
- 4.128 The power station and access road is set entirely on recent surfaces which support both domestic agriculture and more natural seral vegetation which also contains a large component of exotic grass and forbes.
- 4.129 The descriptions and species lists indicate a lack of any rare species or unusual vegetation associations; there appear to be no species of particular interest such as those at their species limits or with disjunct populations.
- 4.130 The Department agrees with Westpower that all the vegetation associations are well represented on public conservation land.
- 4.131 The Department considers that the part of the proposed road into the power station that would be on public conservation land would reduce the connectedness across the public conservation land from mountain top to river bed and the associated ecological gradients. The Department considers that this would be no more in scale than a natural and likely, reasonably common scale event which would only affect small scale ecological processes and patterns, however it would still be considered a permanent break in that connectivity and the disturbance would be over and above what would occur naturally in this Ecological District. All the other permanent industrial structures do represent, though small in scale, a loss to the conservation value of intactness.
- 4.132 The appropriate avoidance measure during construction is to retain large diameter trees along with other measures identified in this report to mitigate effects on other terrestrial values such as bats. The Department considers that the ecology report also appropriately identifies weed control as a direct remediation action for the proposal. Proposed conditions would ensure the potential effect from weed invasion is mitigated.

### **Intake Site/Kiwi Flat**

- 4.133 The intake site is within the more mountainous and less modified Wilberg Ecological District however the location of both areas at the boundaries of these Ecological District results in characteristics of both Ecological Districts being represented to some extent.
- 4.134 The forest associations at the gorge entrance appeared entirely natural, and although exotic species are found at ground level at both Kiwi Flat and in the lower river terrace of the foot print, the area would still rate highly for naturalness.
- 4.135 The intake structure is set amongst hillslope forest of mixed hardwoods and podocarps, dominated by kamahi and southern rata with totara and miro as common elements and within a zone of riparian species including a non vascular component along the exposed boulders of the gorge. The temporary infrastructure including; the platform for staff facilities; helipad; storage site for machinery and temporary stockpiling and access road between the intake site and contractor facilities (4m x 48m) is set on a small alluvial terrace supporting native and introduced grass and forbe species with native seral shrub vegetation.
- 4.136 The Department considers that the temporary components of the proposed scheme at the Intake site/Kiwi Flat area would have negligible effects on vegetation associations but would still have impacts on what is currently an entirely intact site. The impact is not considered to be major. The Department considers that the temporary components of this site could be easily remediated within a relatively short time frame after temporary structures and worksites have been removed. The control of weeds would be the most useful ongoing mitigation activity required here as natural regeneration would occur quickly.

### **Departments Conclusion**

- 4.137 The ecology report has identified the vegetation associations as common within the Ecological District; this is true of the forest, but less valid of seral vegetation on recent soils. The Department considers that all appropriate and adequate avoidance and remedial actions have been proposed focusing on on-going weed control and no further conditions are recommended.
- 4.138 The Department considers that while the footprint (both temporary and final) is a very small proportion of the Ecological District or the catchment the impact of the project on the important quality of intactness would result in a minor loss of conservation values. The Department and Westpower experts largely agree that effects on terrestrial vegetation would be small in scale and be minor.

### **D Assessment of Effects - Birds and Bats**

- 4.139 Westpower's application states that *"The project area contains areas of significant habitat for indigenous fauna based on assessment of guidelines/criteria for significance set out in the relevant regional and district planning provisions RPS (West Coast Regional Policy Statement 2000) (Policy 9.2 (a)-(p)) and the WDP (Westland District Plan 2002) (Policy 4.9D(i)-(viii)), and accordingly have high natural heritage values based on assessment criteria in the CMS (West Coast Conservation Management Strategy 2010-2020) (Policy 3.3.2.3(1)). The area's significance is largely defined by the relative intactness of the proposed footprint, the presence and representativeness of Threatened and At Risk species, and the potential distinctiveness of at least one species (western weka)."*
- 4.140 Section 7.5 p82 -84 of the application summarises the potential effects on birds and bats. Appendix 16 of the application gives a full assessment of effects on the birds and bats. The actual and potential effects identified by Westpower on birds and bats are:
- *"loss of faunal habitat and potential direct loss of fauna during the construction phase (particularly during breeding);*
  - *changes in food source or breeding habitat caused by changes in river flows or sedimentation;*
  - *disturbance of riparian areas used by bats for foraging;*
  - *Improving access to predators (such as dogs) by construction of new roads (but only in the lower valley from Macgregor Creek to the proposed powerhouse);*
  - *Increased risk of road kills, especially during the construction period;*

- noise and disturbance caused by humans and machinery (also mainly during the construction phase);
- lighting from the powerhouse and intake (very localised and intermittent) this may be a positive effect for bats and moreporks, while an adverse effect for their prey: i.e. flying insects;
- minor positive effects other than from lighting might include power poles being used as perches or roosts for some birds, and road access routes being used by bats for navigation.”

Natural, Historic or Recreational Value	Scheme Phase	Potential Effect	Assessment of Effect (post avoidance, mitigation and monitoring measures)	Avoidance, Mitigation and Monitoring
Birds and Bats (Vertebrate Fauna)	Construction & Operation	Loss of Faunal Habitat Direct loss of Fauna Change in riverine Habitat Bats - roosting, breeding habitat, foraging behaviour, commuting routes Birds - fernbird, hole-nesting birds, other forest or non-riverine birds, riverine birds Other Effects - improved predator access, increased road kill risk, noise and disturbance, lighting	Negligible Negligible Negligible Negligible, possibly minor positive effect with respect to foraging and commuting Negligible Negligible	See Section 9 for suite of suggested conditions derived from recommended avoidance, mitigation and monitoring.

4.141 The effects are summarised by Westpower as follows:

*“The loss of faunal habitat and potential direct loss of fauna during the construction phase (particularly during breeding) are the main adverse effects on terrestrial fauna (birds and bats) caused by the Scheme. However, overall effects are considered negligible, given the small size of the Scheme’s construction footprint (c. 4.53 ha of vegetation affected) and that it largely avoids significant terrestrial faunal habitat such as mature forest.*

*Although riverine birds may be indirectly affected (positive or adverse) by any change to their food source or breeding habitat caused by changes in river flows or sedimentation, the effects on riverine birds (excluding blue duck which is discussed separately) are considered likely to be negligible given that:*

- *Threatened or At Risk birds are relatively scarce within the abstraction reach;*
- *the abstraction reach is only 2.6 km;*
- *productivity of aquatic fauna is relatively low in the main stem compared to stable tributaries that are either not affected, or minimally affected by the Scheme (McMurtrie & Suren 2014);*
- *sediment accumulation is unlikely given the frequent flooding events (Allen & Hay 2013; Doyle 2013; Hicks 2013); and*
- *Scheme design and proposed mitigation aim to avoid or minimise potential effects.*

*Similarly, indirect effects on bats that appear to select riparian areas for foraging are considered by Westpower negligible.*

*The small scale of the Scheme and its minimal effect on significant habitats and natural heritage values greatly reduces the level of potential effects in terms of the RPS, WDP and CMS. All species and their habitats found within the Scheme footprint are well represented elsewhere, regionally or nationally.”*

**Summary of Assessment of Effects on Birds and bats from p127 of the application:**

- 4.142 As a result of this analysis Westpower has proposed a number of special conditions to avoid, remedy and mitigate potential effects. These are detailed in section 9, p142-158 of the application and include the following conditions. These can also be found in full in appendix 1 of this report along with the Departments proposed conditions recommended if this concession is granted.

<b>CONDITIONS</b>	<i>1.1-1.2, 4.1, 4.4-4.7, 4.10, 5.8-5.10, 5.16, 7.1-7.4, 12.1-12.3, 15.1-15.6</i>
-------------------	---

- 4.143 Westpower concludes that *“The Scheme is predicted to have negligible effect on terrestrial fauna values currently present in the Waitaha Valley. Predators are considered to be a far greater threat to terrestrial fauna in the Waitaha Valley than any adverse effects caused by the Scheme. The absence of kiwi and relatively low numbers of Threatened bird species and individuals are indications of high predation levels in the Waitaha Valley.”*

**Department’s Comment on the Assessment of effects on the birds and bats (excluding Blue Duck)**

Conservation significance of the site for birds and bats

- 4.144 The Department agrees with the report commissioned by Westpower from Wildlife Surveys Ltd in terms of its major finding that the survey area has significant conservation values for birds and bats.
- 4.145 In the context of Natural Heritage policies of the CMS and as stated by Westpower’s consultant, Wildlife Surveys Ltd (2014) in its report (Appendix 16 of application), the site triggers significance under all the criteria for Representativeness, Diversity, Intactness, Viability, presence of Threatened Species and Habitat and/or Taonga species and Habitat criteria.
- 4.146 CMS Policy 3.3.2.3 (1) states: *“Natural heritage should be identified and its relative value assessed using standard criteria such as representativeness, viability, diversity, presence of threatened and/or taonga species and their habitat, intactness and natural landscape character.”*
- 4.147 The Wildlife Surveys Ltd report goes some way towards describing how each criterion is fulfilled in detail. For example, the gorge forests support the majority of representative bird species expected in this forest type including relatively frequent long-tailed cuckoo and brown creeper compared to some other forest sites in the region. The site is relatively intact and well connected (spatially and temporally) with other habitats, contains birdlife that is important in maintaining ecological processes, and should be viable in the long term. The area identified for the proposed road construction is the low altitude component of gorge habitats, which are required by the bird community at certain times of the year (e.g., in autumn and winter, or when seasonal food supplies are present there).
- 4.148 Specific food sources are usually only available in certain seasons and birds that use such sources are sometimes called “sequential specialists”. For example, kaka move from high and mid-altitude food sources in winter (e.g., for invertebrates and sap) to low-altitude food sources in spring and to podocarp fruit in autumn and podocarp seed in winter (O’Donnell 1993; O’Donnell & Dilks 1989, 1994). The presence of good numbers of kea (nationally endangered) at the site is an example of this phenomenon. Kea are often thought of as alpine birds, but in reality, on the West Coast they spend considerable time feeding in the forest on podocarp fruit, seeds and flowers (O’Donnell & Dilks 1994).

Conservation significance of the site for nationally threatened species

- 4.149 The Department considers that, “Nationally threatened species” are those classed as “Threatened” or “At Risk” as defined by the current version of the New Zealand threat classification system (Townsend et al. 2008).
- 4.150 Wildlife Surveys Ltd (2014) records a relatively high number of threatened bird species (9 species plus blue duck) and 1 threatened bat species from the ‘envelope’. Most notable are populations of the critically endangered long-tailed bat and grey duck, nationally endangered kea and nationally vulnerable kaka and falcon.

- 4.151 In addition, pied oystercatcher and black shag (already noted by Wildlife Surveys Ltd) and at least three additional threatened species are present on the Waitaha River below the 'envelope' but above the State Highway 6 bridge (Banded dotterel, Nationally Vulnerable; pied stilt, declining; variable oystercatcher, at risk – recovering; C. O'Donnell personal observations).
- 4.152 Wildlife Surveys Ltd highlights the relative importance of the site for the nationally critical long-tailed bats. The Department agrees with this assessment. Bats are now rare over most of the West Coast region (O'Donnell 2000). Using the Departments bat detecting standards it is considered that there are a relatively high number of bat records within and around the area affected by the 'envelope'.

#### Potential impacts of hydro construction

- 4.153 Westpower notes six potential negative effects of the proposal on fauna (p 82-83 of application). The Department agrees with this assessment. The major impacts of the proposed development include loss of breeding and/or feeding habitats of both threatened and representative bird species and long-tailed bats through felling of trees and clearance of habitats, mainly for road development, but locally about the portal, weir and other workings. The proposed vegetation clearance may also cause the death of birds or bats as trees are felled and the removal of potentially important food sources.
- 4.154 The greatest impact overall on birds and bats is potential loss of a bat roosting tree/s. Bats concentrate in social groups (colonies) to breed and the felling of individual trees could be catastrophic if a bat colony is present. Therefore, if any roosts are felled during the operation, the effects would be significant rather than negligible (as was suggested in the application, P127).
- 4.155 It is noted that highest bat activity recorded by Wildlife Surveys Ltd was around the weir and portal construction site, it is acknowledged that the reduction in the footprint at this site has lowered and maybe removed this risk. If Westpower was able to avoid all bat roost trees then effects on bats would be considered to be minor. Proposed methods to avoid bat roosts are discussed below.

#### Proposed mitigation

- 4.156 Proposed mitigation needs to deal effectively with the six potential negative effects of the proposal on fauna (p82-83 of application).

#### Bats

- 4.157 Westpower is aware of the need to avoid bat roost trees (*"the final road alignment will seek to follow a route that avoids any key vegetation, large trees and potential bat roosts and to maintain a minimum 10 m buffer between the road and both the Waitaha River and the ecologically sensitive Stable Tributary as described in Section 4.9, p27 of application"*).
- 4.158 If this concession is granted bat roost trees should in the first instance be avoided. A range of conditions have been proposed to achieve this however further more prescriptive conditions are proposed by the Department, including; surveying potential bat roost trees prior to deciding on the road alignment; surveying any remaining bat roost trees prior to tree felling; and what to do in the potential case of discovery of bats during and after felling. In addition felling should not be undertaken in winter when bats are hibernating (in torpor) (May-September) and would not be detectable.
- 4.159 Potential roost trees have been defined by the Department as all live and dead standing trees > 15 cm DBH (measurement of diameter at breast height) along the alignment footprint that have features that may indicate a potential roost (e.g. peeling bark; cavities, hollows, knot holes, splits, cracks etc). The Departments specialist on bats notes that the minimum DBH size of bat roost trees is lower than that suggested by the applicant and results from recent radio tracking and roosting studies from both the North and South Islands.
- 4.160 It is considered that potential negative effects on roost trees could be avoided with adherence to the above conditions. It is acknowledged that with the proposed reduction in the vegetation clearance at the intake site would reduce the risk to bats by no longer requiring the removal of at

risk to large diameter trees or podocarps that have greatest importance to indigenous fauna (Particularly bats, kaka and rifleman that inhabit this area).

#### Birds (excluding Blue Duck)

- 4.161 Large trees in the vicinity of the tunnel entrance and those along the proposed road route are likely to provide important seasonal food sources for forest birds including a number of threatened species. Flexible alignment of the road access route may avoid these, although valuable seasonal food supplies in seral vegetation habitats are likely to be lost.
- 4.162 The Department supports the proposed conditions to avoid clearance during the bird breeding season (P83 of application). Other conditions that would avoid or mitigate against the effects mentioned above include surveying and marking large trees and then adjusting the road alignment to avoid as many large trees as possible and resulting the least damage to vegetation as possible. In addition the proposed conditions are recommended;
- a) Boundaries of all areas proposed to be disturbed would be checked by the grantor
  - b) Any podocarp trees greater than 60cm dbh would need to be checked by the grantor prior to removal.
  - c) The area around trees with a dbh of greater than 60cm for any podocarp or 100cm for any non podocarp would not be disturbed closer than their outer canopy drip line.
  - d) Surveying for Kaka nests in the proposed access road alignment and alternative routes must be used if any found - this is covered under Westpower's proposed condition 5.10.

Would all help to reduce the effect of the loss of seasonal vegetation habitats.

#### **Department Conclusions**

- 4.163 Westpower suggests only a low number of threatened species are present however the Department does not agree with this statement. The site contains significant habitat of threatened and representative bird and bat species. Impacts potentially include loss of breeding and/or feeding habitat through felling of trees and clearance of habitats mainly for the road development, and locally about the portal, weir and other workings. The greatest potential impact would be the potential loss of a bat roost during felling, if this happened this would be a significant effect. However if Westpower could avoid felling any bat roosts then the potential effects on bats would be considered minor. Effects on forest birds would also be considered negligible if Westpower could avoid important food source trees. If Westpower adheres to the proposed conditions it is considered that effects on fauna values would be adequately avoided, remedied and mitigated.

#### **E Assessment of Effects – Lizards**

- 4.164 Section 7.6 of the application (p 84-86) summarizes what Westpower see as the potential effects of the proposed scheme on lizards. Table 12 P128 of the application provides a summary.
- 4.165 Appendix 17 of the application gives the full assessments of the potential effects on Lizards by Westpower's consultant (Whitaker 2013).

#### **Westpower's Summary of Assessment of Effects on lizards (Table 12, p128 of application)**

- 4.166 Westpower concludes that *"Whilst there are some unknowns in regard to particularly skink presence there are no records of lizards within the project area, and no lizards were found during the field survey. Although the Whitaker 2013 report proposes no specific mitigation measures Westpower has suggested a condition relating to the collection of lizards found during the construction. The Whitaker report concludes that at a local scale, the project is expected to have very little adverse effect on the lizard fauna of the project area, though clearly those lizards living within the project footprint will be lost or displaced."*
- 4.167 Westpower concludes that the Scheme would have no detrimental effect on the broader conservation status of the lizard fauna known from central Westland. There are a number of other general conditions proposed that relate to avoidance and mitigation effects on lizards.

4.168 These are detailed in section 9, p142-158 of the application and include the following conditions. These can also be found in full in appendix 1 of this report along with a set of new recommended conditions.

<b>CONDITIONS</b>	1.1-1.2, 7.1-7.4, 15.8
-------------------	------------------------

Natural, Historic or Recreational Value	Scheme Phase	Potential Effect	Assessment of Effect (post avoidance, mitigation and monitoring measures)	Avoidance, Mitigation and Monitoring
<b>Lizards</b>	Construction & Operation	Conservation status of lizard fauna known from central Westland Loss or displacement of lizard fauna Local loss of gecko Habitat Local loss of skink Habitat  Changed flow regime	Nil  Negligible Negligible Unknown - very small area affected in relation to available habitat in the catchment as a whole. Potential for creation of habitat by works. Nil	See Section 9 for suite of suggested conditions derived from recommended avoidance, mitigation and monitoring.

#### Department's Comments on the Assessment of effects on Lizards

- 4.169 The Department considers that Westpower's report (Whitaker 2013) provides information on the threat status, conservation value and distribution of the indigenous lizard fauna. Whitaker also comments on how little is known about the autecology of the indigenous skinks and geckos.
- 4.170 Three areas within the proposed footprint were searched over 10 person days in summer. No lizards were found but suitable habitat was identified for both skinks and geckos by a competent and respected herpetologist. The consultant's reports (Whitaker 2013 and Toft 2014 respectively) provided a clear and comprehensive assessment of the local lizard fauna with reference to current knowledge and national threat status.
- 4.171 Of the eight lizard species that are known to occur in Westland, three or four species could occur in the project area; *Mokopirriakau granulatus* s.s., (forest gecko) *Naultinus tuberculatus* (West Coast green gecko), *Oligosoma polychroma* s.s. (common skink) and *O. infrapactatum* s.s.<sup>1</sup> (speckled skink complex) (Whitaker 2013). The applicant's survey found no lizards.
- 4.172 *Mokopirriakau* species are At Risk of extinction – in decline (Hitchmough et al 2012). They are widespread on the West Coast but facing a potentially high rate of decline. Although none were found in the survey they are probably present in the forest and shrublands. The *Naultinus* green gecko is expected to occur semi continuously on the West Coast, although the populations appear to be at low density. This species is threatened with extinction and is classified as Nationally Vulnerable as their numbers are low. The species also potentially faces a moderate rate of decline (Hitchmough et al 2012). The habitat at Kiwi Flat is considered ideal and it is said to be highly likely that this species is present on the project area (Whitaker 2013).
- 4.173 The most recent taxonomic evidence shows that all species of *Oligosoma* skink identified by Whitaker (2013) as potentially occurring on site are At Risk of extinction – in decline. *O. polychroma* complex skinks were known to have patchy and localised populations on the West Coast. Whitaker (2013) thought it was most likely that *O. polychroma* s.s. was present on site and that within the speckled skink complex (represented in Westland by three species), if any were present, it was most likely to be *O. infrapactatum* s.s. Given its current known distribution, however, it is unlikely to occur (Whitaker 2013).

#### Significance of lizards on site

- 4.174 Whitaker (2013) argues that because the available habitat is so great on the West Coast, and the animals are widespread at any site, the conservation significance of the gecko populations within the footprint is low, only increasing slightly if the presence of *M. sp. "Okarito"* is recorded. Whitaker is more concerned with the presence of the 'At Risk' skink species, and moderately concerned with the likelihood, though low, of other *O. infrapactatum* complex animals being present. He notes that the presence of any other species of lizards on site would be of high conservation significance.
- 4.175 Whitaker's argument maybe a reasonable assessment for the national significance of the At Risk gecko, but it is considered by the Department that any loss of individuals of the Threatened species is considered nationally significant (Pers. Comm. C O'Donnell) and locally. Both the loss of individuals and habitat would be a significant loss.
- 4.176 Whitaker's argument that the patchy nature of skink populations makes the site more significant for skinks than geckos is reasonable, however since the time this report was written the common skink complex has been resolved with two of the three species classed as At Risk of extinction. This poses a greater risk of significant loss than originally considered by Whitaker even though no skinks were found and he suspects the most likely taxa to be present will be the "not threatened" species. The speckled skink complex taxonomy has also changed since 2013 and the presence of any of these species in the small amount of potential habitat on site would be of at least moderate conservation significance and potentially high significance if the Chesterfield skink is present, according to Whitaker (2013).
- 4.177 Whitaker claims that the forest and shrubland habitats occur widely in the Waitaha catchment and throughout central Westland. The forest cover within the Hari Hari Ecological District (E.D.) is well represented on public conservation land, however the Department considers this is not the case for seral shrublands in the E.D. Seral shrublands are typical habitats of diurnal skinks and geckos. Across all Land Environments (Leathwick et al 2003) only 20% of the seral shrublands in the E.D. are within public conservation land, and that proportion of seral vegetation for the Land Environments present within the project footprint (O2.1, O1.4) is very small. It is estimated that less than 5% of the total land area of each land environment in native seral shrubs is in public conservation land. The risk of negative effects on skinks and geckos is therefore considered to be greater than what Whitaker thought.
- 4.178 Despite Whitaker's assessment that the development would have negligible effects on the gecko fauna the Department considers that this is by no means guaranteed and remains a risk for lizard conservation values whilst so little information is known about the actual species on site. Should the Westland green gecko be present the effect would be greater than just a local loss. The Department considers the effects on the skink fauna could also be nationally significant if a rare *O. infrapactatum* taxa is present and at least locally significant otherwise.

### **Proposed Mitigation**

- 4.179 Whitaker (2013) states that basic information on lizard autecology in Westland is largely lacking and it is for this reason that recovery of any incidental lizard finds is reported to Department staff locally to inform taxonomy and distribution patterns. In the event of this occurring, as is recommended, all Wildlife Act permits, conditions, and arrangement for the handling procedures of the animals would have to be sought and obtained prior to habitat destruction.
- 4.180 No other proposal is offered as avoidance, remediation, or mitigation for the loss of habitat and probable loss of individuals. The Department considers that there would be localised negative effects through loss of individuals and permanent loss of potential habitat, and there could be significant national effects. Either way biodiversity values on public conservation lands would be reduced.
- 4.181 The difficulty of capturing and identifying diurnal skinks and the brevity of the consultants survey period means a more thorough search for individuals should be addressed if the scheme was to be granted before the development phases occur using 'Artificial Cover Object's' for individual recovery.
- 4.182 Adams (2014) states that the cryptic nature of lizards makes any search difficult, and from experience of lizard surveys on the West Coast, "*searches are even more difficult there*". Survey

must be done by highly skilled herpetologist, ideally assisted with specially trained detection dogs. Even under ideal conditions there is a likelihood of missing/ detecting some/many species and detecting even abundant species would require significant effort over time.

- 4.183 If the hydro scheme was to be granted it is recommended that the following additional conditions replace proposed condition 15.8;
- a) The Concessionaire must obtain all Wildlife Act permits prior to commencing operations, which must include conditions and arrangements for the handling and release procedures of any geckos/skinks found, prior to any habitat destruction.
  - b) The Concessionaire must write a set of Lizard Salvage Procedures for the project and include these in the X Management Plan. The Procedures should include details of:
    - i. procedures for searching for and salvaging lizards, including capture and handling techniques to be applied
    - ii. provision of post-release monitoring
    - iii. reporting
  - c) The Concessionaire must obtain approval for the Lizard Salvage Procedures from the Hokitika DOC Operations Manager prior to commencing operations
  - d) Lizard capture, handling and relocation should be undertaken at a suitable time of year when lizards are active, as advised by a suitably experienced herpetologist
  - e) Lizards classified as ‘Not Threatened’ should only be released into site(s) that are assessed by a qualified herpetologist [or other expert] as being of similar or better habitat than the source location, and capable of supporting that lizard species;
  - f) Lizards classified as ‘Not Threatened’ should only be released into site(s) that are within five hundred (500) metres of the development footprint and has long-term security from development or modification (or with consultation and agreement with the Hokitika DOC Operations Manager)
  - g) If lizard species salvaged are classed as Threatened wildlife, the Concessionaire must contact the Hokitika DOC Operations Manager. The Concessionaire must transfer the wildlife to an approved captive holding facility until a suitable release site is identified by DOC. A separate application to translocate threatened species may be required. The costs of care and subsequent release are the responsibility of the Concessionaire.
  - h) A report is to be submitted in writing to the Hokitika DOC Operations Manager, at the end of the construction phase, or annually, summarising outcomes in accordance with the Lizard Salvage Procedure. The report must include:
    - i. the species and number of any animals collected and released;
    - ii. the GPS location (or a detailed map) of the collection point(s) and release point(s);
    - iii. copies of approved Species Specific Management Plans; and
    - iv. results of all surveys, monitoring or research.
  - i) Completed Amphibian and Reptile Distribution System (ARDS) cards for all herpetofauna sightings and captures (<http://www.doc.govt.nz/conservation/native-animals/reptiles-and-frogs/species-information/herpetofauna-data-collection/ards-card/>) must be sent to Herpetofauna, Department of Conservation, National Office, PO Box 10420 Wellington 6143 or [herpetofauna@doc.govt.nz](mailto:herpetofauna@doc.govt.nz).
- 4.184 Other remedial activities could involve replanting/restoration of temporarily destroyed habitat with appropriate shrub species and potentially creation of other shrub habitat in appropriate sites within the catchment. Rehabilitation is captured by the proposed special conditions 11.1, to prepare a rehabilitation management plan.

## Departments Conclusions

- 4.185 Three (or possibly four) indigenous species of lizard may be present in the proposed Waitaha Hydro Scheme Project Area (approximately 55 ha) that was surveyed; Mokopirriakau granulatus, Nautlinus tuberculatus Oligosoma polychroma and possibly O. Infrapactatum
- 4.186 It is likely that these species occur in the project envelope area of approximately 8ha and as N. tuberculatus is threatened with extinction (Hitchmough et al 2012) the site is considered significant for lizards.
- 4.187 There is also ideal habitat in the foot print for gecko species. The footprint is said by Westpower to be of no more than of local value to lizards because of their widespread, low density distributions within a vast habitat. Whitaker also argues that the project has a low impact of local effect, identifying only loss and displacement of individuals and destruction of common habitats as an impact. The report recognises the subjective nature of describing an amount of loss and refers to both “negligible” or “of very little adverse effect on the lizard fauna of the project area”. However the Department considers this is not the case if the Westland green gecko or a unique clade of the speckled skink is present.
- 4.188 The Department considers that the likely presence of a threatened gecko species and total removal of less well represented “At Risk” skink habitat would be considered to be a significant local negative effect and potentially a nationally significant negative effect and would cause a loss of biodiversity values. You need to decide whether the proposed mitigation measures would avoid, remedy and mitigate adequately the effects on lizards or whether the information available on lizards is insufficient or inadequate to assess the effects such that the proposed hydro scheme should be declined pursuant to 17U(2)(a) of the Conservation Act 1987.

## F Assessment of Effects - Invertebrates

- 4.189 Section 7.7 of the application (p86-88) summarises the potential effects of the proposed scheme on invertebrates. Appendix 18 of the application gives the full assessments of the potential effects on invertebrates by Westpowers consultant (Toft 2014). Table 12, p128 of the application provides a summary of what Westpower see as the potential effects on Invertebrates.

- 4.190 The potential effects on invertebrates is further summarised by Westpower in its application:

*“There will be some direct disturbance and removal of habitat as a result of road and facility construction.*

*The primary effect of the Scheme is expected to be on the riparian communities, at least in the short term. This will be through the:*

- habitat removal and modification caused by construction of roads and facilities;*
- temporary backwater effect on habitat at Kiwi Flat;*
- changed water flow regimes affecting sediment deposition dynamics in riparian zones downstream of the weir; and*
- an increased risk of new weeds and invasive invertebrates (e.g. introduced ants and molluscs) establishing in natural habitats as a result of vehicles and equipment being brought into the area for project construction and ongoing maintenance.”*

- 4.191 Westpower concludes that the scheme is expected to have relatively low effects on invertebrates.
- 4.192 As a result of its analysis Westpower has not proposed any specific mitigation measures for invertebrates. Nevertheless, mitigation measures proposed in the Vegetation Report with respect to weed management and revegetation would help mitigate a potential increased risk of new weeds and invasive invertebrates along exposed edges where required. A number of the general proposed conditions are also relevant to the avoidance and mitigation of effects on invertebrates and riparian habitats.

Natural, Historic or Recreational Value	Scheme Phase	Potential Effect	Assessment of Effect (post avoidance, mitigation and monitoring measures)	Avoidance, Mitigation and Monitoring
Invertebrates	Construction & Operation	Loss of vegetation, including riparian and edge effects	Minor and short term	<i>See Section 9 for suite of suggested conditions derived from recommended avoidance, mitigation and monitoring.</i>
		Road Construction over Macgregor Creek	Minor or less than minor	
		Introduction of weeds	Minor or less than minor, potentially positive in riparian areas with mitigation	
		Change flow regime - including riparian habitat	Minor or less than minor	

#### Westpowers Summary of Potential effects on Invertebrates

4.193 These are detailed in Westpowers proposed conditions in section 9 of the application and can be found in full in appendix 1 of this report.

<b>CONDITIONS</b>	<i>1.1-1.2, 5.16, 7.1-7.4, 12.1-12.7, 18.21</i>
-------------------	---

#### Department's Comments and conclusion on the Assessment of effects on Invertebrates

4.194 The Department considers that Richard Toft's report (Toft 2014) on the invertebrate values at the proposed construction sites is comprehensive and reasonable. The Department agrees with Toft's findings and conclusion that the construction foot print is very small relative to the ecological district and that weed and pest control is an appropriate inclusion in the applicant's proposal, particularly at Kiwi Flat (the least ecologically modified / most intact area within the proposal).

4.195 The Department supports the findings and ecological views of the commissioned ecology reports. The Department supports Westpower's proposed weed and pest control mitigations and believes that Westpower should be scrupulous against weed invasion into the riparian environment during construction of the weir at Kiwi Flat. This is particularly important in the light penetrating forest margins surrounding the short service road (between the tunnel portal and the weir) and the turf surfaces of Kiwi Flat. The Department does not consider that any further conditions are required.

#### **G Assessment of Effects – Aquatic Ecology/Benthic Communities and Fish**

##### Ecology/ Benthic Communities

4.196 Section 7.8, p89-96 of the application provides Westpower's analysis of the potential effects on the Aquatic Ecology/Benthic Communities. Appendix 10, 11 and 12 of the application gives the full assessment of effects on the Aquatic Ecology/Benthic Communities.

4.197 Westpower's summarises the potential effects:

- a) The Benthic Report (Appendix 10, McMurtrie & Suren, 2014) looks at the water quality, habitat, aquatic plants (periphyton/algae, bryophytes, macrophytes) and benthic invertebrates (small animals such as insect larvae and snails that live on or near the stream bed) of the Waitaha Catchment, the potential effects of the Scheme on these communities, and how these effects can be avoided, mitigated or remedied where the effects are adverse or significant.

- b) The Fish Report (Appendix 11, Drinan & McMurtrie, 2014) looks at the fish communities of the Waitaha River Catchment, potential effects on these communities, and how these effects can be avoided, mitigated or remedied.
- 4.198 The potential effects on Aquatic Ecology/Benthic Communities are further summarised by Westpower in its application and presented below. The proposed activities are separated into construction and operations related effects.
- 4.199 The construction effects relate to the creation of the access roads and other infrastructure (intake weir, underground settling basins, tunnel, powerhouse, tailrace etc...). The activities causing potential effects during the construction phase are summarised by Westpower as:
- sediment mobilisation;
  - release of concrete- and hydrocarbon-based contaminants;
  - riparian vegetation clearance; and
  - the spread of the invasive algae *Didymosphenia geminata* (Didymo) in tributary waterways.
- 4.200 The activities causing potential effects during the operational activities of the Scheme are summarised by Westpower as:
- residual flow regime (effect on aquatic benthic habitat);
  - sediment release during flushing of the settling basins/operation of the Scheme;
  - the backwater effect of the weir; and its influence on fish passage and
  - effects related to the permanent infrastructure (waterway crossings, riparian vegetation loss, stormwater runoff, lighting).
- 4.201 Westpower states further that *“The potential effects of the construction phase are partly mitigated via the planned programme to reduce effects as well as the nature of the environment e.g. the existing unstable nature and high sediment load of the Waitaha River mainstem and of most of the tributary waterways within the construction footprint, and the dry nature of some of the tributary waterways that will be crossed by the access road.”*

#### Effects during Construction Phase

- 4.202 Westpower states that the McMurtrie & Suren (Appendix 11) report (Benthic Report): *“...considers that the greater risk from construction activities is around the Stable Tributary on the true right bank of the river in the Douglas Creek Reach. This stable tributary could potentially be impacted by the removal of vegetation within the riparian zone for the construction of the access road that will run parallel to it in some sections, also from input of sediment during construction.*
- However, the potential effects on this sensitive and ecologically significant waterway will be greatly reduced or avoided by keeping the access road and all other activities a sufficient distance away from the stream (ideally 20 m with a minimum allowable distance of 10 m where topography and other matters limit a wider buffer strip). This will serve as a buffer zone of intact vegetation to help protect the stream from runoff and shield the system from activity. The creation of road drains that would direct stormwater away from the stream would also assist in keeping the stable and clean-water system free of sediment. It is noted however that the ability to successfully avoid runoff from the road construction entering the Stable Tributary will ultimately be dependent on the grade of the ground between the access road and the waterway, which has not as yet been detailed.”*
- 4.203 It is also stated by Westpower under avoidance strategies p136-137 that the road alignment has been designed to avoid the need to cross the Stable tributary.
- 4.204 Westpower comments further that:
- “The report proposes a range of recommended mitigation/avoidance measures that should ensure a ‘minor/less than minor’ effect during the construction phase.*

*Monitoring is considered warranted to make sure that this sensitive system is being adequately protected.”*

4.205 The following extraction from table 12, p128-129 of the application provides a summary in table form.

Natural, Historic or Recreational Value	Scheme Phase	Potential Effect	Assessment of Effect (post avoidance, mitigation and monitoring measures)	Avoidance, Mitigation and Monitoring
<b>Aquatic Ecology Benthic Communities</b>	Construction	Release of Sediment (from vegetation clearance and construction of infrastructure) Release of concrete and hydro-carbon based contaminants (from construction of infrastructure and machinery) Riparian vegetation clearance Spread of the invasive alga <i>Didymosphenia geminata</i> (Didymo)	Minor or less than minor  Minor or less than minor  Minor or less than minor Minor or less than minor	<i>See Section 9 for suite of suggested conditions derived from recommended avoidance, mitigation and monitoring.</i>
	Operation	Loss of aquatic benthic habitat with the mainstem due to residual flow  Sediment release during flushing of the settling basins/operation of the scheme Backwater effect of the weir on the mainstem at Kiwi Flat Waterway crossings Loss of riparian vegetation Stormwater runoff from the access road and associated hard surfaces  Lighting Effects	Minor or less than minor  Minor or less than minor  Less than minor  Less than minor Less than minor Minor or less than minor  Minor or less than minor	<i>See Section 9 for suite of suggested conditions derived from recommended avoidance, mitigation and monitoring.</i>
<b>Fish Communities</b>	Construction	Sediment release  Release of concrete and hydro-carbon based contaminants Vegetation clearance (including riparian vegetation clearance) Spread of the invasive alga <i>Didymosphenia geminata</i> (Didymo)	Less than minor  Less than minor  Less than minor Less than minor	<i>See Section 9 for suite of suggested conditions derived from recommended avoidance, mitigation and monitoring.</i>
	Operation	Loss of instream fish habitat within the mainstem and tributaries (the latter due to loss of surface water connection) due to residual flow  Fish strandings within the abstraction reach due to down-ramping  Impaired koaro/improved salmonid and eel passage to Kiwi Flat due to residual flow and the weir  Injury/mortality to larval koaro from passage through the headworks, settling basins and turbines  Riparian Vegetation Loss Increased predation risk to fish (both native and introduced) that have been attracted to the tailrace Sediment release during flushing of the settling basins Impeded fish passage at tributary waterways that require road crossings	Minor  Minor or less than minor  Less than minor  Minor or less than minor  Less than minor Minor  Minor or less than minor  Less than minor	<i>See Section 9 for suite of suggested conditions derived from recommended avoidance, mitigation and monitoring.</i>

#### Effects during Operations Phase

4.206 Westpower states further that: *“The report considers the findings of the IFIM modelling in determining the operational effects of the Scheme as a result of reduced flow on the aquatic ecology. The IFIM modelling predicts a large (155-174%) increase in short filamentous algae and a decrease in diatoms within the abstraction reach as a result of the residual flow, while there are variable predicted effects on the aquatic invertebrate community ranging from decreases to increases in habitat availability depending on the*

*particular Habitat Suitability Curve used. The report advises that the IFIM modelling is limited to predicting changes in habitat suitability in relation to water depth, velocity and substrate. However, any predicted changes based on the IFIM modelling will most likely be overridden by the low nutrient and high disturbance regime of the river, which appear to be the overarching factors affecting the benthic aquatic community of this river and that will not change significantly under the residual flow conditions.”*

(IFIM Modelling = Instream Flow Incremental Methodology is used to predict the effects of changes to flow on the habitat available to fish, invertebrates and other biota.)

4.207 Westpower state further that: *“The report considers that the overall impact of the residual flow on the benthic aquatic community of the Waitaha River is likely to be low (or ‘minor/less than minor’).*  
*This is due to:*

- a) the comparatively short distance of the abstraction reach (totalling approximately 2.6 km or roughly 6% of the Waitaha mainstem between the coast and headwaters at Ivory Lake);*
- b) the existing low periphyton biomass and low diversity and density of aquatic invertebrates within the abstraction reach;*
- c) all species within the abstraction reach also being found throughout the rest of the Waitaha mainstem and tributaries unaffected by the Scheme; and*
- d) the overarching dominance of the disturbance regime and sediment dynamics on the benthic fauna remaining unchanged.*

*The backwater effect on the Waitaha River at Kiwi Flat is predicted to be short-lived, with the area behind the weir filling with coarse sediment (gravel and cobble substrate) and the low flow channel regrading to suit the local conditions following the first large flood event. Given the short time frame and the fact that this part of the river already undergoes periods of inundation and channel regrading (from the flood flow pinch point caused by Morgan Gorge), there is unlikely to be any long term adverse ecological effect created by the weir.*

*The long term effects of any waterway crossings are likely to be negligible (or ‘less than minor’) once the recommended mitigation measures are implemented. The avoidance of any waterway crossing of the Stable Tributary in the current Scheme plan serves to protect this sensitive habitat from any disturbance relating to stream crossings. Removal of riparian vegetation is not considered to have any noticeable effect on the functioning of waterways (with the possible exception of the Stable Tributary as discussed below) due to the limited influence that riparian vegetation has on the Waitaha River mainstem (caused by the large distance between streamside vegetation and the river edge caused by the scouring effect of frequent floods), and the small amount of vegetation being removed in relation to tributary stream crossings.*

*Any potential effects during the operational phase of the Scheme on the Stable Tributary, primarily relating to removal of riparian vegetation for the road and transmission line corridor and from potential road runoff, can be adequately resolved to a ‘minor/less than minor’ effects level via similar avoidance and mitigation measures as proposed for the construction phase. It is noted however that the ability to successfully prevent road runoff entering the Stable Tributary will ultimately be dependent on the grade of the ground between the access road and the Stable Tributary, which has not yet been detailed. While there will be no permanent lights along the road corridor, and lighting around the powerhouse and intake will already be kept to a minimum, recommendations for the type of lights used (in terms of wavelength and light direction) are provided on the basis that these measures are environmentally sensitive options.”*

4.208 Westpower has considered the suggested mitigation measures contained in the Benthic Report (Appendix 10) and has adopted these in the form of suggested conditions with the aim of avoiding or mitigating potential effects of the Scheme. More particular to the recommended measures are the following conditions as set out in Section 9, p143-158 of the application.

<b>CONDITIONS</b>	<i>1.1-1.2, 4.1, 4.3, 5.14-5.16, 6.1-6.3, 7.1-7.4, 8.1-8.10, 8.12, 8.14-8.18, 11.1-11.6, 12.1-12.7, 14.1-14.5, 15.5-15.6, 18.1-18.4, 18.9-18.10</i>
-------------------	---

4.209 These can be found in full along with a set of proposed recommended special conditions resulting from the Departments analysis of the assessment of effects in Appendix 1 of this report.

4.210 Westpower concludes that:

*“The effects of the proposed construction and operation of the scheme would, subject to the implementation of the recommended avoidance and mitigation measures, be minor or less than minor. That is that the life-supporting capacity of the Waitaha River and its tributaries - with respect to the aquatic invertebrate, periphyton, bryophyte, and macrophyte communities at least - is not likely to be significantly affected by the Scheme provided the recommended avoidance/mitigation measures are implemented.”*

#### Fish

4.211 The potential effects on fish are summarised by Westpower in its application on p93. These are separated into construction and operational effects;

4.212 Construction Effects:

- *sediment release and deposition;*
- *release of concrete- and hydrocarbon-based contaminants;*
- *vegetation clearance, including riparian vegetation; and*
- *the spread of the invasive algae *Didymosphenia geminata* (*Didymo*) in tributary waterways.*

4.213 Longer-term potential operational effects are summarised as:

- *loss of in-stream habitat (both within the mainstem and tributaries due to loss of surface water connection) due to residual flow;*
- *fish strandings and displacement within the abstraction reach due to sudden flow changes (i.e. down-ramping and up-ramping);*
- *impaired koaro/improved salmonid and eel passage due to the residual flow and the weir;*
- *injury/mortality to larval koaro from passage through the headworks, settling basins and turbines;*
- *riparian vegetation loss;*
- *increased predation risk to fish (both native and introduced) that have been attracted into the tailrace;*
- *sediment release during flushing of the settling basins; and*
- *impeded fish passage at tributary waterways that require road crossings.*

4.214 The Effects on fish are further explained in Westpower’s application and given below. Westpower states that:

*In general, the majority of construction related effects are likely to have a less than minor effect on the fish communities once the planned programme to reduce effects, and the recommended avoidance/mitigation measures, are implemented.*

*With respect to residual flow effects, the report advised that the IFIM modelling predicts that habitat availability for adult brown trout is likely to be greatly reduced during dry and typical flow months (55–105% habitat retention) and habitat for the native fish known to occur in the abstraction reach (koaro and torrentfish), will generally increase (93–241% habitat retention during dry and typical flow months), apart from longfin eel, which is predicted to decrease slightly. Notwithstanding these predictions the overall*

effect of residual flow on the fish communities would most likely be minor, provided that upstream of Morgan Gorge remains free of salmonids and longfin eels. This is due to:

1. the comparatively short distance of the residual flow (totalling approximately 2.6 km);
2. the low diversity and densities of fish species within the abstraction reach (brown trout, koaro, longfin eel, torrentfish);
3. the overall sub-optimal fish habitat in the mainstem within the abstraction reach;
4. the ability of koaro to still migrate upstream into tributary waterways within the abstraction reach and upstream into Kiwi Flat; and
5. the protection of flow and surface water connections for the Stable Tributary and Douglas Creek (that are located approximately 800 m downstream of the end of the abstraction reach).

Despite this conclusion, the report notes that there is some level of uncertainty regarding the long term effects of the Scheme on the koaro population upstream of Morgan Gorge (especially from koaro passage through the turbines). Thus, a more integrated, monitoring-based approach is required to confirm that the fish populations, upstream of Morgan Gorge especially, are not adversely affected by the Scheme in the intermediate to long term. Furthermore, the long term effects associated with fish strandings, fish attraction into the tailrace and the flushing of the settling basins are difficult to accurately predict prior to the Scheme operating; therefore, monitoring is required for these effects to confirm that their level of effect is as predicted (minor or less than minor). The effects of waterway crossings on the fish communities are likely to be less than minor once the recommended mitigation measures are implemented. The long term effects associated with fish displacements due to sudden flow changes is also likely to have a less than minor effect on fish communities. Similarly, the effects of riparian vegetation loss and waterway crossings on the fish communities are likely to be less than minor once the recommended mitigation measures are implemented.

- 4.215 As a result of their analysis Westpower has proposed a number of special conditions to avoid, remedy and mitigate potential effects. These are detailed in section 9 of the application.

<b>CONDITIONS:</b>	1.1-1.2, 4.1, 4.3, 5.14-5.16, 6.1-6.3, 7.1-7.4, 8.1-8.10, 8.12, 18.14-8.19, 11.1-11.6, 12.1-12.7, 14.1-14.5, 15.5-15.7, 15.9, 18.1-18.4, 18.9-18.14
--------------------	---

- 4.216 Westpower concludes that:

*Overall they considered that the effects of the proposed construction and operation of the Scheme will be minor or less than minor, subject to the implementation of avoidance/recommended mitigation measures. Although life-supporting capacity is a broad-scale term that encompasses numerous facets of ecosystems, many of which are beyond the scope of the Fish Report, the life-supporting capacity of the Waitaha River and its tributaries, with respect to the fish communities at least, is not likely to be significantly affected by the Scheme provided the recommended mitigation measures are implemented.*

## **Department’s Comments on the Assessment of Effects on the Aquatic Ecology/Benthic Communities & Fish**

### **Mainstem**

- 4.224 The Department considers that the main features of this proposed run of river hydro scheme with the potential for effecting the aquatic ecology is the diversion of up to 23 cumecs of water from the mainstem of the Waitaha River (current mean flow is about 35 cumecs at Kiwi Flat) into a tunnel located just upstream of Morgan Gorge. The water would be conveyed through a proposed tunnel approximately 1.7km to a power station and would exit from the power station, discharging to the river via a tailrace located approximately 2.6km downstream from the intake. The primary effect of the diversion on aquatic ecology would be the reduced flow in the river through the diversion reach of 2.6km, where it is proposed that a residual flow of 3.5 cumecs, immediately below the intake would be maintained. The proposed residual flow would be

further added to by the contribution of tributary inflows of at least 0.7 cumecs for 50% of the time.

- 4.225 The Department considers that the frequent flood and fresh events (every 8.6 days on average) and high sediment load typical of the existing regime would remain a primary influence on the river's ecology in the diversion reach post construction. Downstream of the tailrace discharge, where water would be returned to the mainstem, it is considered that the flow regime would be very similar to the existing natural regime under this run of river scenario.
- 4.226 The habitat type in the reduced flow diversion reach consists of a very steep, turbulent bedrock slot and large boulder gorge with a boulder bed reach (boulder garden) below this and finer sediments; sand, gravel and cobble substrates predominating further downstream. Fine sediment deposited on surface substrates generally, reflects the input of fine glacial material from the upper catchment glaciers.

### **Aquatic community**

- 4.227 The investigation work by Westpower's consultants work showed the mainstem aquatic community in the diversion reach to be strongly structured by the harsh flow regime, high sediment load and low nutrient environment. Low densities of macroinvertebrate, fish and aquatic plant populations reflected this and likewise the pattern of limited species diversity. While survey work in the mainstem gorge habitat was not possible, it seems likely that macroinvertebrate, fish and plant communities would be similar to those in the survey reaches lower down but variable in species and density depending on local habitat conditions- ie water depths, velocities, substrate and cover regimes. Advice from a national expert in the response to a request for further information (26 January 2015) was that the torrential and highly abrasive conditions within Morgan Gorge would not allow the development of threatened species of bryophytes and lichens. No threatened species of macroinvertebrates or freshwater plants were detected in the mainstem reaches surveyed downstream of the gorge habitat. The range of species found was considered typical for West Coast Rivers of similar type.
- 4.228 Three 'At Risk' native fish were found in the mainstem diversion reach including koaro (*Galaxias brevipinnis*), longfin eel (*Anguilla dieffenbachii*) and torrentfish (*Cheimarrichthys forsteri*) and were present in very low densities. These species are widespread throughout New Zealand and while classified as 'At Risk' declining (Goodman et al 2014) are still relatively common. Populations of these native fish in the diversion reach or elsewhere in the Waitaha catchment affected by the scheme are not recognised as national stronghold populations or otherwise unique in character. Nevertheless, conservation of these species at existing (or enhanced) population levels is of key importance.
- 4.229 The steepness of the gorge section and its torrential nature impact on the fish community by limiting the species present above Morgan Gorge to koaro which has the strongest upstream migratory ability of the New Zealand fish fauna. Koaro were present in low numbers in the Kiwi Flat reach above Morgan Gorge. The absence of trout and other fish including eels upstream of the gorge and ensuring they remain absent is recognised as a value to benefit the koaro population. Trout were present in the mainstem diversion reach in very low densities and do not provide a significant recreational fishery.

### **Tributary aquatic communities**

- 4.230 The Department considers that the tributary environments potentially impacted by the scheme have been thoroughly surveyed and well described in the information provided. Tributaries entering the true right bank where scheme infrastructure and roading are proposed vary in type – from Alpha Creek which is ephemeral and subject to considerable disturbance to the 'Stable Tributary' which was found to be a biodiversity hotspot because of its extreme stability. Compared with the mainstem the tributary habitats were found overall to support much more diverse and abundant communities of aquatic plants- including algae and bryophytes, macroinvertebrates and native fish. This is attributed to their greater hydrological and sediment stability and higher productivity.
- 4.231 With respect to native fish the following species additional to those found in the mainstem were recorded: lamprey (*Geotria australis*), redfin bully (*Gobiomorphus huttoni*) common bully (*Gobiomorphus cotidianus*) and shortfin eel (*Anguilla australis*), with koura (*Paranephrops*

*planifrons*) also recorded from one tributary. Of the aforementioned species koura, redfin bully and lamprey are all considered 'At Risk' species with declining populations but commonly found in West Coast rivers. Koaro were the most abundant species in the tributaries overall.

- 4.232 'Stable Tributary' supported the highest abundance and biomass of instream flora and fauna. Koaro were abundant along with lamprey ammocoetes (juveniles) and koura plus a diverse assemblage of bryophytes. The Department agrees with Westpower's consultant ecologists values assessment that the 'Stable Tributary' is a biodiversity hotspot and that particular measures are needed to protect these values.

#### **Assessment of environmental effects on aquatic values**

- 4.233 Westpower proposes a number of draft conditions in order to protect mainstem and tributary aquatic values during the construction and operational phases of the scheme. These include proposed monitoring to ascertain that aquatic values are adequately protected. The Department propose a number of additional conditions; the proposed Environmental Monitoring Plan (EMP) would outline the methodology. These plans would be subject to independent audit and prepared in accordance with best practice (Condition 1.4) and require departmental approval. This process would provide further opportunity to discuss monitoring requirements. Where relevant the conditions may integrate with conditions which may be imposed under resource consent processes by the West Coast Regional Council.

#### **Construction effects**

- 4.234 The Department considers that the draft conditions and monitoring proposed in the application recognise the mainstem and tributary values at risk during construction and reflect the recommendations of Westpower's ecological advisers on what is needed to protect aquatic ecological values. The Department's main concern is that sediment and other potential contaminants entering the mainstem are adequately managed throughout the construction phase. In this respect the Department supports the role of the proposed Liaison Officer and other provisions under Westpowers proposed Condition 3- 3.1-3.6 as a key requirement to ensure that conditions established under any concession and resource consent are complied with, such as prescribed levels of suspended sediment.
- 4.235 A range of other proposed conditions deal with potential effects on water quality arising from construction including conditions 4.1-4.4 which proposes preconstruction activities and route planning intended to minimise vegetation disturbance and tree removal which would assist in reducing sediment runoff generally. Notably an extended buffer width is promoted around the Stable Tributary in condition 4.3. This condition provides for a margin of up to 20m, with a minimum allowable margin of 10m where topography and other matters limit provision of a wider margin. The Department supports this condition.
- 4.236 Likewise, the Department considers that Westpowers proposed Conditions 5.1 – 5.17 (Disturbance Areas) should include specific measures to limit disturbance of soil and vegetation and sediment runoff into waterways such as those proposed conditions in 5.14 and 5.16. The Department supports these conditions subject to the development of suitable methods to give effect to these conditions to provide protection to the aquatic ecology. The proposed Rehabilitation Management Plan (RMP) conditions 11.1-11.6 would address re-establishment of vegetation communities which would promote riparian protection and benefit tributary habitats, therefore the Department supports the RMP utilising best practice techniques to promote quick re-establishment of vegetation with appropriate eco-sourced species.
- 4.237 The Department considers that Westpowers proposed Construction Management Plan (CMP) conditions 7.1- 7.5 would provide the key higher level direction for the measures needed to protect water quality and condition 7.3 provides for the specific aspects identified for management. The identified aspects under 7.3 a)- 1) are likely to adequately cover the key matters to be addressed by way of more detailed plans either under the CMP or under separate plans or under the Wastewater, Groundwater, Erosion and Sediment Management Plan (Condition 8.1).
- 4.238 The Department recommends that under the CMP Condition 7.3 (e) "in river works" measures are developed to avoid fish stranding as a consequence of construction activities and these

should include provisions for fish salvage where required, also a monitoring component should be incorporated into the EMP.

4.239 It is recommended that the following conditions be included:

- As part of the Construction Management Plan and Environmental Monitoring Plan 7.3 (e) 'in river works requirements', the Concessionaire must develop protocols to prevent fish stranding as a consequence of construction activities, including the provision of fish salvage where required.
- Methodologies for monitoring and preventing fish stranding shall be provided to the Department for approval within the Construction Management Plan and other relevant plans including the Environmental Monitoring Plan.

4.240 Protection of the Stable tributary and other tributaries is to be addressed by way of Westpowers proposed concession conditions 8.6 and 8.7 and 8.8-8.9 relating to waterway crossings generally and specifically by the requirement for a bridge across Granite Creek. It is proposed that Westpower shall submit to the Department the detailed measures appropriate to protecting aquatic life in all affected waterways taking local site conditions into account (e.g. sediment, slope, water volume, runoff characteristics and vegetation). Such details must include the methods for sediment management and provision of fish passage.

4.241 The Department supports Westpowers proposed condition 18.9 for monitoring of water quality in the Stable Tributary to ensure that if necessary any exceedances can be responded to directly by taking appropriate remedial measures. In addition to water quality the Department recommends that native fish populations also be monitored in the Stable Tributary to demonstrate that At Risk fish species, are being adequately protected during the construction period of 3 years.

4.242 The following condition should be added to condition 18.9:

- The Concessionaire in consultation with the department must design a quantitative annual fish monitoring protocol to determine the population health of native fish in the Stable tributary over the 3 year construction period (or longer if construction is extended). The outcome of the programme shall be that the population size and age structure shall be maintained at pre-construction levels. If adverse effects are detected remedial measures will be directed by the Department. Details on quantitative methodology must be provided in the environmental Monitoring Plan (Condition 18.1).

4.243 It is noted that in Westpower's response to the Department's request for further information regarding koaro passage (question 13, further information request on fish and instream habitat) its consultants suggested that fish monitoring occur in tributaries within the abstraction reach, within the Kiwi Flat area and in control sites before and during the operation of the scheme, with further detail to be developed when scheme design and operation are finalised. Collectively this monitoring should provide a good indication of the general health of the koaro populations. The Department recommends the following conditions are included if a concession is granted:

- As part of the EMP the Concessionaire must submit a detailed Fish Passage Monitoring and Mitigation Plan to address the matters set out generally in Westpowers proposed conditions 18.11-18.13 and 15.9. Such a plan shall address fish passage issues (including monitoring for and exclusion of trout and eels) and where relevant fish survival rates relating to migration over the weir, fish entrainment at the tailrace and koaro larval survival rates through turbines. It is unclear to what extent in-river works in the mainstem at locations other than the weir would incorporate fish monitoring. The Department considers that the EMP should develop details within the EMP at condition 18.6.
- In addition (building on suggested condition 18.14) the Concessionaire must develop a detailed Fish stranding monitoring and mitigation plan to ensure scheme operation ramping rules are designed and adjusted to prevent fish stranding or otherwise cause mortality to fish.

- 4.244 S.McMurtrie advised that a suite of water quality monitoring measures would also be designed for other tributaries within the construction footprint. The Department supports this proposal provided details of the methodology, parameters to be measured, their location, protection levels and intervention protocols and reporting requirements are provided in the relevant sections of the EMP.
- 4.245 Likewise the EMP as submitted did not provide details of water quality monitoring for the Waitaha mainstem associated with construction, this needs to be provided within a comprehensive integrated water quality monitoring plan similar to that developed for the tributaries. The outcome of the programme would be that water quality has no adverse impact on aquatic life throughout the construction period. All such water quality monitoring shall use best practice methodology and be developed in conjunction with appropriate technical advice from the West Coast Regional Council to be consistent with council consenting requirements relating to water quality.
- 4.246 The Waitaha mainstem monitoring programme within the EMP shall use best practice methodology in addressing the following:
- the water quality parameters to be measured, the baseline water quality reference levels, the locations, methodology, protection limits and intervention protocols to be followed
  - specify the equipment to be used to allow the continuous telemetered measurement of suspended sediment (using NTU), the measurement of deposited sediment, pH and other relevant parameters (subject to West Coast Regional Council (WCRC) requirements for monitoring Resource consent conditions)
  - NTU levels shall not exceed natural levels by more than 20% as measured no more than 200 metres downstream of the discharge of construction derived sediment
  - Measurement of deposited sediment to accurately discriminate the sediment depositing on the riverbed as a consequence of construction activities from other natural sources, deposition shall be no greater than 20% of reference pre-impact levels measured no more than 200 metres downstream of the discharge of construction derived sediments
  - establish a pH monitoring protocol for whenever concrete is being poured where it may enter watercourses to ensure that pH is not altered by more than 1 pH unit as measured at a point no more than 200 metres downstream of the use of concrete. Establish the methods to address exceedances of water quality limits as proposed above including any agreed additionally and as may be required by the WCRC as resource consent conditions.
  - Specify, based on best practice advice, a review timetable and protocol to ensure that the water quality monitoring programme is fit for purpose including a first assessment within 6 months of the commencement of construction
- 4.247 The Department supports Westpower's proposed conditions 8.10- 8.20 which propose measures to manage contaminants arising from in river works, construction infrastructure, concrete containing materials, sediment from surface runoff and tunnel spoil and other human waste and rubbish. Westpower shall submit the detailed methods within the appropriate construction management plans.
- 4.248 Under proposed condition 8.15, river works associated with weir construction would be managed to minimise the duration and effects on koaro whitebait migration. This provision would benefit from further advice from the consultant ecologists regarding the likely timing of the migration period which at present is not fully known but likely to be over the period August- -November. There is therefore uncertainty over how to manage works to protect migrating koaro. The Department recommends the following words are added to condition 8.15:
- Prior to weir construction Westpower shall use best practice methodology to undertake the necessary studies to define the period of upstream koaro whitebait migration and develop a timing and works protocol to ensure that koaro are protected and that natural levels of koaro passage and recruitment to habitats above the weir are maintained.

- During the programme of weir construction Westpower shall continue to monitor koaro migration to ensure that the timing and works protocols are providing adequate protection for upstream koaro migration. Timing and works protocols shall be adjusted should monitoring indicate that they are inadequate in providing natural levels of koaro passage and survival. The details of the proposed monitoring programme shall be incorporated into the Construction Management Plan in river works 7.3 (e) and be approved by the grantor.
- 4.249 There is some degree of overlap of the construction phase related plans as well as the proposed EMP which would eventually be the location for details of all scheme related monitoring requirements. The Department considers that Westpower should rationalise the location for particular content of these plans to add some clarity and comprehensiveness to what is proposed. It is acknowledged that detail of methodology under the various plans would need to be developed with more discussion with the Department.
- 4.250 Westpower has provided a schedule of protocols under proposed conditions 12.7 relating to didymo management, that were used for the Amethyst hydro scheme; other proposed conditions include 12.4, 12.6. The proposed protocols provide an indicative approach, however, as discussed in the response from Westpower's ecologist, once more detail is known on the construction works, more targeted site specific protocols can be developed. These could be incorporated into the Pest and Weed Control Management Plan.
- 4.251 Westpower considers that scouring from ongoing floods would assist in removing didymo but has not proposed that flushing flows be used as an additional method to mobilise Didymo. Flushing flows have, however, been proposed to help flush sediment from the settling basin (conditions 6.3 and 18.10). Flushing of Didymo or other excess algal growths is therefore feasible and may be effective in scouring off such growths under river conditions conducive to stimulating growths such as periods of extended low flows (e.g. when the river is held at the 3.5 cumec residual flow under a dry weather scenario). The Department therefore recommends the following conditions for the use of a flushing flow in these situations to be added under the Pest and Weed Control Management Plan condition 12.7:
- The Concessionaire shall prepare details of a monitoring and reporting programme to determine the presence and biomass measurement of Didymo and other algal growths in the abstraction reach of the river. Its purpose shall be to establish a flushing protocol that ensures that no more than 50mg of Chlorophyll A biomass/square metre accumulates within the abstraction reach. The monitoring programme shall follow protocols established in Biggs and Kilroy 2000\*. The concessionaire shall undertake flushing flow releases (by closing down the scheme intake) to scour off growths and establish the volume of flow and the time period needed to give maximum effectiveness in removing algae and for designing further flushing regimes for maximum effectiveness.
  - In the case of the invasive algae *Didymo* being detected at any level of growth within the abstraction reach, a flushing flow shall be undertaken no more than 6 hours after its discovery in order to maximise the effectiveness of flushing. \* Biggs, B.J.F and Kilroy, C, 2000: *Stream Periphyton Monitoring Manual. Prepared for Ministry for the Environment. NIWA Christchurch. 226p.*
  - The Concessionaire must design the intake weir with the capability to bypass the full base flow of the river if a flushing flow in the river is required.
  - The flushing flow protocol shall include methods to ensure that all risks to people potentially exposed to sudden increases in flow are managed.
- 4.252 Section 6.4.6, p64 of the concession application discusses fuel and refuelling. Westpower states that fuel would be stored within bunded areas, and contingency plans detailing methods used in case of accidental spill would be required from all contractors operating machinery on site. Westpower further states that storage tanks and refuelling would not take place within the river bed, or within 10 metres of waterways including the Stable Tributary.
- 4.253 Conditions 14.1-14.5 relate to fuel use, storage, leakage and spill management. The Department's standard Concession conditions requires that all fuel stored on public conservation land

complies with the Hazardous Substances and New Organisms Act 1996 (HSNO Act). Therefore the following additional conditions are recommended to be added as special conditions 14.6 and 14.7 if this concession is granted;

- The Concessionaire must ensure that all fuel stored on public conservation land complies with the Hazardous Substances and New Organisms Act 1996 (HSNO Act).
- The Concessionaire must complete the Bulk Fuel request for details form attached to this report in appendix 3 prior to construction and submit the form to the Grantor.

4.254 The proposed conditions including the provision for the use of vegetable based hydraulic fluids to minimise adverse effects are supported by the Department.

#### Departments Conclusion

4.255 The Department considers that the variety of conditions relating to the construction phase are generally adequate to avoid, remedy and mitigate adverse effects on the aquatic ecology in the mainstem and tributaries. Westpower must be able to adhere to the conditions proposed by developing and giving effect to the management plans which will provide the detailed methodologies of how the required levels of aquatic protection and outcomes are to be achieved.

### **Scheme design features and operational activities affecting instream values**

#### **Design of weir and fish passage monitoring**

4.256 The Department considers that together with the further information provided by Westpower the application adequately recognises the potential issues associated with the construction and ongoing operation of the weir and the need for a fit for purpose design that maintains upstream passage for koaro whitebait, juvenile blue duck movements and kayaking access but prevents potential trout and eel invasion. The Department considers that Westpower has properly acknowledged the importance of ensuring the trout and eel free status upstream of the Morgan Gorge where only koaro are currently found. The Department supports proposed condition 15.7 which encapsulates the general principles to be achieved with a collaborative design process with the department which is also supported by Condition 18.11 (b). Proposed condition 18.11 directs a 5 year annual monitoring programme to determine that longfin eels and trout have not gained access to Kiwi Flat and to monitor koaro passage at the weir. The outcome of the weir design and its management and maintenance must be to prevent the upstream movement of all fish with the exception of koaro whitebait at natural levels of recruitment. The following should be added to condition 15.7.

- The weir must be designed, managed and maintained to prevent the upstream movement of all fish except koaro whitebait. A monitoring and mitigation programme shall be designed to ensure that recruitment levels of koaro are sustained at a level agreed by a recognised population expert (as close as possible to and no more than a 10% difference from those occurring prior to weir construction. Details of reporting and mitigation options to achieve this level of recruitment shall be detailed within the EMP and be approved by the grantor.

#### **Design of tailrace**

4.257 The Department considers that the proposed monitoring programme under Condition 18.13 for investigating the entrainment of fish into the tailrace, the recognition of the potential need for a trap and transfer system for native fish and designing it to exclude trout (Condition 15.9) are together likely to be effective. The overall outcome of the ongoing operation of the tailrace shall be to cause no significant reduction to the natural levels (i.e. pre tailrace condition) of native fish recruitment into the waters upstream of the tailrace i.e. the mainstem and tributaries. The following condition is proposed to be added to 15.9:

- The weir must be designed, managed and maintained to prevent the upstream movement of all fish except koaro whitebait. A monitoring and mitigation programme shall be designed to ensure that recruitment levels of koaro are sustained at a level agreed by a recognised population expert (but as close to no more than 10% different from those occurring prior to weir construction, as possible.) Details of reporting and mitigation options to achieve this level of recruitment shall be detailed within the EMP and be approved by the grantor.

### **Potential turbine induced mortality of koaro larvae**

4.258 Westpowers Condition 18.12 proposes a monitoring programme to determine the levels of entrainment of koaro larvae into the scheme intake and turbine mortality rates, it also suggests some potential mitigation solutions that may reduce mortality if it is shown to be occurring. The details of such a programme and the mitigation options would need to be developed in conjunction with and approved by the Department. The objective of the investigation and mitigation programme would be to ensure that overall mortality levels of koaro larvae do not exceed natural levels by more than 10%. It is recommended that the following be added to special condition 18.12:

- The monitoring and mitigation programme to address potential entrainment and turbine mortality rates of larval koaro shall be developed in conjunction with and be approved by the Department. An investigation programme using international best practice shall include the investigation and selection of turbine designs that will minimise larval mortality, determine the timing of koaro larvae migration, their numbers and rates of entrainment into the scheme and survival rates after turbine passage. Based on the findings of the monitoring and investigation programme the Concessionaire shall develop a mitigation programme to manage mortality rates to no more than 10% of those occurring naturally. The investigation and mitigation programme shall be incorporated into the fish ecology section of the proposed EMP where fish and other aquatic matters are consolidated.

### **Instream habitat conditions at Kiwi Flat**

4.259 The Department acknowledges that the weir would eventually accumulate sediment behind it for some distance into the Kiwi Flat reach. The Department was initially concerned that this may affect the koaro population in the mainstem by changing habitat conditions. However, the Department agrees with Westpower that typical surface substrate conditions are likely to re-establish behind the weir once the bed level behind the weir readjusted so that habitat conditions for koaro should be similar to the current condition.

4.260 Following a further information request from the Department (question 13) concerning koaro passage at the weir it has been proposed by Westpower that koaro populations would be monitored in the tributaries in the Kiwi Flat area along with monitoring for the presence of longfin eel and trout. The age structure results from this work should reflect the condition of the mainstem reach for koaro passage and habitat as they pass through the mainstem into the tributaries. However the Department considers that monitoring should also include a mainstem site in the new substrate accumulated by the weir to determine the koaro population utilising this induced substrate type and to confirm its ongoing suitability and use by koaro. The details of fish monitoring programmes at the weir, within the tributaries and at a mainstem site above the weir within Kiwi Flat, together with mitigation options (should adverse effects become apparent) need to be detailed within the Environmental Monitoring Plan (EMP). The objective of monitoring and mitigation (if needed) will be the maintenance of koaro populations within the mainstem and tributaries within 10% of pre scheme levels. The following special conditions should be included with 18.11.

- The concessionaire shall include a koaro population monitoring protocol for a Waitaha mainstem site at Kiwi Flat as part of a comprehensive monitoring and mitigation plan. The plan shall be designed to maintain koaro populations within 10% of pre impact levels within the mainstem and tributaries above the proposed weir. The monitoring programme shall use best practice methodology in quantifying the size and age structure of koaro populations.
- Details of the monitoring programme including reporting and mitigation intervention protocols to maintain populations within 10% of natural levels should be set out within the EMP.

### **Post construction sediment accumulation in the diversion reach**

4.261 Further information was sought by the Department regarding the management of sediment in the mainstem diversion reach. Westpower propose that flushing of the settling basin through an outfall into the mainstem during flood flows should avoid accumulation of the sediment in the reach and the Department considers that this is a good approach. However the final details of

this approach would still need to address the optimal flow range for the dispersal and effective downstream mobilisation of sediment.

- 4.262 Regarding the fine sediment accumulation potentially induced during periods of extended low flows in the diversion reach, the further information provided by Westpower (p3, question 7 hydrology, sediment, and benthic ecology matter - Mr Hicks) is helpful and has suggested a monitoring methodology and trigger criterion of 20% accumulation compared with a reference site and the provision of a flushing flow to mobilise sediment. It is considered that the guidance on sediment effects and monitoring provided in Clapcott et al 2011 may provide useful guidance in developing details of the monitoring and flushing protocol. A condition to this effect is recommended below. (Clapcott, J.E., Young, R.G., Harding, J.S., Matthaei, C.D., Quinn, J.M. and Death, R.G. (2011) Sediment Assessment Methods: Protocols and guidelines for assessing the effects of deposited fine sediment on in-stream values. Cawthron Institute, Nelson, New Zealand)
- The Concessionaire must develop a detailed deposited sediment monitoring and flushing response plan to manage sediment deposition in the abstraction reach resulting from sediment basin flushing. The purpose of the Plan shall be to prescribe a monitoring methodology ( e.g. using Clapcott et al 2011 and other relevant best practise guidance) and flushing regime that maintains sediment levels at no more than 20% greater than at an appropriate non impacted control site.
- 4.263 Currently the sediment discharge matters are dealt with by Conditions 6.3 and 18.10. These need to be brought together into the EMP.

#### **Fish stranding and management of ramping**

- 4.264 Westpower has provided some further information on ramping and how a programme would be implemented to monitor and manage this potential adverse effect on fish stranding (question 5, p3 response on hydrology, sediment and benthic ecology). Avoiding ramping (sudden increases in flow when the scheme starts up or reductions when it is throttled back) by smoothing out changes to be more gradual reduces the risk to stranding of fish and invertebrates as well as to humans who may be exposed to sudden flow increases if in the river. Westpower proposes a programme of monitoring (Condition 18.14) to both check for fish stranding and to inform Westpower as to whether further management of ramping rates is required to ensure that stranding does not eventuate. Such work is anticipated to occur during the commissioning of the scheme but further details of the programme would still need to be developed once more information on scheme design and operation was available.
- 4.265 This work would also develop flow management methods and rules should unforeseen outages occur and address matters of public safety as well as ecological effects. The following condition is recommended.
- 4.266 Currently this issue sits under Fish-Koaro 18.14 of the EMP. It is recommended that it is best separated out from the koaro heading as it does not relate to just koaro as other native fish and trout are also present. A new heading to the proposed conditions should be added named '*Ramping effects- monitoring and mitigation*'. Also Condition 18.14 should be added to at the end with:
- The monitoring and mitigation programme shall develop flow change protocols that provide for the safety of downstream users at all times. This shall include the installation of warning notices and other devices that ensure the public are not caught unaware of increases in flow.
  - Within the first year of operation of the Scheme the Concessionaire must undertake monitoring based on international best practice to ascertain the level of fish and invertebrate stranding (if any) due to flow changes arising from the operation of the Scheme. When the relationship between flow increases and recessions on the levels of fish and invertebrate stranding within the affected reaches is determined the concessionaire shall submit a detailed report on the findings. The report shall recommend rates of flow change that will prevent fish and invertebrate stranding and avoid other adverse effects on aquatic life. The concessionaire must adopt protocols to ensure that these rates are complied with at all times.

- The concessionaire shall provide a continuous flow record of the volume of water being released from the tailrace (refer proposed conditions below) as evidence of compliance with these protocols. Additional studies shall be undertaken in the event of uncertainty about the scale of effect of flow changes on fish or invertebrates so that additional protective protocols or other mitigation to minimise effects can be developed and adopted within flow change protocols.

### **Measurement of scheme impact on flows**

4.267 The impact of the scheme intake on the rivers flow regime below the weir, the background flow levels arising above the weir and the volume of water being released at the schemes tailrace (including measuring and management of ramping effects discussed above) are key matters for continuous measurement and management within a comprehensive flow monitoring and management programme. A key requirement is to monitor and maintain the continuous release of no less than 3.5 cumecs of water at the weir. The monitoring programme shall include details of the methods to be used to ensure that the flow release is continuously adjusted to meet the 3.5 cumecs requirement. Such a programme shall also specify the monitoring that shall be used to determine the volume of flow contributed by tributary streams into the abstraction reach of the river (ie between the intake weir and tailrace discharge point), in order to gain a comprehensive understanding of their influence on the flow regime. The flow monitoring and management programme shall also address the abstraction of water from any other tributaries or groundwater that is used during the construction phase of the scheme or on a permanent basis. The concessionaire in preparing such a plan shall ensure it is developed in conjunction with and meets the requirements of the WCRC. A proposed condition is set out below additional to Westpowers proposed conditions 18.8 and 18.9.

- The concessionaire must develop a flow monitoring and management programme (that would form part of the EMP that addresses the matters outlined above. The flow monitoring and management programme must be developed by suitably qualified hydrological and technical specialists to ensure the choice of flow recording equipment and its installation, the location of measuring sites, rating curve accuracy, data logging and telemetric equipment all comply with international best practice standards. The flow monitoring system shall be fully operational no later than 2 months prior to the commissioning of the scheme. Accuracy of measurement as a minimum shall be no less than +/- 5% and all flow data shall be audited and certified by an appropriately qualified and experienced hydrologist. Flow data records shall be available for inspection by the grantor and WCRC on request.
- The flow measuring equipment shall measure and record flow on a continuous instantaneous basis at the scheme intake and that passing over the weir. The monitored flow volumes shall be interrogable by telemetry and the information used to ensure that at all times flow released downstream from the weir is no less than 3.5 cumecs.
- If at any time as a consequence of an outage or equipment malfunction the flow released downstream of the weir is less than 3.5 cumecs the concessionaire shall advise the grantor and WCRC immediately and implement measures to restore the flow to 3.5 cumecs urgently. Any such events shall be subject to investigation and improvements to address such failure developed within a protocol agreed by the grantor and WCRC within the flow monitoring and management programme.

### **Ecological impacts of the proposed residual flow regime on aquatic life**

4.268 Further information was received on the hydrograph induced by the scheme under various climatic scenarios (p3 of the further information response on hydrology, sediment and benthic ecology Martin Doyle) and further clarification of the predicted ecohydraulic effects on instream communities (p3 further information response on fish and instream habitats S. McMurtrie and C. Allen responses) have been helpful in further understanding potential effects and the adequacy and reliable delivery of the 3.5 cumec residual flow release from the weir (p1, further information response on hydrology, sediment and benthic ecology S. Matheson response). Refer

to Appendix 6 of this report for hydrographs showing the real time impact of the scheme operation on the flow regime.

- 4.269 While the mainstream reach of river affected by the diversion represents a relatively small amount of the overall river length, it is clear that while floods would persist, within the diversion itself the natural hydrograph is subject to more extended periods of unnaturally low flows compared with the natural flow regime. Reduced wetted width, and altered mix of habitat and microhabitat afforded by the flow velocity, water depths and substrate regime are the consequence. IFIM modelling while useful in providing insights into habitat availability responses under changed flow has not been subject to robust validation of its predictive power in terms of the abundance of fish, macroinvertebrates or algal abundance under modelled scenario's- particularly in a physically dominated river such as the Waitaha.
- 4.270 Therefore, while the Department agrees that it is likely that a similar range of species of instream flora and fauna would persist in the diversion reach, it is not possible to predict the extent to which the natural patterns of abundance and diversity would be conserved (sensu Conservation Act). In particular the Department is concerned that the albeit naturally low density populations of 'At Risk' native fish present in the diversion reach- koaro, longfin eel and torrentfish are conserved to a level consistent with general conservation purposes. The Department recommends that monitoring of the mainstem native fish populations in the diversion reach and the associated aquatic community of macroinvertebrates and algae are also undertaken to confirm they are being adequately conserved.
- 4.271 It is noted that, at question 19, p8-9 of the further information response on hydrology, sediment and benthic ecology, S.McMurtrie indicates that, demonstrating whether a change in macroinvertebrate, periphyton and fish populations in the diversion reach is a consequence of scheme effects, as opposed to flood disturbance effects would not be possible. The Department agrees that this may be the case; however, the Department requires that such monitoring is undertaken to determine as accurately as possible effects on the presence and relative abundance of native fish and trout, and the condition of the aquatic biota generally including periphyton and macroinvertebrate
- 4.272 Such a programme may be able to be efficiently integrated into the monitoring and investigation programme of flow ramping effects on fish and invertebrate stranding as set out under proposed condition 18.14. This provides the opportunity at the same time to sample 'At Risk' fish and their abundance and population features (ie size distribution) upstream of the tailrace outfall. Besides fish, the macroinvertebrate and periphyton community should be monitored under the programme to gain a full picture of the ecological health of the affected reach. The programme shall be designed using best practice methodology (appropriate to the dynamic nature of the river environment) to establish quantitative measures of the aquatic community present. The details of such a programme including timing, location, method, frequency, trigger levels, mitigation options, reporting requirements and review criteria should be discussed and agreed upon by the Department as a part of the EMP.
- 4.273 Given the harsh physically dominated river environment it is recommended that the monitoring and mitigation programme be established over a 3-5 year period to detect any adverse effects on aquatic biota (notably to At Risk fish populations) and if these were detected the development of appropriate mitigation measures including aquatic habitat augmentation and restoration programmes to address any such adverse effects on fish populations.
- 4.274 The Department recommends that the following is inserted as a new Condition after 18.14 with a new sub heading: 'Instream Community Response within the Abstraction Reach'. The purpose of this monitoring is to evaluate the response of fish, macroinvertebrates and periphyton communities within the abstraction reach to ensure that in the case of a decline in the fish population appropriate mitigation measures are adopted as soon as possible to address any such losses to ensure no net loss of populations of AT Risk species.

- The Concessionaire must design a monitoring programme using best practice methodology (refer examples below-) to evaluate impacts on the aquatic community occurring within the abstraction reach. In particular the programme shall determine the abundance of At Risk fish species compared to those found prior to scheme impacts. As a minimum, monitoring should occur annually for 3-5 years post commissioning to detect and respond promptly to address any decline through appropriate mitigation including habitat restoration/augmentation or other such measures as agreed to by the Department.
- The Concessionaire must provide an annual interpretation of the results of the monitoring programme in the context of the preceding flow regime in the abstraction reach and any other relevant factors. An annual review shall ensure that the sampling programme and mitigation methods are appropriately responsive to the flow regime and other relevant factors. Any proposed changes to the monitoring programme shall be agreed by the Department.

(Examples of best practice methodologies: Freshwater habitat assessment (Harding et al 2009: Stream habitat assessment protocols ), Fish population monitoring ( Joy et al 2009: New Zealand Freshwater Fish sampling protocols), Macroinvertebrate monitoring (Stark et al 2001: Protocols for monitoring macroinvertebrates in wadeable streams; Gray 2013 : Quantitative macroinvertebrate sampling in hard -bottomed streams, Biggs, BJF and Kilroy, C, 2000: Stream Periphyton Monitoring Manual. Prepared for the Ministry for the Environment. NIWA Christchurch. 226p.)

### **Freshwater Fisheries Regulations 1983**

4.275 Part 6 of the Freshwater Fisheries Regulations 1983 applies to diversion structures such as the one proposed. If the Concession was to be granted, the applicant would also require separate approvals pursuant to Part 6 of this Act for the diversion structure in regard to fish facilities. The Director General would need to consider whether a 'Fish Facility' is required and how it should be designed' even though these aspects are already considered in this report.

### **Conclusion**

4.276 The Department considers that Westpower has adequately described the values of the Waitaha's freshwater communities including the underlying hydrological and sediment regime that may be affected by the schemes construction and ongoing operation. If the Concession is granted the conditions would need to include a number of additional recommended special conditions discussed above that the Department considers necessary to reduce any potential effects. However the Department also acknowledges and agrees with Westpowers consultant that there is a level of uncertainty that remains regarding the long term effects of the Scheme on the koaro population upstream of Morgan Gorge and 'At Risk' native fish in the abstraction reach. You need to decide whether the proposed mitigation measures would avoid, remedy and mitigate adequately the effects on freshwater values or whether the information available is insufficient or inadequate to assess the effects such that the proposed hydro scheme should be declined pursuant to 17U(2)(a) of the Conservation Act 1987.

### **H Assessment of Effects – Blue Duck**

4.277 Section 7.9 of the application, p97-103 provides Westpowers analysis of the potential effects on blue duck.

4.278 Westpower (p27 of application) advises that a total of 31 blue ducks were recorded in the Waitaha catchment in 2007 representing 1% of the national total which is 1000 breeding pairs. 8-12 birds annually was the fairly consistent level of birds found between 2016 and 2012. There were three pairs and 3-4 females centred on kiwi flat and 0-3 birds in the abstraction reach. Current population characteristics with predominantly young adult females, low breeding success and low recruitment are indicative of being attributable to stoat predation as a primary threat.

4.279 It is considered by Westpower that the current population is at some risk from adverse natural factors particularly predation. The risk is likely mitigated by its connectivity and interactions with populations in adjoining catchments. It is thought the population in the Waitaha catchment is receiving immigrant birds from elsewhere that has resulted in the Kiwi Flat

breeding population remaining relatively stable over the six year study period undertaken by Westpowers consultant.

4.280 Westpower's effects' analysis is broken down into the following headings:

A. Morgan Gorge:

- (a) The effects of disturbance and noise during the construction period, including changes to nesting behaviour and raising young, feeding habitat, and roosting behaviour.
- (b) Trout access and duckling access to Kiwi Flat.
- (c) Weir ponding and aggradation above Morgan Gorge.
- (d) The effects of ongoing scheme operation.

B. Effects of water abstraction and sediment discharge in and below Morgan Gorge.

C. Effects of works and structures at and downstream of the powerhouse/tailrace site.

D. Multi-site potential effects.

A. Morgan Gorge

*Effects of Disturbance and noise*

4.281 Westpower states that the Blue Duck Report (Overmars, 2014)

*.....considers that the greatest potential effect of disturbance and noise during the construction period at Morgan Gorge will be from the larger scale disturbances and higher intensity noises associated with the construction of the weir and intake structures. The greatest source of noise and disturbance will be the regular helicopter use (typically up to four return trips per day, plus c.15 non-consecutive days of up to 50 return trips when delivering concrete and other materials for weir and intake construction). Blasting will cause more intense but less frequent noise, over approximately one month. General construction noise will be of lower intensity but more prolonged duration.*

*The greatest potential effect of disturbance and noise during the operational period at Morgan Gorge will also arise from helicopter use for maintenance of the weir and intake structures. It is considered that the noise and disturbance effects will principally affect the breeding pair in whose territory the activities will occur.*

*The report considers that, based on lower bird hearing noise sensitivity relative to humans, the loudest noise (blasting) is unlikely to directly affect blue ducks significantly beyond the 500 m buffer proposed for recreational users and livestock. For the more frequent helicopter noise, the 400 m estimated 'harassment' distance for two North American threatened bird species may be taken as a guide for potential effects on blue duck. Noise and disturbance effects thus may extend up to the Whirling Water confluence of the Waitaha River, and partly up Caesar Creek and Anson Stream and down Morgan Gorge.*

Natural, Historic or Recreational Value	Scheme Phase	Potential Effect	Assessment of Effect (post avoidance, mitigation and monitoring measures)	Avoidance, Mitigation and Monitoring
Blue Duck	Construction	Whole Scheme: Fire Risk Clearance of Riparian Vegetation Local Weed and Pest Management	Nil/Less than minor Nil/Less than minor Potential benefit of the scheme	See Section 9 for suite of suggested conditions derived from recommended avoidance, mitigation and monitoring.
		Weir and Intake Construction at Morgan Gorge: Disturbance and	Highly likely to be minor. Monitoring programme and associated trigger	

		Noise	responses to ensure no adverse effects on blue duck population.
		<i>Powerhouse, Tailrace, Tunnelling, Stopbank and Access Road:</i> Powerhouse, tailrace and stopbank construction	Minor/Less than minor
		Lighting	Minor/Less than minor
		Piling at Granite Creek and possibly Macgregor Creek and powerhouse	Less than minor
		Disturbance and Noise from helicopter flights	Minor/Less than minor
	Operation	<i>Whole Scheme:</i> Fire Risk Local Weed and Pest Management	Nil/Less than minor Potential benefit of the scheme
		<i>Weir and Intake at Morgan Gorge:</i> Potential for trout access in to Kiwi Flat	Nil
		Duckling Access through Morgan Gorge to Kiwi Flat	Nil, potential of benefit for duckling access through upper reaches of Morgan gorge in terms of lower flow
		Initial temporary ponding and aggradation behind the weir	Less than minor
		Ongoing operation	Minor/Less than minor
		Disturbance and Noise from helicopter use during maintenance	Highly likely to be minor. Monitoring programme and associated trigger responses to ensure no adverse effects on blue duck population.
		<i>Abstraction Reach:</i> Reduced Flow	Minor, potential for benefit in terms of new habitat created due to lower flow
		Sediment Accumulation	Minor
		<i>Abstraction Reach:</i> Reduced Flow	Minor, potential for benefit in terms of

		Sediment Accumulation	new habitat created due to lower flow Minor	
		<i>Powerhouse, Switchyard, Tailrace and Access Road:</i> Noise Lighting Location of Transmission and Communication Lines	Less than minor Less than minor Nil	

**Summary of assessment of effects on Blue duck (Table 12 p 130 of Application)**

4.282 Westpower states further that the Blue Duck Report

*.....considers that these effects will principally affect the breeding pair in whose territory the activities will occur. The works site is in the flight path between the likely previous nesting site downstream of the gorge entrance and feeding habitat upstream at Kiwi Flat. Potential effects include changes to nesting behaviour and raising young, feeding habitat, and roosting behaviour. This is highly likely to cause the loss of breeding and recruitment for either one or two years (depending on the seasonal timing of the works).*

*Blue duck use of Morgan Gorge as a flight path between Kiwi Flat, downstream of Morgan Gorge, and the tributaries, may also be adversely affected. Adjoining blue ducks and their habitat use could be affected by territorial displacement if the resident pair at the gorge entrance site competed for territory away from the construction area.*

*The report advises that the effect of these changes needs to be assessed at a population level. In years when there would naturally be no juvenile production from the breeding pair, the construction works (potentially extending over two breeding seasons) would have no effect on the Kiwi Flat population. Their territorial use and breeding activities would resume after completion of the construction works. Loss of juvenile production and recruitment would occur in otherwise naturally productive years, but the evidence of low natural productivity and population support via immigration indicates the loss of this contribution to the overall Kiwi Flat population may not be significant.*

*After mitigation to avoid and minimise disturbance and noise to the extent practicable, the most likely effects of noise and disturbance during the construction and operational periods at Morgan Gorge on the Kiwi Flat blue duck population are assessed as highly likely to be minor ..... however it is appropriate to address any possibility of an unfavourable outcome for the Kiwi Flat population through a monitoring programme with appropriate response triggers to assure that there are no adverse effects on the blue duck population as a result.*

*Trout Access and Duckling Access to Kiwi Flat*

4.283 Westpower states that:

*The blue duck territory in which the weir is located is probably the most productive of any at Kiwi Flat, because it encompasses the confluences of two major tributaries (Whirling Water and Caesar Creek) with the Waitaha River. The resident blue duck pair in this territory in 2007–2008 likely nested in Morgan Gorge. Had the breeding attempt been successful, it is likely that the ducklings would have been raised on Kiwi Flat, and access would have been required terrestrially or upstream through the Morgan Gorge entrance.*

4.284 Westpower states that:

*Although the final design features of the weir are not confirmed, the report proposes that future duckling access could be impeded by the 4-5 m high water fall and/or the vertical concrete walls of the weir and intake channel. This could result in a permanent impediment to upstream duckling access or displacement of this nesting site, possibly to a site more accessible to predators. This potential effect can be avoided by designing part of the downstream face of the weir to provide for upstream access for ducklings (while preventing trout access and facilitating koaro movement).*

#### *Weir Ponding and Aggradation*

4.285 Westpower comments that:

*At its completion, the weir will cause temporary ponding (probably 1–2 weeks), and subsequent sediment equilibrium aggradation over a short period (weeks–months) that at its maximum will extend upstream from Morgan Gorge to about the Caesar Creek confluence. These changes are within the natural range of the hydrological and sediment regimes and aquatic biota. Although the zone is within part of the most productive blue duck territory at Kiwi Flat in 2007–2008, evidence strongly indicates this part of the territory had low direct blue duck occupancy and habitat use and it is of lower habitat quality. While the changes caused by the ponding and aggradation behind the weir will be discernible for a short period (weeks–months), they are largely within the range of natural habitat variability, to which blue duck are adapted.” Westpower concludes that “The temporary ponding and aggradation behind the weir are considered to have less than minor adverse effects on blue ducks.*

#### B. Effects of Water Abstraction and Sediment Discharge on Blue Duck in and below Morgan Gorge

4.286 Westpower states that:

*Blue duck surveys and other observations between 2005–2012 indicate that blue duck presence in the abstraction reach (outside Morgan Gorge) has been low (0–2 birds), and may be declining. Based on IFIM habitat modelling predictions, major changes in periphyton and macro-invertebrate communities (important blue duck habitat features) are not expected, and it is possible the extent of preferred blue duck habitat (shallow depths and low velocity) in the abstraction reach may increase. Overall, the abstraction and periodic sediment return will have minor adverse effects on the blue duck habitat quality and population in the abstraction reach, and there may be an improvement in habitat quality.*

#### C. Effects of Works and Structures on Blue Duck at and Downstream of Powerhouse/Tailrace Site

4.287 Westpower states that:

*Between 2006–2012, there was a low level of periodic blue duck habitat use of the Waitaha River around the Douglas Creek confluence, and movement is almost certain to have occurred in the locality of the powerhouse/tailrace site. The scale of the works at the powerhouse/tailrace site is less in magnitude and time compared with the Morgan Gorge headworks site, and is generally located away from the river itself. External lights that will be used at the powerhouse and tailrace site during tunnel construction, and infrequently during the operational period, should be shielded to prevent its visibility to ducks on the Waitaha River or using it as a flight path. Otherwise, given the low level of blue duck use of the Waitaha River in this locality, effects of these structures and works on blue ducks and their habitat during the construction and operational periods are anticipated to be less than minor.*

#### D. Multi-Site Potential Effects on Blue Duck

4.288 Westpower endorses the assessment of the effects and mitigation proposals of Drinan & McMurtrie (2014) (Appendix 11 of the application) and McMurtrie & Suren (2014) (Appendix 10 of the application) in respect of potential effects on blue ducks and their habitat: sediment discharge, location of contractors’ facilities, management of fuel and other hydrocarbons, and

Didymo. It also endorses the assessment of the potential effects and mitigation proposals of Buckingham (2014) in respect of predators on blue ducks and their habitat.

#### Mitigation Proposals

- 4.289 As a result of its analysis Westpower has assessed the adverse effects as being likely to be minor. It has, however, proposed a number of special conditions commenting that there are seventeen mitigation measures designed to avoid, remedy or mitigate the potential effects of the scheme on blue duck. A monitoring programme is also proposed, the results of which would be used to determine if specific actions, programmes or further monitoring are of value and need to be implemented to restore or enhance the blue duck population in the Scheme area should it decline (compared to pre-construction levels) during construction or in the three years following Scheme completion.
- 4.290 These proposed special conditions are detailed in section 9 of the application and Appendix 1 of this report along with any recommended new conditions or changes to the proposed conditions.

<b>CONDITIONS:</b>	<i>1.1-1.2, 4.8-4.9, 5.16, 7.1-7.4, 8.1-8.12, 9.1-9.4, 12.1-12.7, 14.1-14.5, 15.1-15.7, 15.10 - 15.11, 18.1-18.4, 18.15-18.20</i>
--------------------	---

- 4.291 Westpower concludes that:

*On its own, the blue duck population in the Scheme area appears to be at some risk from adverse natural environmental factors, particularly predation. The risk is likely mitigated by its connectivity and interactions with adjoining populations (in particular, that at Amethyst Ravine), and possibly by future TB free 1080 possum control operations.*

*Provided the recommended mitigation measures in this report are adopted, while there will be some recognisably different blue duck habitats present in the Scheme area, it is anticipated those habitats will have the capacity to sustain the blue duck population in future, and adverse effects of the Scheme on blue ducks and their habitats are assessed as highly likely to be minor. A monitoring programme, with specific response triggers for possible monitoring outcomes, is recommended to assure there are no adverse effects as a result of the Scheme.*

#### **Department's Comment on the Assessment of Effects on Blue Duck**

- 4.292 The Department considers that the report 'Assessment of Environmental Effects of the proposed Waitaha Hydro Scheme on Whio/Blue Duck (*Hymenolaimus Malacorhynchos*)' is comprehensive and well constructed.
- 4.293 Overall Westpower's assessment concludes that the project has been designed to minimise the effects of the hydro development on this area which is considered to have high significance and natural heritage values for blue duck and their habitat in relation to criteria in the West Coast Regional Policy Statement 2000, the Westland District Plan 2002 and the West Coast Conservation Management Strategy 2010-2020. It also states that the scheme would change the habitat and that this should continue to sustain a blue duck population if recommended mitigation measures are adopted and a monitoring programme is put into place to monitor outcomes and inform response triggers which would ensure no adverse effects result from the scheme.
- 4.294 The report does provide an assessment of the population and the various theories explaining the observations. The Department considers that there could be more understanding of the relationship between the Waitaha catchment and other adjacent catchments and how changing the habitat or behaviour of the Waitaha birds would influence the wider blue duck population. There is some suggestion that the various catchments are integral in the meta population but this relationship and the various contributions or dependencies of the other catchments are not well understood.
- 4.295 There is clear evidence that the blue duck population is currently vulnerable as a result of predator pressure. A key consideration is: would this development exacerbate (by compounding negative pressure on the population) or improve the current situation through mitigation

measures – deploying stated and other unstated mitigation options such as predator control regimes?

- 4.296 Westpower states that the population in the abstraction reach is low; 0-3 birds based on five surveys which is attributable to locally less favourable habitat (p27 of application). The Blue Duck Report states that the habitat quality for blue duck might improve as a result of the scheme and the reduced flow, but negative effects would be minimal. The Department considers that, to determine with more confidence the importance of the abstraction reach for blue duck and the role this areas plays for the wider blue duck meta population, further monitoring would be useful.
- 4.297 Predator pressure has been identified as a key cause of blue duck mortality and a possible reason long term survival prospects for blue duck in the Waitaha catchment is low. The Department considers the proposed forest clearance, riparian disturbance, access roads and other construction activities could alter predator dynamics and abundance.
- 4.298 The Department considers that there are still some uncertainties around the weir construction.

#### **Comments on proposed mitigation measures**

- 4.299 The Department agrees with Westpower's summary of effects and that the proposed mitigation measures would mitigate the effects identified.
- 4.300 However the Department is not convinced that designing an intake weir that would allow for blue duckling access is feasible. If such a design is not feasible then it may be necessary to provide further mitigation measures by looking at additional long-term predator control commitments or reviewing the trigger conditions for a Whio Operation Nest Egg operation (WHIONE) as is proposed by Westpower in condition 18.17 or to activate an applicant funded captive bred blue duck replenishment programme.
- 4.301 It is recommended that the following be added to condition 15.7:
- If such a design allowing for blue duckling access is not feasible then Westpower, at the option of the Grantor, must either: (a) undertake a Whio Operation Nest Egg operation as in condition 18.7; or (b) fund a captive bred blue duck programme; or (c) extend the predator control commitments.
- 4.302 The blue duck report alludes to 'moving blue ducks prior to blasting'. Condition 15.11 requires that, prior to blasting, a visual inspection is made but does not identify what would be done if birds are known to be in the area or seen during the visual inspection.
- 4.303 Proposed Condition 15.11 states
- Prior to any rock blasting the Concessionaire shall undertake a visual inspection to ensure that blue ducks are not present within or about the entrance to Morgan Gorge or within the potential fall zone.*
- 4.304 Moving birds could be by 'scaring them off' or catching and temporarily holding in captivity until after blasting ceases or re-location to 'safe' area. Experience at the Amethyst with blasting indicates that scaring the ducks off has been sufficient. A small charge was laid prior to blasting. Once the blue ducks are shooed away then setting the charge would provide another warning to keep them away prior to the actual rock blasting. Scaring the birds off is far preferable to relocating or holding them in captivity which may be stressful on them.
- Therefore it is recommended that the following is added to condition 15.11.
- Blue ducks must be scared off prior to any blasting;
  - If this is unsuccessful then blasting will be delayed until the birds fly away;
  - A photographic log and record will be kept of any birds in the vicinity and provided to Doc.
- 4.305 This would require a wildlife Act permit.

## Departments Conclusion

4.306 The Department agrees with Westpower's summary of effects on blue duck and that if the proposed measures discussed above were adhered to then they would be adequate to avoid, remedy and mitigate the potential effects.

### (i) Assessment of Effects – Cultural Values

4.307 Section 7.11, p105 of the Application sets out Westpower's assessment of the potential effects on Cultural Values and concludes that based on the current information known about the area within which the scheme is to be located, the effects of the proposed activity on Cultural Values is no more than minor.

4.308 A number of conditions have been proposed by Westpower to ensure this is the case, including accidental discovery protocols.

<b>CONDITIONS</b>	1.1-1.2, 7.1-7.5
-------------------	------------------

### Department's Comment on the Assessment of Effects on cultural Values

4.309 As discussed in section 2 of this report the application area is in the Takiwa of both Te Runanga o Ngati Waewae and Te Runanga o Makaawhio. The application was sent to Ngati Waewae and Makawhio on the 19 August 2014 and comment was received on 23 September 2014. Ngati waewae stated that they are happy with the application and any concerns have been addressed directly with the applicant.

4.310 The Department met with both iwi on 1 December 2015 and provided an update of the process. Both Iwi commented that although they initially had few concerns through initial consultation, they intended to talk to Westpower about the finer details of the application.

4.311 The following standard Ngai Tahu special conditions should be included in any Concession granted

4.312 The Concessionaire acknowledges that pounamu (including all nephrite, semi-nephrite, bowenite and serpentine) is under the ownership of Te Rūnanga o Ngāi Tahu pursuant to the Ngāi Tahu (Pounamu Vesting) Act 1997:

- No pounamu may be removed or recovered by the Concessionaire or their employees/clients.
- Where any pounamu is found by the Concessionaire, it is requested immediately to notify the Pounamu Manager, Te Rūnanga o Ngāi Tahu, Christchurch, ph 0800 Kai Tahu (0800 524 8248) **AND** for the West Coast District - Te Rūnanga o Ngāi Tahu Waewae-Chairperson, 0508-7862642, email: [francois@ngatiwaewae.org.nz](mailto:francois@ngatiwaewae.org.nz); **AND/OR** Te Rūnanga o Makaawhio Office 03 755 7885, email: [makawhio1@xtra.co.nz](mailto:makawhio1@xtra.co.nz).]
- The Concessionaire is requested to consult the relevant Papatipu Runanga (insert contact details) if it wishes to use Ngāi Tahu cultural information. If the Concessionaire wishes to use the Tōpuni or statutory acknowledgement information contained in schedules 14-108 of the Ngāi Tahu Claims Settlement Act 1998, or any Department produced interpretative material in respect to Ngāi Tahu cultural information, they are requested to notify the relevant Papatipu Runanga, as a matter of courtesy.
- The Concessionaire must, as far as practicable, attend any workshops held by the Department for the purpose of providing information to concessionaires, which is to include the Ngāi Tahu values associated with Tōpuni areas.
- The Concessionaire is encouraged to request any persons employed by the Concessionaire to recognise and provide for Ngāi Tahu values in the conduct of their activities.

## Departments Conclusion

4.313 The Department agrees with Westpower that potential effects on cultural values are no more than minor and if the applicant adheres to the proposed conditions above then the Department considers that the effects on cultural values would be adequately avoided, remedied and mitigated.

### (j) Assessment of Effects on Recreation and Tourism Values

4.314 Section 7.13 of the application, p107 – 110 provides Westpower’s summary of the potential effects on recreation and tourism values of the Waitaha Valley. Appendix 19 of the application ‘The Recreation Report’ (Rob Greenaway) provides the applicants full assessment of effects of the scheme on these values.

4.315 Westpower has summarised the values and uses of the Waitaha Valley as being:

- *internationally and nationally significant for extreme kayaking (Morgan Gorge, upper Waitaha Gorge) and high grade kayaking (Waitaha Gorge) as part of the West Coast kayaking complex;*
- *regionally significant in the lower valley (Kiwi Flat area) for tramping but nationally significant in the upper valley, particularly at Ivory Lake. Low use throughout;*
- *regionally significant for hunting;*
- *regionally significant for hot springs in the Morgan Gorge (mostly an element of the tramping and kayaking experience but identified as a specific destination by some visitors);*
- *regionally significant for angling (lower Waitaha River only, outside Scheme footprint); and*
- *locally significant for jet boating (lower Waitaha River only, outside Scheme footprint).*

4.316 The components of the scheme which have the potential to effect recreation and use of the area are summarised by Westpower as:

1. *temporary construction activities at Kiwi Flat and at the powerhouse site;*
2. *modified flow regime between the top of Morgan Gorge and the powerhouse tailrace; and the*
3. *introduction of head-works and generation infrastructure into settings which have only minimal developments for recreation purposes.*

4.317 The potential effects have been split into land based effects and water based effects. In terms of land-based recreational activities in the Waitaha Valley, Westpower concludes that these activities:

*...would be able to continue with only indirect effects caused by the introduction of hydro development structures in the setting and effects on natural character and visual amenity.”*

### Potential effects on the use of the river for kayaking identified by Westpower:

4.318 Westpower states that:

*Whilst there would still be an opportunity to kayak the part of the river occupied by the Scheme, the kayaking use will be constrained by residual flow effects in the abstraction reach and the construction of a weir at Morgan Gorge”* Westpower states that “*These effects include:*

- *the introduction of control and generation structures on an otherwise free-flowing river;*
- *the introduction of permanent (albeit removable) structures in a backcountry-remote landscape setting otherwise developed only for recreation;*
- *an additional 1530 m of portage when flows between the top of Morgan Gorge and the Scheme tailrace are inadequate;*
- *a reduced opportunity to kayak the Morgan Gorge;*

- a new information regime with, potentially, more live data about flow characteristics; and
- a new requirement to communicate with a management agency (Westpower) if ceases to abstraction are sought for the Morgan Gorge and/or the Douglas Creek reach.

4.319 Westpower further states that:

*With the Scheme in place the potential effect is a constraint on the kayaking opportunity in the Gorge, and in much of the Douglas Creek reach for those portaging the Gorge (in terms of a longer distance to walk) as well as those kayaking it (a shift from the quite common availability of moderate-range flows below Morgan Gorge to relatively infrequent availability).*

4.320 And that:

*There will be no direct adverse effects on kayaking options in the river above Kiwi Flat (including the Waitaha Gorge) from the Scheme. Whilst there will be no direct effects on the river above Kiwi Flat the potential for inadequate flows in the abstraction reach – which includes Morgan Gorge and the section below the Gorge that those portaging the Gorge will normally rely on to complete their journey – may influence some potential kayakers not to make use of the opportunity above Kiwi Flat.*

*The residual net effect of the Scheme on Waitaha Catchment recreation values will remain 'high' in the Kiwi Flat area and from the top of Morgan Gorge to Douglas Creek. This is due to the introduction of development structures into a predominantly unmodified (besides for recreation) backcountry-remote recreation setting, and flow effects along the abstraction reach.*

4.321 Westpower states that:

*At the regional level, the effect of the Scheme on West Coast recreation and tourism generally will be very slight due to the high number of alternatives available for all activities affected by the Scheme and the relatively low level of use of the Kiwi Flat area. The West Coast will retain its international reputation as a challenging kayaking setting with the Scheme in place, and the Morgan Gorge (and the remainder of the River) will retain its ability to challenge highly skilled kayakers, albeit with additional restrictions on its use due to the need to confer with (Westpower) if a cease to abstraction is required to provide a natural flow. The change from an uncontrolled river for kayaking may remove a key quality which makes the Morgan Gorge internationally significant for the activity (albeit rarely used).*

**An Extract from Table 12 of the application: Summary of the Assessment of Potential Effects – Recreation and Tourism can be found at Appendix 6.**

4.322 As a result of its analysis Westpower has proposed in its application a number of special conditions to avoid or mitigate potential effects and to retain an opportunity for kayaking use. These are detailed in section 9, p142-158 of the application and include the following conditions.

<b>CONDITIONS</b>	<i>1.1-1.2, 7.1-7.4, 17.1-17.5</i>
-------------------	------------------------------------

4.323 These can also be found in Appendix 1 of this report along with some further recommended conditions that have resulted from the Department's analysis.

4.324 Westpower notes the conclusion of the Recreation Report (Rob Greenaway & Associates, 2014) that a hydro scheme is not directly compatible with the recreation management category (back-country remote recreation zone) as defined in the West Coast CMS, from the perspective that

the CMS does not readily identify this type of activity, and associated infrastructure, as occurring within the zone.

4.325 Greenaway states that:

*Activities such as those proposed in this application are required to be the subject of specific consideration and assessment in terms of the provision of the Act and the CMS, which is the purpose of this application.*

*The introduction of development structures into a predominantly unmodified (besides for recreation) backcountry-remote recreation setting, and flow effects along the abstraction reach, will result in a residual 'high' net effect on Waitaha Catchment recreation values in the Kiwi Flat area and from the top of Morgan Gorge to Douglas Creek due to the development of the Scheme. This is essentially due to the change from an unmodified environment in terms of these types of structures to one containing these structures.*

4.326 Westpower concludes that:

*There would be only indirect effects on all land-based recreational activities, with all of those activities being able to continue and that all forms of recreation, with the exception of kayaking, in the Waitaha Valley would retain their regional and local significance.*

4.327 From a kayaking perspective Westpower concludes that:

*Morgan Gorge (and the remainder of the Waitaha River) would retain its ability to challenge highly skilled kayakers, albeit with additional restrictions on the use of the Morgan Gorge due to the need to confer with a management authority (Westpower) if a cease to abstraction is required to provide a natural flow.*

4.328 Westpower further states that:

*This change from an uncontrolled river for kayaking may remove a key quality which makes the Morgan Gorge internationally significant for the activity (albeit, rarely used). The Scheme may sustain nationally significant kayaking values on the River with the retention of current kayaking opportunities above Morgan Gorge.*

4.329 And that:

*In considering the effects on the internationally and nationally significant status of kayaking opportunities on the river, it is important to note that this scale of significance relates as much to the West Coast complex of kayaking opportunities as it does to the values of any single river.*

4.330 Westpower also states that:

*The West Coast will retain its international reputation as a challenging kayaking setting with the Scheme in place.*

4.331 And that:

*From a regional perspective the effect of the Scheme on West Coast recreation and tourism generally will be very slight due to the high number of alternatives available for all activities affected by the Scheme and the relatively low use of the Kiwi Flat area.*

#### **Department's Comment on the Assessment of Effects on Recreation and Tourism Values**

4.332 As part of the Department's analysis on the effects of the proposed activity on Recreation and Tourism Values, information was sought from White Water New Zealand pursuant to section 17S(4)(a) and (b) of the Conservation Act to help assess the values of the Waitaha river to white

water kayakers and therefore help assess the effects on those values of the proposed hydro scheme.

- 4.333 Whitewater New Zealand (Incorporated) WNZ is the national organisation representing recreational whitewater canoeing and kayaking in New Zealand.
- 4.334 Whitewater NZ is affiliated to the NZ Canoe Federation (PO Box 11081, Hamilton) which is a member of the International Canoe Federation (ICF).
- 4.335 The report provided from WNZ has helped inform the Departments analysis of the effects on recreation use. Additional to this, Westpower was given the opportunity under 17S (5) of the Conservation Act to comment on the information provided by WNZ. These comments also formed part of the Departments analysis on the effects of the proposed scheme on recreation and tourism values.
- 4.336 The potential effects of the scheme on recreation use of the Waitaha Valley are summarised as follows:

**The Potential effects on Recreation of the construction of the access road, tailrace, powerhouse and tunnel.**

- 4.337 Walking up the Waitaha Valley starts at the end of legal road on the true right of Waitaha River, approximately 4km below Macgregor Creek. From the car park, people pick their way up the riverbed beside farmland to Macgregor Creek. From Macgregor Creek people follow the river bed and low terraces for around an hour and the track then leaves the river and climbs and follows a series of benches above Morgan Gorge to the swing bridge at the bottom of Kiwi Flat.
- 4.338 The Department considers that the access road would have a physical presence in what is the start of a largely unmodified natural environment. The new access road would however, provide improved foot access up the lower Waitaha River to the start of the tramping track near the powerhouse.
- 4.339 The public would still not be able to drive to Macgregor Creek and along the new access road over public conservation land due to access over sections of the road lower down the valley being located on private land.
- 4.340 The Department considers that the physical presence of elements of the power scheme including the access road, tunnel portal exit, penstock, power house, switchyard and tailrace would affect the remote-like characteristics of the area. This is predominately due to the industrial style modification occurring within an area that currently contains very little modification within the backcountry- remote zone.
- 4.341 Westpower states that:
- The powerhouse, switchyard and tailrace occupy a discrete footprint downstream from Morgan gorge.....the visual effects of the power house would be mitigated by using a colour pallet to minimise its impact on people visiting the area.*
- 4.342 Westpower proposes that additional vegetation would be used to screen the visual prominence of the powerhouse and switchyard. And that
- The alignment of the access road and the transmission line would avoid where appropriate, any large individual or stands of mature trees between Macgregor Creek and the powerhouse area.*
- 4.343 Westpower further state that:
- Noise emissions from the ongoing operation of the scheme would be low in comparison with the relatively high levels of ambient noise from the Waitaha River and that any potential noise effects would be no more than minor for recreational users in the area.*

- 4.344 Westpower comments that, in recognition of the potential construction effects, and to address changes in recreation amenity generally the existing foot track on the true right may be realigned to avoid leading visitors to or past development areas<sup>7</sup>.
- 4.345 In addition to this, Westpower has proposed to improve tramping access into the valley by providing enhanced foot access or an alternative foot access track on the true left of Morgan Gorge (if landowner approval was gained) as this would give better access to the hot springs and views into the Gorge, and reduce interaction with the Scheme head-works at Kiwi Flat<sup>8</sup>. The Department considers however that that Landowner approval to shift foot access back to the true left of the Waitaha Valley is unlikely to be provided.
- 4.346 Westpower initially proposed that a special condition be included in the concession:
- 17.2 “Subject to the agreement of the Grantor, the Concessionaire shall provide alternative track access on the true right of the Waitaha River for recreational visitors between Macgregor Creek and Kiwi Flat. This shall be provided and maintained at the Concessionaire's expense for the duration of the Concession, and routed to avoid the powerhouse site construction area.”*
- 4.347 On 21 October 2014 the Department requested additional information from Westpower to detail the location and feasibility of constructing an alternative track on the true right to allow people walking to Kiwi Flat to avoid both seeing and hearing the powerhouse.
- 4.348 On 16 January 2015 Westpower confirmed that it would be viable to construct a track via Alpha Creek to reach a higher terrace and bypass the powerhouse site and that this could potentially be of a higher standard and improved grade to the existing track to Kiwi Flat. (refer Appendix 1 of the Departments Technical Advisor Recreation Report for an ariel map of track options to avoid the powerhouse).
- 4.349 The Department considers that the construction of this alternative track away from the proposed powerhouse would help to minimise the impact of the scheme, particularly for those people who tramp down the Waitaha Valley.
- 4.350 The Department recommends that if the Concession is granted Westpowers proposed Special Condition 17.2 should remain and the following words are added;
- to Tramping Track Standard described in the New Zealand Handbook Tracks and Outdoor Visitor Structures SNZ HB8630:2004.
- 4.351 The Department considers that a section of track from the high level route to the Waitaha River, immediately below the gorge would need to be retained to allow kayakers portaging Morgan Gorge to re-enter the river above the power scheme. The Department recommends the following condition is added as 17.2 (b) if the Concession is granted.
- The Concessionaire must ensure that the section of the route to allow kayakers to access the bottom of Morgan Gorge is retained and this section of the track should be constructed and maintained to Tramping Track Standard described in the New Zealand Handbook Tracks and Outdoor Visitor Structures SNZ HB8630:2004.
- 4.352 Kayakers walking into the lower Waitaha River and putting in near the bottom of Morgan Gorge would also need to be able to continue to walk directly past the proposed powerhouse site as would hunters. The Department considers that Access around the power house and associated infrastructure would be required to allow foot access to Morgan Gorge. This track should also be

---

<sup>7</sup> Page 14, Volume 4, Appendix 19 Westpower: Waitaha Hydro Scheme Application for Concessions and Assessment of Environmental Effects. – July 2014

<sup>8</sup> Page 66, Volume 4, Appendix 19 Westpower: Waitaha Hydro Scheme Application for Concessions and Assessment of Environmental Effects. – July 2014

constructed and maintained to Tramping Track Standards described in the New Zealand Handbook Tracks and Outdoor Visitor Structures SNZ HB8630:2004.

**The Potential Effects on Recreation Values of the presence of the Intake Channel, Tunnel Portal and Weir at the Head of Morgan Gorge**

4.353 A permanent foot access track would also be required from the existing DOC track on the true right of the river at the top of the Morgan Gorge down to the intake site. Westpower state that the track would be constructed to DOC standard with vegetation clearance kept to a minimum.

4.354 It is recommended that should the hydro scheme be approved then the following additional special condition be included as 17.6 and 17.7:

- The Concessionaire shall build and maintain foot access from the existing track on the true right of the Waitaha River to the intake. The access track must be maintained to Tramping Track Standard described in the New Zealand Handbook Tracks and Outdoor Visitor Structures SNZ HB8630:2004.

4.355 Westpower proposes that the weir would be a reinforced concrete structure 4 -5 m high, 1 m wide and span the river channel at the head of Morgan Gorge. It is envisaged that the weir would have a depressed crest for the residual flow to pass. Westpower states that:

*“This arrangement would concentrate the residual flow into a chute and which would allow kayakers to use the river at all times”*

4.356 Westpower proposed in the original application that a special condition be included in the concession:

17.3 *“The downriver face of the weir shall be designed to allow kayaking access into Morgan Gorge. The Concessionaire will be encouraged to consult with Whitewater New Zealand on the development of the weir design.”*

4.357 Following analysis of information sought from Whitewater New Zealand the Department agrees that the downriver face of the weir would need to be designed to allow kayaking access into Morgan Gorge and in addition to this, provide for safe foot access around the weir for re-entry into the river and to allow for the rescue of kayakers. Further information was sought from Westpower that confirms the design of the Weir includes the provision of safe access around the weir for re-entry into the river for kayakers wanting to run the Morgan Gorge, and to allow rescue should the need arise.

4.358 Westpower now proposes the following redrafted condition that requires that the safety features of the weir achieve an overall standard of difficulty for kayak and foot access into Morgan Gorge no greater than already exists, with achievement of that standard being certified by suitably qualified persons;

17.3 *The safety features of the weir shall be designed in consultation with Whitewater New Zealand.*

- 1) *The safety features of the weir are to achieve an overall standard of difficulty for kayak and foot access into Morgan Gorge no greater than already exists.*
- 2) *The design plans for the safety features of the weir shall be certified as to their achievement of condition (1) by:*
  - a) *a suitably qualified and experienced engineer with experience in the design and operation of weir structures; and*
  - b) *a person with experience in water safety, particularly in kayaking on rivers.*

---

<sup>9</sup> Page 2 and Figure 3 diagram of intake channel Waitaha Headworks Concept Volume 2 Westpower: Waitaha Hydro Scheme – July 2014

- 3) *The Concessionaire shall prior to the commissioning of the project, provide a certificate from a suitably qualified and experienced engineer confirming that the construction of the weir has occurred in accordance with the design plans certified under condition (2).*

4.359 Westpower states in the further information provided that it must be noted that:

- *“These safety features do not preclude the need for kayakers to evaluate the risks of kayaking this section of the Waitaha River as they would normally;*
- *The Morgan Gorge is a naturally unsafe environment which is very difficult to access (and get out of); and*
- *There are a number of other requirements to be addressed in designing the weir and as outlined in the application these include: preventing fish access into Kiwi Flat other than for koaro; enabling duckling access; and retaining engineering and economic integrity.”*

4.360 The Department considers that, the redrafted Westpower condition 17.3 with the additions of the words *“The safety features of the weir shall be designed in consultation with Whitewater New Zealand and in the case that Whitewater NZ does not comment on or agree with the design of the weir then the Department will make a decision”* would provide for the downriver face of the weir to be designed to allow kayaking access into Morgan Gorge and provide for safe foot access around the weir for re-entry into the river and to allow for the rescue of kayakers.

#### **Morgan Gorge Swingbridge**

4.361 Westpower has suggested in the application that they relocate the swingbridge over the Morgan Gorge at Kiwi Flat to reduce visibility of the weir and diversion structure<sup>10</sup>.

4.362 The Department considers however given that the weir, diversion structure and portal would be visible from the riverbed and track immediately above the Morgan Gorge swingbridge, there would be little benefit in relocating the swingbridge to another location further down the Morgan Gorge.

#### **Potential Effects of the Construction Activities on Recreation Values of the Waitaha Valley**

4.363 Westpower states that construction activities, especially at the down-river end of Kiwi Flat, and at the powerhouse, would take three to four years. Construction noise and human activity, especially at the head-works, during this period would be 'significant' during the construction process and incompatible with the experiences associated with a remote recreation setting.

4.364 Westpower proposes that a special condition be included in the concession:

17.1 During the construction period, the Concessionaire shall provide information on construction activities that may affect recreational users within the area surrounding the construction footprint.

This information shall be made available on the Westpower website, and on appropriately located signage approved by the Grantor. The information shall include:

- a) A description of the type, timing sequence and location of construction activities;
- b) Potential hazards (including in-river hazards) arising from construction activities, including advice on avoiding hazards and construction activities generally; and
- c) Any effects on the flow regime.

4.365 The Department supports this initiative and should the hydro scheme be approved it is recommended that the proposed special condition be reworded to include that the information is also made available on the Department's web site, and those of key stakeholders such as [www.remotehuts.co.nz](http://www.remotehuts.co.nz) and the Whitewater NZ website.

---

<sup>10</sup> <sup>10</sup> Page 66, Volume 4, Appendix 19 Westpower: Waitaha Hydro Scheme Application for Concessions and Assessment of Environmental Effects. – July 2014

### **Potential Effects on Recreation Values from the proposed Water Takes and Flow Regime**

- 4.366 The proposed water takes have been modelled up to a maximum of 23 cumecs ( $\text{m}^3/\text{s}$ ), and residual flow of 3.5 cumecs ( $\text{m}^3/\text{s}$ ) immediately below the intake.
- 4.367 Westpower proposes that there would be a water level monitor in the tunnel at the start of the penstock. When the level rises the Scheme control system would open the guide vanes to take more water and the generation output from the Scheme would increase. If the water level drops the opposite would happen.
- 4.368 When the hydro scheme reaches the maximum take, the intake gate would close sufficiently so that excess water remains in the river. There could also be some spill from the sediment settling basin through the flushing channel. When the flow gets below the minimum required for one turbine to operate then the Scheme would be shut down until there is sufficient water. This is likely to be in the range of 2-3 cumecs ( $\text{m}^3/\text{s}$ ) above the residual flow.
- 4.369 Westpower states: *“That planned starting and stopping of the hydro scheme could be managed using ramping procedures to prevent a sudden increase in flow in the main stem of the river or in the case of starting, increased discharge from the tailrace.”* Procedures are proposed that would *“be put in place to manage situations which could result in the hydro scheme shutting down without notice e.g. automatic emergency shutdowns.”*

The effects on stops and starts would be closely monitored during commissioning and the initial operational period and the information gained to determine the appropriate safety procedures and level of response to manage these situations and to ensure public safety<sup>11</sup>.

- 4.370 Westpower comments that for a take of 23 cumecs ( $\text{m}^3/\text{s}$ ), and residual flow of 3.5 cumecs ( $\text{m}^3/\text{s}$ ), flow effects would be represented by a lower minimum flow at the Gorge (3.5 cumecs ( $\text{m}^3/\text{s}$ ) under the scheme compared with 4.8 cumecs ( $\text{m}^3/\text{s}$ ) pre-scheme) and a reduced period of time that mid-range flows exist. It is stated that flood flows would barely be affected.
- 4.371 Westpower states that: *“While the preferred kayaking flow for Morgan Gorge is unclear, mid-range flows of 11.8 – 23.3  $\text{m}^3/\text{s}$  which currently occur for 40% of the time annually will be available under the Scheme for 7% of the time annually (146 days per year to 26). Over summer (Dec, Jan, Feb), that flow range will be available for 13% of the time compared to 33% naturally (30 days per year to 12).*

*Flows above 23.3  $\text{m}^3/\text{s}$  would be reduced from 40% of the time to 15% on an annual basis, and 23% over summer. Flows above 11.8  $\text{m}^3/\text{s}$  naturally occur for 80% of the time and would, with the scheme in place, occur only for 22% of the time, and 35% of the time in summer (a change of 292 days per year of flows over 11.8  $\text{m}^3/\text{s}$  to 80 days). This represents a constraint on the kayaking opportunity in the Gorge, and in much of the Douglas Creek reach for those portaging the Gorge as well as those kayaking it (a shift from the quite common availability of moderate-range flows to relatively infrequent availability).<sup>12</sup>“*

- 4.372 Westpower comments that: *“More use of the Morgan Gorge would be needed to establish an ideal flow range.”* England (2011) description of the Waitaha River in general is as follows: *“A lot of the Waitaha is very committing, set in gorges with steep rock sides. It is also physically and mentally (if not emotionally!) tiring, creating an epic adventure style of kayaking. On this trip, the Waitaha was at the lower end of medium flow and approx 30  $\text{m}^3/\text{s}$ . It is commonly run lower than this and higher. At lower flows, holes can be even more powerful in places and rocks can be disconcerting, while at higher flows rapids can be very quick and powerful. It is unlikely that the Waitaha would get kayaked at flood flows as it would be very powerful and almost impossible to portage rapids in the gorges. It does, however, have a broad range of*

---

<sup>11</sup> Page 45 Volume 1 Westpower: Waitaha Hydro Scheme Application for Concessions and Assessment of Environmental Effects. – July 2014

<sup>12</sup> Page 7, Volume 4, Appendix 19 Westpower: Waitaha Hydro Scheme Application for Concessions and Assessment of Environmental Effects. – July 2014

*useful flows making the Waitaha's flow very reliable throughout late spring through to autumn<sup>13</sup>.*"

- 4.373 Westpower proposes that 'cease to abstract' would enable kayaking of the Morgan Gorge to continue at agreed times, in addition to when the flow through the Gorge is sufficient to kayak. Further discussion on cease to abstract/no take days is discussed below.

#### **Alternative options to manage flow regimes**

- 4.374 Alternative options to manage flow regimes were considered and discussed with Whitewater NZ by Westpower prior to submitting the application. Westpower states that it might be possible for the scheme to be managed by Westpower to take variable amounts of water on high flow days to produce controlled flows in the 17.5 and 22.5 cumecs (m<sup>3</sup>/s) suitable for kayaking down the Morgan Gorge whilst still generating some power. However, Westpower is concerned that controlled flows might not be able to be maintained when a kayaking party was in the Morgan Gorge and have confirmed that they are not prepared to operate their power scheme in a manner where they could produce controlled flows that kayakers could use<sup>14</sup>.
- 4.375 In January 2015 Whitewater NZ prepared a report<sup>15</sup> as a result of the Department's request for information on the river flows required by kayakers to run the Morgan Gorge and the impacts of the proposed hydro scheme on whitewater and kayaking values.
- 4.376 The flows required by kayakers wanting to run the Morgan Gorge are estimated by Whitewater NZ to be between 17.5 and 22.5 cumecs<sup>16</sup>.
- 4.377 The flows required by kayakers wanting to run the lower 1.5 km from just below the most difficult rapids on the Morgan Gorge to the proposed powerhouse are estimated by Whitewater NZ to be 10-50 cumecs<sup>17</sup>.
- 4.378 Whitewater NZ comments that preliminary analysis of the impact of the proposed hydro scheme on the Morgan Gorge and the availability of flows suitable for kayakers indicates that there would be a significant reduction in the availability of flows suitable for kayakers. Analysis was carried out using hydrology data, from the catchment, provided by Westpower. Available days suitable for kayaking were determined by calculating the number of days flows were in the suitable 17.5 to 22.5 cumec (m<sup>3</sup>/s) kayaking flow band at Kiwi Flat (at the entrance to the Morgan Gorge), both under natural conditions and when the proposed scheme was running<sup>18</sup>.
- 4.379 Whitewater NZ comments that: *"On average, the number of days where flows (natural flow) were suitable for kayaking the Morgan Gorge over the September to May kayaking season, based on data from the 2006-2012 years, was 51.9 days and that this number would be reduced to 8.8 days, an 83% reduction, if the scheme was installed( refer Table 1 below)<sup>19</sup>."*

#### **Table 1. Mean and median flows (cumecs) and numbers of suitable days available for kayaking the Morgan Gorge before and after installation of the proposed Westpower power scheme**

---

<sup>13</sup> Footnote Page 7, Volume 4, Appendix 19 Westpower: Waitaha Hydro Scheme Application for Concessions and Assessment of Environmental Effects. – July 2014

<sup>14</sup> Rob Caldwell, CEO Westpower, personal communication (Whitewater NZ), meeting with Westpower at Christchurch, 13<sup>th</sup> May 2014.

<sup>15</sup> Impacts of the proposed Waitaha River Westpower Hydro Scheme On White Water and Kayaking Values, Douglas A Rankin and Shane Orchard, January 2015 Appendix 2

<sup>16</sup> Refer page 13 Impacts of the proposed Waitaha River Westpower Hydro Scheme On White Water and Kayaking Values, Douglas A Rankin and Shane Orchard, January 2015

<sup>17</sup> Refer page 13 Impacts of the proposed Waitaha River Westpower Hydro Scheme On White Water and Kayaking Values, Douglas A Rankin and Shane Orchard, January 2015

<sup>18</sup> Refer page 13 Impacts of the proposed Waitaha River Westpower Hydro Scheme On White Water and Kayaking Values, Douglas A Rankin and Shane Orchard, January 2015

<sup>19</sup> Refer page 14 Impacts of the proposed Waitaha River Westpower Hydro Scheme On White Water and Kayaking Values, Douglas A Rankin and Shane Orchard, January 2015

Data set	Natural flow			Modified flow			Days lost	
	Mean	Median	No. days	Mean	Median	No. days	No.	Percentage (%)
Full year on average, 2006-12 <sup>a</sup>	32.7	19.0	59.1	17.4	3.5	8.9	50.2	85
September – May kayaking season, on average, 2006-12 <sup>a</sup>	37.5	21.9	51.9	20.2	3.5	8.8	43.1	83
December – February peak kayaking season, on average, 2006-12 <sup>a</sup>	46.0	26.7	17.5	26.6	3.7	4.5	13.0	74
September – May kayaking season, wet, 1995-96 <sup>b</sup>	51.8	30.9	50	31.3	7.9	7	43	86
September – May kayaking season, dry, 1976-77 <sup>b</sup>	29.2	18.1	35	14.1	3.5	7	28	80

<sup>a</sup> Approximate as full data not available for 2006 or 2012.

<sup>b</sup> From synthetic data.

- 4.380 However, Whitewater NZ considers that flow conditions of at least 40 -45 cumecs are required above the intake for Westpower to take 23 cumecs and leave a residual flow in the right flow range for kayaking. Whitewater NZ commented that these conditions however are likely to occur in periods close to or during rain events. In these circumstances the river is likely to be falling or rising relatively quickly and in these conditions the actual flow at a given time is difficult to predict, making the river unsafe for kayaking.<sup>20</sup>
- 4.381 Whitewater NZ comments that: *“In the report by Greenaway (2014) it is important to note that in the analysis of the impact of flow changes as a result of the proposed scheme the flow requirements for kayakers down the Morgan Gorge (and 1.5km reach below the Gorge) have not been correctly identified<sup>21</sup>.”*
- 4.382 Whitewater NZ states that: *“After further analysis of the flow data, consideration of river flow patterns, weather patterns likely during some of the flow options discussed in the preliminary analysis above, and further discussions with Westpower, it is apparent that the days where the residual flows were suggested as being ‘suitable’ for kayaking in Table 1 will not be useable at all.*

*In other words, if the proposed Westpower hydro scheme goes ahead, none of the predicted ‘suitable’ days would be realistically available to kayakers. As a result, the scheme represents a 100% loss of the resource to kayakers.*

*This arises for several reasons as follows:*

*Firstly, Westpower have confirmed that they are not prepared to operate their power scheme in a manner where they could produce controlled flows that kayakers could use. They are concerned about liability should something happen, which meant controlled flows might not be able to be maintained when a kayaking party was in the Morgan Gorge. It is understandable*

<sup>20</sup> Detailed presentation of flow and analysis is available in information provided by Whitewater NZ, Impacts of the proposed Waitaha River Westpower Hydro Scheme On White Water and Kayaking Values, Douglas A Rankin and Shane Orchard, January 2015

<sup>21</sup> Refer footnote 4 page 14 Impacts of the proposed Waitaha River Westpower Hydro Scheme On White Water and Kayaking Values, Douglas A Rankin and Shane Orchard, January 2015

that Westpower would be particularly concerned if this happened and a kayaking party had an incident caused by changing flows.

*Secondly, the proposed residual flows passing down the Morgan Gorge when Westpower were taking flows of 23 cumecs are unsuitable for supporting safe navigation by kayakers. This is for two reasons. As Westpower have stated, they are not prepared to guarantee a high enough minimum residual flow in the affected reach. The proposed minimum residual flow of 3.5 cumecs effectively excludes kayakers from the resource. In addition, days when the river is flowing high enough for Westpower to take 23 cumecs and leave a residual flow in the right flow range for kayaking, are likely to be in periods close to or during rain events. In such circumstances the river is likely to be falling or rising relatively quickly. Without Westpower being prepared to manage takes to prevent natural rapid changes in flows (i.e., management to 'smooth' the rate of change in flows in the Gorge) there are unacceptable risks for kayakers attempting a run. This applies to both situations where the flows are rising or falling too steeply to provide a safe flow window."*

- 4.383 Whitewater NZ also commented that when kayaking the Waitaha Gorge run, the river journey is normally completed by rejoining the river as soon as one is comfortable after portaging the Morgan Gorge. With the flow being constrained below the Morgan Gorge to the powerhouse this 1.5 km section of previously runnable good white water would have to be portaged or the ability to kayak this reach of the river would be severely constrained<sup>22</sup>. This section of the river is in fact the most kayaked section of the Waitaha River as it is largely a grade 2 experience.
- 4.384 As noted above, the flows required by kayakers wanting to run the lower 1.5 km from just below the most difficult rapids on the Morgan Gorge to the proposed powerhouse are estimated to be 10-50 cumecs<sup>23</sup>.
- 4.385 The number of days that the annual estimated 50 – 100 kayakers who paddle the Waitaha River and continue their journey from below Morgan Gorge and the 5 km's downstream to the take out point is not known. From analysis of the information provided in the application (refer to 4.373 of this report) it appears that when the scheme is operating, between 12 and 26 days per annum are available at mid range flows of 11.8 – 23 cumecs and there would be a higher number of days when the flow is greater than this.
- 4.386 Westpower proposes the following special condition be included in the concession:
- 17.5 Once the Scheme is operational, the Concessionaire shall provide real-time flow data and camera footage of the Waitaha River at the intake location on its website. That information shall be available for kayakers, other recreational visitors and the general public to view.
- 4.387 The Greenaway Report states that: *"Making river flow information publically available would enable kayakers to better judge optimal kayaking periods and take advantage of suitable natural flows which augment the residual flow"*<sup>24</sup>.
- 4.388 The Department considers that while this information would help kayakers make informed judgement on whether or not to paddle the Waitaha River, including Morgan Gorge, the situation would remain that when the power scheme is operating at capacity no days may be suitable for kayakers to complete a run of the Waitaha River, including Morgan Gorge.
- 4.389 Westpower provided the following additional information on the level of use by kayakers on the Waitaha River;

---

<sup>22</sup> Additional Information from Whitewater NZ on the proposed Westpower Waitaha Hydro Scheme, Douglas A Rankin page 11, 1 May 2015.

<sup>23</sup> Refer page 13 Impacts of the proposed Waitaha River Westpower Hydro Scheme On White Water and Kayaking Values, Douglas A Rankin and Shane Orchard, January 2015

<sup>24</sup> Refer Page 62 Volume 4, Appendix 19 Westpower: Waitaha Hydro Scheme Application for Concessions and Assessment of Environmental Effects. – July 2014

*“Overall the Waitaha River was reported to have approximately 50 kayak days per annum. That is kayakers spending a day or less on the river, which may include the same people doing more than one trip per year. <sup>25</sup>”*

- 4.390 Westpower also commented that the use estimates of 50 kayakers is (based on helicopter records and RiVAS) for those paddling in the Waitaha Gorge section and mostly portaging the Morgan Gorge annually.
- 4.391 Westpower further states that fewer than 10 individuals might kayak the upper Waitaha Gorge (above Country Stream) and/or Morgan Gorge in any one year, although these sections might not be run at all for long periods, and there is a limited pool of suitably skilled kayakers<sup>26</sup>.
- 4.392 Westpower further comments that since 2002 and over a period of 13 years there have been 6 -7 attempts (successful and not) to kayak Morgan Gorge and that usage of the Morgan Gorge section of the river is expected to continue to be low and that there may be many lengthy periods of time when it remains un kayaked<sup>27</sup>.
- 4.393 Westpower notes Whitewater NZ acknowledgement that the use of the Waitaha River is low compared to other kayaking runs on the West Coast and nationally<sup>28</sup>, and that due to the both the technical difficulty of the runs and access, *“most kayakers cannot and will not ever kayak these difficult runs”*.
- 4.394 Westpower considers that this low use usage number is directly relevant to the number of no-take days that is appropriate to be offered in mitigation of adverse effects.
- 4.395 Whitewater NZ, however, comments that Booth (2008) earlier reported a higher annual usage number of about 100 kayaker/visitor per annum and this is also only referring to the Waitaha Gorge run and not the values associated with the Morgan Gorge run and any other runs on the Waitaha catchment<sup>29</sup>.

#### **Cease to abstract /No take days**

- 4.396 Westpower proposes that cease to abstract would enable kayaking of the Morgan Gorge to continue at agreed times, as well as when the flow through the Gorge is sufficient to kayak.
- 4.397 Westpower states that this: *“...will represent a change to the current quality of experience which occurs within a predominantly natural backcountry-remote setting with no artificial constraints on participation. Making river flow information publically available would enable kayakers to better judge optimal kayaking periods and take advantage of suitable natural flows which augment the residual flow. However, the net adverse effect of the Scheme on kayaking the Morgan Gorge is likely to be 'high.’”*

*When flows are suitable for kayaking in the Gorge (naturally or via a cease to abstraction) there should be no experience of hydro developments until the powerhouse is encountered near 'Alpha Creek<sup>30</sup>.’”*

- 4.398 The Department agrees with Westpower that the challenge in protecting the regional kayaking resource, with the Morgan Gorge in mind, would be establishing a protocol for ceases to

---

<sup>25</sup> Page 31, Volume 4, Appendix 19 Westpower: Waitaha Hydro Scheme Application for Concessions and Assessment of Environmental Effects. – July 2014

<sup>26</sup> Page 53, Volume 4, Appendix 19 Westpower: Waitaha Hydro Scheme Application for Concessions and Assessment of Environmental Effects. – July 2014

<sup>27</sup> Westpower’s comment: Impacts of the proposed Waitaha River Westpower Hydro Scheme on White Water Kayaking Values, Prepared by Westpower 30 April 2015

<sup>28</sup> Refer Page 11 Impacts of the proposed Waitaha River Westpower Hydro Scheme On White Water and Kayaking Values, Douglas A Rankin and Shane Orchard, January 2015 for original text.

<sup>29</sup> Refer additional Information from Whitewater NZ on the proposed Westpower Waitaha Hydro Scheme, Douglas A Rankin page 6, 1 May 2015

<sup>30</sup> Refer Page 62 Volume 4, Appendix 19 Westpower: Waitaha Hydro Scheme Application for Concessions and Assessment of Environmental Effects. – July 2014

abstraction that is suitably flexible for kayakers. The Department also agrees with information provided by Whitewater New Zealand that no-take days would need be available on request at very short notice so that kayakers wanting to descend the gorge could watch weather and flow patterns to determine when they could make a descent and then calling up at short notice to do so when conditions were right.

- 4.399 A no-take day requires the hydro scheme to be switched off, on the date and for the time agreed, to enable kayakers to kayak Morgan Gorge under natural flow conditions.
- 4.400 The original condition proposed in the application concession was as follows:
- 17.4 *The Concessionaire shall consult with Whitewater New Zealand on the potential for developing a regime of ceases to abstraction to provide natural flows in Morgan Gorge, to support a continued kayaking opportunity in Morgan Gorge.*
- 4.401 Further information was sought from Westpower to see if agreement could be reached with Whitewater NZ on the number of no-take days that might help mitigate the effects of the water extraction on kayakers. The issue of whether agreement on the number of no take days where natural flows are made available at short notice as an acceptable form of mitigation is controversial.
- 4.402 For many kayakers, retaining a wild and scenic river including the Morgan Gorge is very important even if they do not have the skills and experience to paddle this section of river. For these reasons they have not seen it as appropriate to negotiate a number of no-take or controlled flow days.
- 4.403 Whitewater NZ comments that it is important that wilderness/wild places are not only held in high regard by those who use the place, they are also held in high regard by those that don't use the resource but who know about them, and appreciate them for knowing that they are there.
- 4.404 Although Westpower has not been able to reach agreement with Whitewater NZ on the number of cease to abstraction/no take days and the protocol to implement them, it proposes that its original proposed condition 17.4 in regard to no take days is replaced with the following:
- 17.4 (1) *The Concessionaire shall cease the take at the intake on two occasions per calendar year in accordance with condition [3] if the following conditions are met:*
- a) *no later than 7 days before the nominated day, the Concessionaire receives notice from Whitewater New Zealand (or their successors or nominees ("WWNZ")) nominating a proposed no- take day;*
  - b) *the Concessionaire gives WWNZ notice of its decision whether to grant WWNZ's request no later than 5 days before the nominated day (the Concessionaires consent may not be unreasonably withheld);*
  - c) *WWNZ gives the Concessionaire notice confirming its request no later than 12:00 pm on the day before the nominated day; and*
  - d) *the Concessionaire has not received a cancellation notice under condition [2].*
- (2) *If, before 7:00am on the nominated day, the Concessionaire receives notice from WWNZ that WWNZ wishes to cancel a no-take day, the cancelled day is not regarded as a 'no-take day' and WWNZ may select one alternative no-take day in accordance with the process in conditions 1a) to 1d), or as otherwise agreed in writing between the Concessionaire and WWNZ.*
- (3) *If the conditions set out in conditions [1] or (2) are met, the Concessionaire will cease take at the intake between the hours of 7.00 am and 5.00 pm on the nominated day. However, the Concessionaire may resume the take at the*

*intake earlier than 5.00 pm on the nominated day if notified by the WWNZ nominee that all kayakers have left the affected reach of the river in accordance with the Protocol.*

- (4) *If the Concessionaire receives a cancellation notice under condition (2) or (3) after the specified time, the day is deemed to be a "no-take day" and, on receipt of the cancellation notice, the Concession holder may, at its discretion, resume taking water from the intake.*
- (5) *Any additional requests for no take days shall be considered by the Concessionaire at the Concessionaires absolute discretion.*
- (6) *All notices under conditions [1]-[4] must be sent in writing and to the contact person specified in the Protocol.*

4.405 Westpower also states that: *"A Protocol outlining the specific details of the "no-take" regime will be finalised in consultation with Whitewater New Zealand prior to operation of the hydro scheme."*

4.406 Westpower proposes that the following additional clause be included:

- (7). *The cease to abstract no-take Protocol will be reviewed by the Concessionaire on an annual basis, unless the details change for a contact person, in which case the Protocol must be updated as soon as reasonably practicable. The Protocol will include but not be limited to:*
  - a) *The respective contact persons for WWNZ and the Concession holder (to whom notices must be sent);*
  - b) *Methods of communication and contact details;*
  - c) *Responsibilities of each party (including that the WWNZ contact person advise the Concessionaire that all kayakers have left the affected reach of the river on the nominated day);*
  - d) *The section of affected reach to which notification in (c) applies; and*
  - e) *Notification of no-take days.*

4.407 Westpower further states: *"The proposed conditions do not preclude any person or group electing to kayak the Morgan Gorge at any time whether under natural flows or operational flows. In addition to the organised recreational no-take days, there may be days when the hydro scheme is shut down for routine maintenance etc."*

4.408 Westpower comments that there is a high level of choice for high-grade kayaking options on the West Coast, and the Waitaha contributes to a relatively abundant kayaking opportunity setting (and hence its significance at the international level).

4.409 Westpower describes 58 river runs on the West Coast. Of these 58 river runs, the Waitaha River was assessed as one of 14 grade 5 runs with helicopter access on the West Coast. Overall, grade 5 and grade 4 runs were identified as the most common kayaking opportunities on the West Coast (twenty four and fourteen runs respectively). There are also, eight grade 4,5, four Grade 3, four grade 3,4, three grade 3, one grade 2,3 and four Grade 2 runs on the West Coast<sup>31</sup>.

4.410 While the Department concludes that based on this information the Waitaha River receives approximately 50 – 100 PA kayak visits per annum, the average number of days the river is run each year is not known.

4.411 It is difficult to predict potential future use of the Waitaha River, including Morgan Gorge. Whitewater NZ commented that improvements in gear and equipment have made it possible for sections of rivers such as the Morgan Gorge to now be paddled. As technical rivers such as the Waitaha are paddled more often, the aspiration by paddlers to complete such runs on the river

---

<sup>31</sup> Refer Table 4 page 31, Volume 4, Appendix 19 Westpower: Waitaha Hydro Scheme Application for Concessions and Assessment of Environmental Effects. – July 2014

can increase. An increase in the number of people being taught kayaking skills via polytechnic and clubs can also see more people developing the necessary experience and expertise to undertake kayak runs such as those found on Waitaha River <sup>32</sup>.

- 4.412 The Department also recommends that the following words ‘and the Grantor’ are added to the proposed special condition 17.4 (7) (a).
- The respective contact persons for WWNZ, the Concessionaire and the Grantor (to whom notices must be sent);
- 4.413 The Department notes that Westpower has not proposed to review the number of no-take days. Given the diverse views of the members of Whitewater NZ, it is accepted that at this time Westpower have not been able to reach agreement with Whitewater NZ on a number of cease to abstraction/no take days. Westpower has, however, stated a willingness to continue to talk to WWNZ on these matters.
- 4.414 The Department notes that that there have been 6 -7 attempts (successful and not) to kayak Morgan Gorge over the past 13 years. The issue is whether Westpower’s proposal to offer 2 cease to abstract /no take days per annum is reasonable.
- 4.415 If Westpower’s application is granted, the Department recommends, that because there is the possibility that demand to kayak the Morgan Gorge could either increase or decrease over the term of the proposed concession a condition to review the number of cease to abstract /no-take days on a 5 yearly basis, is included. Therefore the Department recommends that the following wording to proposed special condition 17.4 (5) is added.
- The Grantor will review the number of no-take days and their management on a 5 yearly basis.

#### **An assessment of the whitewater recreational values of West Coast Rivers – White Water Kayaking**

- 4.416 Andy England paddled 38 rivers (sections), on the West Coast in 2010, including the Waitaha River and wrote trip reports for each river as part of an Assessment of the whitewater recreational values of West Coast rivers – whitewater kayaking<sup>33</sup>.
- 4.417 Mr. England described the overall character of the Waitaha River as the pinnacle of one-day wilderness adventure kayaking on the West Coast and a classic grade 5 river trip of world class. The Waitaha offers an intense and aggressive whitewater challenge set amongst spectacular gorges, with a known challenge held back for the end of the day in the form of the Morgan Gorge portage. Morgan Gorge now being paddled leaves a delectable challenge open to the world’s most skilled whitewater kayakers.
- 4.418 The West Coast of the South Island has a number of rivers that provide outstanding kayaking and rafting white water and amenity values over a range of Classes of difficulty (England, 2011).
- 4.419 Whitewater kayakers spoken to in 2014 by the Department, commented that other than the Waitaha River only one other river (the Hokitika) and some of its tributaries such as the Mungo and Whitcombe Rivers offers such a range and variety of extremely challenging white water for the most expert of kayakers. However, because a number of the Waitaha runs are more challenging still, thus resulting in its pinnacle status and there is no other resource offering the same mix and level of extremely challenging white water that can substitute for the Waitaha River<sup>34</sup>.

---

<sup>32</sup> As per comments with Whitewater NZ and NZ Kayak School 3 November 2014

<sup>33</sup> An assessment of the whitewater recreational values of West Coast rivers – whitewater kayaking Andy England Leap Research Paper No2 January 2011

<sup>34</sup> Page 10 Impacts of the proposed Waitaha River Westpower Hydro Scheme On White Water and Kayaking Values, Douglas A Rankin and Shane Orchard, January 2015

- 4.420 As part of his assessment, Mr England also compiled a data set describing the values and use of a total of 60 rivers (sections), using an on-line survey of the kayaking community.
- 4.421 Mr. England, described that the West Coast of the South Island has a number of rivers that provide outstanding kayaking and rafting white water and amenity values over a range of Classes of difficulty.
- 4.422 Mr. England commented that: *“In comparison to other regions of NZ and the world, the West Coast region has a very high density of rivers that offer great whitewater challenge, inspiring river scenery and a strong wilderness feel. Added to this are such qualities as cleanliness and clarity of water, a range of access arrangements including helicopter access, geographic closeness of rivers meaning low travel times between rivers, and a wider regional experience that offers additional social attractions.*

*That so many rivers of the West Coast are valued so highly does not belittle their assessment, but truly represents their remarkable qualities. It makes it impossible to segregate a common set of top rivers, but a general trend is that northern Westland has the highest concentration of top rated rivers for whitewater challenge, with very high scores for scenery and wilderness; while northern Buller and South Westland have small concentrations of rivers top rated for wilderness and scenery with high ratings for whitewater challenge.*

*The main whitewater kayak users of West Coast rivers are highly specialised and experienced, which reflects and is reflected by the high proportion of more challenging rivers, yet the region is also held in high regard as a destination to aspire to by users of lower ability.*

*Of interest is the demographic profile of survey respondents, showing that most whitewater kayakers on the West Coast are male, of widespread ages, educated to bachelor's degree or beyond, professionally employed with incomes above national averages.”*

- 4.423 At a relative level, the Waitaha was ranked amongst 60 West Coast rivers<sup>35</sup> as:
- 35th for 'number of respondents' having used a river.
  - 12th for percent of international respondents using a river.
  - 8th for 'overall importance'.
  - 5th for 'whitewater challenge'.
  - 10th for 'scenery from river'.
  - 5th for 'wilderness feeling'.
- 4.424 Mr. England notes that the survey results have a “.....definite bias towards harder rivers, reflecting the respondents' profile (more advanced kayakers generally.)” Westpower comment that the survey period (winter 2009) preceded the first full descent of the Morgan Gorge (February 2010) and so the data will relate predominantly to the other sections of the Waitaha River<sup>36</sup>.”
- 4.425 Westpower’s consultant’s report (Greenaway 2014) states:

*“The effects of the proposal on the wild and scenic qualities of the Waitaha River are difficult to mitigate, considering the key issue is a change from an uncontrolled and undeveloped state to one with hydro structures and a controlled flow regime”*

## **Conclusion – Effects on Recreation and Tourism Values**

- 4.426 Westpower has provided a detailed description and assessment of the recreation use of the Waitaha Valley. The Department agrees that the Waitaha study area receives low use from kayakers (50 – 100 PA), and trampers and hunters (<150 PA). The Department, however,

<sup>35</sup> Refer pages 83- 88 An assessment of the whitewater recreational values of West Coast rivers – whitewater kayaking Andy England Leap Research Paper No2 January 2011

<sup>36</sup> Refer page 31 Volume 4, Appendix 19 Westpower: Waitaha Hydro Scheme Application for Concessions and Assessment of Environmental Effects. – July 2014

considers that this level of use is not uncommon for Backcountry – Remote Zones on the West Coast due to its remoteness and the fact that it is relatively hard to travel through.

- 4.427 The Department agrees with Westpower’s statement that *“The scheme has the potential to affect the quality and nature of the recreation experience in the area under application by changes to the remote-backcountry characteristics of the Kiwi Flat and Douglas Creek settings (via the installation of hydro diversion structures, access and the powerhouse) and an altered flow regime in the Morgan Gorge and much of the Douglas Creek reaches.”*
- 4.428 The Department agrees with Westpowers assessment that the effects on most trampers and hunters accessing the Waitaha Valley would largely be localised changes to what is currently an undeveloped backcountry-remote setting. Access from Macgregor Creek to near the power house would be improved but overall the tramping and hunting experience would remain 'hard won', the experience may be diminished by the presence of a functioning hydro scheme and associated infra structure<sup>37</sup>.
- 4.429 The Department notes impacts include effects on highly-experienced kayakers who may seek to paddle the Morgan Gorge, and on all kayakers on the river who portage the Gorge section but then paddle down past Douglas Creek (The location of the proposed tailrace) to a take out point with the latter potentially facing an additional 1530 metre portage when flows are inadequate due to the scheme.
- 4.430 The Department considers that both national and international visitors, and in particularly kayakers, regardless of whether or not they have the ability to paddle the Morgan Gorge, highly value and appreciate the intrinsic worth of retaining rivers on the West Coast and around the world that can flow uninterrupted and are free of hydro schemes and their associated structures.
- 4.431 The Department notes Westpower’s conclusion that mitigations are available to avoid and mitigate the scale of effects on kayaking through a number of the proposed conditions including no take days/ceases to abstraction. The Department nevertheless has reservations about the adequacy of that mitigation in light of the fact that the river would change from its natural state and would no longer be available to kayakers except on a very small number of ‘cease to abstract’ days. The Department agrees with Westpower that the scheme would likely result in net ‘high’ adverse effects on kayaking the Morgan Gorge. You will need to consider;
- a) Whether the proposed mitigation measures on recreationists in particular kayakers are adequate and where they are inadequate you will need to consider whether the effects are such that the proposed hydro scheme should be declined pursuant to 17(2)(b) of the Conservation Act and;
  - b) Whether granting the proposed activity would be contrary to the provisions of the Conservation Act or the purpose for which the land is held pursuant to 17U(3) of the Conservation Act 1987.

**(k) Assessment of Effects - Noise**

- 4.432 Section 7.14 of the application (p110-116) summarises the potential noise effects of the proposed scheme. Appendix 20 of the application provides the full Assessment of Noise Effects of both the construction and operational phases of the scheme. The report was prepared for Westpower by consultants Marshall Day Acoustics.
- 4.433 Westpower states that:

*Most noise effects associated with the Scheme are primarily related to the construction period and include:*

---

<sup>37</sup> Refer conclusion by Westpower page 66 Volume 4, Appendix 19 Westpower: Waitaha Hydro Scheme Application for Concessions and Assessment of Environmental Effects. – July 2014

- *the construction of access roads;*
- *construction of Scheme infrastructures, i.e. piling, blasting, tunnelling;*
- *use of light and heavy vehicles; and*
- *helicopter movements.*

*Following construction there would be some noise associated with the Scheme during operation, including noise from the powerhouse and vehicles used for maintenance.*

4.434 The following conditions have been proposed by Westpower. (Page 116 of application)

<b>CONDITIONS</b>	<i>1.1-1.2, 7.1-7.4, 9.1-9.4, 16.1</i>
-------------------	--

4.435 The Department agrees with Westpower that the noise effects from construction would be of a temporary nature. Proposed special conditions include the development and implementation of a construction noise management plan. The plan would address the following:

- criteria and standards for construction noise;
- general noise management methods;
- specific noise management for helicopters movements, traffic, blasting, piling, the protection of recreational users and wildlife (including blue duck);
- contingency measures;
- training; and
- complaints.

4.436 Westpower states that:

*Once operational there would be a relatively low level of noise generating activities associated with the Scheme and would include noise from the power house and vehicle movements associated with maintenance.*

*Accordingly noise from the Scheme once operating would be minimal and mitigation of noise from the powerhouse on recreation users would be essentially be achieved by the sound of the adjacent Waitaha River and the rerouting of the access track away from the powerhouse.*

#### Departments Conclusion

4.437 Westpower's report concludes that any operational noise effects on recreational users and wildlife would be no more than minor.

4.438 The Department agrees this is a fair assessment and that it is considered that noise effects would be adequately and reasonably mitigated by the proposed special conditions, no further conditions are recommended.

#### **(I) Assessment of Effects Historical and Archaeological**

4.439 Section 7.12 of the application, p106 provides Westpowers assessment of the effects on historic values.

4.440 Westpower have proposed a number of standard conditions to manage the accidental discovery of any potential as yet unknown sites.

4.441 These are provided in section 9, p142 - 158 of the application and include the following conditions. (These can also be found in Appendix 1 of this report):

<b>CONDITIONS</b>	<i>1.1-1.2, 7.1-7.4, 17.1-17.5</i>
-------------------	------------------------------------

#### **Department Conclusion**

4.442 The Department agrees with Westpower's assessment that there are no known historic features in the proposed footprint area and no effects in regard to historic values.

## THE DEPARTMENTS SUMMARY AND CONCLUSIONS FROM THE ASSESSMENT OF EFFECTS OF WAITAHA HYDRO

### **(a) River Dynamics & Natural Hazards**

- 4.443 Westpower states that there are significant risks to the scheme from natural hazards in the area, in particular the future possibility of an Alpine Fault earthquake during the lifetime of the Scheme. However the main potential impact is likely to be on the scheme itself and not on the conservation values. This is partly because there is no significant water storage structure proposed therefore there are no additional seismic hazards for either the local environment or river users.
- 4.444 The Department considers that in terms of the geotechnical aspects of the application the methods used for the geotechnical assessments for this stage of the proposal are normal and in line with good practice. The proposed hydro scheme presents a low risk to the Department as it relates to geotechnical aspects of the scheme. Geotechnical aspects are currently at feasibility stage and further work including drilling would be required to address potential geotechnical risks.

### **(b) Natural Character, Landscape and Visual Amenity**

- 4.445 The Department agrees with the Departments consultant that the Waitaha upper catchment would meet the accepted test of an outstanding natural landscape, and the Morgan Gorge would more than likely be worthy of inclusion as an outstanding natural feature.
- 4.446 Effects on a broad scale and local scale landscape, visual amenity and natural character (abstraction reach, intake and powerhouse sites) have been considered in detail. A series of photosimulations have been used to good effect. The findings in the assessment are considered to be fair, measured and credible.

#### Broad scale landscape effects

- 4.447 Westpower considers that, at a whole of Upper Waitaha catchment scale, the effects of the Scheme on natural character, landscape and visual amenity would be low or moderate to low. the Department disagrees with this assessment and considers the effects at a broad scale to be moderate.

#### Local scale landscape effects

- 4.448 Westpower considers that at a local landscape level, the effects of the Scheme within the Upper Waitaha catchment would be high. The Department agrees with this assessment.

#### Visual amenity effects

- 4.449 Westpower considers visual amenity effects (from close viewpoints) at the intake and powerhouse sites to be high because of the introduction of industrial-style modifications. The Department agrees.

#### Natural character effects

- 4.450 Westpower considers the natural character effects on river flow through the abstraction reach to be moderate. The Department agrees.
- 4.451 Westpower considers the local natural character effects at the intake and powerhouse sites to be high. The Department agrees.

#### Mitigation

- 4.452 The additional conditions are considered to be both reasonable and practical and would help to provide better certainty of outcome and reduce potential adverse effects at both the intake and powerhouse sites. There does not appear to be any mitigation measures concerning the change of water flow in the abstraction reach; and despite Westpower reducing the potential effects at both the headwork's/intake site and at the power house through reviewing their initial proposed mitigation and proposing additional mitigation measures during the application process, the effects at both the intake site and the power house would remain high.

4.453 The Department and Westpower largely agree about the nature and extent of the effects as they relate to landscape, visual amenity and natural character. As some adverse effects would be high you will need to consider;

c) whether the proposed mitigation measures are adequate and where there are no or inadequate mitigation measures you will need to consider whether the effects are such that the proposed hydro scheme should be declined pursuant to section 17(2)(b) of the Conservation Act and;

d) Whether granting the proposed activity would be contrary to the provisions of the Conservation Act or the purposes for which the land is held pursuant to 17U(3) of the Conservation Act 1987.

**(c) Vegetation - Terrestrial vegetation/habitat**

4.454 The Hydro scheme would result in a permanent loss of 3.62 ha of terrestrial vegetation, however the overall impact on vegetation associations is considered to be low and adequately mitigated for however there would be an impact on what is currently considered an entirely intact site that would result in a loss of conservation values.

4.455 The ecology report has identified the vegetation associations as common within the Ecological District; this is true of the forest, but less valid of seral vegetation on recent soils. The Department considers that all appropriate and adequate avoidance and remedial actions have been proposed focusing on ongoing weed control and no further conditions are recommended.

4.456 The Department considers that while the footprint (both temporary and final) is a very small proportion of the Ecological District or the catchment the impact of the project on the important quality of intactness would result in a minor loss of conservation values. The Department and Westpower experts largely agree that effects on terrestrial vegetation would be small in scale and be minor.

**(d) Birds and Bats**

4.457 Westpower suggests only a low number of threatened species are present however the Department does not agree with this statement. The site contains significant populations of threatened and representative bird and bat species. Impacts potentially include loss of breeding and/or feeding habitat through felling of trees and clearance of habitats mainly for the road development, and locally about the portal, weir and other workings. The greatest potential impact would be the potential loss of a bat roost during felling, if this happened this would be a significant effect. However if Westpower could avoid felling any bat roosts then the potential effects on bats would be considered minor. Effects on forest birds would also be considered negligible if Westpower could avoid important food source trees. If Westpower adheres to the proposed conditions it is considered that effects on fauna values would be adequately avoided, remedied and mitigated.

**(e) Lizards**

4.458 Three (or possibly four) indigenous species of lizard may be present in the 100ha development envelope that was surveyed; *Mokopirriakau granulatus*, *Nautlinus tuberculatus* *Oligosoma polychroma* and possibly *O. Infrapactatum*.

4.459 It is likely that these species occur in the project envelope area of approximately 8ha and as *N. tuberculatus* is threatened with extinction (Hitchmough et al 2012) the site is considered significant for lizards.

4.460 There is also ideal habitat in the foot print for gecko species. The footprint is said by Westpower to be of no more than of local value to lizards because of their widespread, low density distributions within a vast habitat. Whitaker also argues that the project has a low impact of local effect, identifying only loss and displacement of individuals and destruction of common habitats as an impact. The report recognises the subjective nature of describing an amount of loss and refers to both “negligible” or “of very little adverse effect on the lizard fauna of the

*project area*". However the Department considers this is not the case if the Westland green gecko or a unique clade of the speckled skink is present.

- 4.461 The Department considers that the likely presence of a threatened gecko species and total removal of less well represented "At Risk" skink habitat would be considered to be a significant local negative effect and potentially a nationally significant negative effect and would cause a loss of biodiversity values. You need to decide whether the proposed mitigation measures would avoid, remedy and mitigate adequately the effects on lizards or whether the information available on lizards is insufficient or inadequate to assess the effects such that the proposed hydro scheme should be declined pursuant to 17U(2)(a) of the Conservation Act 1987.

**(f) Invertebrates**

- 4.462 The Department considers that Richard Toft's report (Toft 2014) on the invertebrate values at the proposed construction sites is comprehensive and reasonable. The Department agrees with Toft's findings and conclusion that the construction foot print is very small relative to the ecological district and that weed and pest control is an appropriate inclusion in the applicant's proposal, particularly at Kiwi Flat (the least ecologically modified / most intact area within the proposal).

- 4.463 The Department supports the findings and ecological views of the commissioned ecology reports. The Department supports Westpower's proposed weed and pest control mitigations and believes that Westpower should be scrupulous against weed invasion into the riparian environment during construction of the weir at Kiwi Flat. This is particularly important in the light penetrating forest margins surrounding the short service road (between the tunnel portal and the weir) and the turf surfaces of Kiwi Flat. The Department does not consider that any further conditions are required.

**(g) Aquatic Ecology/Benthic Communities and Fish**

- 4.464 The primary effect of the hydro scheme on aquatic ecology is the diversion of up to 23 cumecs between Morgan Gorge and the proposed powerhouse which means a reduced flow from the mainstem of the river over about 2.6km (current mean flow of 35 cumecs) leaving a residual flow of no less than 3.5 cumecs. The section of the river affected carries low densities of macro invertebrates, fish and aquatic plant populations with limited species diversity, with a few 'At Risk' native species such as the longfin eel, koaro and torrent fish. Concerns include the effects:

- On the higher aquatic values of the tributaries, particularly on the Stable Tributary
- And of sediment and potential contaminants entering the mainstem of the river during construction.

However the Department considers that proposed conditions such as the proposed buffer zone around the stable tributary and measures limiting soil disturbance and sediment runoff along with rehabilitation promoting riparian protection would be adequate to address the Department's concerns on these effects.

- 4.465 The Department also acknowledges and agrees with Westpower's consultant that there is a level of uncertainty that remains regarding the long term effects of the Scheme on the koaro population upstream of Morgan Gorge.

- 4.466 In addition the Department believes it is not possible to predict the extent to which the natural patterns of abundance and diversity would be conserved in the abstraction reach even though the Department agrees it would be similar. In particular the Department is concerned that the albeit naturally low density populations of 'At Risk' native fish present in the diversion reach, viz. koaro, longfin eel and torrent fish, are conserved to a level consistent with general conservation purposes. The Department recommends that monitoring of the mainstem native fish populations should be undertaken to determine what, if any, effects the Scheme may have on them.

- 4.467 The Department considers that Westpower has adequately described the values of the Waitaha's freshwater communities including the underlying hydrological and sediment regime that may be affected by the schemes construction and ongoing operation. However if the Concession is

granted the conditions would need to include a number of additional recommended special conditions discussed above that the Department considers necessary to reduce any potential effects. However the Department also acknowledges and agrees with Westpowers consultant that there is a level of uncertainty that remains regarding the long term effects of the Scheme on the koaro population upstream of Morgan Gorge and 'At Risk' native fish in the abstraction reach. You need to decide whether the proposed mitigation measures would avoid, remedy and mitigate adequately the effects on freshwater values or whether the information available is insufficient or inadequate to assess the effects such that the proposed hydro scheme should be declined pursuant to 17U(2)(a) of the Conservation Act 1987.

**(h) Blue Ducks**

4.468 The Department agrees with Westpower's summary of effects and that the proposed mitigation measures would mitigate the effects identified. While the scheme would change the blue duck habitat through the abstraction reach the Department considers that a blue duck population would continue to be sustained if the proposed and recommended special conditions are adhered to.

**(i) Cultural**

4.469 Te Runanga o Makawhio and Te Runanga o Ngati Waewae have not raised any concerns in terms of cultural effects during the consultation process. They indicated however that they intend to look at the finer details with Westpower. The Department agrees with Westpower that potential effects on cultural values are no more than minor and if the applicant adheres to the proposed conditions then the Department considers that the effects on cultural values would be adequately avoided, remedied and mitigated.

**(j) Recreation and Tourism local/Regional**

4.470 The Department notes Westpower's conclusion that mitigations are available to avoid and mitigate the scale of effects on kayaking through a number of the proposed conditions including no take days/ceases to abstraction. Nevertheless, it considers that the changes to the natural state of the river mean that the final adverse effect on kayaking on the Waitaha River remains significant. You will need to consider;

c) Whether the proposed mitigation measures on recreationists in particular kayakers are adequate and where they are inadequate you will need to consider whether the effects are such that the proposed hydro scheme should be declined pursuant to 17(2)(b) of the Conservation Act and;

d) Whether granting the proposed activity would be contrary to the provisions of the Conservation Act or the purpose for which the land is held pursuant to 17U(3) of the Conservation Act 1987.

4.471 Many kayakers hold the belief that it is critical that the unspoilt character of the Waitaha River including the Morgan Gorge is retained. They consider that the application is inconsistent with Conservation Act 1987, in which conservation is described as the preservation and protection of natural and historic resources for the purpose of maintaining their intrinsic values, providing for their appreciation and recreational enjoyment by the public, and safeguarding the options of future generations<sup>38</sup>.

**(k) Noise**

4.472 The report concludes that any operational noise effects on recreational users and wildlife would be no more than minor. The Department considers this to be a fair assessment and that noise effects would be adequately and reasonably avoided, remedied and mitigated by the proposed special conditions.

**(l) Historical and Archaeological**

4.473 The Department agrees with Westpower's assessment that there are no known historic features in the proposed footprint area and no effects in regard to historic values.

---

<sup>38</sup> Interpretation, Part 1, Conservation Act 1987

**Section 17U (1)(d) Any Information received under section 17S or section 17T of this Act.**

4.474 In considering this application the Minister must have regard to any information received by the Minister under sections 17S and 17T of the Conservation Act. Refer to section 2 of this report for a description of the information received under section 17S and how this information been incorporated into this report. In terms of section 17T there has been no further information received at this stage.

**Section 17U (1)(f) Any Relevant Oral or Written Submissions Received As a Result Of Public Notification**

4.475 Section 17T (4) and (7) are discussed in this section of this report; these sections discuss the requirement for public notification and the public notification process.

4.476 The effects of this type of activity and the term applied for require this application to be publicly notified pursuant to section 49 of the Conservation Act 1987 if there is an intention to grant.

4.477 If the decision maker forms an intention to grant the application, then a public notification process would be undertaken pursuant to section 49 of the conservation Act. A decision in principle would be notified for 40 working days and any individual, or group, may then object, or submit and be heard on the proposal. If the decision maker does not form an intention to grant there would be no public notification as, in essence, the decision would be to decline the application.

4.478 Any objections and submissions would be considered in a ‘final’ report following notification.

**Section 17 U (1)(g) Any Relevant Information Which May Be Withheld Under The Official Information Act 1982 Or The Privacy Act 1993**

4.479 Any request for information under the Privacy Act or the Official Information Act is to be considered on its merits and on a case by case basis.

4.479 Westpower provided information as a response to information supplied by WWNZ under section 17S (5) (this is listed in section 2 of this report - Information Available for Consideration) This information included the following items listed below which have been provided in confidence. Westpower also stated that release of this information would prejudice the supply of similar information. The Department’s initial view is that it is in the public interest for this type of information to continue to be supplied and that grounds are likely to exist to withhold this information under section 9(2)(ba)(i) of the Official Information Act. But the Department will not form a final view as there is currently no request for this information to be made available. The information includes:

- 1 A report entitled; ‘Waitaha Hydro Scheme – Response to the Department of Conservation – The New Zealand Electricity Industry and Market’, 21 September 2015;
- 2 A report on the financial viability of the proposed hydro scheme and entitled ‘Waitaha Hydro Scheme Financial Performance Analysis’, 23 September 2015 and;
- 3 ‘Review of the Financial Viability of the Waitaha Hydro Project’ September 2015.

**17U (2) Minister May Decline Application**

4.480 This section provides that the Minister may decline any application if the Minister considers that:

- (a) *The information available is insufficient or inadequate to enable him or her to assess the effects (including the effects of any proposed methods to avoid, remedy, or mitigate the adverse effects) of any activity, structure, or facility; or*
- (b) *There are no adequate methods or no reasonable methods for remedying, avoiding, or mitigating the adverse effects of the activity, structure, or facility.’*

**Comment**

4.481 The test in section 17U (2) is discretionary – that is, the Minister may decline an application if there is insufficient or inadequate information to assess effects or there are no adequate

methods for remedying, avoiding or mitigating adverse effects. In most sections of this report the Department considers that there is sufficient information on the effects of this proposal to enable the Minister to assess the effects of the proposed activity and that the range of methods proposed to avoid, remedy or mitigate effects are adequate and reasonable. However in those instance where it is not so clear the decision maker will have to consider whether the application should be declined pursuant to this section 17U(2).

- 4.482 As also indicated in this report there are other sections in the report where it might be considered that there is inadequate information or not adequate methods to describe how significant adverse effects would be avoided, remedied or mitigated.
- 4.483 As alluded to at paragraphs 1.18 and 1.19, Westpower is taking a development envelope approach to this application. In other words, it is seeking concessions within a development envelope within which the scheme would be constructed. Westpower has identified a number of potential effects across a spectrum of activities it would carry out in the event that its application is granted and has attempted to identify mitigation measures by way of proposed conditions. Nevertheless, you need to be satisfied before making a substantive decision to grant the applications that the adverse effects of these activities are acceptable. If the adverse effects are not currently capable of ascertainment, you need to be satisfied that the conditions of grant contain clear bottom lines or standards against which the effects can be measured via methodologies developed by Westpower. Without these bottom lines/standards any approval of the applications would require a subsequent decision maker to make the substantive assessment as to the appropriateness of the various management plans and whether they contain adequate methods to assess effects and whether such effects are acceptable. This would constitute an unlawful delegation as there would be a deferral of the substantive decision to a secondary approval stage.
- 4.484 If you decide, therefore, to grant the various applications on the basis that Westpower must demonstrate at some point in the future that it can properly determine the effects of each activity against bottom lines or standards set in the conditions of grant you should also be aware that if it is unable to do so it would not be able lawfully to exercise its consents. In short, it would have failed to satisfy critical conditions subsequent.
- 4.485 Subject to the foregoing, it is considered that compliance with the Department's standard concession conditions and the proposed and recommended Special Conditions would adequately avoid, remedy or mitigate the adverse effects of the proposed hydro scheme on terrestrial fauna and flora values including adverse effects on: birds, bats, lizards and invertebrates, as well as the effects on aquatic ecology and cultural and historical values. Nevertheless, it is up to you as the decision maker to form your own views on these matters taking into account all the effects identified in this report and its attachments and the proposed mitigations.
- 4.486 There are several areas, however, where the Department has concerns about the adequacy of information provided by Westpower and/or the adequacy or reasonableness of the methods proposed by Westpower to be undertaken to avoid, remedy or mitigate the adverse effects of the proposal.
- 4.487 The first area of concern is the degree of adverse effects on the natural landscape character at the intake and the powerhouse sites. Both Westpower and the Department consider the adverse effects of the proposed scheme to be significant on these areas. You will need to determine whether the proposed mitigation methods are adequate and reasonable.
- 4.488 Secondly, the adverse effects of the scheme on the natural state of the river and on recreational users of the river, in particular kayakers, would be high. In recognition of this, Westpower has proposed mitigating these effects with a Special Condition that would provide for two cease to abstract/no take days per annum. White Water New Zealand would have the opportunity to nominate these days with at least 7 days' notice to the nominated day. While the information indicates that the abstraction reach is kayaked very infrequently because of the technical difficulties it presents you will have to determine whether the proposed cease to abstract days are an adequate mitigation measure for the kayaking that does occur and also for changing the natural state of the river.

**Section 17U(3) The Minister shall not grant an application for a concession if the proposed activity is contrary to the provisions of this Act or the purposes for which the land concerned is held.**

- 4.489 The lands under application occur in the Waitaha Forest Conservation Area, which is classified as Stewardship Land and is public conservation land administered by the Department and managed under the Conservation Act 1987.
- 4.490 The Scheme is located on land legally described as Reserve 1672 and Section 1, Survey Office Plan 12094 (Conservation Act 1987) and includes components within the bed of the Waitaha River and part of Macgregor Creek. See Appendix 4 of this report for maps of the proposed scheme and the Conservation Area or see the application, volume 2, appendix 1, Map 2 for a map of the conservation parcel boundaries.

<b>Legal Description</b>	<b>Key Topographical References</b>
Waitaha Forest Conservation Area. Stewardship Land within Reserve 1672 and Section 1 Survey Office Plan 12094 and includes part of the bed of the Waitaha River and part of the bed of Macgregor Creek.	Powerhouse Site: c. NZTM E1415320; N5223700. Tunnel Portal at PH site : c. NZTM E1415324; N5223550, Intake Site: c. NZTM E1415825; N5222160 Contractors Facility: c. NZTM E1416125; N5222050

- 4.491 The Minister shall not grant a concession if the proposed activity is contrary to the purpose for which the land is held (section 17U(3) Conservation Act).

**Purpose of the Conservation Act 1987**

- 4.492 Land held under the Conservation Act 1987 is held for “Conservation” purposes. “Conservation” is defined under the Act as:

*“The preservation and protection of natural and historic resources for the purpose of maintaining their intrinsic values, providing for their appreciation and recreational enjoyment by the public, and safeguarding the options of future generations.”*

- 4.493 ‘Preservation’ and ‘protection’ are both further defined in section 2 of the Act to mean:

*‘preservation’, in relation to a resource, means the maintenance, so far as is practicable, of its intrinsic values’*

*‘protection, in relation to a resource, means its maintenance, so far as is practicable, in its current state; but includes—*

- (a) its restoration to some former state; and*
- (b) its augmentation, enhancement, or expansion*

- 4.494 Section 5 of the Conservation Act 1987 establishes a Department of Conservation.

**Stewardship areas**

- 4.495 Section 25 of the Conservation Act 1987 states that:  
*“Every stewardship area shall be so managed that its natural and historic resources are protected.”*

- 4.496 Natural Resources are defined in the Conservation Act 1987 as:

- (a) plants and animals of all kinds; and*
- (b) the air, water, and soil in or on which any plant or animal lives or may live; and*
- (c) landscape and landform; and*
- (d) geological features; and*

(e) *systems of interacting living organisms, and their environment; and includes any interest in a natural resource.*

4.497 Historic Resources are defined in the Conservation Act 1987:

*Historic resource means a historic place within the meaning of the Historic Places Act 1993; and includes any interest in a historic resource.*

#### **Comment**

4.498 The emphasis in the Conservation Act 1987 is on preservation and protection of natural resources for the purpose of maintaining intrinsic values, providing for public appreciation and recreational enjoyment, and safeguarding the options of future generations.

4.499 The mandatory nature of the wording in section 25 of the Conservation Act 1987 suggests that it would not be lawful under the Act to allow an activity to occur which undermines the protection (i.e. undermines the maintenance as far as practicable in its current state) of natural and historic resources of the land.

4.500 However, the provisions of the Act require the Minister also to consider a number of other matters as set out in part 3B of the Act, including the effects of the proposed activity, and the possible safeguards and mitigation measures proposed. The Minister must also consider the natural and historic resources the stewardship area status seeks to protect and to question whether the granting of the application, with or without conditions, would provide appropriate protection of those resources.

4.501 The effects of the proposed hydro scheme and measures proposed to avoid, remedy and mitigate the effects on the natural and historic resources of the Waitaha Conservation Area are discussed above in this report. This analysis concludes that there are a number of significant adverse effects on natural resources from the proposed hydro scheme. The key issue is whether there are adequate or reasonable methods for mitigating these adverse effects.

4.502 If you consider the significant adverse effects (especially the effects on the natural landscape character at the intake and power house sites and the effects on recreational users, especially kayakers, in the abstraction reach) are not able to be adequately mitigated, you should consider declining the proposal on the basis that it is contrary to the Act and the purposes for which the land is held pursuant to section 17 U (3).

#### **Section 17U (4) STRUCTURES**

4.503 Section 17U (4) provides that:

*The Minister shall not grant any application for a concession to build a structure or facility, or to extend or add to an existing structure or facility, where he or she is satisfied that the activity-*

(a) *Could reasonably be undertaken in another location that-*  
(i) *Is outside the conservation area to which the application relates; or*  
(ii) *Is in another conservation area or in another part of the conservation area to which the application relates, where the potential adverse effects would be significantly less;*

*or*

(b) *Could reasonably use an existing structure or facility or the existing structure or facility without the addition.'*

4.504 A summary of alternative locations and options are described in the Application on pages 186-194 of Volume 1, a full report on the decision pathway and considerations of different locations and options are provided in appendix 22 of Volume 4 of the application. This consideration also includes a description of how the options for locating the intake site, power house and road access route were arrived at.

- 4.505 Westpower states that: *“The decision to proceed with the Scheme on the Waitaha River has been subject to a comprehensive consideration of a wide range of alternatives, options and factors (i.e. technical, engineering, environmental, economic) and after undertaking appropriate investigations and receiving advice from relevant experts at all key stages.”*
- 4.506 Westpower considers that the chosen option for Scheme location, design and layout provides the best balance between making the most efficient and effective use of the renewable hydro resource for the benefit of current and future generations of the West Coast community whilst, as far as is practicable, avoiding or minimising effects of the development and operation of the Scheme.
- 4.507 Specifically Westpower states:

*“Between 2004 and 2005 Westpower undertook a survey of rivers with a potential for hydro-electric power schemes within the Westpower distribution area. This included consideration of previous reports, including a Report prepared for the Ministry of Works and Development on Small Hydro Electric Potential of West Coast in 1985 (Royds Sutherland and Macleay Consulting Engineers).*

*Rivers were removed from further consideration in the first instance if they were assessed as too remote, required a dam and associated storage lake, located in a National Park or were excluded by water conservation orders. A short list of six rivers was produced for further site inspection and assessment, including a thorough aerial inspection by helicopter.*

*These six rivers were the:*

- |                             |                           |
|-----------------------------|---------------------------|
| <i>1. Waitaha River</i>     | <i>4. Amethyst River;</i> |
| <i>2. Kakapotahi River;</i> | <i>5. Rough River;</i>    |
| <i>3. Toaroha River;</i>    | <i>6. Big River.</i>      |

*The potential for development of a hydro scheme on each of these 6 rivers was then assessed by Westpower. Factors taken into consideration in comparing the sites and in selecting a site(s) included:*

- being within the Westpower distribution area (refer figure 1 of the application, page 5);*
- the size of the catchment area;*
- tunnel length required;*
- potential environmental effects (including recreational);*
- head (or fall) of the Scheme and generating capacity;*
- foundation conditions for the headworks and tunnel portal;*
- river alignment;*
- effects of possible sediment intake;*
- general geology;*
- access to the area; and*
- the economics of each scheme/option.*

*All of these sites were either located within or partly within conservation land. On the basis of a full assessment and consideration of these criteria it was recommended that two of the rivers, where a potential hydro-electric power scheme could be located, be continued to the pre-feasibility stage. The pre-feasibility phase allowed for a better comparison of the potential schemes with the Amethyst Hydro Scheme, which had already been progressed to the pre-feasibility stage.*

*The two scheme locations were on the Waitaha and Kakapotahi (Little Waitaha) Rivers in Westland, some 15 km south of Ross. These sites were selected above the others as there were fewer issues arising when considered over the full range of selection criteria. A civil pre-feasibility study was undertaken on these two schemes, including a number of options for location, design and layout being*

identified for each river. There were three scheme options identified for the Kakapotahi River (see Figure, 10 page 188 of the application). Six initial options were identified for the Waitaha River from a combination of two intake locations and three powerhouse sites (Figure 11, page 188 of the application).

The investigations into the civil engineering components of the proposed schemes at the time indicated that a hydro-electric power scheme would be feasible on each river.

The Waitaha scheme options were selected for further investigation over the Kakapotahi because of environmental and possibly cultural concerns arising from the diversion of water from one catchment to another. Among the factors considered was recreational use - the Kakapotahi Gorge was a well-known and popular canoeing and kayaking site, and also that the intake dam would have resulted in long term aggradation in the river for over 6 km upstream. Additionally all the Kakapotahi scheme options had a higher cost per kWh than the Waitaha schemes. At the time of that study no-one had kayaked the Morgan Gorge.”

#### **Comment**

- 4.508 The Department considers that Westpower has carried out extensive investigation of a number of alternatives sites both outside of the Waitaha Forest Conservation Area and in other conservation areas on the West Coast that were within the Westpower distribution area (from Lyell in the North to Paringa in South Westland.)
- 4.509 Given the detailed assessment of alternative locations and the selection criteria, the Department is satisfied that the proposed hydro scheme structures and access road could be not be reasonably undertaken in another location that is either outside the conservation area to which the application relates or is in another conservation area or in another part of the conservation area to which the application relates, where the potential adverse effects would be significantly less nor does the Department consider that Westpower could reasonably use an existing structure or facility without the addition.

#### **Section 17U (5), (6) and (7)**

- 4.510 Section 17U(5) The Minister may grant a lease or a licence granting an interest in the land only if;
- (a) the lease or licence relates to 1 or more fixed structures and facilities (which structures and facilities do not include any track or road except where the track or road is an integral part of a larger facility); and
  - (b) in any case where the application includes an area or areas around the structure or facility,—
    - (i) either—
      - (A) it is necessary for the purposes of safety or security of the site, structure, or facility to include any area or areas (including any security fence) around the structure or facility; or
      - (B) it is necessary to include any clearly defined area or areas that are an integral part of the activity on the land; and
    - (ii) the grant of a lease or licence granting an interest in land is essential to enable the activity to be carried on.
- 4.511 Section 17U(6) No lease may be granted unless the applicant satisfies the Minister that exclusive possession is necessary for—
- (a) the protection of public safety; or
  - (b) the protection of the physical security of the activity concerned; or
  - (c) the competent operation of the activity concerned.
- 4.512 Section 17U (7) For the purposes of subsection (6), the competent operation of an activity includes the necessity for the activity to achieve adequate investment and maintenance.

#### **Comment**

- 4.513 Westpower has applied for a mixture of lease, licence and easement for different parts of the application as described in section 1 of this report and pages 13-14 of its application. The Department considers that the proposed lease and licences are consistent with the above requirements. That is that they relate to 1 or more fixed structures and facilities, the leases are required for both public safety and physical security and the competent operation of the hydro scheme. The access roads between the portal and intake and the access road from Macgregors Creek to the powerhouse and the lower tunnel portal do not require exclusive possession and the concessions would be in the form of an easement. Construction and maintenance of new and existing walking tracks would also be by way of an easement.

## **PLANNING INSTRUMENTS**

### **Section 17W (1) Relationship between Concessions and Conservation Management Strategies and Plans**

- 4.514 Section 17W(1) provides;

*“Where a conservation management strategy or conservation management plan has been established for a conservation area and the strategy or plan provides for the issue of a concession, a concession shall not be granted in that case unless the concession and its granting is consistent with the strategy or plan.”*

- 4.515 Section 17W(2)(b) provides where;

*“The relevant conservation management strategy or conservation management plan does not make any provision for the activity to which the application relates in the conservation area,- the Minister, after complying with the provisions of sections 17S, 17T, and 17U, may grant a concession.”*

- 4.516 Section 17W(3) of the Conservation Act states that

*“The Minister may decline any application, whether or not it is in accordance with any relevant conservation management strategy or conservation management plan, if he or she considers that the effects of the activity are such that a review of the strategy or plan or the preparation of a strategy or plan is more appropriate.”*

### **Provisions of Conservation General Policy (CGP) 2005**

- 4.517** The proposed Hydro Scheme would be located on land managed pursuant to the Conservation Act 1987. The CGP 2005 provides guidance for the implementation of the Conservation Act and other conservation related legislation. Conservation management strategies and plans prepared under this legislation must be consistent with the CGP 2005, although existing approved conservation management strategies and plans will continue to have effect until they are amended or reviewed, except where they clearly derogate from the CGP. The relevant provisions of the CGP are summarised and discussed below:

#### **CGP Policy 2(e)**

- 4.518 Tangata whenua will be consulted on specific proposals that involve places or resources of spiritual or historical and cultural significance to them. Te Runanga o Makawhio and Te Runanga o Ngati Waewae have not raised any concerns in terms of cultural effects during the consultation process. They have indicated however that they intend to look at the finer details with Westpower.

#### **CGP 3(e)**

- 4.519** *“People and organisations interested in public conservation lands and waters should be consulted on specific proposals that have significance for them.”* Whitewater NZ Inc was consulted and provided information regarding the application. If the application is proposed to be granted it would be publicly notified.

#### **CGP Policy 4.5 - Geological features, landforms, and landscapes.**

4.520 Policy 4.5 (b) states that: *“Activities which reduce the intrinsic values of landscape, landform and geological features on public conservation lands and waters should be located and managed so that their adverse effects are avoided or otherwise minimised.”*

‘Intrinsic value’ is defined in the CGP as: *“A concept which regards the subject under consideration as having value or worth in its own right independent of any value placed on it by humans.”*

#### **CGP Policy 4.6 – Ecosystem Services**

4.521 Ecosystem services are defined in the CGP as a wide range of conditions and processes *“through which natural ecosystems, and the species that are a part of them, help sustain and fulfil life.”*

4.522 Policy 4.6(a) states that Activities on public conservation lands and waters should be *“planned and managed in ways which avoid or otherwise minimise adverse effects on the quality of ecosystem services.”*

CGP Policy 4.5(b) and 4.6 (a) noted above require an analysis of the effects of the proposed activities on the various conservation values to draw a conclusion in respect of consistency with these policies. This re-enforces the requirements of part 3B of the Conservation Act in respect of commercial activities (section 17 U - matters to be considered when granting a concession). The information indicates that while adverse effects are not able to be avoided many are able to be mitigated adequately. Nevertheless, there are some significant adverse effects remaining. In the context of policy 4.5(b) you will need to determine whether the proposed mitigation of significant adverse effects relating to natural landscape at the local scale is adequate. If not, the requirements of policy 4.5(b) would not be satisfied. The consequence of this is that there would be difficulty in granting the application since its granting would unlikely be consistent with section 17W (1) of the Conservation Act.

#### **CGP Policy 9 – People’s Benefit and Enjoyment**

4.523 Policy 9.1(a) of the CGP states that:

*“Recreational opportunities will be provided on public conservation lands and waters. Where provided, they should be consistent with the values of and outcomes planned for places.”*

4.524 Policy 9.1(f) states that *“Recreational opportunities at places should be managed to avoid or otherwise minimise any adverse effects (including cumulative effects) on:*

- i. natural resources and historical and cultural heritage where required by the relevant Act;*
- ii. the qualities of peace and natural quiet, solitude, remoteness and wilderness, where present; and*
- iii. the experiences of other people”*

4.525 In terms of policy 9.1(a) the outcomes planned for the West Coast Conservancy and the Hokitika Place are discussed below under CMS Section 4.1.1 please refer to this discussion and analysis.

4.526 In terms of policy 9.1(f) it is considered that this policy is aimed at the effects of recreation that must be managed, not the effects of something else on recreation therefore it is not relevant.

#### **CGP Policy 11 – Activities Requiring Specific Authorisation**

4.527 Policy 11 (a) - (e) deals with activities requiring specific authorisation, including concessions. It specifies that activities should avoid, remedy or mitigate any adverse effects (including cumulative effects) and maximise any positive effects. Both the Department and concessionaires should monitor effects, including effects on public enjoyment, to inform future management decisions. Concessionaires are to be responsible for the safe conduct of their operations.

4.528 Policy 11.1(b) states *“All activities on public conservation lands and waters which require a concession or other authorisation should, where relevant, avoid, remedy or mitigate any adverse effects (including cumulative effects) and maximise any positive effects on natural*

*resources and historical and cultural heritage, and on the benefit and enjoyment of the public, including public access.”*

### **CGP Policy 11.3- Utilities**

4.529 Utilities are defined in the CGP as:

*“Includes but not limited to: structures and infrastructure for telecommunications; energy generation and transmission; sewerage; water supply and flood control; oil and gas; roads and airstrips; hydrological and weather stations.”*

4.530 Under this definition the proposed hydro scheme would be considered a utility. Policy 11.3 states:

- “(a) Utilities may be provided for on public conservation lands and waters where they cannot be reasonably located outside public conservation lands and waters, or if specifically provided for as a purpose for which the place is held.*
- (b) When new utilities are installed or existing utilities are maintained or extended, they should be of a scale, design and colour that relates to, and is integrated with, the landscape and seascape.*
- (c) Public access to utilities may be denied where necessary for the protection of public safety or the security or competent operation of the activity concerned.*
- (d) Utilities should, wherever possible, be located in, or added to, an existing structure or facility and use existing access options.*
- (e) Utilities that are redundant should be removed from public conservation lands and waters and the site restored as far as practicable to a natural state to minimise effects on the landscape.”*

4.531 Policies 11.3 (a)-(d) of the CGP provide for utilities (including roads) where they cannot reasonably be located outside public conservation lands and waters. Any new utilities should be of a scale, design and colour that relates to and is integrated with the landscape. Public access to utilities may be denied where necessary for public safety, or the security of competent operation of the activity. The utilities should, wherever possible, be located in, or added to, an existing structure or facility and use existing access options.

4.532 Policy 11.3(a) reinforces the consideration required under section 17U(4) of the Conservation Act which states;

*“The Minister shall not grant any application for a concession to build a structure or facility, or to extend or add to an existing structure or facility, where he or she is satisfied that the activity-*

- (a) could reasonably be undertaken in another location that-*
  - (i) is outside the conservation area to which the application relates; or*
  - (ii) is in another conservation area or in another part of the conservation area to which the application relates, where the potential adverse effects would be significantly less...”*

4.533 This matter is already considered earlier in this report under 17(U) (4) – Structures. The Department considers that Westpower has carried out an extensive investigation of a number of alternative sites both outside of the Waitaha Forest Conservation Area and in other conservation areas on the West Coast within the Westpower distribution area (from Lyell in the North to Paringa in South Westland.)

4.534 Given the detailed assessment of alternative locations and the selection criteria for the scheme, the Department is satisfied that the proposed hydro scheme structures and access road could not be reasonably undertaken in another location that is either outside the conservation area to which the application relates, in another conservation area, or in another part of the

conservation area to which the application relates, where the potential adverse effects would be significantly less. Nor does the Department consider that Westpower could reasonably use an existing structure or facility without the addition (of the proposed structures).

- 4.535 In terms of CGP policy 11.3 (b) it is considered that there are a range of measures proposed that help integrate the structure with the landscape, such as facing visible parts of the intake, weir and portals, the colour for the power house being 'ironsand' and a suitable planting plan to be developed for around the powerhouse /bund area.
- 4.536 In terms of policy 11.3 (c) in relation to public access being denied only where necessary for the protection of public safety or the security or competent operation of the activity concerned, this matter is already considered in this report under 17U(5), (6) and (7). There are a number of areas under application that meet the requirements for a lease type of concession both during construction and operation, where exclusive use would be required for public safety, physical security and the competent operation of the proposed hydro scheme.
- 4.537 In terms of policy 11.3 (d) there are no other existing structures to which this structure could be added to nor is there any other access option.
- 4.538 Policy 11.3 (e) also states that utilities that are redundant should be removed from public conservation lands and waters and the site restored as far as practicable to a natural state to minimise effects on the landscape.
- 4.539 If a concession for the proposed hydro scheme is granted then it is recommended that special conditions are included that require the structures to be removed at the expiry of the concession and also for the bond conditions proposed by Westpower conditions 2.1-2.7 be included in any concession granted. Standard conditions in the lease contract provide for the removal or otherwise of all structures and are therefore not required as Special Conditions.
- 4.540 Utilities are also discussed further below under the West Coast CMS planning provisions 3.7.11 'Utilities'.

#### **Conclusion Conservation General Policy**

- 4.541 Subject to adequate and reasonable avoidance, remediation and mitigation or otherwise minimisation of potential adverse effects on terrestrial fauna and flora values including adverse effects on birds and bats, lizards, invertebrates, as well as the effects on the aquatic ecology, cultural and historical values, it is considered that the proposed construction and operation of the hydro scheme and associated facilities would be consistent with the provisions of the Conservation General Policy 2005 in terms of these specific matters.
- 4.542 You need to consider whether or not the mitigations proposed would be such that the scale, design and colour relates to, and is integrated adequately with the landscape in order to be consistent with this policy 11.3(b).

#### **West Coast *Tai Poutini* Conservation Management Strategy 2010-2020 (CMS)**

- 4.543 The CMS has a principal objective requiring concessions to comply with Part 3B of the Conservation Act 1987 and not to compromise the objectives of the CMS, national park management plans or any conservation management plans.
- 4.544 Key relevant provisions of the CMS are analysed below.
- 4.545 Section 3.1.2.1 Treaty of Waitangi relationships –

Objective 1 *To give effect to the principles of the Treaty of Waitangi when interpreting and administering conservation legislation.*

Policy 3 *Papatipu Rūnanga and, where required, Te Rūnanga o Ngāi Tahu will be consulted on specific proposals that involve places or resources of spiritual or historical and cultural significance to them.*

#### **Comment**

4.546 Te Runanga o Makawhio and Te Runanga o Ngati Waewae have not raised any concerns in terms of cultural effects during the concession consultation process.

### **CMS Section 3.3 Natural Heritage Conservation**

4.547 The CMS describes natural heritage as including all indigenous species, the places they live, the physical and biological systems with which they interact (e.g. air, water, soil, habitats and ecosystems), and geological features, landforms and landscapes.

4.548 The CMS states that the overall aim of the Departments approach is to prevent further loss of indigenous biodiversity by removing as many human-induced disturbances as possible and using various methods to greatly reduce the impact of threats that cannot be completely removed.

4.549 The CMS describes the main threats to terrestrial biodiversity values. These include currently present and newly colonising pest species. For freshwater biodiversity values, the CMS states maintenance of the natural character and quality of waterways and wetlands is crucial for the survival of freshwater invertebrates, fish and bird species as well as the continuation of freshwater ecosystem services. The CMS identifies a variety of human activities that can adversely affect geodiversity and landscape values, including earthworks and roading, development of utilities, infrastructure or other buildings in natural settings, and native vegetation clearance.

### **CMS Section 3.3.3.2 Maintenance and Restoration of the Indigenous Natural Character of Ecosystems**

#### **4.550 Objective 1**

To maintain, and restore where practicable, the indigenous natural character of the full range of the West Coast Te Tai o Poutini terrestrial, freshwater and marine ecosystems.

4.551 To achieve this objective the CMS states a number of policies. Policy 1 is relevant to this application;

#### **Policy 1**

*Management of threats to terrestrial and freshwater species, habitats and ecosystems across all public conservation lands on the West Coast Te Tai o Poutini should be prioritised, taking into account the need to:*

- a) prevent the loss of indigenous species and the full range of their habitats and ecosystems;*
- b) maintain contiguous sequences of indigenous ecosystems (e.g. from mountains to sea);*
- c) maintain representative examples of the full range of indigenous ecosystems;*
- d) maintain populations of indigenous species, habitats and ecosystems with unique or distinctive values;*
- e) achieve recovery of threatened indigenous species (including their genetic integrity and diversity) and restore their habitats where necessary;*
- f) restore threatened indigenous ecosystems and connections between ecosystems where necessary;*
- g) maintain the ecological integrity of indigenous ecosystems consistent with the purposes for which the land is held;*
- h) protect recreational freshwater fisheries and freshwater fish habitats; and*
- i) achieve integrated management at priority sites.*

### **Comment**

4.552 The effects on terrestrial and freshwater species and ecosystems have been discussed in this report under an analysis of section 17U(1) (b) and (c). The following summarises the main effects of the proposed hydro scheme on indigenous species and their habitats and ecosystems

Terrestrial vegetation/habitat

4.553 The Hydro scheme would result in a permanent loss of 3.62 ha of terrestrial vegetation. Nevertheless, the overall impact on vegetation associations is considered to be low and to be adequately mitigated for (notwithstanding an impact on what is currently an entirely intact site that would result in some loss of conservation values, albeit minor).

#### Birds and Bats

4.554 The greatest impact on birds and bats is considered to be the potential loss of bat roosting trees where the felling of an individual tree containing a bat roost could be significant. However, additional conditions including tree felling protocols that would help ensure any bat roost trees are avoided have been proposed. The Department considers these would adequately avoid, remedy or mitigate this potential impact.

#### Lizards

4.555 The likely presence of a threatened gecko species and total removal of less well represented 'At Risk' skink habitat is considered to be at least a potential significant local adverse effect and potentially a nationally significant adverse effect and would cause a loss of biodiversity values. Additional conditions such as requiring a lizard salvage procedure to be prepared so that lizards can be moved from the footprint prior to any land disturbance have been recommended in this report. The Department considers these conditions would adequately avoid, remedy and mitigate any potentially adverse effects on lizards.

#### Blue Duck

4.556 The area under application has been assessed to have high values for blue duck and their habitat and that the scheme would change the habitat. But the Department agrees with Westpower that a blue duck population should continue to be sustained if the proposed and recommended special conditions are adhered to. The Department considers that a similar or possibly better habitat for blue duck could result from mitigation measures.

### **CMS Section 3.3.3.3 Management of Fresh Water Fisheries**

4.557 Objective 1

*“To prevent further extinctions of indigenous freshwater fish species and declines in species abundance and range.”*

4.558 To achieve this objective the CMS states a number of policies. Those relevant to this application include;

#### Policies

1. *“Existing and potential threats affecting indigenous fish populations, including barriers to migration (see Policies 2-4), habitat degradation and loss (see Section 3.3.1.5), introduction of pest species (see Policy 9 and Section 3.3.1.5), and interactions between exotic fish, including sports fish, and indigenous fish (see Policy 9) should be addressed.*
2. *The Department should safeguard fish migration through application of the Freshwater Fisheries Regulations 1983 fish passage provisions, advocacy through local authority planning processes, and monitoring.*
4. *Where of benefit to native fish species, the Department should advocate for the removal of barriers or the installation of fish passes that allow native fish to travel both upstream and downstream, and monitor the effectiveness of such fish passes.”*

#### **Comment**

4.559 The primary effect of the hydro scheme on aquatic ecology would be the diversion of 23 cumecs which would mean a reduced flow from the mainstem of the river over about 2.6km (current mean flow of 35 cumecs) leaving a residual flow of no less than 3.5 cumecs immediately below the intake. Survey work by Westpower indicates the section of the river affected by the diversion carries low densities of macro invertebrates, native fish and aquatic plant populations with limited species diversity. These include populations of At Risk native species such as the longfin eel, koaro and torrent fish. The tributary streams protected from the mainstem's frequent

flooding and high sediment regime are more stable and support ecologically more diverse aquatic flora (including bryophyte assemblages) and fauna which are more sensitive to effects than the mainstem. Main concerns include the effects:

- a) Of sediment and other potential contaminants such as concrete on the aquatic life entering the sensitive tributaries particularly the Stable Tributary and mainstem of the river during construction activities;
- b) Of scheme infrastructure on the existing migration access pathways of native fish and trout and consequent effects on recruitment levels and predation/competition effects; notably protecting the koaro, the only feature of the waters upstream of Morgan Gorge; and
- c) Of reduced flows on the long term persistence of mainstem At Risk fish species in the diversion reach

4.560 A range of proposed standard and special conditions are considered adequate to address Departmental concerns of the potential effects on freshwater values. Conditions include: a buffer zone around the Stable Tributary, avoiding the need to cross the tributary; and measures limiting soil disturbance and sediment runoff, along with rehabilitation promoting riparian protection.

4.561 A unique feature of the Waitaha is the presence of koaro only upstream of Morgan Gorge. Westpower has recognised the need to ensure the intake weir design maintains the 'status quo' fish passage features and does not permit the access of other competitive and predatory species - primarily eels and trout. Proposed conditions should ensure the design of the weir achieves this. This is also supported by Conditions directing a 5 year annual monitoring programme to determine that longfin eels and trout have not been able to traverse the weir structure while koaro passage at the weir is being adequately maintained. Other conditions to protect koaro during construction include a requirement that weir construction be avoided during the period when koaro may be migrating upstream.

4.562 Conservation of the aquatic community in the mainstem abstraction reach, including the populations of At Risk native fish is required to be consistent with the general provisions of the CMS. While it is likely that such populations would persist at some level, without monitoring the resulting impacts on their long term abundance and diversity cannot be determined. Cumulative loss of freshwater fish habitat under reduced flows drives overall declines in national populations. The Department is concerned to ensure that the albeit naturally low density populations of 'At Risk' native fish present in the diversion reach i.e. koaro, longfin eel and torrent fish, are conserved to a level consistent with general conservation purposes. The Department recommends that monitoring of the mainstem native fish populations be undertaken to determine this. An Environmental Monitoring Plan is proposed which would help ensure any concession conditions are met.

4.563 It is considered that as long as Westpower adheres to the proposed Standard and Special Conditions the proposed hydro scheme would be consistent with the CMS policies outlined above.

### **CMS Section 3.3.3.5 Threatened Species Management**

4.564 Objective 1

*"To prevent further extinctions or range contractions of indigenous species found on the West Coast Te Tai o Poutini." And Objective 2 "To ensure, where practicable, that representative populations of all indigenous species have long-term security in predominantly natural habitats within their natural range."*

4.565 To achieve the above objectives this section of the CMS states a number of policies. Policy 3 is relevant to this application:

*“Work on threatened species should focus on preventing extinction and maintaining genetic diversity. Subsequent priorities should include progressively increasing the security, range and population size of species”*

4.566 The Department considers that Westpower has addressed concerns around potential effects on threatened species in the footprint area, in particular bats, lizards, koaro and blue ducks. The effects on these species and a range of proposed measures to avoid, remedy and mitigate the effects are discussed in this report. It is not considered that the effects on threatened species in the area under application would affect their security, range and population. The Department considers that if Westpower adhered to the proposed Standard and Special conditions then the proposed hydro scheme would be consistent with the Threatened Species Management objectives and policies above.

### **CMS Section 3.3.3.6 Biosecurity and Pest Management**

4.567 Objective 1

*“To protect natural heritage values from the adverse effects of unwanted organisms, invasive weeds and animal pests.”*

Policy 3

*“Public and resource user awareness of the adverse impacts of unwanted organisms on indigenous species and ecosystems, and of ways to avoid their introduction and spread, should be enhanced.”*

#### **Comment**

4.568 A number of conditions are proposed to manage both weed and predator control including the establishment of a monitoring system for weeds and subsequent weed control and the establishment of predator control along the access route and around scheme infrastructure. The Department considers that the proposed methods are adequate to protect the natural heritage values under application and adjacent from the potential for increased effects from unwanted organisms, invasive weeds and animal pests.

### **CMS Section 3.3.4.3 Management of Geodiversity and Landscapes**

4.569 Objective 1

*“To protect geodiversity and landscapes from adverse effects of human use or management.”*

4.570 To achieve the above objective this section of the CMS states a number of policies. Those relevant to this application include;

#### Policies

- 1. “The Department should seek to protect and preserve the natural character, integrity and values of landscapes, landforms, geological and soil features and processes in all aspects of conservation management.*
- 2. Landscape assessments should be conducted on an as-needed basis, e.g. when considering proposals to develop utilities on public conservation land.”*

#### **Comment**

4.571 In terms of policy 2, as part of Westpower’s assessment of effects on Landscape Character, Westpower had a Landscape assessment prepared by Boffa Miskell, March 2014, ‘Natural Character, Landscape and Visual Effects’. Westpower also had this peer reviewed by Isthmus, which is another well know Landscape Architect Company. Westpower also submitted an Amended Headwork’s proposal in March 2015 and a further revised proposal in April 2016. The Department’s consultant has stated that the landscape assessment is considered to be substantive and thorough and that the assessment methodology used is considered best practice.

- 4.572 As a result of the landscape assessment (referred to above), a number of measures have been proposed to avoid, remedy and mitigate potential effects. Measures proposed include:
- Design of a low profile intake and weir structures;
  - Avoid using shotcrete to stabilise slopes;
  - Provide an alternative track taking recreationists away from the powerhouse up to Kiwi Flat;
  - Impose additional conditions requiring Westpower to; ‘face’ the visible parts of the weir, portal and any walled retaining type structures;
  - Provide detailed planting plans around the weir and
  - Ensure the colour of the powerhouse blends with the environment by using ironsand. All of these measures seek to protect and preserve the integrity and values of the landscape, landforms, and soil features of the areas under application.
- 4.573 In terms of CMS Section 3.3.4.3, policy 1, it is important to separate local scale landscape effects from broad scale landscape effects. With respect to the latter, Westpower considers the adverse effects to be low or moderate to low. The Department agrees with the Isthmus report that the adverse effects are greater than low rather than low. With respect to the former both Westpower and the Department consider the adverse effects of the Scheme would be significant at the top of Morgan Gorge, through the abstraction reach and at the powerhouse site. You will need to consider whether the measures proposed to mitigate effects would ensure consistency with policy 1 above or not, if not, the scheme would be inconsistent with policy 1 and therefore inconsistent with section 17W(1) of the Conservation Act.

### **CMS Section 3.5 Authorised Uses of Public Conservation Lands**

#### Objectives

##### 4.574 Objective 1

*“To implement Conservation General Policy 2005 and General Policy for National Parks 2005 when considering applications for authorisations on public conservation lands and waters.”*

Relevant Objectives Include:

##### Objective 3

*“To protect recreational opportunities from adverse effects of authorized uses of public conservation lands.*

##### Objective 5

*“To consult, where necessary, with Papatipu Rūnanga, conservation boards, the West Coast Fish and Game Council, authorisation holders, communities and other people and organisations over the consideration and granting of concessions, access arrangements and other authorisations for use of public conservation lands.”*

#### Policies

##### Policy 2

*“When approving concessions or other authorisations, specific conditions may be applied as deemed appropriate.”*

##### Policy 5

*“Consultation with Papatipu Rūnanga, Te Rūnanga o Ngāi Tahu and conservation boards on concessions, access arrangements and other authorisations for the use of public conservation lands will be early, ongoing, informed and effective.”*

#### **Comment**

- 4.575 Relevant considerations from the CGP’s are discussed earlier in this report.

- 4.576 Discussions on the potential effects on recreational values are found in the assessment of effects section of this report. A number of measures are proposed including an alternative track up the true right of the Waitaha River to take trampers away from the proposed powerhouse, ensuring continued access into the bottom of the Morgan Gorge for kayakers, designing the Weir in consultation with Whitewater New Zealand to provide for kayak access, providing information to the public on flow data and providing for two cease to abstract/no take days to allow for the potential kayaking of the Morgan Gorge.
- 4.577 The Department agrees with Westpower that the effects on kayaking on the Waitaha River would be high even after the proposed mitigation measures. You will need to consider given the above discussion whether you think the adverse effects are sufficiently mitigated to be consistent with objective 3 above. If not the proposal would be inconsistent with objective 3 of section 3.5 of the CMS and therefore inconsistent with section 17W(1).
- 4.578 Consultation with the Conservation Board and iwi has taken place as per the Department's standard processes.

### **CMS Section 3.6.1.1 Provision and Management of Recreational opportunities**

- 4.579 The West Coast CMS makes the following statements:

*“The West Coast Te Tai o Poutini provides a diversity of recreational opportunities, ranging from those in accessible locations to those in remote areas. Although the majority of people using its public conservation lands are on day trips, undertaking activities such as sightseeing, picnicking and short walks, the Conservancy is also widely recognised as a focus for recreational activities in more remote areas.*

*Roads provide ready access to a variety of different environments and recreational opportunities. Walking tracks, which range from short, wheelchair-standard nature walks to demanding multi-day tramps, assist people to appreciate the wild beauty of the West Coast Te Tai o Poutini. Public access to national parks and other public conservation lands is free of charge. Aircraft enable all paying clients, irrespective of age, health or physical ability, the opportunity to appreciate remote and rugged terrain.*

*The extensive tracts of remote lands, including gazetted wilderness areas, set the Conservancy apart from many other places in New Zealand. Walking, tramping, camping, wildlife viewing, hunting, fishing, caving, climbing, ski-touring, rafting, kayaking, boating, whitebaiting, mountain biking, horse riding, four-wheel driving and recreational gold fossicking may all be undertaken in a natural setting. The more remote localities provide people with the chance to experience solitude, challenge, independence, tranquillity and closeness to nature.”*

- 4.580 All public conservation lands on the West Coast Te Tai o Poutini, including national parks, have been zoned for different types and levels of recreational use. The Department's recreational opportunities spectrum (ROS) framework was used as a basis for creating these recreation zones and public conservation lands on the West Coast are divided into five different zones: (1) gazetted wilderness areas; (2) remote; (3) backcountry-remote; (4) frontcountry and (5) intense interest sites. During the development of the recreation outcome zones the recreational character, tourism focal points, recreational opportunities, existing patterns of use, access and existing authorised uses, including concessions were taken into account. The zoning system identifies broad recreation outcomes at Places, by describing where the major recreational facilities and services are and the areas that will remain free of high levels of public use<sup>39</sup>...
- 4.581 The West Coast *Te Tai o Poutini* Conservation Management Strategy states that

*“For the foreseeable future it is expected that the majority of people will continue to focus on recreational opportunities such as short walks and visitor centres, although it is likely that there will also be increasing interest in backcountry experiences. The major challenge the Department faces is maintaining the integrity of recreational*

<sup>39</sup> West Coast *Te Tai Poutini* Conservation Management Strategy 2010 – 2020 Volume 1 2010-2020 pages 114

*experiences within the spectrum of opportunities available (e.g. by protecting natural quiet, natural light and remoteness values). In some cases, it may be appropriate to permit an activity to take place at a low level and/or in a restricted area for an initial period, during which time the effects will be monitored closely, or even to prohibit a proposed activity. In other cases, it may be appropriate to expand the scale and/ or level of activity to cater for increasing demand. Management of issues associated with recreation and tourism activities is discussed in Section 3.6.4. ....”*

4.582 The Objectives in the CMS in respect of the provision and management of recreational opportunities are:

Objectives

1. *“To provide a comprehensive range of recreational opportunities that enable people with different capabilities and interests to enjoy and appreciate West Coast Te Tai o Poutini public conservation lands, whilst protecting natural, historical and cultural heritage from adverse impacts of recreational use.*
2. *To avoid or minimise conflicts between different users, including people undertaking different types of activities in the same location.*
3. *To raise awareness of the value (including physical, mental and cultural value) of outdoor recreation for the health of people and communities.”*

4.583 To achieve the above objectives this section of the CMS states a number of policies. Those relevant to this application include;

Policies

1. *“The Department’s recreational zoning framework should be used to identify and manage an appropriate range of recreational opportunities within the Conservancy’s public conservation lands and to minimise conflicts between different types of recreational uses.*
2. *The Department’s recreational zoning framework and appropriate restrictions on mechanised access and use should be implemented in order to safeguard natural, historical and cultural heritage and the ability of the public to experience solitude, peace and natural quiet in public conservation lands.*
3. *Recreation opportunities that are based on the special character and features of West Coast Te Tai o Poutini public conservation lands should be provided, taking into account existing opportunities available elsewhere in the country, both within and outside of public conservation lands.”*

**Comment**

4.584 The main thrust of section 3.6.1.1 is focused on recreational opportunities including the objective of avoiding or minimising conflicts between different recreation users. This section is therefore of limited use in the current context.

**CMS Section 3.6.1.4 Backcountry-Remote zone**

4.585 **Backcountry** - **remote** **zone**  
The proposed location of the Waitaha Hydro Scheme is located in the Backcountry – remote zone within the Hokitika Place.<sup>40</sup>

The CMS states:

*“The ‘backcountry-remote’ zone provides opportunities to access extensive natural settings where facilities are provided but a considerable degree of physical challenge, self-reliance and isolation is involved. Although users of these areas usually travel in groups for company and safety, the expectation is that groups will generally be small and that encounters with other groups will be infrequent, except on a limited number of high-use tracks (see Appendix 7) and rivers (see*

---

<sup>40</sup> Map 17 Hokitika Place recreation outcomes page 240 West Coast Te Tai Poutini Conservation Management Strategy Volume 1 2010-2020

Section 3.6.4.10). Huts and tracks that see relatively little use provide the opportunity for solitude for those who seek a greater sense of isolation and challenge but still need the security of some facilities, especially with the topographical difficulties and climatic extremes regularly encountered on the West Coast Te Tai o Poutini. Overnight use is more intensive at some sites and at certain times of the year.

Within the backcountry-remote zone an extensive network of backcountry facilities (such as roads, routes, tracks, huts, bridges, cableways and signs) and road-end facilities (car parks, shelters, track information) provide access to a wide range of backcountry experiences. Many of these facilities pre-date the establishment of the Department of Conservation (1987) and were originally provided by the New Zealand Forest Service for their wild animal control operations. As a result, many of the huts, tracks and bridges were not designed primarily as a recreational resource, although from the outset they were available for recreational use. Trampers, climbers, hunters and fishers have traditionally used these facilities and, in the past, access has been largely on foot. However, in some places these patterns are now undergoing change as new activities (e.g. kayaking, rafting, mountain biking) create demands for access to areas in the backcountry-remote zone. Increased use is also now being made of air access (see Section 3.6.4.2) for both new and traditional forms of backcountry recreation....”

#### Objectives

1. “To provide access to a range of recreational opportunities via facilities that enable people to enjoy challenging natural settings in the backcountry.
2. To enable people to access extensive natural settings where:
  - a) facilities are provided but a considerable degree of physical challenge, self-reliance and isolation is involved;
  - b) groups of recreational users are generally small and encounters with other groups are infrequent (except on a limited number of high-use tracks and rivers);
  - c) huts and tracks provide the opportunity for solitude for those who seek a greater sense of isolation and challenge, but still need the security of some facilities; and
  - d) overnight use is more intensive at some sites and at certain times of the year.”

4.586 To achieve the above objectives this section of the CMS states a number of policies. Those relevant to this application include;

#### Policies

1. “The backcountry-remote zone should be managed to meet the desired outcomes described in Part 4 of this CMS and in any relevant management plans, providing facilities and services that cater principally for the needs, interests and abilities of most backcountry comfort seekers and backcountry adventurers....
6. “Formed roads on public Conservation Lands located within the back-country remote zone may be available for motorised vehicle use ...”

#### **Comment**

4.587 The desired outcomes for the Backcountry-Remote Zone for the Hokitika Place is discussed later in this report under CMS section 4.2.6.7, refer to this section. The road that is proposed to be formed by Westpower for access into the powerhouse and tunnel portal would not be available generally for use by the public for motor vehicles, bikes or horses etc... as access to this road crosses private land. Foot access only into the site would continue to be available up the riverbed on the true right.

### **CMS Section 3.6.4.2 Aircraft**

4.588 CMS policies allow for 'Regular Aircraft Landings' to be authorised in the backcountry Remote Zone where Regular landings are defined as:

The relevant policies include;

1. *"Aircraft may be authorised to land within public conservation lands where this: ...  
c) is compatible with the statutory purposes for which the place is held ...  
d) is consistent with the objectives and policies for the relevant recreational zone/s ...; and  
e) does not compromise the desired outcomes for Places ...*

*Clauses (c)-(e) apply to applications for aircraft landings associated with ... non-recreational purposes (e.g. ... provision and servicing of utilities ...).*

2. *Aircraft landing sites on West Coast Te Tai o Poutini public conservation lands will be assigned to one of the following four categories, depending on which recreational zone the site is located in and the legal status of the site:*

...

*Regular: Regular landings are defined as occurring when a concessionaire undertakes 3 or more landings per day and/or 21 or more landings per annum, at specific sites. Regular landings may only be authorised within the backcountry-remote zone and may occur all-year-round or on a seasonal basis. Numbers and frequencies of landings should be considered on a case-by-case basis.*

*Irregular: Irregular landings are defined as no more than 2 landings per day, and no more than 20 per annum, at a given location<sup>41</sup>. Landings may be authorised for the purposes of transportation of personnel and/or equipment to or from a variety of possible locations within the ... backcountry-remote zone...*

*Occasional: 'One-off' permits for landings may be granted for specific purposes (short-term, one-off events such as ... management of utilities) at specific sites within the backcountry-remote zone...*

...

6. *Regular aircraft landings should be restricted to specified landing sites, where practicable."*

4.589 Westpower discuss aircraft movement requirements on p64 of their application. There could be 8 movements per day for the proposed construction period of 12-18 months, they state further that *"there would be periods of intense helicopter activity during construction eg when concrete is being delivered to the site, once construction was finished helicopter use would be occasional."*

4.590 The issue, however, is whether section 3.6.4.2 provides for the use of helicopters for the specific purposes of constructing the scheme. Such use is not necessarily incompatible with the statutory purposes for which the area is held (policy 1(a)) but the key issues are whether it is inconsistent with the objectives and policies of the back country remote zone (policy 1(d)) and whether it compromises the desired outcomes for place (policy 1(c)). Subject to later consideration as to whether the use of aircraft compromises the desired outcomes at place, the Department considers that the proposed use of helicopters is consistent with the aircraft policies and that aircraft landings during construction could be authorised by a "regular landings" concession during construction. Post- construction, it is recommended that aircraft landings for maintenance purposes would be better managed by way of a concession for Irregular landings, rather than on-going 'one-off' permits.

---

<sup>41</sup> A given 'location' is defined as 'any landing position within a one kilometre radius of the initial landing position'.

### **CMS Section 3.6.4.3 Animals**

4.591 Objectives and Policies in regard to 3.6.4.3 Animals, describe when it is appropriate for animals to be taken onto public conservation lands. The only reason identified by Westpower that animals would be taken onto the land under application would be if a dog was required for blue duck monitoring. The proposed activity would be consistent with the animal policies.

### **CMS Section 3.6.4.17 Vehicle Use**

4.592 Page 144 of the CMS contains a number of policies around vehicle use and identifies the types of roads that may be used by motorised vehicles, including “roads within public conservation land which may be available to authorised parties under certain circumstances ... Restrictions for such roads may be made by way of by-laws, regulations, or by allocation of keys to gates”. Policies 1, 7 and 11 are also relevant.

#### Policies

- 1 *“Vehicle use will be allowed on formed roads within public conservation land that are maintained to two wheel drive standard.*
  
  - 7 *The Department may control or exclude motorised vehicles from some roads where:*
    - a) *access by vehicles may adversely affect conservation values or other recreational users;*
    - b) *vehicle access is contrary to the management objectives for the place ;*
- or
- c) *there is a risk to public safety*

*These roads may be available to authorised parties under certain circumstances*

- 11) *In some circumstances, authorisations may be granted for the use of motorised vehicles on public conservation lands where roads have not been formed. (e.g research, search and rescue, emergency works)..”*

#### **Comment**

4.593 These vehicle use policies allows for authorisation to be granted for the use of motorised vehicles where roads have not previously been formed. The Department considers that this application is consistent with the Vehicle Use policies.

### **CMS Section 3.7.2 Activities on or in beds of Rivers or Lakes**

4.594 Policy 1

*“When assessing applications for any activity on or in the bed of a river or lake, consideration should be given to (but not limited to) the following guidelines:*

- a) *Adverse effects on freshwater and terrestrial species, habitats and ecosystems, historical and cultural heritage values, public access, recreation opportunities and amenity values should be avoided or otherwise minimised;*
- b) *Riparian vegetation should be maintained or enhanced;*
- c) *Activities should not damage riverbanks;*
- d) *No pests, weeds or other unwanted organisms (e.g. Didymo) should be likely to be introduced to, or become established within, the area as a result of the activity; and*
- e) *The natural character within the setting of the activity should be maintained.*

Policy 2

*Biological communities, physical habitat, channel profiles and substrate may be monitored, in order to evaluate and manage the long-term impacts of activities occurring on or in the beds of rivers or lakes.”*

#### **Comment**

- 4.595 In respect of effects on freshwater and terrestrial species, habitats and ecosystems, historical and cultural heritage values and public access these aspects are discussed under the relevant effects section of this report and conclude that the potential adverse effects are considered to be adequately avoided, remedied or mitigated with adherence to a range of proposed special conditions.
- 4.596 The Adverse effects on the recreation opportunities, especially kayaking, are considered by Westpower and the Department to be significant. Westpower has sought to mitigate these effects by offering 2 days' cease to abstract water. This would theoretically enable the kayakers to use the abstraction reach during these periods. How practical a means of mitigation this is and whether such measures are adequate is something you will have to form a view on. If you conclude that the mitigation measures are not adequate then the proposal would be inconsistent with policy 1(a) of this section and therefore inconsistent with section 17W(1) of the Conservation Act.
- 4.597 In regard to policy 1 b) consideration has been given to the effects on vegetation including effects on riparian margins. The effects and the proposed special conditions including the preparation of a rehabilitation management plan to avoid, remedy and mitigate the effects are considered to be appropriate and adequate. There would however be a residual impact on the quality of intactness; this is not considered to be significant.
- 4.598 In regard to policy 1 c) "*Activities should not damage riverbanks*", consideration has been given to the construction and design of all the structures proposed and while there would clearly be some changes to the river bank areas particularly around the Powerhouse area, a number of measures have been proposed to avoid, remedy and mitigate these adverse effects.
- 4.599 In regard to policy 1 d) above, special conditions are proposed that would require pest and weed control and monitoring including predator control along the proposed access route and around the scheme infrastructure is proposed along with standard Didymo clauses requiring compliance with Biosecurity New Zealand guidelines if the Concession for the Hydro Scheme was to be granted.
- 4.600 In regard to policy 1 e) consideration has been given to potential effects on the Natural Character of the areas under application. It is acknowledged that the area where the powerhouse and associated structures would be located has high landscape values, with the upper part of the Waitaha River (the intake area) having very high landscape values with near pristine levels of Natural Character. The design of the intake structures, site layout, power house and associated facilities all take into account how best to minimise the effects including for example 'facing' where possible the visible parts of the intake, weir, portal and any walled retaining type structures with site rock. Both Westpower and the Department consider that the changes to the intake site would still however 'maintain a high magnitude of adverse natural character effects.' Likewise, they consider the effects on the lower parts of the scheme including the powerhouse area are still considered to be high.
- 4.601 You will need to consider in regards to policy 1 e) "*the Natural character effects within the setting of the activity should be maintained*" whether the proposed mitigation measures reduce the potential adverse effects to the degree where the activity is consistent with this policy or whether the proposal would be inconsistent with policy 1(e) of this section and therefore inconsistent with section 17W (1) of the Conservation Act 1987 with the result that the application could not be granted.
- 4.602 In regards to policy 2 monitoring is proposed to measure effects on various features such as koaro, blue ducks, water quality and weed invasion.

### **CMS Section 3.7.11 Utilities**

- 4.603 The relevant policy in the CMS in respect of utilities that needs additional consideration to those policies in the Conservation General Policy which have already been discussed above under CGP 11.3 Utilities is:

#### Policy 3

*“The development, installation, maintenance and management of utilities on public conservation lands should be consistent with the desired outcome for the relevant place/s.” (see Chapter 4.2).*

- 4.604 The footprint of the proposed Hydro Scheme is in the West Coast Conservancy and the Hokitika Place, the outcome statements for the West Coast Conservancy and the Hokitika Place are considered below under the CMS Sections below.

#### **CMS Section 4.1 Desired Outcome for the Conservancy**

##### **CMS Section 4.1.1 The West Coast Tai Poutini Conservancy in 2020.**

4.605

*“...management undertaken by the Department focuses on ... identification, conservation, protection and restoration of natural, historical and cultural heritage values; and provision for appropriate recreation, use and enjoyment of public conservation lands... Business opportunities and provision of public goods or services that are consistent with conservation outcomes are enabled.”*

##### **Comment**

- 4.606 Policy 4.1.1 allows for the provision of appropriate use and business opportunities consistent with conservation outcomes.

##### **CMS Section 4.1.1.4 Proactive management of conservation values in 2020.**

*“The Conservancy’s natural, historical and cultural heritage values are proactively managed, rehabilitated, restored or enhanced. The decline of indigenous biodiversity is halted. The security of threatened species unique to New Zealand and most at risk from extinction is improved. No extinctions of West Coast Te Tai o Poutini indigenous ... freshwater and terrestrial species occur and managed threatened species have a lowered risk of extinction.’ ...*

*‘The connectivity and natural functioning of mountain-sea ecosystems ... and riparian areas is improving. Advocacy for protection of freshwater fish habitats ... is successful and artificial impediments to fish passage are progressively removed.’ ... ‘Further spread of unwanted exotic species is prevented, and no new unwanted organisms become established within public conservation lands.”*

##### **Comment**

- 4.607 The Department considers the effects on biodiversity would be adequately avoided, remedied and mitigated through a range of measures. Methods to avoid or minimize effects on any threatened species have been proposed; including the use of tree felling protocols to protect bats; blue duck conditions including monitoring for changes to blue duck numbers with triggers for additional mitigation methods including increased predator control or a whoo operation nest operation to ensure pre construction blue duck populations are maintained; additional conditions have been proposed to carry out more surveys for lizards to ensure At Risk lizards are identified and mitigated for.
- 4.608 Effects on freshwater values are considered to be low and the few At Risk species present (including long finned eel, koara and torrent fish) are considered to be adequately mitigated by the use of a range of conditions including; a buffer zone around the Stable Tributary; avoiding the need to cross the stable tributary and measures limiting soil disturbance and sediment run off as well as rehabilitation of any disturbed riparian margins.
- 4.609 It is acknowledged that it is not possible to predict the extent to which the natural patterns of fresh water diversity are conserved in the abstraction reach therefore proposed monitoring must demonstrate that At Risk fish species are continuing to be being adequately conserved and if adverse effects are detected remedial measures must be agreed.

- 4.610 Effects on terrestrial vegetation and habitat is considered to be low and adequately mitigated for however it is acknowledged that there would be an minor impact on what is currently an entirely intact site.
- 4.611 The connectivity and natural functioning of mountain – sea ecosystems and riparian areas for the abstraction reach in the Waitaha would potentially diminish by a small degree. It is unlikely that these impacts would adversely affect the overall connectivity and natural functioning of mountain – sea ecosystems and riparian areas for the West Coast in any more than a minor way.
- 4.612 It is also considered that the need for the passage of koaro over the proposed weir has been acknowledged along with the need to prevent the passage of trout and eels upstream of the weir, conditions require the weir to be designed using a collaborative process and appropriate specialists to achieve this.

**CMS Section 4.1.1.5 Protection of conservation values from adverse effects of authorised uses in 2020.**

*“The Department safeguards the Conservancy’s natural, historical and cultural heritage values by identifying and taking appropriate action to avoid or otherwise minimise adverse effects of human use or management. Threats to, or adverse effects on, natural, historical and cultural heritage values are identified and assessed accurately and in a timely manner. Potential threats and risks to natural, historical and cultural heritage values are avoided or are managed in ways that are consistent with the desired outcomes for Places described in Chapter 4.2 of this CMS.”*

**Comment**

- 4.613 The potential adverse effects from the proposed hydro scheme on natural, historical and heritage values have been identified and discussed in this report, a range of measures have been proposed that would help to avoid, remedy and mitigate the adverse effects. Consistency with the desired outcomes for the Hokitika Place described in Chapter 4.2 of the CMS is discussed below.

**CMS Section 4.1.1.6 Recreational use and enjoyment of public conservation lands in 2020.**

*“People appreciate and enjoy public conservation lands and receive in full measure the inspiration, enjoyment, recreation and other benefits that may be derived from them, where these are not inconsistent with the protection of natural, historical and cultural heritage.’ ... ‘... increasing use is made of backcountry facilities and remote zones.”*

**Comment**

- 4.614 The proposed activity would not prevent the continued appreciation and enjoyment of the Waitaha Catchment, an improved access track as proposed would help facilitate better access into Kiwi Flat. There would potentially be a decrease in the appreciation and enjoyment of the area for a small number of recreationists including kayakers from the adverse effects of on Natural Character and kayaking values.

**CMS Section 4.2.6 Desired Outcome for Hokitika Place**

- 4.615 Section 4.2.6 of the CMS describes what the Hokitika Place will be like in 2020 if the direction of the CMS is followed.

- 4.616 The relevant desired outcomes from the CMS for the Hokitika place are discussed below;

**CMS Section 4.2.6.3 Geodiversity, landform and landscapes in 2020.**

*“The overall character of geodiversity, landforms and landscapes in Hokitika Place is maintained in its 2010 condition ...”, a summary of which is presented below.*

*The extensive alluvial gold deposits throughout much of Māwhera derive mainly from the greywacke rocks of Paparoa and Reefton and subsequent glacial processes. Both extensive coal measures and fragmented areas of gold-bearing quartz lie at the southern end of the Paparoa Range. Away from the ranges younger sedimentary*

*rocks (limestone, sandstone, siltstone) form much of the lowland hill country between Rapahoe and Taramakau. The topography of Māwhera includes broad valleys close to the Main Divide. West of the Alpine Fault, granite summits of the Hohonu Range, Mount Te Kinga and Bell Hill rise above subsidiary ranges of the Southern Alps Kā Tiritiri o te Moana, while the coal measures of the southern Paparoa Ranges provide some of the most barren terrain found anywhere on the West Coast Te Tai o Poutini...*

#### **Comment**

- 4.617 Management of Geodiversity and landscapes is considered already above in relation to CMS policy Section 3.3.4.3 further consideration in relation to this specific outcome is given below.
- 4.618 The Department acknowledges the effects on natural character, the effects section of this report concludes that:

#### Top of Morgan Gorge/Headworks

- 4.619 At a broad scale, the intake structure “...will affect the remote values of Morgan Gorge and introduce a small node of industrial activity into an otherwise remote area.” The Department agrees with this conclusion. At the broad landscape scale, the intervention of the headworks area on Natural Character would be considered moderate.
- 4.620 Westpower’s consultant considers that the entrance to the gorge is a sensitive landscape feature and that the built changes to the area “...maintain a high magnitude of adverse natural character effects”. This is based on the fact that the intake structure is an artificial element in a highly natural setting. The Department agrees with this assessment and conclusion.

#### Morgan Gorge

- 4.621 Westpower considers that there would be a moderate or moderate to low effect on the landscape character at the broad scale (catchment based) through the abstraction reach in terms of the change of water flow. But at the local scale both Westpower and the Department consider the effects on landscape character would be high.

#### Power House Site

- 4.622 The powerhouse building would form the primary visual change to the site where effects would be greatest. Westpower and the Department consider that the visual effects of the powerhouse would locally be ‘high’.

#### Conclusion

- 4.623 At a local landscape level both Westpower and the Department consider the effects on natural character, landscape and visual amenity to be high. At a broad landscape scale, the effects on landscape character (catchment based) are considered by the Department to be ‘moderate’.
- 4.624 The outcome statement for the Hokitika Place envisages that the overall character of geodiversity, landforms and landscapes will be maintained. You will need to consider whether the methods proposed to reduce effects from this proposal would be sufficient to ensure this would be the case if the proposed hydro scheme was granted, if not the proposal would not be consistent with this outcome and therefore inconsistent with section 17W(1).

#### **CMS Section 4.2.6.4 Indigenous biodiversity in 2020.**

4.625

*... natural heritage values are maintained to at least the same condition they were in as at 2010” ... “The numerous ... waterways in the Hokitika Place remain important habitat for rarer water birds and native freshwater fish ... [including] koaro in alpine streams” ... “Large and relatively undisturbed river systems ... have retained connectivity to their floodplains” ... “Headwater catchments continue to provide important habitat for blue duck whio” ... “Containment and /or treatment of pollutant discharges, along with restoration of freshwater fish*

*habitats, result in no further degradation of aquatic ecosystems” ... “... kea are present in the subalpine and alpine habitats of Hokitika Place” ... “The range of western weka does not contract and their abundance does not reduce. New Zealand falcon kārearea, South Island kākā ... and native bats pekapeka populations continue to exist.” ... “Invasive weeds ... are rarely found and are prevented from spreading further southward into Te Wāhi Pounamu Place.*

#### **Comment/Conclusion**

- 4.626 The effects on indigenous biodiversity is discussed in detail in the effects sections of this report and under CMS policy 3.3.3.2 - Maintenance and Restoration of the Indigenous Natural Character of Ecosystems on biodiversity values. It is considered that as long as Westpower adheres to the proposed and recommended conditions the proposed hydro scheme would be consistent with this policy.

#### **Hokitika Backcountry-Remote Zone**

##### **CMS Section 4.2.6.7 People Benefit and Enjoyment in 2020 states:**

4.627

*New Zealanders continue to regard the extensive Hokitika backcountry as the country’s backcountry adventurer ‘capital’, because of the comprehensive network of backcountry tracks, routes and huts. Opportunities range from multi-day valley and trans-alpine tramping via remote and challenging terrain, to day tramps and weekend trips to accessible huts or natural hot pools (the latter are found in several valleys, including at Cedar Flats in the Taipo valley (and Morgan Gorge in the Waitaha valley). A number of tramping tracks and historic huts are associated with historic routes across the Southern Alps Kā Tiritiri o te Moana, especially Harper Pass Noti Taramakau, Browning Pass Noti Raureka and Whitcombe Pass Rakaia Wai Pakahi. Numerous opportunities exist for extended north to south traverses utilizing routes and passes into the Newton Saddle, Mikonui, Tuke, Mungo and Waitaha catchments. Circuitous routes are also available, such as the Scamper-Torrent circuit up the Waitaha Valley and down the Smyth Range. Recreational facilities are generally concentrated on valley floors along the more popular tramping and traditional access routes. However there are several huts, ridge routes and a few bridges specifically sited to maximise ‘non-tracked’ linkages between valleys. Such facilities include Bluff Hut, Sir Robert Hut, Moonbeam Hut, County Stream Hut, County Junction swingbridge, Price Basin Hut and Ivory Lake Hut<sup>42</sup>.*

*..... Hokitika is a world-renowned rafting and whitewater kayaking destination. The Styx, Toaroha and Kakapotahi rivers and Totara Lagoon are maintained as key places for kayaking that are free from high numbers of other users during kayaking trips (see Section 3.6.4.10)....*

#### **Comment/Conclusion**

- 4.628 Westpower notes the Recreation Report states that ‘A hydro development’, as such, is not compatible with the back-country remote management category (this is because the backcountry-remote zone is a recreation management mechanism and is not intended to relate to other types of activities) but it concludes that “*the outcomes of the CMS for the Hokitika place will still be achieved with the scheme in place.*” The Department agrees.
- 4.629 The Department considers that the proposed hydro scheme is consistent with the back-country remote zone objectives and policies 3.6.1.4 above. The desired outcomes for the Hokitika Place would still be maintained although the Department considers there would be a degree of loss of solitude and sense of isolation for those recreating in the location of Kiwi Flat and the powerhouse. However it is considered that huts and tracks would still provide the opportunity for solitude for those who seek a greater sense of isolation as required by policy 3.6.1.4 2 (c).

---

<sup>42</sup> Desired outcome for Hokitika place page 248 West Coast *Te Tai Poutini* Conservation Management Strategy Volume 1 2010-2020

- 4.630 A range of recreational opportunities enabling people to enjoy the natural setting of the Waitaha River would still remain, proposed mitigation methods that help the structures blend in with the landscape and alternative track access would help to avoid or otherwise reduce effects on the natural setting.

## 5.0 Relevant information about the applicant

### Convictions on any charge related to the activity applied for or on any conservation related issue:

- 5.1. Westpower agrees in their application that the applicant nor any of its company directors, trustees, partners or anyone involved with the application has been convicted of any offence nor have any current criminal charges pending before the court.

### Past compliance with concession conditions:

- 5.2. Westpower has held a number of Permissions with the Department the most relevant being the Amethyst Hydro Limited Concession WC-23915-OTH which is owned by Westpower. There have been no compliance issues with this Concession.

### Credit check result:

- 5.3. Westpower is an existing client with a good record, no credit check was required.

## 6.0 Proposed operating conditions

### Concession Activity:

- 6.1. The construction and ongoing operation of a hydro electric power scheme, including maintenance repairs and all activities which are reasonably necessary for the competent operation of the scheme, in the areas shown on the attached plan in appendix 4 and subject to the standard contract conditions for lease, licence and easements and the Special Conditions listed in Appendix 1 of this report.
- 6.2. Including the following temporary and permanent structures and concession type:

	<b>Scheme Component</b>	<b>Concession Type</b>
<b>Headworks</b> Permanent structures	Weir, diversion, intake channel, intake portal and upper tunnel portal.	Lease
<b>Access road and transmission line</b> Permanent structures	Access road from tunnel to power house across Macgregor Creek, including associated drainage and protection works Overhead power lines.  Short intake access road between tunnel portal and intake and associated protection works.  Foot access track between existing DOC foot access track on the true right and main tunnel entrance  Alternative foot access track on the true right from MacGregor Creek to the top of Morgan Gorge	Easement

<b>Headworks</b> Temporary structures	A raised platform for staff facilities and work area. A site for assembly and storage of machinery above flood levels. Access route between intake site and storage/assembly areas. Foot access from existing DOC foot tracks on true right and contractor's facilities platform during construction.	Licence
<b>Subsurface structures</b>	Tunnels and sediment settling basins.	Lease
<b>Powerhouse site</b> Permanent Structures	Tunnel portal, penstock, powerhouse and surrounds, switchyard, tailrace, stop-bank and flood protection works.	Lease
<b>Powerhouse site</b> Temporary structures	Staging/storage areas and treatment pond.	Licence

### **Section 17 Z Term of Concession**

6.3. Section 17 Z of the Conservation Act states:

- (1) *A lease or a licence may be granted for a term (which term shall include all renewals of the lease or licence) not exceeding 30 years or, where the Minister is satisfied that there are exceptional circumstances, for a term not exceeding 60 years.*
- (2) *A permit may be granted for a term not exceeding 10 years but shall not be renewable.*
- (3) *An easement may be granted for a term not exceeding 30 years, but—*
  - *(a) in exceptional circumstances, the Minister may grant a term not exceeding 60 years:*
  - *(b) where the easement provides a right of way access to a property to which there is no other practical access, the term may be for such longer period as the Minister considers appropriate:*
  - *(c) where the easement is for a public work (as defined in the Public Works Act 1981), the term may be for the reasonably foreseeable duration of that public work.*

6.4. Westpower has applied for a term of 49 years on the basis that the level of financial investment that is required for a hydro scheme of this nature is very large. Westpower has stated *the total construction cost is estimated at between \$80-\$100 million* and also comments on the need to plan for the long term needs of the community. The Department considers that these matters are of such a high level of investment and planning for community needs in terms of power provision are exceptional and that a term of 49 years is considered reasonable and appropriate.

### **Section 17X - Power of Minister to impose and enforce conditions**

6.5. In granting any concession, the Minister may impose conditions relating to fees, compensation and bonds as he or she considers appropriate for the activity, structure, or facility. In terms of the setting of fees, compensation and bonds for the Waitaha Hydro proposal the following clauses from section 17X of the Conservation Act are relevant;

- (c) *the payment of rent, fees, and royalties as provided in section 17Y:*
- (d) *the payment of compensation for any adverse effects of the activity on the Crown's or public interest in the land concerned, unless such compensation has been provided for in the setting of rent:*
- (e) *the provision by the concessionaire of bonds—*

- 6.6. In addition to 17X section 17Y(2) sets out that  
*the fee may be fixed at the market value, having regard to:*  
(a) *any circumstances relating to the nature of the activity; and*  
(b) *the effects of the activity on the purposes of the area affected; and*  
(c) *any contractual conditions, covenants, or other encumbrances placed upon intrinsic resources, natural resources, or historic resources by the concession.*

**Fees:**

**Management Fee:**

- 6.7. The standard management fee for this concession type is \$400 per annum. This would cover such things as normal invoicing, file management, rent reviews and collecting activity returns.
- 6.8. It should be noted that it is proposed that Westpower fund a liaison officer who would review annual work plans and monitor compliance with work plans and make recommendations to the Grantor. All costs associated with the liaison officer would be recovered from Westpower.
- 6.9. In addition to this because the details of the proposed management plans would still need to be provided to the Grantor for audit and approval, there could be further time involved in this process prior to any construction. All additional time would be cost recovered at the normal Departments charge out rates, which are currently \$115 plus GST.

**Concession Activity Fee:**

- 6.10. The Department considers the market fee for this activity to be 6% of gross operating revenue as established by our current framework for this activity type.

**Fee during Construction period**

- 6.11. The total proposed permanent footprint is 3.62 hectares. The hydro scheme may take 3-4 years to be constructed before it would be able to generate electricity; an activity fee for this period is recommended. A fee of \$10 000 per annum is recommended during the construction phase taking into account rental and compensation for residual adverse effects during this phase.
- 6.12. Once the scheme is operating, an Annual Return form must be submitted to the Grantor 6 monthly each and every year the concession is in force.

**Bond**

- 6.13. It is been standard practice to set a bond which should be enough to complete the obligations of the concessionaire if they default, or to undertake remedial actions to return the concession site to its previous condition. It is recommended that if this application is granted a bond is established. The bond would be set prior to the Concession Activity commencing and the amount will be set by the Grantor following an independent risk assessment using a methodology approved by the Grantor. Conditions for a bond have been proposed by Westpower which the Department agrees with.

**Compensation:**

- 6.14. There are a number of residual adverse effects on the Crown's or public's interest in the area affected by the proposal. It would be appropriate, under 17X (d) of the Conservation Act, to impose a condition requiring Westpower to pay/provide compensation. No compensation has been proposed by Westpower at this stage.

**Westpowers proposed special conditions and the Departments proposed changes to these:** See Appendix 1

**7.0 Applicant's comments on draft Officer's Report**

- 7.1. The application was sent to Westpower on 22 June 2016, Westpower provided their comments on the 21 July 2016, the comments include a number of factual errors as well as raising a number of issues and comments on key conclusions. Factual errors are corrected directly into this report, while issues raised are responded to under each item. A table of these comments is provided at Appendix 7 of this report with the Department's responses.

## **8.0 Summary and Conclusions**

- 8.1. There would be a range of effects that the Department considers would be small and adequately avoided, remedied or mitigated for. These include: a loss of 3.62ha of vegetation, potential effects on Blue duck, bats, lizards, invertebrates and freshwater habitats and species.
- 8.2. The Department considers that there would be high adverse effects from: the industrial nature of the intrusion on the natural character of the area in the Waitaha River Valley at the top of Morgan Gorge; from the decrease in water through the abstraction reach; and from the industrial intrusion at the powerhouse site.
- 8.3. The Department also considers there would be significant adverse effects on kayakers through the change from the river being in a natural state to one where there would be a significantly reduced opportunity to kayak the Morgan Gorge and the stretch below the Gorge to the proposed tailrace.
- 8.4. You need to consider whether the proposed mitigation measures are adequate and where there are no or inadequate measures you will need to decide whether the effects are such that the proposed hydro scheme should be declined pursuant to 17U(2)(b) of the Conservation Act and;
- 8.5. If this was the case and taking this into account whether the proposed activity would also be contrary to the provisions of the Act and the purposes for which the land is held because the conservation values are not able to be protected as required by section 25 of the Conservation Act and pursuant to section 17U (3) of the Conservation Act.
- 8.6. You also need to consider whether the information available is insufficient or inadequate to fully assess the effects and where the information is insufficient or inadequate you will need to decide whether that the proposed hydro scheme should be declined pursuant to section 17U(2)(a) of the Conservation Act and;
- 8.7. A number of CGP and CMS policies rely for consistency on the effects being adequately mitigated. You need to consider whether as discussed in this report the proposed hydro scheme is consistent with the CGP's in particular; CGP policy 4.5 (b) Geological features, landforms and landforms policies, CMS section 3.3.4.3 - Management of Geodiversity and landscapes policy 1, and 3.7.2 – Activities on or in Beds of Rivers of Lakes policy 1 a) and e) and 3.5 Authorised uses of Public Conservation Lands objective 3. If you consider that the proposed hydro scheme is inconsistent with these policies then to grant a concession for the proposed hydro scheme would be inconsistent with 17 W(1) of the Conservation Act.
- 8.8. In considering whether to form the intention to grant you should also keep in mind that, if ultimately the proposal is granted, Westpower would need to develop a number of detailed management plans in accordance with standards imposed by special conditions. Westpower would need to determine appropriate methodology in order to demonstrate that each standard can be met. Failure to do so would mean that it would not be able to exercise the consent. In effect it would fail to meet a condition subsequent of the grant.

## **9.0 Recommendations to decision maker**

- 9.1. Pursuant to the delegation dated 9 September 2015 it is recommended that the Deputy Director General of Operations:
  1. Deem this application to be complete in terms of s17S of the Conservation Act 1987; and

**Either**

**Option 1**

2. Approve in principle the granting of notified lease, licence and easement concessions for a term of 49 years for a Hydro scheme to Westpower Limited subject to the standard concession contracts; and the special conditions identified in this report.
3. Agree that if this application is approved in principle then the intention to grant the concessions for a Hydro scheme will be publicly notified; and
4. Agree that the intention to grant be placed in two local papers (the Greymouth Star and The Hokitika Guardian) and the 4 daily newspapers published in Auckland, Wellington, Christchurch and Dunedin.

**Or Option 2**

5. Decline the application pursuant to:
  - a) Section 17U(2)(a) of the Conservation Act 1987 on the basis that the information available is insufficient or inadequate to fully assess the effects.
  - b) Section 17U (2) (b) of the Conservation Act 1987 on the basis that there are no adequate methods or no reasonable methods for remedying, avoiding or mitigating all the significant adverse effects of the activity on Natural Character and Recreational values, as discussed in this report.
  - c) Section 17(U) (3) on the basis that some aspects of the proposed hydro scheme are contrary to the purposes for which the land is held; and
  - d) Section 17W(1) on the basis that the application is inconsistent with parts of the Conservation General Policy and the West Coast CMS.

Name: Diana Clendon  
 Senior Permissions Advisor  
 Date: 4 August 2016

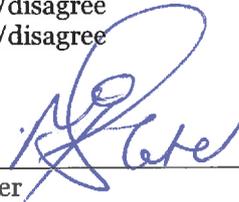
Recommendation:

- 1 Agree/~~Disagree~~
- Either Option 1
- 2 Approve /~~Decline~~
- 3 Agree/~~Disagree~~
- 4 Agree/~~Disagree~~

*Would like the Hearing Commissioner to explore further the impact on kayaking and whether the mitigation proposed is adequate*

Or Option 2

- 5 Approve/Decline pursuant to:
  - a) Agree/disagree
  - b) Agree/disagree
  - c) Agree/disagree
  - d) Agree/disagree

Signed:   
 Michael Slater  
 Deputy Director General Operations  
 Date: 19/8/16

## **Westpowers Suggested Draft Special Conditions**

### **1 General**

1.1 The Concessionaire shall provide final Management Plans required by these conditions to the Grantor for the Grantor's approval. The Grantor will audit and approve these plans in a timely manner to ensure that final construction does not differ substantially in location, scale or level of effect to the concession application lodged by the Concessionaire. The Concessionaire shall ensure that these plans are prepared by a suitably qualified person. The concession application lodged by the Concessionaire comprises those documents listed in schedule #.

1.2 Once audited and approved by the Grantor, the Management Plans shall form part of this Concession, and the Concessionaire shall not deviate from these plans without prior written approval of the Grantor.

1.3 The Concessionaire shall pay the costs incurred by the Grantor in auditing and approving all plans required pursuant to this Concession.

1.4 The Grantor may require plans provided pursuant to this concession to be independently audited by an auditor approved by the Grantor. The auditor shall certify that the plans have been prepared in accordance with best practice for the relevant discipline. The costs of independent audit shall be borne by the Concessionaire.

1.5 All plans provided pursuant to this Concession shall be provided by the Concessionaire to Grantor within reasonable time frames to allow the Grantor to review these plans.

### **2 Bond**

2.1 Prior to commencing the Concession Activity, the Concessionaire must provide as surety a trading bank, insurance company or bond guarantor who is acceptable to the Grantor.

2.2 The surety must execute (in the case of two or more jointly and severally) in favour of, and on terms acceptable to, the Grantor a performance bond initially set at NZ\$ \_\_\_\_\_ (\_\_\_\_\_ dollars) for due and faithful performance by the Concessionaire of the obligations under the Concession and/or reinstating any disturbed area of the Land to a standard satisfactory to the Grantor where disturbance has been caused by the Concessionaire or any agent of it and/or otherwise remedying or mitigating any adverse effects of the Concession Activity.

2.3 If the initial amount of the bond has not been set in clause 2.2 then prior to the Concession Activity commencing that amount will be set by the Grantor following an independent risk assessment using a methodology approved by the Grantor.

2.4 The initial amount set under either Conditions 2.2 or 2.3 may be reviewed at the discretion of the Grantor at any time.

2.5 The cost of any independent risk assessment or review will be paid by the Concessionaire within 10 working days of being given a notice by the Grantor.

2.6 Notwithstanding the expiry, surrender or termination of the Concession document, the bond will not expire and is to remain in full force and effect until such time as all obligations of the Concessionaire under the Concession document have been complied with to the satisfaction of the Grantor.

2.7 If the Concessionaire breaches any condition or fails to carry out any condition of the Concession or in carrying out the Concession Activity there arise adverse effects not authorised or reasonably foreseen in the Concession document the Grantor may call on the bond entered into under this Document or any portion of it to ensure compliance with the conditions of the Concession document or to remedy or mitigate those adverse effects referred to above.

### **3 Liaison Officer**

3.1 The Concessionaire must fund a Department of Conservation employee or external contractor who will act as a liaison contact between the Concessionaire and the Grantor during the term of construction of the Scheme. The exact role, brief of service and level of remuneration of the Liaison Officer will be agreed between the Concessionaire and the Grantor, and failing agreement will be determined by arbitration under Condition # of Concession Documents standard conditions.

3.2 The Concessionaire and the Grantor record that the role of the Liaison Officer includes:

- a) reviewing annual Work Plans and other documentation submitted to the Grantor under this concession or otherwise associated with the Concessionaire's activities and operations under this concession, and making appropriate recommendations to the Grantor based on those documents;
- b) monitoring compliance by the Concessionaire with Plans required pursuant to this concession and any other requirements of the Grantor; and
- c) monitoring compliance with the Rehabilitation Plan, monitoring and liaising over the success or otherwise of ongoing restoration works and making recommendations to the Grantor regarding successful progressive and long term restoration and rehabilitation of the Site.

3.3 The appointment of the Liaison Officer will be by the Grantor following consultation with the Concessionaire, and the Liaison Officer will report to the Grantor.

3.4 The Concessionaire and the Grantor agree that the Liaison Officer will be a senior position, requiring a range of professional skills necessary for liaising effectively and autonomously with the Concessionaire, the Grantor, the West Coast Regional Council and Westland District Council, other external consultants, insurance companies and bondsmen. The Liaison Officer must have a strong proven performance in relationship management for large-scale developments in environmentally sensitive areas.

3.5 The Liaison Officer must be appointed by the commencement date for this concession. Pending such appointment the Grantor may, if considered necessary and desirable by the Grantor, appoint an interim liaison person at any time between the date of execution of this Concession and the commencement of this concession; and such interim liaison person will carry out the role of the liaison officer as envisaged by condition 3.2 of the Special Conditions for this concession.

3.6 The Liaison Officer may, with the prior approval of the Grantor, call on additional independent external consultants for specialist advice on matters reasonably raised by the Concessionaire's operations carried out under this concession. The Liaison Officer will advise anticipated costs of consultants to both the Concessionaire and Grantor. The Concessionaire shall meet the costs reasonably charged by such consultants.

#### **4. Pre- Construction Activities**

4.1 Prior to Construction of the Scheme, the Concessionaire will submit for the Grantor's approval, the precise route of the access road and transmission line from the Macgregor Creek boundary of the Concession to the switchyard and powerhouse site. The transmission line, poles and wires/lines, will be located within the 20 metre access road corridor. If a pole is required to be located outside the 20 metre corridor this shall be included within the alignment information submitted to the Grantor for approval.

4.2 The submission of a proposed access road and transmission route to the Grantor must include an assessment to demonstrate that the proposed alignment is in compliance with all other relevant conditions of the Concession.

4.3 The access road and transmission route shall retain a margin of up to 20 metres, with a minimum allowable margin of 10 metres where topography and other matters limit provision of a wider margin, between the access road and associated corridor and the Stable Tributary. This margin is to allow for a protected vegetated riparian zone of trees, shrubs and groundcover that will shelter the waterway from the road and help to intercept runoff from the road.

4.4 Prior to construction the Concessionaire shall survey, identify and map all large trees with a dbh (measurement of diameter at breast height) of greater than 30 cm dbh for podocarp trees or greater than 60 cm for hardwood trees proposed to be removed or disturbed within the:

- a) proposed access road and transmission line alignment;
- b) construction footprint including the areas around the possible tunnel portal entry site, and temporary road to the contractors facility above Morgan Gorge.

4.5 This data will be used to make any practicable road alignment adjustments to avoid as many of these large trees as possible.

4.6 The tree survey outlined in Condition 4.4 shall also include a survey for potential bat roosting trees based on criteria provided by a suitably qualified bat expert.

4.7 The data collected under Conditions 4.4 and 4.6 will be used by the Concessionaire to identify any potential bat roosting trees and to define access and transmission routes that result in least damage to all vegetation, in particular large (60+ cm dbh) hardwood trees and podocarp trees (30+ cm dbh).

4.8 During the month of April, prior to construction, the Concessionaire shall undertake monitoring of the blue duck population for the following three parameters:

- a) total numbers;
- b) the presence of pairs; and
- c) the presence of juveniles.

4.9 Monitoring of the blue duck population under 4.8 shall be undertaken at the following sites:

- a) from (and including) Kiwi Flat to Douglas Creek; and
- b) the Amethyst Ravine.

4.10 Boundaries of all areas to be disturbed shall be marked out on the ground prior to work commencing and approved by the Grantor. Disturbance outside these marked areas are not permitted unless prior written approval from the Grantor is obtained. The Concessionaire is to pay the Grantors costs in approving marked areas and considering any requests for deviation from those areas.

## 5. Disturbance Areas

5.1 The area to be disturbed for construction shall not exceed 5.33 ha in total and shall be within the areas marked out under Condition 4.7 and as set out on the maps attached (Appendix 1: Maps 5 and 6).

5.2 Notwithstanding the total areas permitted to be disturbed in Condition 5.1, the maximum construction and operational footprint areas permitted shall not exceed the areas set out below:

	<b>Construction Footprint (ha)</b>	<b>Operational Footprint (ha)</b>
<b>Surface Area:</b>		
Area 1: Headworks	0.73	0.235
Area 2: Powerhouse Site	2.0	1.3
Access Road	2.6	2.4
<b>Total Surface Area</b>	<b>5.33</b>	<b>3.935</b>
<b>Total Subsurface Area</b>	<b>2.6</b>	<b>2.6</b>

*Note:*

1. The surface figures include

a) the areas estimated for vegetation clearance as provided in the report on Terrestrial Flora Description and Assessment (TACCRA 2013 Appendix 15) and

b) allows for the non – vegetated areas within the footprint, for example work within the bed of the river.

2. Powerhouse site includes stop banks and flood protection.

3. The operational footprint is within the construction footprint.

4. The subsurface area allows for all the works underground including the tunnel, sediment settling basins, flushing tunnel .

5.3 The Concessionaire shall avoid or minimise the removal of large hardwood trees ( $\geq 60$  cm dbh) and podocarp trees ( $\geq 30$  cm dbh).

5.4 The Concessionaire shall obtain the Grantors approval for removal or disturbance of any Podocarp measuring more than 60 cm dbh.

5.5 The Concessionaire shall obtain the Grantor's approval for removal or disturbance of kamahi and other non podocarp species measuring more than 100 cm dbh.

5.6 Unless otherwise approved by the Grantor, trees or areas around trees, with a dbh of greater than 60 cm for any podocarp species or 100 cm for any non-podocarp species are not to be disturbed closer than their outer canopy drip line.

5.7 The felling of any trees is to be done in a manner so that damage to surrounding vegetation is minimised as far as is practicable.

5.8 Dead standing trees shall not be removed unless they pose a hazard or obstruction. If such trees pose a hazard or obstruction the Concessionaire shall obtain the approval of the Grantor prior to removal.

5.9 Prior to any tree felling where a tree has been identified in Condition 4.6 as likely to be occupied by bats the Concessionaire shall engage a suitably qualified person to monitor for the presence of bats the evening prior to tree felling (using an electronic bat detector) to ensure no bats are occupying tree when felled. If the tree is occupied then tree felling shall be delayed until the bats have vacated the tree.

5.10 At the same time as the specialised bat survey, a search shall be undertaken at similar sites for nesting kaka. If kaka nests are found within the proposed construction area, activities shall be temporarily halted or alternative routes found to avoid disturbance.

5.11 The Grantor shall not withhold permission to remove trees unreasonably, but will ensure that the Concessionaire minimises disturbance and removal of significant trees as far as is practicable.

5.12 All large trees felled pursuant to this concession are to remain the property of the Grantor. The Concessionaire shall comply with all reasonable instructions given by the Grantor to remove large trees to a site approved by the Grantor for disposal.

5.13 Subject to the provisions of the approved Rehabilitation Management Plan (see Condition 11.1), any vegetation disposed of on Site shall be in areas approved by the Grantor.

5.14 The Concessionaire shall ensure that there is no dumping of substrate or side casting of material into forest beside any road formation. All material shall be disposed of at designated or otherwise approved sites.

5.15 The Concessionaire shall remove all excess fill from the Land within 4 weeks of fill being created unless written approval is given by the Grantor for it to remain on the Site for longer.

5.16 The Concessionaire shall ensure that disturbance of riparian margins is minimised.

5.17 Once construction of the Scheme components and infrastructure authorised under this concession are complete (including the tunnel, access roads, tunnel portal and staging area, intake structure, treatment pond, penstock, stopbank, powerhouse, and switchyard) the Concessionaire shall provide a survey map, prepared by a suitably qualified land surveyor and in a form able to be registered, of all areas occupied for the Grantors approval. The Grantor shall vary this concession by replacing the map attached pursuant to Condition 5.1 (maximum permitted disturbance area approved for construction) with this map recording actual 'as built' developments.

## **6 Water Take, Diversion and Use**

6.1 The Concessionaire shall ensure flow in the Waitaha River below the intake weir is not less than the Minimum Residual Flow of 3.5 m<sup>3</sup>/sec at all times during operation of the Scheme when water is being diverted through the turbines.

6.2 Abstraction of water shall cease whenever the flow falls below the Minimum Residual Flow of 3.5 m<sup>3</sup>/sec below the intake weir. The Concessionaire shall notify the Grantor within 5 working days of the occurrence of the flow in the Waitaha River falling below 3.5 m<sup>3</sup>/sec at the flow-monitoring site.

6.3 The Concessionaire shall design the intake to include the facility to bypass the full base flow of the river if a flushing flow in the river appears necessary from the monitoring of fine sediment discharge in the abstraction reach.

## **7 Construction Management Plan**

7.1 Prior to the commencement of construction, the Concessionaire shall submit a Construction Management Plan to the Grantor for approval. This will set out how the construction works will be staged, the duration of the various stages, methods of construction and methods for managing any environmental effects during construction. The overall objectives of the Construction Management Plan shall be to:

- a) provide guidance on environmental management for the construction of the Scheme and associated facilities;
- b) undertake construction works in a timely and efficient manner to avoid prolonging potential effects on the environment;
- c) avoid, remedy, or mitigate any adverse environmental effects associated with construction activities (including consideration of timing to minimise construction activities during the breeding seasons for blue duck, bats and kaka and across two breeding seasons at the weir and intake site), where practicable; and
- d) describe the methods for managing the actual or potential effects of construction activities.

7.2 The Construction Management Plan shall include:

- a) staff and contractor's responsibilities and reporting frameworks;
- b) construction methodology for each aspect of construction, how the construction works will be staged, and the duration of the various stages;
- c) how stakeholders will be kept informed during construction and how any complaints will be managed;
- d) key personnel and points of contact throughout the construction period;
- e) protocols for establishing when expertise and certification is required for certain elements of construction;
- f) protocols to be followed in the event of the accidental discovery of cultural or heritage items or artefacts; and
- g) an outline of the relationship with the Liaison Officer.

7.3 The Concessionaire shall ensure that the Construction Management Plan describes the methods/actions and timing for managing specific aspects during construction. These aspects will be provided for either in the body of the Construction Management Plan or managed via the topic-specific management plans set out in Conditions 8 to 13. The aspects to be managed relate to the management of:

- a) vegetation clearance;
- b) wastewater, groundwater, erosion and sediment;
- c) hazardous substances;
- d) noise;
- e) in – river works;
- f) construction traffic;
- g) waste;
- h) pests and weeds;
- i) landscape design;
- j) rehabilitation;
- k) health and safety; and
- l) archaeological and cultural protocols, including accidental discovery.

7.4 Once audited and approved by the Grantor, the Construction Management Plan shall form part of the Concession, the Concessionaire shall follow the recommendations of that plan and shall not deviate from the plan without prior written approval of the Grantor.

7.5 The Concessionaire shall ensure that the Accidental Discovery Protocols established in the Construction Management Plan will be followed and complied with in the event of discovery of any artefact or historical, cultural or archaeological material during construction activities.

## **8 Wastewater, Groundwater, Erosion and Sediment Management**

8.1 Prior to the commencement of construction, the Concessionaire shall submit a Wastewater, Groundwater, Erosion and Sediment Management Plan to the Grantor's approval. The objectives of this Plan are to:

- a) protect and maintain the ecological integrity of the Waitaha River and Stable Tributary (Appendix 1: Map 6);
- b) prevent contamination of waterways; and
- c) prevent erosion and land instability.

8.2 This plan shall provide for both the construction activities and ongoing operation of the Scheme including detailed methodology for treatment of water and measures that will be established to minimise erosion and run off. The plan will include:

- a) sediment and erosion control and management of runoff from:
  - i. access roads;
  - ii. waterway crossings;
  - iii. river protection works;
  - iv. portal areas;
  - v. intake site;
  - vi. powerhouse site;
- b) treatment of water from tunnel;
- c) water abstraction for potable water and drilling water;
- d) greywater and toilet facilities; and
- e) monitoring.

8.3 Once audited and approved by the Grantor, the Wastewater, Groundwater, Erosion and Sediment Management Plan shall form part of the Concession, the Concessionaire shall follow the recommendations of that plan and shall not deviate from the plan without prior written approval of the Grantor.

8.4 The Concessionaire shall prepare and submit annually to the Grantor a report detailing the results of the Wastewater, Groundwater, Erosion and Sediment Management Plan out as per Condition 8.2.

8.5 Following analysis of the information provided pursuant to Condition 8.4 and any other relevant information regarding water quality obtained by the Grantor, the Grantor may, after discussions with the Concessionaire and the relevant territorial local authorities require the implementation of further management measures for water quality throughout the concession period.

### ***Stable Tributary***

8.6 The Concessionaire shall implement a combination of sediment management practices and informal drainage channels to ensure that any sediment-laden road runoff, including flood flows, is directed away from the Stable Tributary.

8.7 No construction activity, including the location of machinery or equipment, shall occur within the Stable Tributary or within the riparian margin for this tributary as described in Condition 4.3.

### ***Waterway Crossings***

8.8 Construction of waterway crossings shall be undertaken during low flow conditions and, as far as practicable, should make use of pre-cast structural elements to minimise the quantities of wet concrete or cement based products required within waterway channels.

8.9 A bridge shall be used to cross Granite Creek. If a pier is required, this will be located out of the permanently wetted channel if technically feasible.

### ***Contractors' Facilities***

8.10 The Concessionaire shall maximise the vegetated buffer zone (with a minimum of 10 m) between the Waitaha River bank and the contractors' facilities and helicopter landing site located above Morgan Gorge.

8.11 The helicopter landing site at the headworks contractors' facilities site will be located at the maximum down-valley extent practicable, taking into account operational and safety requirements.

### ***Waste - including Foulwater and Greywater Facilities***

8.12 The concessionaire will ensure that amount of waste is kept to a minimum and ensure that no refuse material be stored or disposed of within any waterway or its associated riparian margins (including excess cement). All waste and materials will be stored above flood levels.

8.13 All foulwater and greywater facilities shall be developed in accordance with the requirements of the Building Act 2004 and the Building Code.

#### ***Potential Contaminants of Water***

8.14 Sediment removed from any construction settling pond shall be disposed of outside the concession area at a designated disposal site.

8.15 The duration of time working in the channel during weir construction will be minimised so as to reduce the risk of flood damage and sediment/concrete-based contaminant release, as well as effects on koaro migration.

8.16 The use of concrete-containing materials (e.g. concrete slurry, shotcrete material) shall be carefully managed to ensure that contaminated water is not released into any tributary waterway or directly into the mainstem river.

8.17 The quantity of tunnel spoil to be temporarily stored at the powerhouse site, and the contractors' facilities areas, shall be no more than a maximum volume equivalent to 100 m<sup>3</sup>. Tunnel spoil shall be regularly removed to the designated disposal site outside the concession area.

8.18 All runoff from hard surfaces (e.g. the access road, powerhouse building and associated grounds) shall be discharged to ground where site conditions allow.

8.19 Rock protection material for the armour-rock stopbank around the powerhouse site will be sourced from the powerhouse and tunnel excavations where suitable and available at the time required.

#### ***Erosion Control***

8.20 The Concessionaire shall ensure that any structure designed to accommodate the discharge from the power station to the Waitaha River is constructed in such a way as to avoid scouring or erosion of the natural watercourse.

### **9 Construction Noise Management Plan**

9.1 Prior to the commencement of construction, the Concessionaire shall submit a Construction Noise Management Plan to the Grantor for approval. The Construction Noise Management Plan shall be prepared by a suitably qualified acoustic noise consultant. The objective of the Construction Noise Management Plan is to minimise as far as practicable the effects of noise arising from construction activities.

9.2 The Construction Noise Management Plan shall include:

- a) criteria and standards for construction noise;
- b) general noise management methods;
- c) specific noise management for helicopters movements, traffic, blasting, piling, the protection of recreational users and wildlife (including blue duck);
- d) contingency measures;
- e) training; and
- f) complaints.

9.3 Once audited and approved by the Grantor, the Construction Noise Management Plan shall form part of the Concession, the Concessionaire shall follow the recommendations of that plan and shall not deviate from the plan without prior written approval of the Grantor.

9.4 Civil and construction works shall be undertaken only during daylight hours with the exception of emergencies and that the underground work associated with the tunnel construction is permitted at any time of the day or night.

### **10 Landscape Management Plan**

10.1 Prior to the commencement of construction, the Concessionaire shall submit a Landscape Management Plan to the Grantor for approval. The overall objective of the Landscape Management Plan will be to use construction methods and materials where feasible that will minimise adverse visual effects on the environment, including reducing visual prominence and enabling recolonisation of vegetation.

10.2 The Landscape Management Plan is to include (but not be limited to) defined landscape goals, timelines and methods that will be followed by the Concessionaire to achieve that overall objective. A member of the NZ Institute of Landscape Architects shall draft the Landscape Management Plan in consultation with the Concessionaire and other relevant experts.

- a) Specific Objectives for the Powerhouse Area are:
- i) to ensure that the footprint of the powerhouse is clearly defined and that works do not extend outside of these parameters;
  - ii) that the design of the powerhouse and adjacent penstock and portal avoids imposing structures with as much as practical kept underground;
  - iii) to minimise the removal of indigenous vegetation; and
  - iv) to ensure that a Landscape Planting Plan is developed incorporating the requirements of the Boffa Miskell: Natural Character, Landscape, and Visual Amenity Effects Report and in particular Part 6.2 of that report.

- b) Specific Objectives for the Intake Area are to:
- i) avoid significant cuts and battered slopes for access roads, including avoiding their proximity to river bank features and keeping works in the bed of the river to the minimum required to construct and maintain the road;
  - ii) ensure that the intake structures intersect with the existing topographic features and that appropriate cliff stabilisation measures are sensitively implemented; and
  - iii) ensure that active and passive rehabilitation measures are effective, notably for the construction sites.

10.3 All structures and activities associated with the Scheme are to be constructed (and coloured) in a manner that is in keeping with their surroundings.

10.4 Once audited and approved by the Grantor, the Landscape Management Plan shall form part of the Concession, the Concessionaire shall follow the recommendations of that plan and shall not deviate from the plan without prior written approval of the Grantor.

## **11 Rehabilitation Management Plan**

11.1 Prior to the commencement of construction, the Concessionaire shall submit a Rehabilitation Management Plan to the Grantor for approval. The Plan is to include (but not be limited to) defined rehabilitation goals, timelines and methods that will be followed by the Concessionaire to rehabilitate the site following construction activities.

11.2 Once audited and approved by the Grantor, the Rehabilitation Management Plan shall form part of the Concession, the Concessionaire shall follow the recommendations of that plan and shall not deviate from the plan without prior written approval of the Grantor.

11.3 The Concessionaire shall rehabilitate all areas (including all contractors' facilities and storage areas within the Concession area) not required for either the ongoing construction or operation of the Scheme following completion of construction within a time frame agreed to with the Grantor. This will include enabling of natural regeneration or supplementary planting with appropriate indigenous species through appropriate methods of ground preparation.

11.4 Rehabilitation to be supervised by a suitably qualified person approved by the Grantor (paid for by the Concessionaire). This person may be the Liaison Officer.

11.5 The Concessionaire must ensure that all surplus materials, structures, machinery and equipment are to be removed from the Site at the completion of construction works.

11.6 The Concessionaire shall provide a report on rehabilitation progress to the Grantor on an annual basis until the rehabilitation goals set out in the Rehabilitation Plan have been met.

## **12 Pest and Weed Control Management Plan**

12.1 The Concessionaire shall provide a Pest and Weed Control Management Plan to the Grantor for approval prior to any work commencing.

12.2 This Management Plan shall include detailed methodology for pest and weed control management to reduce the risk of weed and pest incursion and to manage and suppress weeds and pests within the concession area and will include:

- a) the monitoring of weeds establishment (in particular *Leycesteria formosa* but also for other woody species such as *Ulex europaeus*), with any necessary weed control undertaken as soon as practicable in the most effective season for best control results for the species concerned, and prior to plants attaining seeding maturity;
- b) in agreement with the Grantor, predator control along the access route and around Scheme Infrastructure. Predator control shall target possums, feral cats, mustelids and rodents.

12.3 Once audited and approved by the Grantor, the Pest and Weed Control Management Plan shall form part of the Concession, the Concessionaire shall follow the recommendations of that plan and shall not deviate from the plan without prior written approval of the Grantor.

12.4 The Concessionaire must ensure that all machinery is cleaned (water blasted) before entering the site. For the purpose of this condition, the site entrance shall be taken as the contractors' facilities on the north bank of Macgregor Creek.

12.5 The Concessionaire shall ensure that all gravel, fill or other material brought onto the Site comes from a weed free source.

12.6 The Concessionaire must comply with the Didymo (*Didymosphenia geminata*) prevention and cleaning protocols as set out in Schedule # before and after contact (including people, equipment, clothing, footwear and other items) with any waterway.

12.7 The Concessionaire shall comply with all guidelines and notices put out by Biosecurity New Zealand regarding measures to avoid spreading the pest organism *Didymosphenia geminata* (refer to [www.biosecurity.govt.nz/didymo](http://www.biosecurity.govt.nz/didymo)).

### **13 Safety**

13.1 Prior to the commencement of construction, the Concessionaire shall submit to the Grantor an independently audited Safety Plan which meets the requirements of Conditions ## of the General Conditions (*cross reference to these*). The Concessionaire must comply with and keep that document in force during the term of this concession.

13.2 The Concessionaire shall produce a fire plan which meets the approval of the Grantor prior to commencing construction on the Site. No fires are to be lit on the Site and extreme care is to be taken with equipment likely to start fires. Full fire extinguishing equipment is to be kept on the Site at all times during construction.

### **14. Fuel**

14.1 The Concessionaire and its contractors must ensure that any refuelling vehicle carries a spill kit of loose absorbent material at all times, to absorb spilled fuel. In the event of a spill, the absorbent material shall be laid immediately over the site of the spill, and every practical step taken to contain the fuel. All contaminated soil must be removed from the site and disposed of in an environmentally safe manner. The Concessionaire must immediately report all fuel spills over 1 litre to the Grantor.

14.2 Machinery with fuel or oil leaks shall not be used onsite.

14.3 Any diesel storage tanks (maximum size 1250 litres) are to be bunded when onsite. The bund shall have a capacity of 110% of the fuel tank volume). The tanks and bunded area shall not be located any closer than 10 metres to any waterway and shall be located outside of any large flood event flow path.

14.4 Refuelling shall not take place within 10 metres of waterways.

14.5 The Concessionaire shall consider the feasibility and use of environmentally aware hydraulic fluids (based on vegetable products rather than petroleum-based products).

### **15 Protection of Terrestrial and Aquatic Fauna**

15.1 The Concessionaire shall ensure that their agents, servants, contractors, employees or invitees do not take dogs onto the Land unless authorised by the Grantor for environmental monitoring purposes e.g. locating blue ducks.

15.2 Subject to agreement of the Grantor, the Concessionaire shall install “no dogs allowed” signs for general public accessing the area in which the scheme is located. The most suitable location of any signs will form part of the agreement.

15.3 The Concessionaire shall ensure all food and rubbish arising from construction and operational activities is collected and removed from the site promptly.

15.4 The Concessionaire must train staff and contractors of the need to maintain appropriate road speed limits and shall set appropriate road speed limits (30 -50 km/hr) to minimise potential road deaths of birds.

15.5 The Concessionaire will ensure lights are turned off unless essential for operational and safety purposes during both construction and operational periods.

15.6 Where external sensor lights are installed permanently at the powerhouse/intake site these shall incorporate full cut-off or shielded light fixtures to prevent light scattering and use lighting that produces light at one wavelength, but emit no UV.

15.7 The intake weir shall be designed in consultation with the appropriate specialists to allow for:

- a) koaro passage in and out of Kiwi Flat while preventing trout and other fish species from accessing Kiwi Flat; and
- b) blue duck duckling access.

#### ***Lizards***

15.8 The Concessionaire shall advise the Grantor should any gecko/skink be discovered during construction activities. The Concessionaire will apply for the necessary wildlife permit required for collection of reptiles prior to construction so that any gecko/skink may be collected and handed to the Grantor.

#### ***Aquatic Ecology***

15.9 The tailrace channel will be designed, in consultation with a suitably qualified ecologist, to reduce suitable trout refuge areas (e.g. large boulders) so that it is not conducive to good adult trout habitat.

#### ***Blue Duck***

15.10 Unless required for operational, monitoring and safety reasons, helicopters servicing the scheme shall:

- a) avoid using the Waitaha River as a helicopter flight path between Macgregor Creek and the Morgan Gorge intake site contractors’ facilities, and fly as far as practicable away from both Douglas Creek Confluence and Morgan Gorge exit; and
- b) avoid helicopters flying up-valley of the Morgan Gorge intake site contractors’ facilities.

15.11 Prior to any rock blasting the Concessionaire shall undertake a visual inspection to ensure that blue ducks are not present within or about the entrance to Morgan Gorge or within the potential fall zone.

#### **16. Aircraft Access**

16.1 Aircraft access is permitted with authorised Aircraft Concessionaires only.

#### **17.0 Recreational Use**

17.1 During the construction period, the Concessionaire shall provide information on construction activities that may affect recreational users within the area surrounding the Construction Footprint. This information shall be made available on the Westpower website, and on appropriately located signage approved by the Grantor. The information shall include:

- a) a description of the type, timing sequence and location of construction activities;
- b) potential hazards (including in-river hazards) arising from construction activities, including advice on avoiding hazards and construction activities generally; and
- c) any effects on the flow regime.

17.2 Subject to the agreement of the Grantor, the Concessionaire shall provide alternative track access on the true right of the Waitaha River for recreational visitors between Macgregor Creek and Kiwi Flat. This shall be provided and maintained at the Concessionaire's expense for the duration of the Concession, and routed to avoid the powerhouse site construction area.

17.3 The downriver face of the weir shall be designed to allow kayaking access into Morgan Gorge. The Concessionaire will consult with Whitewater New Zealand on the development of the weir design.

17.4 The Concessionaire shall consult with Whitewater New Zealand on the potential for developing a regime of ceases to abstraction to provide natural flows in Morgan Gorge, to support a continued kayaking opportunity in Morgan Gorge.

17.5 Once the Scheme is operational, the Concessionaire shall provide real-time flow data and camera footage of the Waitaha River at the intake location on its website. That information shall be available for kayakers, other recreational visitors and the general public to view.

## **18 Environmental Monitoring**

18.1 Prior to the commencement of construction, the Concessionaire shall submit an Environmental Monitoring Plan to the Grantor for approval. This plan shall detail the Concessionaire's programme for monitoring compliance with all conditions of this concession, including monitoring of compliance of all approved management plans forming part of this concession.

18.2 The Environmental Monitoring Plan shall specify the frequency of monitoring, timing of monitoring, review of monitoring, actions required if the monitoring determines an adverse effect.

18.3 Once audited and approved by the Grantor, the Environmental Monitoring Plan shall form part of the Concession, the Concessionaire shall follow the recommendations of that plan and shall not deviate from the plan without prior written approval of the Grantor.

18.4 The Concessionaire shall prepare and submit annually to the Grantor a report detailing the results of the monitoring as required as part of the Environmental Monitoring. The report shall also include an assessment of the results and if appropriate, make recommendations to the Grantor with respect to the outcomes of the monitoring.

### ***Infrastructure***

18.5 The Concessionaire shall undertake minimum monthly monitoring of weirs, races, roads and tracks, water tables, culverts and pipelines for signs of erosion, blockages, leakages etc. This will be included as part of the routine maintenance Schedule of the Scheme.

### ***Water***

18.6 The Grantor shall review water monitoring requirements in consultation with the Concessionaire and the West Coast Regional Council within 6 years of the commencement of water diversion, and every three years thereafter.

### ***Take, Diversion and Use***

18.7 The Concessionaire shall install a continuous flow monitoring device that is located below the intake. An electronic copy of these records shall be provided to the Concessionaire at the end of each calendar month in the format of flow rate, date and time.

18.8 The Concessionaire shall measure and record daily totals of water abstraction calculated from the power output. A copy of these records shall be provided to the Grantor annually.

### ***Stable Tributary - Water Quality***

18.9 The Concessionaire shall monitor the water quality of the Stable Tributary during the construction phase for pH and sediment (e.g. measures such as total suspended solids, turbidity, and water clarity) to ensure that water quality within the waterway is not reduced through construction activities.

### ***Fine Sediment - Waitaha River***

18.10 The Concessionaire shall establish a programme to monitor any discernible accumulation of fine sediment within the abstraction reach (i.e. between Morgan Gorge and the tailrace discharge point) due to residual flow or flushing of settling basins once the Scheme is operational. The monitoring will be by visual inspection of the channel margins downstream from Morgan Gorge, for example, weekly during periods when for example more than 2 weeks passes without a fresh in the river.

### ***Fish - Koaro***

18.11 The Concessionaire shall undertake annual monitoring for the initial five years post-completion of Scheme construction for the following purposes:

- a) to record koaro passage at the weir; and
- b) to confirm that salmonids and longfin eels have not gained access to Kiwi Flat and its tributaries.

18.12 The Concessionaire shall undertake monitoring to ascertain:

- (a) when peak koaro larval drift occurs (from at least the Kiwi Flat 'Stable Tributary') and the proportion of these larvae being diverted into the turbines; and
- (b) (dependent on these findings), the injury/mortality rate of larvae passing through the turbines.

18.13 The Concessionaire shall undertake monitoring once the tailrace is constructed and operational to quantify fish abundance within the tailrace. If monitoring reveals that a considerable number of fish are entering the tailrace then some form of a trap and transfer system or guidance system may be required, at least during peak fish migratory periods.

18.14 Within the first year of operation of the Scheme the Concessionaire shall undertake monitoring to ascertain the level of fish stranding (if any) due to sudden flow changes arising from the operation of the Scheme. The results of this monitoring will be used to inform the concessionaire as to whether further management of ramping rates is required, in terms of fish stranding management, during planned Scheme maintenance activities.

### ***Blue Duck Population***

18.15 During the month of April in each year of construction and for 3 years post construction the Concessionaire shall undertake monitoring of the blue duck population for the following three parameters:

- a) total numbers;
- b) the presence of pairs; and
- c) the presence of juveniles.

18.16 Monitoring of the blue duck population under 18.15 shall be undertaken at the following sites:

- a) from (and including) Kiwi Flat to Douglas Creek; and
- b) the Amethyst Ravine.

18.17 If monitoring under Conditions 18.15 and 18.16 shows an overall decline in the blue duck population within the site set out in Condition 18.15(a) compared to pre-construction monitoring undertaken in Conditions 4.8 and 4.9(a) and where during the corresponding period:

- a) stoat numbers over the period are low; and
- b) there is not a corresponding decline in adult abundance at Amethyst Ravine;

the Concessionaire, where approved by the Grantor, will review/modify the Pest and Weed Control Management Plan (Condition 12.1) to either institute predator control (at Kiwi Flat and/or Amethyst Ravine), or implement who operation nest egg (WHIONE), in order to ensure pre-construction population levels established through Conditions 4.8 and 4.9(a) are maintained.

18.18 To inform decision making under Condition 18.17, the Concessionaire will seek information on rimu fruiting and stoat populations in podocarp forest in central Westland (DOC), and on pest control undertaken in the Waitaha Valley (TBfree). This information, together with hydrological information collected by the Concessionaire at Kiwi Flat, will be used for the purpose of assessing the major external environmental variables which are unrelated to the Scheme and that may impact on blue ducks in the Scheme area.

### ***Blue Duck (Knowledge Improvement)***

18.19 During construction the Concessionaire shall:

- a) record any observations of blue ducks at the Morgan Gorge headworks site and within the construction area; and
- b) collect data of the location, timing and extent of principal noise and/or disturbance events

at the Morgan Gorge headworks and contractors' facilities site (helicopters, blasting, heavy machinery).

18.20 Once the Scheme is operational, the Concessionaire will record any observations of blue duck made during maintenance/site visits and keep a record of the visits

**Weeds**

18.21 The concessionaire will undertake post construction weed monitoring on:

- a) an annual basis during use and for a minimum of 5 years after decommissioning of the temporary access road to and including the contractors' facilities area at the intake site; and
- b) an annual basis within and for the duration of the concession at all other areas of the Concession Area.

**19.0 Geotechnical**

19.1 The Concessionaire is responsible for the structural integrity and maintenance of all structures or development activities associated with the Scheme.

19.2 The Concessionaire shall either at its sole cost meet all responsibilities and requirements, or reimburse the Grantor in respect of any costs of it meeting any responsibilities or requirements, under either the Building Act 2004 or the Resource Management Act 1991, in respect of any dam and weir structures associated with the concession activity, and will at its sole cost meet all statutory, regulatory of common law responsibilities, requirements or legal obligations arising in relation to such facilities, and indemnify and reimburse the Grantor or the Department of Conservation in respect of any costs or liabilities arising out of its statutory, regulatory or common law responsibilities, requirements or legal obligations in relation to such facilities.

## Proposed Draft Special Conditions (including changes from further information supplied)

### 1 General

Add the following highlighted Conditions:

1.1 The Concessionaire must provide final Management Plans required by the conditions within this concession, to the Grantor for the Grantor's certification. **These Plans must include:**

- a) *Construction Management Plan*
- b) *Wastewater, Groundwater, Erosion and Sediment Management*
- c) *Construction Noise Management Plan*
- d) *Landscape Management Plan*
- e) *Rehabilitation Management Plan*
- f) *Pest and Weed Control Management Plan*
- g) *Protection of Terrestrial and aquatic fauna Management Plan*
- h) *Environmental Monitoring Plan*

The plans must be provided at least 3 calendar months prior to commencement of construction.

The Grantor may require plans provided pursuant to this concession to be independently audited by an auditor approved by the Grantor. The Grantor shall within one month of receiving the Management Plan, either:

- a) Certify that the Management Plan meets the requirements of the relevant conditions and have been prepared in accordance with best practice for the relevant discipline and that the final construction does not differ in location, scale or level of effect to the Concession application lodged by the Concessionaire. And/or
- b) Request a timeframe extension for further evaluation or advise the Concessionaire that the time for evaluation of the Management Plan has been extended and when that evaluation will be complete.
- c) Prior to making a decision about whether or not to certify that Management Plan the Grantor may seek an assessment of the Management Plan by an appropriately qualified and experienced external reviewer/s.
- d) If the Grantor advises that amendments are required in accordance with the relevant conditions, the Grantor shall advise the Concessionaire within 10 working days of receipt of the revised Management Plan, or at a later time advised by the Grantor, whether it is certified or not.

At all times, a copy of all plans and management plans required in accordance with the conditions of this concession, including a copy of this Concession, must be readily available at the Concessionaire's offices and on site.

The Concessionaire must ensure that all personnel and contractors undertaking work and tasks authorised by this Concession are made aware of the conditions of this concession and that all personnel and contractors undertake their operations to ensure compliance with those conditions.

Each Management Plan must identify which conditions it addresses.

No Concession activity can commence until the Management Plans have been certified.

~~1.2~~ Once audited and approved by the Grantor, the Management Plans shall form part of this Concession, and the Concessionaire shall not deviate from these plans without prior written approval of the Grantor.

Replace 1.2 with:

Once certified by the Grantor, all work must be carried out in accordance with these Management Plans.

1.3 The Concessionaire must pay the costs incurred by the Grantor in reviewing and approving all plans required by this Concession including obtaining expert reviews.

At least six months prior to the Activity commencing, the Concessionaire must advise the Grantor, in writing, of the proposed commencement date.

At least one month prior to the initial commencement date of the proposed monitoring outlined in Schedule X, the Concessionaire must advise the Grantor, in writing, of the proposed monitoring commencement date.

The concession shall lapse if not given effect to within 5 years from the date on which it was granted.

~~1.4~~ The Grantor may require plans provided pursuant to this concession to be independently audited by an auditor approved by the Grantor. The auditor shall certify that the plans have been prepared in accordance with best practice for the relevant discipline. The costs of independent audit shall be borne by the Concessionaire.

~~1.5~~ All plans provided pursuant to this Concession shall be provided by the Concessionaire to Grantor within reasonable time frames to allow the Grantor to review these plans.

## **2 Bond**

2.1 Prior to commencing the Concession Activity, the Concessionaire must provide as surety a trading bank, insurance company or bond guarantor who is acceptable to the Grantor.

2.2 The surety must execute (in the case of two or more jointly and severally) in favour of, and on terms acceptable to, the Grantor a performance bond initially set at NZ\$\_\_\_\_\_ (\_\_\_\_\_dollars) for due and faithful performance by the Concessionaire of the obligations under the Concession and/or reinstating any disturbed area of the Land to a standard satisfactory to the Grantor where disturbance has been caused by the Concessionaire or any agent of it and/or otherwise remedying or mitigating any adverse effects of the Concession Activity.

2.3 If the initial amount of the bond has not been set in clause 2.2 then prior to the Concession Activity commencing that amount will be set by the Grantor following an independent risk assessment using a methodology approved by the Grantor.

2.4 The initial amount set under either Conditions 2.2 or 2.3 may be reviewed at the discretion of the Grantor at any time.

2.5 The cost of any independent risk assessment or review will be paid by the Concessionaire within 10 working days of being given a notice by the Grantor.

2.6 Notwithstanding the expiry, surrender or termination of the Concession document, the bond will not expire and is to remain in full force and effect until such time as all obligations of the Concessionaire under the Concession document have been complied with to the satisfaction of the Grantor.

2.7 If the Concessionaire breaches any condition or fails to carry out any condition of the Concession or in carrying out the Concession Activity there arise adverse effects not authorised or reasonably foreseen in the Concession document the Grantor may call on the bond entered

2.8 into under this Document or any portion of it to ensure compliance with the conditions of the Concession document or to remedy or mitigate those adverse effects referred to above.

### 3 **Liaison Officer**

3.1 The Concessionaire must fund a Department of Conservation employee or external contractor who will act as a liaison contact between the Concessionaire and the Grantor during the term of construction of the Scheme. The exact role, brief of service and level of remuneration of the Liaison Officer will be agreed between the Concessionaire and the Grantor, and failing agreement will be determined by arbitration under Condition # of Concession Documents standard conditions.

3.2 The Concessionaire and the Grantor record that the role of the Liaison Officer includes:

- a) ~~reviewing annual Work Plans and other documentation submitted to the Grantor under this concession or otherwise associated with the Concessionaire's activities and operations under this concession, and making appropriate recommendations to the Grantor based on those documents;~~
- b) ~~monitoring compliance by the Concessionaire with Plans required pursuant to this concession and any other requirements of the Grantor; and~~
- e) ~~monitoring compliance with the Rehabilitation Plan, monitoring and liaising over the success or otherwise of ongoing restoration works and making recommendations to the Grantor regarding successful progressive and long term restoration and rehabilitation of the Site.~~

#### The role of the Liaison Officer includes:

- d) meeting with the Concessionaire, including the primary contractor as required but at least 10 working days prior to commencement of the activity.
- e) meeting with the Concessionaire at appropriate intervals, and not less than every 6 months following commencement of the Activity.
- f) Reviewing Management plans and obtaining expert advice.
- g) reviewing annual Work Plans and other documentation submitted to the Grantor under this concession or otherwise associated with the Concessionaire's activities and operations under this concession, and making appropriate recommendations to the Grantor based on those documents;
- h) monitoring compliance by the Concessionaire with Plans required pursuant to this concession and any other requirements of the Grantor; and
- i) monitoring compliance with the Rehabilitation Plan, monitoring and liaising over the success or otherwise of ongoing restoration works and making recommendations to the Grantor regarding successful progressive and long term restoration and rehabilitation of the Site.

3.3 The appointment of the Liaison Officer will be by the Grantor following consultation with the Concessionaire, and the Liaison Officer will report to the Grantor.

3.4 The Concessionaire and the Grantor agree that the Liaison Officer will be a senior position, requiring a range of professional skills necessary for liaising effectively and autonomously with the Concessionaire, the Grantor, the West Coast Regional Council and Westland District Council, other external consultants, insurance companies and bondsmen. The Liaison Officer must have a strong proven performance in relationship management for large-scale developments in environmentally sensitive areas.

3.5 The Liaison Officer must be appointed **prior to the applicant submitting the Management Plans referred to in condition 1.6 above**. Pending such appointment the Grantor may, if considered necessary and desirable by the Grantor, appoint an interim liaison person at any time between the date of execution of this Concession and the commencement of this concession; and such interim liaison person will carry out the role of the liaison officer as envisaged by condition 3.2 of the Special Conditions for this concession.

- 3.6 The Liaison Officer may, with the prior approval of the Grantor, call on additional independent external consultants for specialist advice on matters reasonably raised by the Concessionaire's operations carried out under this concession. The Liaison Officer will advise anticipated costs of consultants to both the Concessionaire and Grantor. The Concessionaire shall meet the costs reasonably charged by such consultants.

#### **4 Pre- Construction Activities**

- 4.1 Prior to Construction of the Scheme, the Concessionaire will submit for the Grantor's approval, the precise route of the access road and transmission line from the Macgregor Creek boundary of the Concession to the switchyard and powerhouse site. The transmission line, poles and wires/lines, will be located within the 20 metre access road corridor. If a pole is required to be located outside the 20 metre corridor this shall be included within the alignment information submitted to the Grantor for approval.
- 4.2 The submission of a proposed access road and transmission route to the Grantor must include an assessment to demonstrate that the proposed alignment is in compliance with all other relevant conditions of the Concession.
- 4.3 The access road and transmission route shall retain a margin of up to 20 metres, with a minimum allowable margin of 10 metres where topography and other matters limit provision of a wider margin, between the access road and associated corridor and the Stable Tributary. This margin is to allow for a protected vegetated riparian zone of trees, shrubs and groundcover that will shelter the waterway from the road and help to intercept runoff from the road.

Road widths any greater than required for safe operation of the road must be avoided. It is expected that the road will generally be a single lane with passing bays (requiring 6m and 10m widths respectively) Passing bays must be no more than 100m in length. Justification must be provided if more than 2 passing lanes are proposed.

Any instances where it is proposed that the access road be closer than 20m from the stable tributary must be specifically identified and justified with alternative options supplied.

- 4.4 Prior to construction the Concessionaire shall survey, identify and map all large trees with a dbh (measurement of diameter at breast height) of greater than 30 cm dbh for podocarp trees or greater than 60 cm for hardwood trees proposed to be removed or disturbed within the (also see bat conditions):
- c) proposed access road and transmission line alignment;
  - d) construction footprint including the areas around the possible tunnel portal entry site, and temporary road to the contractors facility above Morgan Gorge.

4.5 This data will be used to make any practicable road alignment adjustments to avoid as many of these large trees as possible and to comply with the bat conditions in Schedule X (Appendix 2 of this report), the road alignment will be defined and approved through the Management plan process.

~~4.6 The tree survey outlined in Condition 4.4 shall also include a survey for potential bat roosting trees based on criteria provided by a suitably qualified bat expert~~

~~4.7 The data collected under Conditions 4.4 and 4.6 will be used by the Concessionaire to identify any potential bat roosting trees and to define access and transmission routes that result in least damage to all vegetation, in particular large (60+ cm dbh) hardwood trees and podocarp trees (30+ cm dbh).~~

~~4.8 During the month of April, prior to construction, the Concessionaire shall undertake monitoring of the blue duck population for the following three parameters:~~

- ~~a) total numbers;~~
- ~~b) the presence of pairs; and~~
- ~~c) the presence of juveniles.~~

~~4.9 Monitoring of the blue duck population under 4.8 shall be undertaken at the following sites:~~

- ~~a) from (and including) Kiwi Flat to Douglas Creek; and~~
- ~~b) the Amethyst Ravine.~~

see to Blue Duck monitoring section

- 4.10 Boundaries of all areas to be disturbed shall be marked using flagging tape on the ground and GPS'd prior to work commencing and approved by the Grantor. These areas will be reviewed by the Liason Officer to check consistency with the approved plans. Disturbance outside these marked areas are not permitted unless prior written approval from the Grantor is obtained. The Concessionaire is to pay the Grantors costs in approving marked areas and considering any requests for deviation from those areas.

## 5 Disturbance Areas

- 5.1 The area to be disturbed for construction shall not exceed 4.94 ha in total and shall be within the areas marked out under Condition 4.10 and as set out on the maps attached (Appendix 1: Map 5 (Revised February 2015) and Map 6).

- 5.2 Notwithstanding the total areas permitted to be disturbed in Condition 5.1, the maximum construction and operational footprint areas permitted shall not exceed the areas set out below:

	Construction Footprint (ha)	Operational Footprint (ha)
<b>Surface Area:</b>		
<b>Area 1: Headworks</b>	0.34	0.175
<b>Area 2: Powerhouse Site</b>	2.0	1.3
<b>Access Road</b>	2.6	2.4
<b>Total Surface Area</b>	<b>4.94</b>	<b>3.875</b>
<b>Total Subsurface Area</b>	<b>2.6</b>	<b>2.6</b>

Note:

1. The surface figures include

- a) the areas estimated for vegetation clearance as provided in the report on Terrestrial Flora Description and Assessment (TACCRA 2013 Appendix 15) and
  - b) allows for the non – vegetated areas within the footprint, for example work within the bed of the river.
2. Powerhouse site includes stop banks and flood protection.
3. The operational footprint is within the construction footprint.
4. The subsurface area allows for all the works underground including the tunnel, sediment settling basins, flushing tunnel

- 5.3 The Concessionaire shall avoid or minimize the removal of large hardwood trees ( $\geq 60\text{cm dbh}$ ) and podocarp trees ( $\geq 30\text{cm dbh}$ ) The Concessionaire must minimize the removal and disturbance of Bat, Lizard and Bird habitat. This includes but is not limited to, specifically minimizing the number of trees felled  $>15\text{cm dbh}$  and avoid to the extent practical the felling of hardwood trees ( $\geq 60$  and podocarp trees  $\geq 30\text{cm dbh}$ )

- 5.4 The Concessionaire shall obtain the Grantors approval for removal or disturbance of any podocarp measuring more than 60cm dbh.

- 5.5 The Concessionaire shall obtain the Grantor's approval for removal or disturbance of kamahi and other non podocarp species measuring more than 100cm dbh.

- 5.6 Unless otherwise approved by the Grantor, trees or areas around trees, with a dbh of greater than 60cm for any podocarp species or 100cm for any non podocarp species are not to be disturbed closer than their outer drip line.

Specific reasons (ecological and engineering) should be provided to the grantor and approval obtained for proposed disturbance or removal of any podocarp measuring  $\geq 60\text{cm}$  dph or kamahi and other non podocarp species measuring  $\geq 100\text{cm}$  dbh.

Disturbance includes any proposed activities with a trees dripline.

- 5.7 The felling of any trees is to be done in a manner so that damage to surrounding vegetation is minimised as far as is practicable.
- 5.8 Dead standing trees shall not be removed unless they pose a hazard or obstruction. If such trees pose a hazard or obstruction the Concessionaire shall obtain the approval of the Grantor prior to removal.
- 5.9 ~~Prior to any tree felling where a tree has been identified in Condition 4.6 as likely to be occupied by bats the Concessionaire shall engage a suitably qualified person to monitor for the presence of bats the evening prior to tree felling (using an electronic bat detector) to ensure no bats are occupying tree when felled. If the tree is occupied then tree felling shall be delayed until the bats have vacated the tree. See bat condition section 15~~
- 5.10 ~~At the same time as the specialised bat survey, a search shall be undertaken at similar sites for nesting kaka. If kaka nests are found within the proposed construction area, activities shall be temporarily halted or alternative routes found to avoid disturbance. (moved to section 15 under Protection of Terrestrial and Aquatic Fauna)~~
- 5.11 The Grantor shall not withhold permission to remove trees unreasonably, but will ensure that the Concessionaire minimises disturbance and removal of significant trees as far as is practicable.
- 5.12 All large trees felled pursuant to this concession are to remain the property of the Grantor. The Concessionaire shall comply with all reasonable instructions given by the Grantor to remove large trees to a site approved by the Grantor for disposal. The grantor must be notified when any large tree (greater than 100cm dph) is to be felled. The Grantor will identify where the tree shall be placed.
- 5.13 Subject to the provisions of the approved Rehabilitation Management Plan (see Condition 11.1), any vegetation disposed of on Site shall be in areas approved by the Grantor.
- 5.14 The Concessionaire must ensure that there is no dumping of substrate or side casting of material into forest beside any road formation. All material must be disposed of at designated or otherwise approved sites.
- 5.15 ~~The Concessionaire shall remove all excess fill from the Land within 4 weeks of fill being created unless written approval is given by the Grantor for it to remain on the Site for longer.~~

Suggested reworked conditions:

The Concessionaire must ensure fill is only brought on site when it is required within the following 4 week work programme.

a) The maximum volume of fill to be stored on site is  $x\text{m}^3$

The maximum volume of spoil/wasterock to be stored on site is  $100\text{m}^3$ .

a) The storage area is to be located at the site that will be at the powerhouse site (identified on map X),

b) All other spoil/wasterock is to be removed from PCL unless it can be used onsite for a task that would otherwise require material to be brought onto PCL.

The Concessionaire shall remove all excess fill from the Land within 4 weeks of fill being created unless written approval is given by the Grantor for it to remain on the Site for longer.

Any sediment that is collected in a settling pond must be disposed of off Public Conservation Land unless it can be used onsite for a task that would otherwise require material to be brought onto Public Conservation Land.

Rock protection material for the armour-rock stopbank around the powerhouse site will be sourced from the powerhouse and tunnel excavations where suitable and available at the time required.

5.16 The Concessionaire shall ensure that disturbance of riparian margins is minimised.

5.17 Once construction of the Scheme components and infrastructure authorised under this concession are complete (including the tunnel, access roads, tunnel portal and staging area, intake structure, treatment pond, penstock, stopbank, powerhouse, and switchyard) the Concessionaire shall provide a survey map, prepared by a suitably qualified land surveyor and in a form able to be registered, of all areas occupied for the Grantors approval. The Grantor shall vary this concession by replacing the map attached pursuant to Condition 5.1 (maximum permitted disturbance area approved for construction) with this map recording actual 'as built' developments. To inform this map the concessionaire must:

a) Review the area required for the Concession;

b) Identify any areas that are no longer necessary for the on-going operation or maintenance of the Activity or for on-going mitigation measures, provided that the concession fully retains areas affected during construction, to ensure that these areas are able to be restored by the concessionaire;

## 6 Water Take, Diversion and Use

6.1 The Concessionaire shall ensure flow in the Waitaha River below the intake weir is not less than the Minimum Residual Flow of 3.5 m<sup>3</sup>/sec at all times during operation of the Scheme when water is being diverted through the turbines.

6.2 Abstraction of water shall cease whenever the flow falls below the Minimum Residual Flow of 3.5 m<sup>3</sup>/sec below the intake weir. The Concessionaire shall notify the Grantor within 5 working days of the occurrence of the flow in the Waitaha River falling below 3.5 m<sup>3</sup>/sec at the flow-monitoring site.

See proposed new conditions under 18.8

6.3 The Concessionaire shall design the intake to include the facility to bypass the full base flow of the river if a flushing flow in the river appears necessary from the monitoring of fine sediment discharge in the abstraction reach.

Suggested new conditions

The Concessionaire must avoid significant fluctuations in water volumes in the Waitaha River (biodiversity and Recreation impacts) and surrounds by:

a) Ensuring start-ups and shut downs taking water are undertaken in a "soft" manner whereby take is gradually increased in from the lowest possible take volume to normal operating power and decreased from operating volume to a lesser take volume.

b) All increases and reductions of water taken must occur at a rate of change not more than xm<sup>3</sup> minute.

## 7 Construction Management Plan

7.1 Prior to the commencement of construction, the Concessionaire shall submit a Construction Management Plan to the Grantor for approval. The CMP will set out how the construction works will be staged, the duration of the various stages, methods of construction and methods for managing any environmental effects during construction. The overall objectives of the Construction Management Plan shall be to:

a) to provide a management and operational framework which continually guides and informs measures and management approaches ;

- b) to ensure compliance with conditions of this concession
- c) to ensure activities are carried out in accordance with the avoid, remedy, or mitigate hierarchy for the prevention or management of any adverse impacts associated with the Concessionaires operations; and
- d) describe the methods for managing the actual or potential effects of construction activities.

7.2 The Construction Management Plan shall include:

- a) staff and contractor's responsibilities and reporting frameworks;
- b) construction methodology for each aspect of construction, how the construction works will be staged, and the duration of the various stages;
- c) how stakeholders will be kept informed during construction and how any complaints will be managed;
- d) key personnel and points of contact throughout the construction period;
- e) protocols for establishing when expertise and certification is required for certain elements of construction;
- f) protocols to be followed in the event of the accidental discovery of cultural or heritage items or artefacts; and
- g) Other procedures or actions necessary to comply with all of the conditions of this concession and any other relevant regulatory or legislative requirements.
- h) an outline of the relationship with the Liaison Officer.
- i) The scope for any minor changes

7.3 The Concessionaire shall ensure that the Construction Management Plan describes the methods/actions and timing for managing specific aspects during construction. These aspects will be provided for either in the body of the Construction Management Plan or managed via the topic-specific management plans set out in Conditions 9 to 14. The aspects to be managed relate to the management of:

- a) vegetation clearance disturbance and tree felling;
- b) wastewater, groundwater, erosion and sediment;
- c) hazardous substances;
- d) noise;
- e) in – river works;
- f) construction traffic;
- g) waste;
- h) pests and weeds;
- i) landscape design;
- j) rehabilitation;
- k) health and safety; and
- l) archaeological and cultural protocols, including accidental discovery.

**New Conditions (see paragraph 4.241)**

As part of the Construction Management Plan and Environmental Monitoring Plan 7.3 (e) 'in river works requirements', the Concessionaire must develop protocols to prevent fish stranding as a consequence of construction activities, including the provision of fish salvage where required.

Methodologies for monitoring and preventing fish stranding must be provided to the Grantor for approval within the Construction Management Plan and other relevant plans including the Environmental Monitoring Plan.

7.4 Once audited and approved by the Grantor, the Construction Management Plan shall form part of the Concession, the Concessionaire shall follow the recommendations of that plan and shall not deviate from the plan without prior written approval of the Grantor.

7.5 The Concessionaire must ensure that the Departments Accidental Discovery Protocols be followed and complied with in the event of discovery of any artefact or historical, cultural or archaeological material during construction activities. See protocols in schedule X.

**Add the following conditions**

**Annual Work Plan and Annual Report**

An Annual Work Plan must be provided to the Grantor not less than one calendar month prior to the proposed date for commencement of concession activities, and at least yearly thereafter. The overall objectives of the Annual work Plan must be to:

- a) provide guidance on environmental management for the construction and ongoing works of the Scheme and associated facilities that are not identified in the Construction Management Plan;
- b) provide a basis upon which construction works can occur in a timely and efficient manner;
- c) to ensure compliance with the requirements of conditions of this concession (including consideration of timing to minimise construction activities during the breeding seasons for blue duck, bats and kaka);
- d) describe the operational activities which are to take place in the coming calendar year.

The Concessionaire shall prepare and submit annually to the Grantor an Annual Report detailing the results of the annual Work Plan that was carried out including a report on whether the objectives of each management plan was met.

## **8 Wastewater, Groundwater, Erosion and Sediment Management**

8.1 Prior to the commencement of construction, the Concessionaire shall submit a Wastewater, Groundwater, Erosion and Sediment Management Plan to the Grantor's approval. The objectives of this Plan are to:

- ~~d) protect and maintain the ecological integrity of the Waitaha River and Stable Tributary (Appendix 1: Map 6);~~
- ~~e) prevent contamination of waterways; and~~
- ~~f) prevent erosion and land instability.~~

Proposed changes to wording of condition:

- a) Maintain water quality in the Waitaha River, Stable Tributary and other waters affected by the schemes construction and operation. Measures to achieve this must include:
  - i) avoiding to the extent practicable activities within 20m of Stable Tributary, including the siting of machinery or equipment;
  - ii) minimising the duration of activities occurring within or adjacent to waterways;
  - iii) undertaking construction and operational activities in a manner that minimising sediment from road and general uncontained surface runoff, entering the waterways (including Stable Tributary);
  - iv) ensuring discharge from runoff from is discharged to ground where site conditions allow;
  - v) ensuring any greywater and runoff, including from hard surfaces (e.g. the access road, powerhouse building and associated grounds), is directed into drainage channels through or into sediment detention ponds, soak holes, silt fences, other devices and suitable vegetated areas as required; and
  - vi) managing sediment deposition in the abstraction reach which resulting from sediment basin flushing.

8.2 This plan shall provide for both the construction activities and ongoing operation of the Scheme including detailed methodology for treatment of water and measures that will be established to minimise erosion and run off. The plan will include:

- f) sediment and erosion control and management of runoff from:
  - vii. access roads;
  - viii. waterway crossings;
  - ix. river protection works;
  - x. portal areas;
  - xi. intake site;

- xii. powerhouse site;
- g) treatment of water from tunnel;
- h) water abstraction for potable water and drilling water;
- i) greywater and toilet facilities; and
- j) monitoring.

**Addition of the following conditions:**

Timing of instream works shall be planned and managed to minimise impacts on aquatic life including managing the risk of construction contaminants and sediment being dispersed during freshes and floods. Work in the mainstem Waitaha River shall be undertaken during periods of stable flows within the lower flow range ie less than 20 cumecs.

- 8.3 Once audited and approved by the Grantor, the Wastewater, Groundwater, Erosion and Sediment Management Plan shall form part of the Concession, the Concessionaire shall follow the recommendations of that plan and shall not deviate from the plan without prior written approval of the Grantor.
- 8.4 The Concessionaire shall prepare and submit annually to the Grantor an Annual Report detailing the results of the Wastewater, Groundwater, Erosion and Sediment Management Plan as per condition.
- 8.5 Following analysis of the information provided pursuant to Condition 9.2 and any other relevant information regarding water quality obtained by the Grantor, the Grantor may, after discussions with the Concessionaire and the relevant territorial local authorities require the implementation of further management measures for water quality throughout the concession period.

**Stable Tributary**

- 8.6 The Concessionaire shall implement a combination of sediment management practices and informal drainage channels to ensure that any sediment-laden road runoff, including flood flows, is directed away from the Stable Tributary.
- 8.7 No construction activity, including the location of machinery or equipment, shall occur within the Stable Tributary or within the riparian margin for this tributary as described in Condition 4.3.

**Waterway Crossings**

- 8.8 Construction of waterway crossings shall be undertaken during low flow conditions and, as far as practicable, should make use of pre-cast structural elements to minimise the quantities of wet concrete or cement based products required within waterway channels.

**Changes to the following condition:**

- 8.9 ~~A bridge shall be used to cross Granite Creek. If a pier is required, this will be located out of the permanently wetted channel if technically feasible.~~

**Bridge Design: single span bridges are to be used for waterway crossings with pre-cast structural elements:**

- (1) unless health and safety concerns prohibit this or an alternative design will reduce the environmental impact. This can be considered during management plan certification.
- (2) If a pier is required, this will be located out of the permanently wetted channel if technically feasible.

**Contractors' Facilities**

- 8.10 The Concessionaire shall maximise the vegetated buffer zone (with a minimum of 10 m) between the Waitaha River bank and the contractors' storage/assembly area and helicopter landing site located above Morgan Gorge.

Changes to the above condition

The Concessionaire must ensure that auxiliary structures (including but not limited to contractors storage and assembly area, portacoms, helicopter landing site) adjacent to the Waitaha River must:

- a) Have at least a 10m vegetated buffer

- 8.11 The helicopter landing site at the headworks storage/assembly area will be located at the maximum down-valley extent practicable, taking into account operational and safety requirements

**Waste - including Foulwater and Greywater Facilities**

- 8.12 The concessionaire must ensure that the amount of waste is kept to a minimum and ensure that no refuse material be stored or disposed of within any waterway or its associated riparian margins (including excess cement). All waste and materials will be stored above flood levels.
- 8.13 All foulwater and greywater facilities shall be developed in accordance with the requirements of the Building Act 2004 and the Building Code.

**Potential Contaminants of Water**

- 8.14 Sediment removed from any construction settling pond shall be disposed of outside the concession area at a designated disposal site.
- 8.15 **The Concessionaire** must ensure the duration of time working in the channel during construction is minimised so as to reduce the risk of flood damage and sediment/concrete-based contaminant release, as well as effects on koaro migration.

**Add the following conditions (see paragraph 4.250):**

Prior to weir construction Westpower must use best practice methodology to undertake the necessary studies to define the period of upstream koaro whitebait migration and develop a timing and works protocol to ensure that koaro are protected and that natural levels of koaro passage and recruitment to habitats above the weir are maintained.

During the programme of weir construction Westpower must continue to monitor koaro migration to ensure that the timing and works protocols are providing adequate protection for upstream koaro migration. Timing and works protocols must be adjusted should monitoring indicate that they are inadequate in providing natural levels of koaro passage and survival. The details of the proposed monitoring programme shall be incorporated into the Construction Management Plan in river works 7.3 (e) and be approved by the grantor.

**Wording to be added to 9.17:**

During the programme of weir construction the applicant shall develop a programme for monitoring the presence of upstream migrating koaro whitebait in the vicinity of the proposed weir construction site. The purpose of the monitoring shall be to time the works at the weir (such as the pouring of concrete or other instream works activities) to avoid adverse effects on upstream migrating koaro. The details of the proposed monitoring programme shall be incorporated into the Construction Management Plan in river works (7.3 (e) and be approved the grantor.

- 8.16 The use of concrete-containing materials (e.g. concrete slurry, shotcrete material) shall be carefully managed to ensure that contaminated water is not released into any tributary waterway or directly into the mainstem river.
- 8.17 The quantity of tunnel spoil to be temporarily stored at the powerhouse site, and the contractors' facilities areas, shall be no more than a maximum volume equivalent to 100 m<sup>3</sup>. Tunnel spoil shall be regularly removed to the designated disposal site outside the concession area.
- 8.18 All runoff from hard surfaces (e.g. the access road, powerhouse building and associated grounds) shall be discharged to ground where site conditions allow.

- 8.19 Rock protection material for the armour-rock stopbank around the powerhouse site will be sourced from the powerhouse and tunnel excavations where suitable and available at the time required.

### **Erosion Control**

- 8.20 The Concessionaire shall ensure that any structure designed to accommodate the discharge from the power station to the Waitaha River is constructed in such a way as to avoid scouring or erosion of the natural watercourse.

### **9 Construction Noise Management Plan**

- 9.1 Prior to the commencement of construction, the Concessionaire shall submit a Construction Noise Management Plan to the Grantor for approval. The Construction Noise Management Plan shall be prepared by a suitably qualified acoustic noise consultant. The objective of the Construction Noise Management Plan is to minimise as far as practicable the effects of noise arising from construction activities.

- 9.2 The Construction Noise Management Plan shall include:

- g) criteria and standards for construction noise;
- h) general noise management methods;
- i) specific noise management for helicopters movements, traffic, blasting, piling, the protection of recreational users and wildlife (including blue duck);
- j) contingency measures;
- k) training; and
- l) complaints.

- 9.3 Once audited and approved by the Grantor, the Construction Noise Management Plan shall form part of the Concession, the Concessionaire shall follow the recommendations of that plan and shall not deviate from the plan without prior written approval of the Grantor.

- 9.4 Civil and construction works shall be undertaken only during daylight hours with the exception of emergencies and that the underground work associated with the tunnel construction is permitted at any time of the day or night.

### **10 Landscape Management Plan**

- 10.1 Prior to the commencement of construction, the Concessionaire shall submit a Landscape Management Plan to the Grantor for approval. ~~The overall objective of the Landscape Management Plan will be to use construction methods and materials where feasible that will minimise adverse visual effects on the environment, including reducing visual prominence and enabling recolonisation of vegetation.~~

**Add in the following highlighted conditions (See paragraph 4.94)**

**The overall objective of the Landscape Management Plan will be to avoid to the extent practicable and otherwise minimise the visual effect of all structures and alterations to the landscape by reducing visual prominence and enabling recolonisation of vegetation:**

- 10.2 The Landscape Management Plan is to include (but not be limited to) defined landscape goals, timelines and methods that will be followed by the Concessionaire to achieve the overall objective. A member of the NZ Institute of Landscape Architects shall draft the Landscape Management Plan in consultation with the Concessionaire and other relevant experts. Specific conditions must include;

**The Concessionaire must implement the works consistent with the updated revisions including the wording provided by James Bentley in his memorandum dated April 2016 and the revised photographic simulations prepared by Boffa Miskell April 2016.**

- 10.3 **The Concessionaire must** ensure that all structures and activities associated with the Scheme are to be constructed and coloured in a manner that is in keeping with their surroundings.

Specific Objectives for the Powerhouse Area are:

- i. The Concessionaire must implement the planting rehabilitation plan for the flood protection bund at Alpha Creek and around the powerhouse/bund area provided on page 4 of the 'Revised Photographic Simulations' prepared by Boffa Miskell April 2016 and this should form part of the proposed 'Construction and Rehabilitation Management Plan'.
  - ii. to ensure that the footprint of the powerhouse is clearly defined and that works do not extend outside of these parameters;
  - iii. The Concessionaire must avoid erecting any transmission tower at the switchyard and bury the transmission lines for no less than 200m downstream of the powerhouse.
  - iv. Further to condition 10.2 (b) the Concessionaire must ensure the power house building, walls, doors and trim be coloured: 'Ironsand' and the concrete walls roughened reducing unnecessary architectural details.
  - v. that the design of the powerhouse and adjacent penstock and portal avoids imposing structures with as much as practical kept underground;
  - vi. to minimise the removal of indigenous vegetation; and
  - vii. to ensure that a Landscape Planting Plan is developed incorporating the requirements of the Boffa Miskell: Natural Character, Landscape, and Visual Amenity Effects Report and in particular Part 6.2 of that report.
- c) Specific Objectives for the Intake Area are to:
- i. avoid significant cuts and battered slopes for access roads, including avoiding their proximity to river bank features and keeping works in the bed of the river to the minimum required to construct and maintain the road;
  - ii. ensure that the intake structures intersect with the existing topographic features and that appropriate cliff stabilisation measures are sensitively implemented; and
  - iii. ensure that active and passive rehabilitation measures are effective, notably for the construction sites.
  - iv. The Concessionaire must explore the practicality of facing the visible parts of the intake weir and portal structures once the structures have been constructed and carry this out where practical.
- 10.4 Once audited and approved by the Grantor, the Landscape Management Plan shall form part of the Concession, the Concessionaire shall follow the recommendations of that plan and shall not deviate from the plan without prior written approval of the Grantor.
- 11 **Rehabilitation Management Plan**
- 11.1 Prior to the commencement of construction, the Concessionaire shall submit a Rehabilitation Management Plan to the Grantor for approval. The Plan is to include (but not be limited to) defined rehabilitation goals, timelines and methods that will be followed by the Concessionaire to rehabilitate the site following construction activities.
- 11.2 Once audited and approved by the Grantor, the Rehabilitation Management Plan shall form part of the Concession, the Concessionaire shall follow the recommendations of that plan and shall not deviate from the plan without prior written approval of the Grantor.
- 11.3 The Concessionaire must rehabilitate all areas (including all contractors' facilities and storage areas within the Concession area) not required for either the ongoing construction or operation of the Scheme following completion of construction within a time frame agreed to with the Grantor. This will include enabling of natural regeneration or supplementary planting with appropriate indigenous species through appropriate methods of ground preparation.

- 11.4 The Concessionaire must ensure Rehabilitation is supervised by a suitably qualified person approved by the Grantor (paid for by the Concessionaire). This person may be the Liaison Officer.

Add the following conditions

The Rehabilitation Management Plan must ensure:

- a) plant species, plant/grass mixes, spacing/densities, sizes (at the time of planting) and layout are mapped;
  - b) the staging of planting must, as far as practicable, include provision for planting within each planting season following completion of work in each stage of the Project;
  - c) any plantings reflect the natural plant associations of the area;
  - d) where practicable, the use of mixes of plant which are of a suitable richness and diversity to encourage self-sustainability once established;
  - e) native plants are, so far as practicable, genetically sourced from the local Ecological Districts
- 11.5 The Concessionaire must ensure that all surplus materials, structures, machinery and equipment are to be removed from the Site at the completion of construction works.
- 11.6 The Concessionaire must provide a report on rehabilitation progress to the Grantor on an annual basis until the rehabilitation goals set out in the Rehabilitation Plan have been met.

## 12 Pest and Weed Control Management Plan

- 12.1 The Concessionaire must provide a Pest and Weed Control Management Plan to the Grantor for approval prior to any work commencing.

- 12.2 This Management Plan shall include detailed methodology for pest and weed control management to avoid to the extent practicable the adverse effects on native wildlife from pest animals by and plants by identifying (and undertaking) actions that minimise the risk of weed and pest incursion and measures to manage and suppress weeds and pests within the concession area and will include:

- a) the monitoring of weed establishment (in particular *Leycesteria formosa* but also for other woody species such as *Ulex europaeus*), with any necessary weed control undertaken as soon as practicable in the most effective season for best control results for the species concerned, and prior to plants attaining seeding maturity; (include this in monitoring section or move condition?)
- ~~b) in agreement with the Grantor, predator control along the access route and around Scheme Infrastructure. Predator control shall target possums, feral cats, mustelids and rodents.~~

Add the following conditions

- a) Weed control must be undertaken and timed to ensure that terrestrial weed species do not establish (in particular *Leycesteria formosa* but also for other woody species including *Ulex europaeus*).
  - b) Predator control shall include the control of rats, possums feral cats and mustelids that occur along the access route and around the Scheme Infrastructure and along all river banks (minimum target area 20m either side).
  - c) This control must be sufficient to maintain pest densities below <5% Return Tunnel Tracked for rats, <10% Return Tunnel Tracked for mustelids and <5% Return Trap Count possums. Note alternative monitoring approaches may be used provided they are consistent with NPCA and DOC Standards.
- 12.3 Once audited and approved by the Grantor, the Pest and Weed Control Management Plan shall form part of the Concession, the Concessionaire shall follow the recommendations of that plan and shall not deviate from the plan without prior written approval of the Grantor.
- 12.4 The Concessionaire must ensure that all machinery is cleaned (water blasted) before entering the site. For the purpose of this condition, the site entrance shall be taken as the contractors' facilities on the north bank of Macgregor Creek.

- 12.5 The Concessionaire shall ensure that all gravel, fill or other material brought onto the Site comes from a weed free source.
- 12.6 The Concessionaire must comply with the Didymo (*Didymosphenia geminata*) prevention and cleaning protocols as set out in Schedule # before and after contact (including people, equipment, clothing, footwear and other items) with any waterway.
- 12.7 The Concessionaire shall comply with all guidelines and notices put out by Biosecurity New Zealand regarding measures to avoid spreading the pest organism *Didymosphenia geminata* (refer to [www.biosecurity.govt.nz/didymo](http://www.biosecurity.govt.nz/didymo)).

Add the following conditions: (see paragraph 4.253)

- 12.8 The Concessionaire shall prepare details of a monitoring and reporting programme to determine the presence and biomass measurement of *Didymo* and other algal growths in the abstraction reach of the river. Its purpose shall be to establish a flushing protocol that ensures that no more than 50mg of Chlorophyll A biomass/square metre accumulates within the abstraction reach. The monitoring programme shall follow protocols established in Biggs and Kilroy 2000\*. The concessionaire shall undertake flushing flow releases (by closing down the scheme intake) to scour off growths and establish the volume of flow and the time period needed to give maximum effectiveness in removing algae and for designing further flushing regimes for maximum effectiveness.
- 12.9 In the case of the invasive algae *Didymo* being detected at any level of growth within the abstraction reach, a flushing flow shall be undertaken no more than 6 hours after its discovery in order to maximise the effectiveness of flushing. \* Biggs, B.J.F and Kilroy, C, 2000: *Stream Periphyton Monitoring Manual. Prepared for Ministry for the Environment. NIWA Christchurch. 226p.*
- 12.10 The Concessionaire must design the intake weir with the capability to bypass the full base flow of the river if a flushing flow in the river is required.
- 12.11 The flushing flow protocol shall include methods to ensure that all risks to people potentially exposed to sudden increases in flow are managed.

### 13 Safety

- 13.1 Prior to the commencement of construction, the Concessionaire shall submit to the Grantor an independently audited Safety Plan which meets the requirements of Conditions ## of the General Conditions (cross reference to these). The Concessionaire must comply with and keep that document in force during the term of this concession.
- ~~13.2 The Concessionaire shall produce a fire plan which meets the approval of the Grantor prior to commencing construction on the Site. No fires are to be lit on the Site and extreme care is to be taken with equipment likely to start fires. Full fire extinguishing equipment is to be kept on the Site at all times during construction. (No fires being lit on site is covered in the standard lease contract condition 9.1, safety aspects of fire should be covered in the Health and safety plan referred to in condition 13.1 above)~~

### 14. Fuel

- 14.1 The Concessionaire and its contractors must ensure that any refuelling vehicle carries a spill kit of loose absorbent material at all times, to absorb spilled fuel. In the event of a spill, the absorbent material shall be laid immediately over the site of the spill, and every practical step taken to contain the fuel. All contaminated soil must be removed from the site and disposed of in an environmentally safe manner. The Concessionaire must immediately report all fuel spills over 1 litre to the Grantor.
- 14.2 Machinery with fuel or oil leaks shall not be used onsite.

- 14.3 Any diesel storage tanks (maximum size 1250 litres) are to be bunded when onsite. The bund shall have a capacity of 110% of the fuel tank volume). The tanks and bunded area shall not be located any closer than 10 metres to any waterway and shall be located outside of any large flood event flow path.
- 14.4 Refuelling shall not take place within 10 metres of waterways.
- 14.5 The Concessionaire shall consider the feasibility and use of environmentally aware hydraulic fluids (based on vegetable products rather than petroleum-based products).

The addition of the following special conditions (see paragraph 4.255)

14.6 The Concessionaire must ensure that all fuel stored on public conservation land complies with the Hazardous Substances and New Organisms Act 1996 (HSNO Act).

14.7 The Concessionaire must complete the Bulk Fuel request for details form attached to this report in appendix 3 prior to construction and submit the form to the Grantor.

## **15 Protection of Terrestrial and Aquatic Fauna**

- 15.1 The Concessionaire shall ensure that their agents, servants, contractors, employees or invitees do not take dogs onto the Land unless authorised by the Grantor for environmental monitoring purposes e.g. locating blue ducks.
- 15.2 Subject to agreement of the Grantor, the Concessionaire shall install “no dogs allowed” signs for general public accessing the area in which the scheme is located. The most suitable location of any signs will form part of the agreement.
- 15.3 The Concessionaire shall ensure all food and rubbish arising from construction and operational activities is collected and removed from the site promptly.
- 15.4 The Concessionaire must train staff and contractors of the need to maintain appropriate road speed limits and shall set appropriate road speed limits (30 -50 km/hr) to minimise potential road deaths of birds.
- 15.5 The Concessionaire will ensure lights are turned off unless essential for operational and safety purposes during both construction and operational periods.
- 15.6 Where external sensor lights are installed permanently at the powerhouse/intake site these shall incorporate full cut-off or shielded light fixtures to prevent light scattering and use lighting that produces light at one wavelength, but emit no UV.
- 15.7 The intake weir shall be designed in consultation with the appropriate specialists to allow for:
- a) koaro passage in and out of Kiwi Flat while preventing trout and other fish species from accessing Kiwi Flat; and
  - b) blue duckling access.

Add the following conditions (see paragraph 4.302)

If such a design allowing for blue duckling access is not feasible then Westpower, at the option of the Grantor, must either: (a) undertake a Whio Operation Nest Egg operation as in condition 18.7; or (b) fund a captive bred blue duck programme; or (c) extend the predator control commitments.

(see paragraph 4.258)

The intake weir must be designed, managed and maintained to prevent the upstream movement of all fish except koaro whitebait. A monitoring and mitigation programme shall be designed to ensure that recruitment levels of koaro are sustained at levels no more than 10% different from those occurring prior to weir construction. Details of reporting and mitigation options to achieve this level of recruitment shall be detailed within the EMP and be approved by the grantor

Add the following conditions

## Bats

See bat conditions in appendix 2 (refer paragraph 4.159)

### **Kaka** (see paragraph 4.163)

At the same time as the specialised bat survey, the Concessionaire must carry out a search at similar sites for nesting kaka. If kaka nests are found within the proposed construction area, activities shall be temporarily halted or alternative routes found to avoid disturbance.

## Lizards

~~15.8 The Concessionaire shall advise the Grantor should any gecko/skink be discovered during construction activities. The Concessionaire will apply for the necessary wildlife permit required for collection of reptiles prior to construction so that any gecko/skink may be collected and handed to the Grantor.~~

### **Replace 15.8 with: (see paragraph 4.183)**

7. The Concessionaire must obtain all Wildlife Act permits prior to commencing operations, which must include conditions and arrangements for the handling and release procedures of any geckos/skinks found, prior to any habitat destruction.
8. The Concessionaire must write a set of Lizard Salvage Procedures for the project and include these in the X Management Plan. The Procedures should include details of:
  - iv. procedures for searching for and salvaging lizards, including capture and handling techniques to be applied
  - v. provision of post-release monitoring
  - vi. reporting
9. The Concessionaire must obtain approval for the Lizard Salvage Procedures from the Hokitika DOC Operations Manager prior to commencing operations
10. Lizard capture, handling and relocation should be undertaken at a suitable time of year when lizards are active, as advised by a suitably experienced herpetologist
11. Lizards classified as ‘Not Threatened’ should only be released into site(s) that are assessed by a qualified herpetologist [or other expert] as being of similar or better habitat than the source location, and capable of supporting that lizard species;
12. Lizards classified as ‘Not Threatened’ should only be released into site(s) that are within five hundred (500) metres of the development footprint and has long-term security from development or modification (or with consultation and agreement with the Hokitika DOC Operations Manager)
13. If lizard species salvaged are classed as Threatened wildlife, the Concessionaire must contact the Hokitika DOC Operations Manager. The Concessionaire must transfer the wildlife to an approved captive holding facility until a suitable release site is identified by DOC. A separate application to translocate threatened species may be required. The costs of care and subsequent release are the responsibility of the Concessionaire.
14. A report is to be submitted in writing to the Hokitika DOC Operations Manager, at the end of the construction phase, or annually, summarising outcomes in accordance with the Lizard Salvage Procedure. The report must include:
  - v. the species and number of any animals collected and released;
  - vi. the GPS location (or a detailed map) of the collection point(s) and release point(s);
  - vii. copies of approved Species Specific Management Plans; and
  - viii. results of all surveys, monitoring or research.
15. Completed Amphibian and Reptile Distribution System (ARDS) cards for all herpetofauna sightings and captures (<http://www.doc.govt.nz/conservation/native->

[animals/reptiles-and-frogs/species-information/herpetofauna-data-collection/ards-card/](#)) must be sent to Herpetofauna, Department of Conservation, National Office, PO Box 10420 Wellington 6143 or [herpetofauna@doc.govt.nz](mailto:herpetofauna@doc.govt.nz).

### **Aquatic Ecology**

15.9 The tailrace channel will be designed, in consultation with a suitably qualified ecologist, to reduce suitable trout refuge areas (e.g. large boulders) so that it is not conducive to good adult trout habitat.

Add the following condition (see paragraph 4.257)

The weir must be designed, managed and maintained to prevent the upstream movement of all fish except koaro whitebait. A monitoring and mitigation programme shall be designed to ensure that recruitment levels of koaro are sustained at a level agreed by a recognised population expert (but as close to no more than 10% different from those occurring prior to weir construction, as possible.) Details of reporting and mitigation options to achieve this level of recruitment shall be detailed within the EMP and be approved by the grantor.

### **Blue Duck**

15.10 Unless required for operational, monitoring and safety reasons, helicopters servicing the scheme shall:

- a) avoid using the Waitaha River as a helicopter flight path between Macgregor Creek and the Morgan Gorge intake site contractors' facilities, and fly as far as practicable away from both Douglas Creek Confluence and Morgan Gorge exit; and
- b) avoid helicopters flying up-valley of the Morgan Gorge intake site contractors' facilities.

Add the highlighted words (see paragraph 4.306):

15.11 Prior to any rock blasting the Concessionaire shall undertake a visual inspection to ensure that blue ducks are not present within or about the entrance to Morgan Gorge or within the potential fall zone. If blue duck are seen to be present during a visual inspection then the concessionaire must do one of the following things;

- a) Blue ducks must be scared off prior to any blasting;
- b) If this is unsuccessful then blasting will be delayed until the birds fly away;
- c) A photographic log and record will be kept of any birds in the vicinity and provided to Doc.

### **16. Aircraft Access**

16.1 Aircraft access is permitted in accordance with the conditions of this consent and with an authorised Aircraft Concessionaires only.

### **17.0 Recreational Use**

17.1 During the construction period, the Concessionaire must provide to the information on construction activities that may affect recreational users within the area surrounding the Construction Footprint.

Add highlighted wording

This information shall be made available on the Westpower website and to the Department of Conservation, and other of key stakeholders for their websites if they agree, such as Permolat ([www.remotehutes.co.nz](http://www.remotehutes.co.nz)) and the whitewater NZ and on appropriately located signage approved by the Grantor. The information shall include:

- d) a description of the type, timing sequence and location of construction activities;
- e) potential hazards (including in-river hazards) arising from construction activities, including advice on avoiding hazards and construction activities generally; and
- f) any effects on the flow regime.

Add the following Highlighted wording to 17.3 (a) and additional condition 17.2 (b)(see paragraph 4.350-4.351)

17.2

- (a) ~~Subject to the agreement of the Grantor,~~ The Concessionaire must provide alternative track access on the true right of the Waitaha River for recreational visitors between Macgregor Creek and Kiwi Flat. This must be ~~provided~~ constructed and maintained to Tramping Track Standard described in the New Zealand Handbook Tracks and Outdoor Visitor Structures SNZ HB8630:2004 at the Concessionaire's expense for the duration of the Concession. The track must be located ~~and routed~~ to avoid the powerhouse site ~~construction area~~ and approved through the management planning process that ensures that the effects of it are minimised.
- (b) The Concessionaire must ensure that the section of the route to allow kayakers to access the bottom of Morgan Gorge is retained and this section of the track should be constructed and maintained to Tramping Track Standard described in the New Zealand Handbook Tracks and Outdoor Visitor Structures SNZ HB8630:2004.

17.3 The downriver face of the weir shall be designed to allow kayaking access into Morgan Gorge. The Concessionaire will consult with Whitewater New Zealand on the development of the weir design.

Change 17.3 to: (see paragraph 4.360)

The safety features of the weir shall be designed in consultation with Whitewater New Zealand.

- 1) The safety features of the weir are to achieve an overall standard of difficulty for kayak and foot access into Morgan Gorge no greater than already exists.
- 2) The design plans for the safety features of the weir shall be certified as to their achievement of condition (1) by:
  - a) a suitably qualified and experienced engineer with experience in the design and operation of weir structures; and
  - b) a person with experience in water safety, particularly in kayaking on rivers.
- 3) The Concessionaire shall prior to the commissioning of the project, provide a certificate from a suitably qualified and experienced engineer confirming that the construction of the weir has occurred in accordance with the design plans certified under condition (2).

17.4 ~~The Concessionaire shall consult with Whitewater New Zealand on the potential for developing a regime of ceases to abstraction to provide natural flows in Morgan Gorge, to support a continued kayaking opportunity in Morgan Gorge.~~

Replace 17.4 with the following (see paragraph 4.406 and 4.414 and 4.417):

17.4

- (1) The Concessionaire shall cease the take at the intake on two occasions per calendar year in accordance with condition [3] if the following conditions are met:
  - a) no later than 7 days before the nominated day, the Concessionaire receives notice from Whitewater New Zealand (or their successors or nominees ("WWNZ") nominating a proposed no- take day;
  - b) the Concessionaire gives WWNZ notice of its decision whether to grant WWNZ's request no later than 5 days before the nominated day (the Concessionaires consent may not be unreasonably withheld);
  - c) WWNZ gives the Concessionaire notice confirming its request no later than 12:00 pm on the day before the nominated day; and
  - d) the Concessionaire has not received a cancellation notice under condition [2].
- (2) If, before 7:00am on the nominated day, the Concessionaire receives notice from WWNZ that WWNZ wishes to cancel a no-take day, the cancelled day is not regarded as a 'no-take day' and WWNZ may select one alternative no-take day in accordance with the process in conditions 1a) to 1d), or as otherwise agreed in writing between the Concessionaire and WWNZ.

(3) If the conditions set out in conditions [1] or [2] are met, the Concessionaire will cease take at the intake between the hours of 7.00 am and 5.00 pm on the nominated day. However, the Concessionaire may resume the take at the intake earlier than 5.00 pm on the nominated day if notified by the WWNZ nominee that all kayakers have left the affected reach of the river in accordance with the Protocol.

(4) If the Concessionaire receives a cancellation notice under condition [2] or [3] after the specified time, the day is deemed to be a "no-take day" and, on receipt of the cancellation notice, the Concession holder may, at its discretion, resume taking water from the intake.

(5) Any additional requests for no take days shall be considered by the Concessionaire at the Concessionaire's absolute discretion.

a) The Grantor may review the number of no take days and their management on a 5 yearly basis.

(6) All notices under conditions [1]-[4] must be sent in writing and to the contact person specified in the Protocol.

(7) The cease to abstract no-take Protocol must be reviewed by the Concessionaire on an annual basis, unless the details change for a contact person, in which case the Protocol must be updated as soon as reasonably practicable. The Protocol will include but not be limited to:

a) ~~The respective contact persons for WWNZ and the Concession holder (to whom notices must be sent);~~

a) The respective contact persons for the Grantor, White Water New Zealand and the Concession holder (to whom notices must be sent);

b) methods of communication and contact details;

c) responsibilities of each party (including that the WWNZ contact person advise the Concessionaire that all kayakers have left the affected reach of the river on the nominated day);

d) the section of affected reach to which notification in (c) applies; and

e) notification of no-take days.

(8) The Department may review the number of no take days and their management at anytime.

17.5 Once the Scheme is operational, the Concessionaire shall provide real-time flow data and camera footage of the Waitaha River at the intake location on its website. That information shall be available for kayakers, other recreational visitors and the general public to view.

Add (see paragraph 4.354)

17.6 The Concessionaire shall build and maintain foot access from the existing track on the true right of the Waitaha River to the intake, the access must be built and maintained to Tramping Track Standard described in the New Zealand Handbook Tracks and Outdoor Visitor Structures SNZ HB8630:2004.

## 18 Environmental Monitoring Plan

18.1 Prior to the commencement of construction, the Concessionaire shall submit an Environmental Monitoring Plan to the Grantor for approval at least 1 month prior to any component/s of the monitoring required by a condition of the Concession. The Concessionaire must implement and maintain a record system that confirms that the requirements of all conditions of this concession are met. ~~This plan shall detail the Concessionaire's programme for monitoring compliance with all conditions of this concession,~~ including monitoring of compliance of all approved management plans forming part of this concession.

- 18.2 The Environmental Monitoring Plan **must include detailed methodology for the monitoring that is to be carried out and** specify the frequency of monitoring, timing of monitoring, review of monitoring, actions required if the monitoring determines an adverse effect.
- 18.3 Once audited and approved by the Grantor, the Concessionaire must follow the recommendations of the Environmental Monitoring Plan and must not deviate from the plan without prior written approval of the Grantor.
- 18.4 The Concessionaire must prepare and submit annually to the Grantor a report detailing the results of the monitoring as required as part of the Environmental Monitoring. The report shall also include an assessment of the results and if appropriate, make recommendations to the Grantor with respect to the outcomes of the monitoring.

### **Infrastructure**

- 18.5 The Concessionaire shall undertake minimum monthly monitoring of weirs, races, roads and tracks, water tables, culverts and pipelines for signs of erosion, blockages, leakages etc. This will be included as part of the routine maintenance Schedule of the Scheme.

**Add the highlighted words to 18.6 (see paragraph 4.248)**

### **Water**

- 18.6 As part of the EMP the Concessionaire must develop a comprehensive integrated water quality monitoring plan for the tributaries and mainstem. The monitoring programme within the EMP shall use best practice methodology in addressing the following:

- the water quality parameters to be measured, the baseline water quality reference levels, the locations, methodology, protection limits and intervention protocols to be followed
- specify the equipment to be used to allow the continuous telemetered measurement of suspended sediment (using NTU), the measurement of deposited sediment, pH and other relevant parameters (subject to West Coast Regional Council (WCRC) requirements for monitoring Resource consent conditions)
- NTU levels shall not exceed natural levels by more than 20% as measured no more than 200 metres downstream of the discharge of construction derived sediment
- Measurement of deposited sediment to accurately discriminate the sediment depositing on the riverbed as a consequence of construction activities from other natural sources, deposition shall be no greater than 20% of reference pre-impact levels measured no more than 200 metres downstream of the discharge of construction derived sediments
- establish a pH monitoring protocol for whenever concrete is being poured where it may enter watercourses to ensure that pH is not altered by more than 1 pH unit as measured at a point no more than 200 metres downstream of the use of concrete. Establish the methods to address exceedances of water quality limits as proposed above including any agreed additionally and as may be required by the WCRC as resource consent conditions.
- Specify, based on best practice advice, a review timetable and protocol to ensure that the water quality monitoring programme is fit for purpose including a first assessment within 6 months of the commencement of construction

The Grantor shall review water monitoring requirements in consultation with the Concessionaire and the West Coast Regional Council within 6 years of the commencement of water diversion, and every three years thereafter.

### **Take, Diversion and Use**

- 18.7 The Concessionaire shall install a continuous flow monitoring device that is located below the intake. An electronic copy of these records shall be provided to the ~~Concessionaire~~ **Grantor** at the end of each calendar month in the format of flow rate, date and time.
- 18.8 The Concessionaire shall measure and record daily totals of water abstraction calculated from the power output. A copy of these records shall be provided to the Grantor annually.

Add the following conditions (see paragraph 4.268)

The flow monitoring and management programme must be developed by suitably qualified hydrological and technical specialists to ensure the choice of flow recording equipment and its installation, the location of measuring sites, rating curve accuracy, data logging and telemetric equipment all comply with international best practice standards. The flow monitoring system shall be fully operational no later than 2 months prior to the commissioning of the scheme. Accuracy of measurement as a minimum shall be no less than +/- 5% and all flow data shall be audited and certified by an appropriately qualified and experienced hydrologist. Flow data records shall be available for inspection by the grantor and WCRC on request.

The flow measuring equipment shall measure and record flow on a continuous instantaneous basis at the scheme intake and that passing over the weir. The monitored flow volumes shall be interrogable by telemetry and the information used to ensure that at all times flow released downstream from the weir is no less than 3.5 cumecs.

If at any time as a consequence of an outage or equipment malfunction the flow released downstream of the weir is less than 3.5 cumecs the concessionaire shall advise the grantor and WCRC immediately and implement measures to restore the flow to 3.5 cumecs urgently. Any such events shall be subject to investigation and improvements to address such failure developed within a protocol agreed by the grantor and WCRC within the flow monitoring and management programme.

#### ***Stable Tributary - Water Quality***

18.9 The Concessionaire shall monitor the water quality of the Stable Tributary during the construction phase for pH and sediment (e.g. measures such as total suspended solids, turbidity, and water clarity) to ensure that water quality within the waterway is not reduced through construction activities.

#### **Add the following to condition 18.9 (see paragraph 4.244)**

The Concessionaire in consultation with the department must design a quantitative annual fish monitoring protocol to determine the population health of native fish in the Stable tributary over the 3 year construction period (or longer if construction is extended). The outcome of the programme shall be that the population size and age structure shall be maintained at pre-construction levels. If adverse effects are detected remedial measures will be directed by the Department. Details on quantitative methodology must be provided in the environmental Monitoring Plan (Condition 18.1).

#### ***Fine Sediment - Waitaha River***

18.10 The Concessionaire shall establish a programme to monitor any discernible accumulation of fine sediment within the abstraction reach (i.e. between Morgan Gorge and the tailrace discharge point) due to residual flow or flushing of settling basins once the Scheme is operational. The monitoring will be by visual inspection of the channel margins downstream from Morgan Gorge, for example, weekly during periods when for example more than 2 weeks passes without a fresh in the river.

Add: (see paragraph 4.264)

Conditions 6.3 and 18.10 should be brought together into the Environment Monitoring programme with the following condition:

The Concessionaire must develop a detailed deposited sediment monitoring and flushing response plan to manage sediment deposition in the abstraction reach resulting from sediment basin flushing. The purpose of the Plan shall be to prescribe a monitoring methodology ( e.g. using Clapcott et al 2011 and other relevant best practise guidance) and flushing regime that maintains sediment levels at no more than 20% greater than at an appropriate non impacted control site

#### ***Fish - Koaro***

18.11 The Concessionaire shall undertake annual monitoring for the initial five years post-completion of Scheme construction for the following purposes:  
c) to record koaro passage at the weir; and

- d) to confirm that salmonids and longfin eels have not gained access to Kiwi Flat and its tributaries.

Add the following clause to 18.11 (see paragraph 4.261)

The concessionaire must include a koaro population monitoring protocol for a Waitaha mainstem site at Kiwi Flat as part of a comprehensive monitoring and mitigation plan. The plan shall be designed to maintain koaro populations within 10% of pre impact levels within the mainstem and tributaries above the proposed weir. The monitoring programme shall use best practice methodology in quantifying the size and age structure of koaro populations.

Details of the monitoring programme including reporting and mitigation intervention protocols to maintain populations within 10% of natural levels must be set out within the EMP.

Add the following words to conditions 18.11 and the addition of the following highlighted conditions: (see paragraph 4.245)

As part of the EMP the Concessionaire must submit a detailed Fish passage monitoring and mitigation plan to address the matters set out generally in Westpowers proposed conditions 18.11-18.13 and 15.9. Such a plan shall address fish passage issues (including monitoring for and exclusion of trout and eels) and where relevant fish survival rates relating to migration over the weir, fish entrainment at the tailrace and koaro larval survival rates through turbines. It is unclear to what extent in-river works in the mainstem at locations other than the weir would incorporate fish monitoring. The Department considers that the EMP should develop details within the EMP at condition 18.6.

In addition (building on suggested condition 18.14) the Concessionaire must develop a detailed Fish stranding monitoring and mitigation plan to ensure scheme operation ramping rules are designed and adjusted to prevent fish stranding or otherwise cause mortality to fish.

18.12 The Concessionaire shall undertake monitoring to ascertain:

- (a) when peak koaro larval drift occurs (from at least the Kiwi Flat 'Stable Tributary') and the proportion of these larvae being diverted into the turbines; and
- (b) (dependent on these findings), the injury/mortality rate of larvae passing through the turbines.

Add the following condition (see paragraph 4.259)

The monitoring and mitigation programme to address potential entrainment and turbine mortality rates of larval koaro shall be developed in conjunction with and be approved by the Department. An investigation programme using international best practice shall include the investigation and selection of turbine designs that will minimise larval mortality, determine the timing of koaro larvae migration, their numbers and rates of entrainment into the scheme and survival rates after turbine passage. Based on the findings of the monitoring and investigation programme the Concessionaire shall develop a mitigation programme to manage mortality rates to no more than 10% of those occurring naturally. The investigation and mitigation programme shall be incorporated into the fish ecology section of the proposed EMP where fish and other aquatic matters are consolidated.

18.13 The Concessionaire shall undertake monitoring once the tailrace is constructed and operational to quantify fish abundance within the tailrace. If monitoring reveals that a considerable number of fish are entering the tailrace then some form of a trap and transfer system or guidance system may be required, at least during peak fish migratory periods.

See Paragraph 4.258

The tailrace channel must be designed and maintained to prevent the entrainment of native fish and trout. A monitoring and mitigation plan including (if necessary) the provision of a trap and transfer facility shall be developed. The overall outcome of the programme shall be to ensure that recruitment levels of native fish are maintained within 10% of natural levels as determined by the Monitoring Plan proposed under condition 18.13.

Add new headings and conditions as highlighted:

**Ramping Effects Monitoring and Mitigation**

18.14 Within the first year of operation of the Scheme the Concessionaire shall undertake monitoring to ascertain the level of fish stranding (if any) due to sudden flow changes arising from the operation of the Scheme. The results of this monitoring will be used to inform the concessionaire as to whether further management of ramping rates is required, in terms of fish stranding management, during planned Scheme maintenance activities.

Add the following words to condition 18.14 (see paragraph 4.267)

The monitoring and mitigation programme shall develop flow change protocols that provide for the safety of downstream users at all times. This shall include the installation of warning notices and other devices that ensure the public are not caught unaware of increases in flow.

Within the first year of operation of the Scheme the Concessionaire must undertake monitoring based on international best practice to ascertain the level of fish and invertebrate stranding (if any) due to flow changes arising from the operation of the Scheme. When the relationship between flow increases and recessions on the levels of fish and invertebrate stranding within the affected reaches is determined the concessionaire shall submit a detailed report on the findings. The report shall recommend rates of flow change that will prevent fish and invertebrate stranding and avoid other adverse effects on aquatic life. The concessionaire must adopt protocols to ensure that these rates are complied with at all times.

The concessionaire shall provide a continuous flow record of the volume of water being released from the tailrace (refer proposed conditions below) as evidence of compliance with these protocols. Additional studies shall be undertaken in the event of uncertainty about the scale of effect of flow changes on fish or invertebrates so that additional protective protocols or other mitigation to minimise effects can be developed and adopted within flow change protocols.

Add the following conditions (see paragraphs 4.276)

**Instream community response within the abstraction reach**

The Concessionaire must design a monitoring programme using best practice methodology (refer examples below-) to evaluate impacts on the aquatic community occurring within the abstraction reach. In particular the programme shall determine the abundance of At Risk fish species compared to those found prior to scheme impacts. As a minimum, monitoring should occur annually for 3-5 years post commissioning to detect and respond promptly to address any decline through appropriate mitigation including habitat restoration/augmentation or other such measures as agreed to by the Department.

The Concessionaire must provide an annual interpretation of the results of the monitoring programme in the context of the preceding flow regime in the abstraction reach and any other relevant factors. An annual review shall ensure that the sampling programme and mitigation methods are appropriately responsive to the flow regime and other relevant factors. Any proposed changes to the monitoring programme shall be agreed by the Department.

(Examples of best practice methodologies: Freshwater habitat assessment (Harding et al 2009: Stream habitat assessment protocols ), Fish population monitoring ( Joy et al 2009: New Zealand Freshwater Fish sampling protocols), Macroinvertebrate monitoring (Stark et al 2001: Protocols for monitoring macroinvertebrates in wadeable streams; Gray 2013 : Quantitative macroinvertebrate sampling in hard -bottomed streams, Biggs, BJB and Kilroy, C, 2000: Stream Periphyton Monitoring Manual. Prepared for Ministry for the Environment. NIWA Christchurch. 226p.)

**Blue Duck (monitoring)**

18.15 During the month of April prior to construction and each year of construction and for 3 years post construction the Concessionaire shall undertake monitoring of the blue duck population for the following three parameters:  
a) total numbers;  
b) the presence of pairs; and

- c) the presence of juveniles.
- 18.16 Monitoring of the blue duck population under 18.15 shall be undertaken at the following sites:
- a) from (and including) Kiwi Flat to Douglas Creek; and
  - b) the Amethyst Ravine.
- 18.17 If monitoring under Conditions 18.15 and 18.16 shows an overall decline in the blue duck population within the site set out in Condition 18.15(a) compared to pre-construction monitoring ~~undertaken in Conditions 4.8 and 4.9(a) and where during the corresponding period:~~
- a) stoat numbers over the period are low; and
  - b) there is not a corresponding decline in adult abundance at Amethyst Ravine; the Concessionaire, where approved by the Grantor, will review/modify the Pest and Weed Control Management Plan (Condition 12.1) to either institute predator control (at Kiwi Flat and/or Amethyst Ravine), or implement who operation nest egg (WHIONE), in order to ensure pre-construction population levels established ~~through Conditions 4.8 and 4.9(a)~~ are maintained.
- 18.18 To inform decision making under Condition 18.17, the Concessionaire will seek information on rimu fruiting and stoat populations in podocarp forest in central Westland (DOC), and on pest control undertaken in the Waitaha Valley (TBfree). This information, together with hydrological information collected by the Concessionaire at Kiwi Flat, will be used for the purpose of assessing the major external environmental variables which are unrelated to the Scheme and that may impact on blue ducks in the Scheme area.

#### **Blue Duck (Knowledge Improvement)**

- 18.19 During construction the Concessionaire shall:
- a) record any observations of blue ducks at the Morgan Gorge headworks site and within the construction area; and
  - b) collect data of the location, timing and extent of principal noise and/or disturbance events at the Morgan Gorge headworks and contractors' facilities site (helicopters, blasting, heavy machinery).
- 18.20 Once the Scheme is operational, the Concessionaire will record any observations of blue duck made during maintenance/site visits and keep a record of the visits

#### **Weeds**

- 18.21 The concessionaire must undertake post construction weed monitoring on:
- a) an annual basis during use and for a minimum of 5 years after decommissioning of the temporary access road to and including the contractors' facilities area at the intake site; and
  - b) an annual basis within and for the duration of the concession at all other areas of the Concession Area.

#### **19.0 Geotechnical**

- 19.1 The Concessionaire is responsible for the structural integrity and maintenance of all structures or development activities associated with the Scheme.
- 19.2 The Concessionaire shall either at its sole cost meet all responsibilities and requirements, or reimburse the Grantor in respect of any costs of it meeting any responsibilities or requirements, under either the Building Act 2004 or the Resource Management Act 1991, in respect of any dam and weir structures associated with the concession activity, and will at its sole cost meet all statutory, regulatory or common law responsibilities, requirements or legal obligations arising in relation to such facilities, and indemnify and reimburse the Grantor or the Department of Conservation in respect of any costs or liabilities arising out of its statutory, regulatory or common law responsibilities, requirements or legal obligations in relation to such facilities.

## Appendix 2

### Bat Conditions

#### Definitions:

- **Potential bat roost trees** are native or exotic trees measuring >15 cm DBH (diameter at breast height) that have roosting habitat features (hollows, cavities, knot holes, splits, cracks and peeling/flaking bark)
- **Dusk and Dawn** are defined as starting and ending 0.5 hours either side of the closest official dusk and dawn time<sup>43</sup>

#### General conditions

1. The Concessionaire must engage a suitably qualified and experienced Chiropterologist (**the Expert**), subject to the Department's approval.
2. The Concessionaire, with the advice of the Expert, must take all practicable efforts ensure that no trees containing bats are felled and all practicable efforts are made to avoid felling bat roost trees.
3. The relevant provisions of [DOC's Best Practice Manual for bats](#) at **Schedule XX** should be adhered to for all aspects of bat work.

#### Surveying Trees Prior to deciding on road alignment and other vegetation clearance areas

4. All locations where vegetation may be disturbed must be surveyed by the Expert for 'potential bat roost trees'. In particular:
  - a. Works should avoid potential bat roosts wherever possible.
  - b. For the road alignment at least two potential routes (identified as preferred and alternative/s) must be identified; and
  - c. For other clearance sites the identified area for survey must be at least twice the area required to be cleared.
5. All potential roost trees in the site must be clearly marked.
6. A surveyed alternative route/building site should be used if potential bat roosts are present in the preferred route/building site.
7. If no practicable alternative route/clearance location without potential bat roosts can be identified, the surveyed location, which will have the least impact on bats, may be used subject to the Expert's opinion and Department's certification.
8. If potential bat roosts cannot be avoided by realignment or re-siting of works areas, all potential bat roost trees must be surveyed to determine whether they have been, or are being used as bat roosts. In particular:
  - a. Potential roosts should be climbed and inspected as soon as possible to determine if they are used or likely to be used by bats, potentially allowing trees to be dismissed as being potential bat roosts.
  - b. If cavities are confirmed as potential bat roosts then the Expert must follow pre-felling conditions, below.
  - c. If trees cannot be checked and dismissed as potential bat roosts, and the trees are targeted for eventual felling, the Expert must follow pre-felling conditions, below.

#### Surveying Trees Prior to Felling

9. All surveys and pre-felling checks must be undertaken by the Expert.
10. All remaining potential bat roost trees must be inspected for the presence of bats immediately preceding any proposed felling.
11. Surveying must occur between dusk and dawn for three consecutive nights prior to felling using an Automatic Bat Monitor (ABM) between September and April and when overnight temperatures are >7 °C. Instructions for use are at Schedule X.).
12. ABM data must be reviewed prior to 12pm (noon) each day to identify if bats are present at the site.

---

<sup>43</sup> See <http://www.lin.govt.nz/sea/nautical-information/astronomical-information>

13. If no bat activity at potential roost trees is identified the trees may be felled in accordance with the methodology identified in the construction Management Plan. Felling must occur prior to dusk on the day of the last survey (Day 3).
14. If bats are present, then felling must not occur until bats have vacated the site.
15. Bat roost trees must not be felled between:
  - a.1 May to 30 September to avoid felling trees where bats may be in torpor and therefore not active; or
  - b.1 October and 30 April if temperatures between dusk and dawn on the previous night dropped below 7°C at locations X, Y and Z<sup>44</sup>.

#### **Discovery of Bats During/After Felling**

16. The Expert, using a bat detector, must be present when trees are felled.
17. If bats are discovered during preparations for felling, every effort should be made to relocate the section of trunk/branch where the bats are roosting before felling may commence (if it is safe to do so).
18. The Expert should determine if bats are still present either by climbing the tree if it is safe to do so (if suitably qualified, or by supervising a qualified arborist to do so) and checking the roost or by monitoring the roost for 3 days using ABMs.
19. If bats be detected while felling is in progress, felling must stop long enough to allow any uninjured bats to escape (if it is safe to do so).

#### **Reporting**

20. The concessionaire must ensure that reporting includes a record of any trees that contain bat roosts detailing the size, location and type of tree.
21. Where no bats are detected within potential bat roost trees within the proposed clearance areas then survey data will be attached in the annual monitoring report (see condition X).
22. Where bats are detected on a preferred route but the bat roost trees are being avoided then the Expert's report must be provided within 1 month of the survey to xyz (see condition X specific monitoring reports).
23. Where there is no practicable alternative clearance location the Grantor must be notified as soon as practicable. No clearance of bat roost trees can occur until certification is provided by DOC).

#### **Dead or Injured Bats**

24. In the event of finding dead or injured bat/s at the site the concessionaire must:
  - a. Take injured bats immediately to the below named vet for assessment.
  - b. Contact the Hokitika Operations Office no longer than 2 hours after an injured or dead bat is found.
  - c. Bats should be placed in a cool dark material-lined box/bag by or under the direction of the Expert to ensure the animal is handled appropriately.
  - d. Once the vet has made an assessment the Expert and vet will determine any rehabilitation action required and the longer term future for the bat/s.
  - e. If the animal is dead or euthanized by the vet, it must be taken to the local DOC office as soon as practicable. The bat/s must be stored in a fridge at less than X<sub>o</sub>C
  - f. Pay any associated costs.

## Appendix 2

### Bat Conditions

Definitions:

- **Potential bat roost trees** are native or exotic trees measuring >15 cm DBH (diameter at breast height) that have roosting habitat features (hollows, cavities, knot holes, splits, cracks and peeling/flaking bark)
- **Dusk and Dawn** are defined as starting and ending 0.5 hours either side of the closest official dusk and dawn time<sup>45</sup>

### General conditions

25. The Concessionaire must engage a suitably qualified and experienced Chiropterologist (**the Expert**), subject to the Department's approval.
26. The Concessionaire, with the advice of the Expert, must take all practicable efforts ensure that no trees containing bats are felled and all practicable efforts are made to avoid felling bat roost trees.
27. The relevant provisions of [DOC's Best Practice Manual for bats](#) at **Schedule XX** should be adhered to for all aspects of bat work.

### Surveying Trees Prior to deciding on road alignment and other vegetation clearance areas

28. All locations where vegetation may be disturbed must be surveyed by the Expert for 'potential bat roost trees'. In particular:
  - d. Works should avoid potential bat roosts wherever possible.
  - e. For the road alignment at least two potential routes (identified as preferred and alternative/s) must be identified; and
  - f. For other clearance sites the identified area for survey must be at least twice the area required to be cleared.
29. All potential roost trees in the site must be clearly marked.
30. A surveyed alternative route/building site should be used if potential bat roosts are present in the preferred route/building site.
31. If no practicable alternative route/clearance location without potential bat roosts can be identified, the surveyed location, which will have the least impact on bats, may be used subject to the Expert's opinion and Department's certification.
32. If potential bat roosts cannot be avoided by realignment or re-siting of works areas, all potential bat roost trees must be surveyed to determine whether they have been, or are being used as bat roosts. In particular:
  - d. Potential roosts should be climbed and inspected as soon as possible to determine if they are used or likely to be used by bats, potentially allowing trees to be dismissed as being potential bat roosts.
  - e. If cavities are confirmed as potential bat roosts then the Expert must follow pre-felling conditions, below.
  - f. If trees cannot be checked and dismissed as potential bat roosts, and the trees are targeted for eventual felling, the Expert must follow pre-felling conditions, below.

### Surveying Trees Prior to Felling

33. All surveys and pre-felling checks must be undertaken by the Expert.
34. All remaining potential bat roost trees must be inspected for the presence of bats immediately preceding any proposed felling.
35. Surveying must occur between dusk and dawn for three consecutive nights prior to felling using an Automatic Bat Monitor (ABM) between September and April and when overnight temperatures are >7°C. Instructions for use are at Schedule X.).
36. ABM data must be reviewed prior to 12pm (noon) each day to identify if bats are present at the site.
37. If no bat activity at potential roost trees is identified the trees may be felled in accordance with the methodology identified in the construction Management Plan. Felling must occur prior to dusk on the day of the last survey (Day 3).
38. If bats are present, then felling must not occur until bats have vacated the site.

---

<sup>45</sup> See <http://www.linz.govt.nz/sea/nautical-information/astronomical-information>

39. Bat roost trees must not be felled between:
- a.1 May to 30 September to avoid felling trees where bats may be in torpor and therefore not active; or
  - b.1 October and 30 April if temperatures between dusk and dawn on the previous night dropped below 7°C at locations X, Y and Z<sup>46</sup>.

#### **Discovery of Bats During/After Felling**

- 40. The Expert, using a bat detector, must be present when trees are felled.
- 41. Should bats be detected while felling is in progress, felling must stop.
- 42. If a tree is partially felled when bats are detected, **once the tree has been vacated**, every effort should be made to relocate the tree or the section of trunk/branch before felling may recommence.
- 43. The Expert should determine if bats are still present by climbing the tree and checking the roost or my monitoring the roost for 3 days using ABMs.

#### **Reporting**

- 44. The concessionaire must ensure that reporting includes a record of any trees that contain bat roosts detailing the size, location and type of tree.
- 45. Where no bats are detected within potential bat roost trees within the proposed clearance areas then survey data will be attached in the annual monitoring report (see condition X).
- 46. Where bats are detected on a preferred route but the bat roost trees are being avoided then the Expert's report must be provided within 1 month of the survey to xyz (see condition X specific monitoring reports).
- 47. Where there is no practicable alternative clearance location the Grantor must be notified as soon as practicable. No clearance of bat roost trees can occur until certification is provided by DOC).

#### **Dead or Injured Bats**

- 48. In the event of finding dead or injured bat/s at the site the concessionaire must:
  - g. Take injured bats immediately to the below named vet for assessment.
  - h. Contact the Hokitika Operations Office no longer than 2 hours after an injured or dead bat is found.
  - i. Bats should be placed in a cool dark material-lined box/bag by or under the direction of the Expert to ensure the animal is handled appropriately.
  - j. Once the vet has made an assessment the Expert and vet will determine any rehabilitation action required and the longer term future for the bat/s.
  - k. If the animal is dead or euthanized by the vet, it must be taken to the local DOC office as soon as practicable. The bat/s must be stored in a fridge at less than X°C
  - l. Pay any associated costs.

## Appendix 3

### BULK FUEL REQUEST FOR DETAILS

#### General Guidance

##### ***Inventory scope***

The Department of Conservation requires that all fuel stored on public conservation land complies with the Hazardous Substances and New Organisms Act 1996 (HSNO Act). Although this Act applies to all fuels, the fuels that we specifically require you to inventory are diesel, petrol, AvGas and JetA1 fuel tanks **greater than 250 litres total capacity, whether used or not**. Fuel drums are out of scope.

##### ***How to provide your information***

Please provide your information in the attached template, and save as a Microsoft Word document.

##### ***Inventory required***

This request is in four parts: tank location, tank details, additional comments and tank photographs.

Please enter details in a separate template for each tank that you may have.

##### ***Coordinates required***

These are 7 digits.

If sourced from your GPS collect the coordinates in NZTM 2000

Alternatively please contact your local Department of Conservation office to obtain assistance with finding coordinates for your bulk fuel tank/s. Office details can be located on the DOC website: <http://www.doc.govt.nz/footer-links/contact-us/office-by-name/>

##### ***Stationary Container Test Certificate requirement***

A Stationary Container System Test Certificate for diesel, petrol, AvGas and JetA1 fuel is required for:

- any below ground tank of more than 250 litres;
- a stationary above ground tank of more than 2,500 litres containing or intending to contain a hazardous substance of class 3.1A (e.g. petrol);
- a stationary above ground tank of more than 5,000 litres containing or intending to contain a hazardous substance of any other classification (e.g. diesel);
- a stationary above ground tank of more than 50 litres containing petrol supplying an internal combustion engine (e.g. generator);
- a stationary above ground tank of more than 500 litres containing diesel supplying an internal combustion engine (e.g. generator);
- a stationary above ground tank of more than 60 litres containing any class 3.1 substance (e.g. petrol or diesel) supplying a burner.

##### ***Location Test Certificate requirement***

A Location Test Certificate applies to the site and is limited to sites where flammable substances are stored (e.g. petrol).

For more information on Hazardous Substances, go to:

<http://www.business.govt.nz/worksafe/information-guidance/legal-framework/hsno-act-1996>

## Bulk Fuel Tank Inventory Template

### 1. Tank location details

<b>Applicant Name</b>	
<b>Location Name</b> (a short and unique name for the site)	
<b>Concession/Permission number if known</b>	
<b>Easting Coordinate</b> (e.g. 1854678)	
<b>Northing Coordinate</b> (e.g. 5678345)	
<b>Emergency Response Plan</b>	Yes/No
<b>Owner of the tank at this location</b>	

### 2. Tank details

<b>Substance</b>	Diesel/Petrol/AvGas/JetA1
<b>Total Capacity (L)</b>	
<b>Is the tank below ground?</b>	Yes/No
<b>Is the tank in use?</b>	Yes/No
<b>Does the tank have secondary containment?</b>	Yes/No/Unknown
<b>Secondary Containment type</b>	bund, wall, double skin or N/A
<b>Does the tank have a Stationary Container Test Certificate?</b>	Yes/No/NA If yes, please provide a copy of the certificate.
<b>Does the tank have a Location Test Certificate?</b>	Yes/No/NA If yes, please provide a copy of the certificate.
<b>What is the tank connected to?</b>	Burner/engine/bowser/other.

### 3. Additional comments (any additional information you would like to supply?):

### 4. Tank photo requirements

Several photos are required for each inventoried tank at a location as follows:

- a) General – picture or two of the overall tank and where it is situated
- b) Nameplate – if any (this is a manufacturer label attached to the tank that gives details about the tank)
- c) Signage on the tank
- d) Outlet valve – where the fuel comes out of the tank
- e) Secondary Containment – if the tank is in a bund
- f) Hook-up to generator or burner (overall view of how the tank is connected to the generator or burner if applicable)

All these photos should be collated in this Word document.



## **Appendix 5**

### **The nature of the activity and the type of facility proposed to be constructed.**

Copy of sections 5 and 6 pages 32-65 from Volume 1 of the application for overview of the proposed infrastructure and Construction activities.

Including;

- 6 Scheme Overview: Operational Infrastructure and;
- 7 Description of construction

See the following hyper link to Westpowers website:

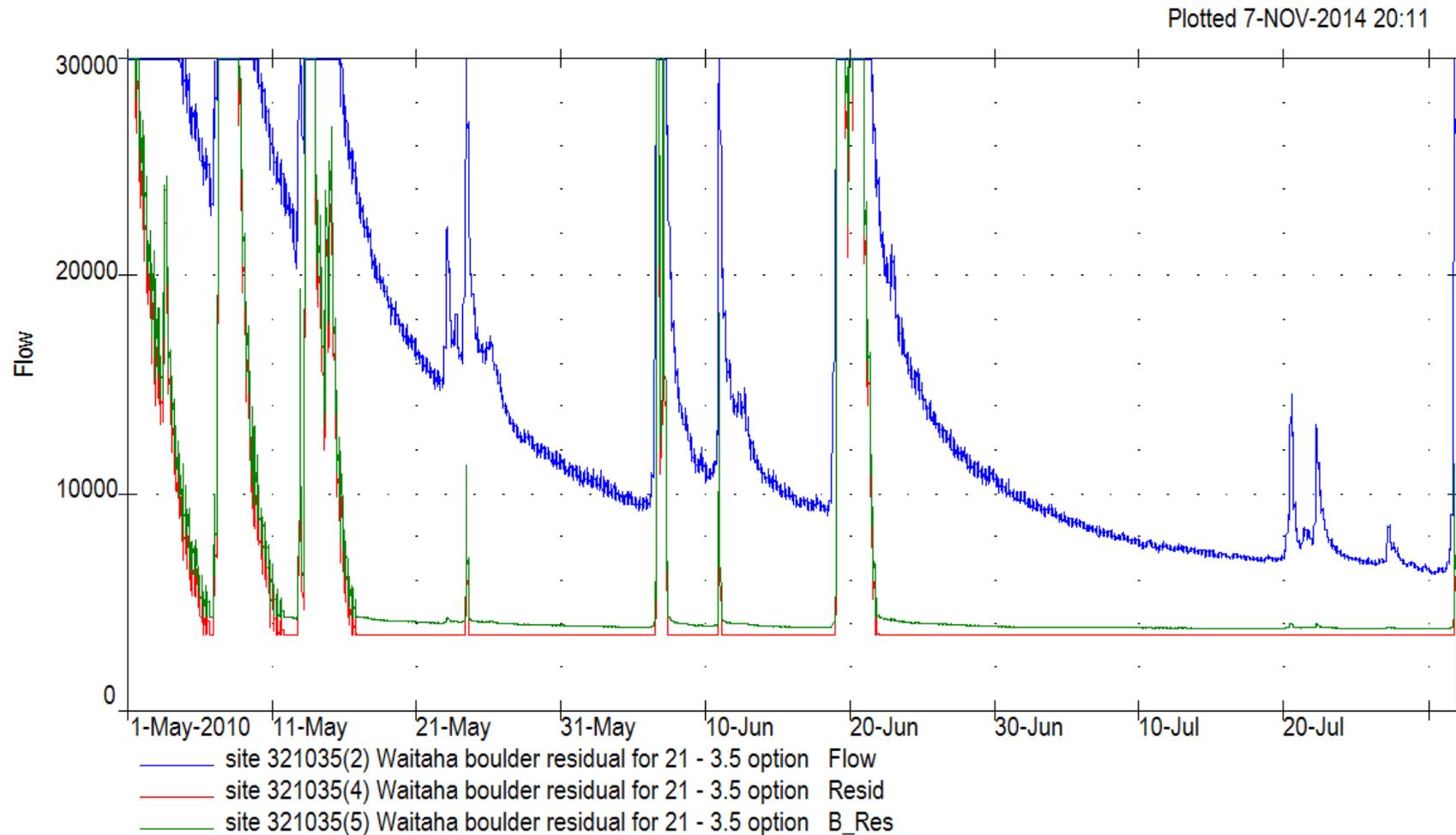
<http://www.westpower.co.nz/system/files/resources/Waitaha%20Hydro%20Scheme%20Concession%20Application%20and%20AEE%20July%202014.pdf>

## Appendix 6

### Hydrograph Showing real time impact of the Scheme on the flow regime

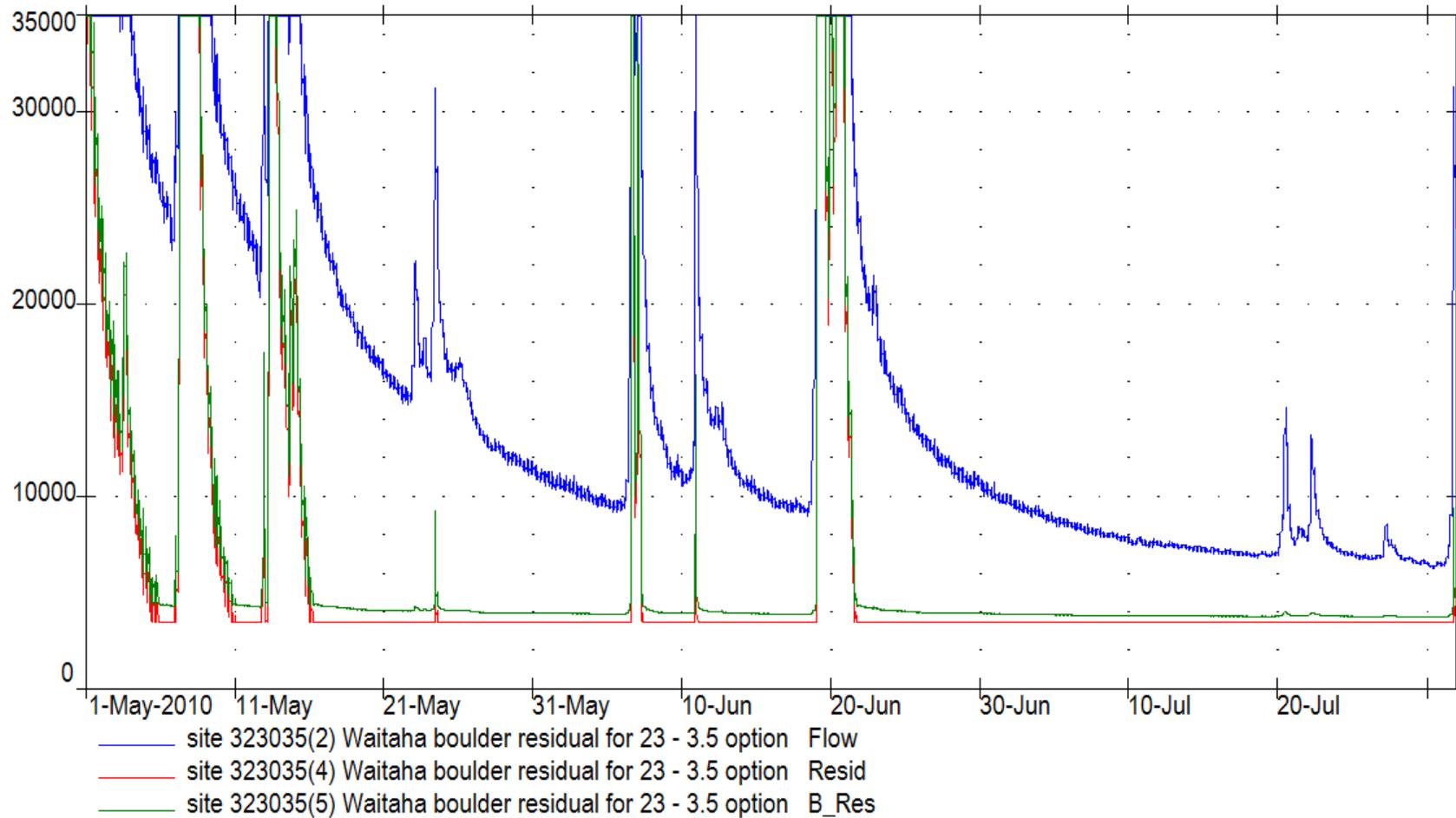
**Winter dry spell 21 cumec take, 3.5 cumec residual** - This graph shows the natural flow above the intake, and the residual flow (a) immediately below the intake, and (b) at the boulder garden reach for the scenario of a 21 cumec take, and a residual flow of 3.5 cumecs.

Blue = natural flow, red = residual flow immediately below intake, green = residual flow at boulder garden reach (units are l/s, 21 cumecs = 21,000 l/s).

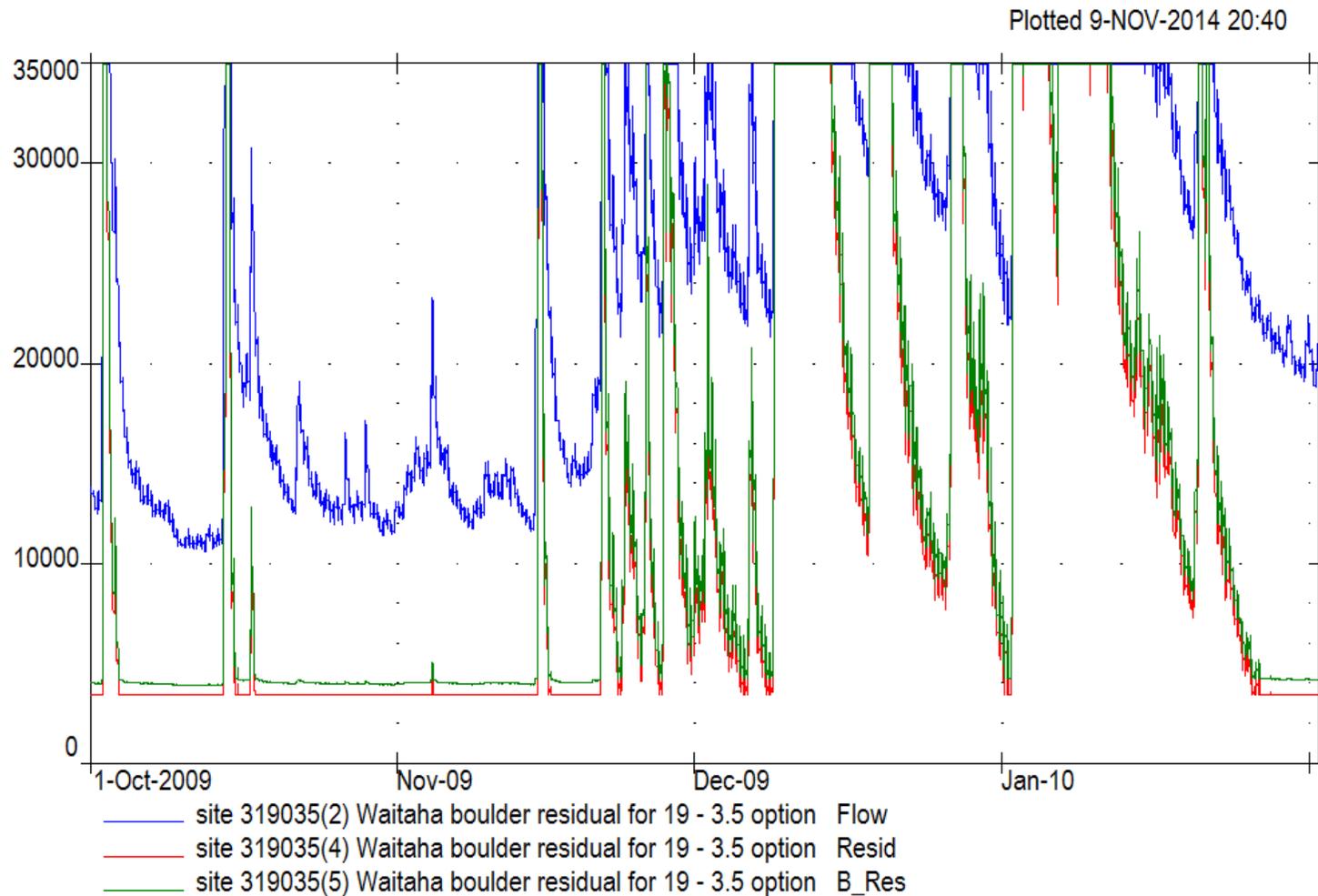


**Winter dry spell 23 cumec take, 3.5 cumec residual** - This graph shows the natural flow above the intake, and the residual flow (a) immediately below the intake, and (b) at the boulder garden reach for the scenario of a 23 cumec take, and a residual flow of 3.5 cumecs. Blue = natural flow, red = residual flow immediately below intake, green = residual flow at boulder garden reach (units are l/s, 23 cumecs = 23,000l/s).

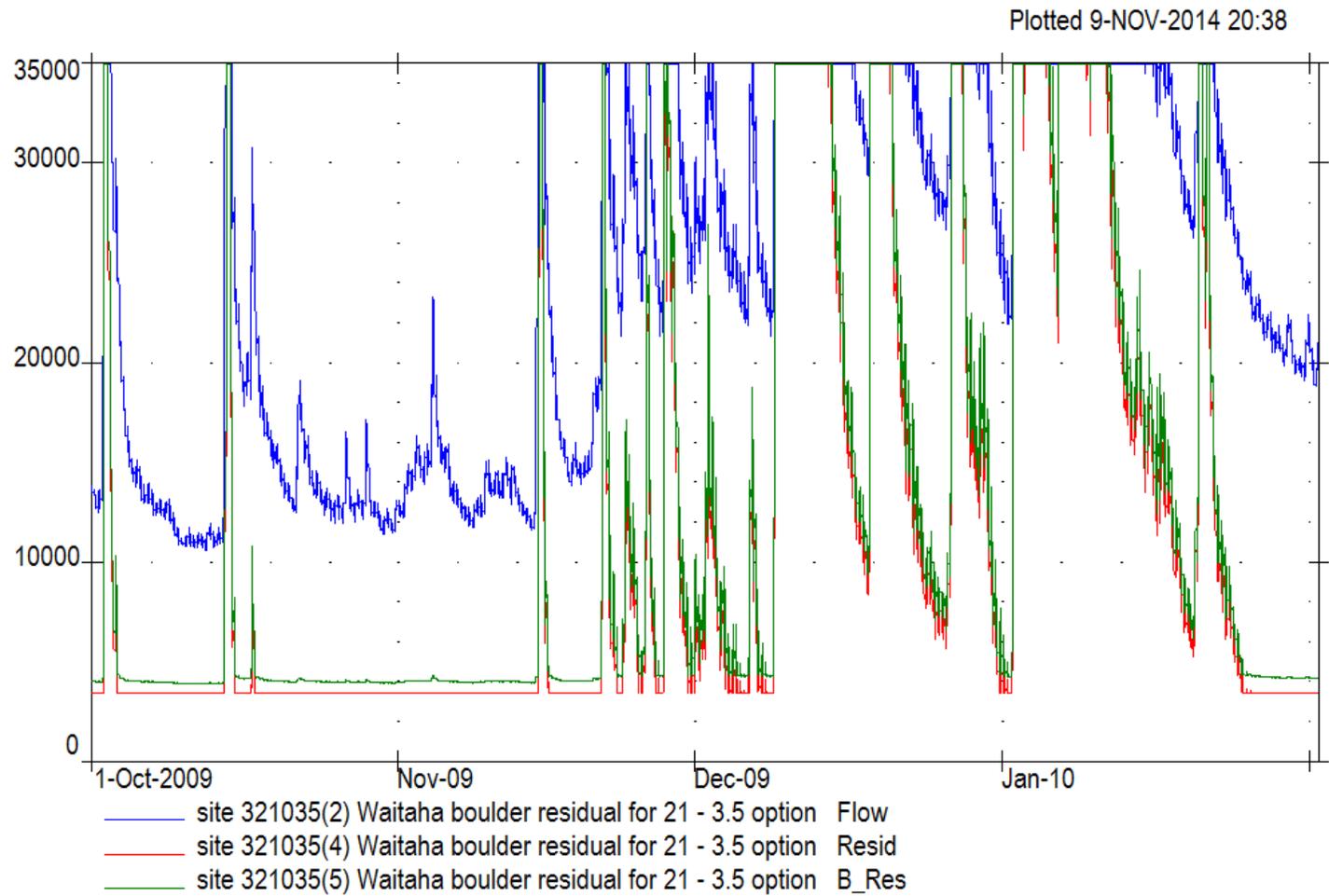
Plotted 7-NOV-2014 20:15



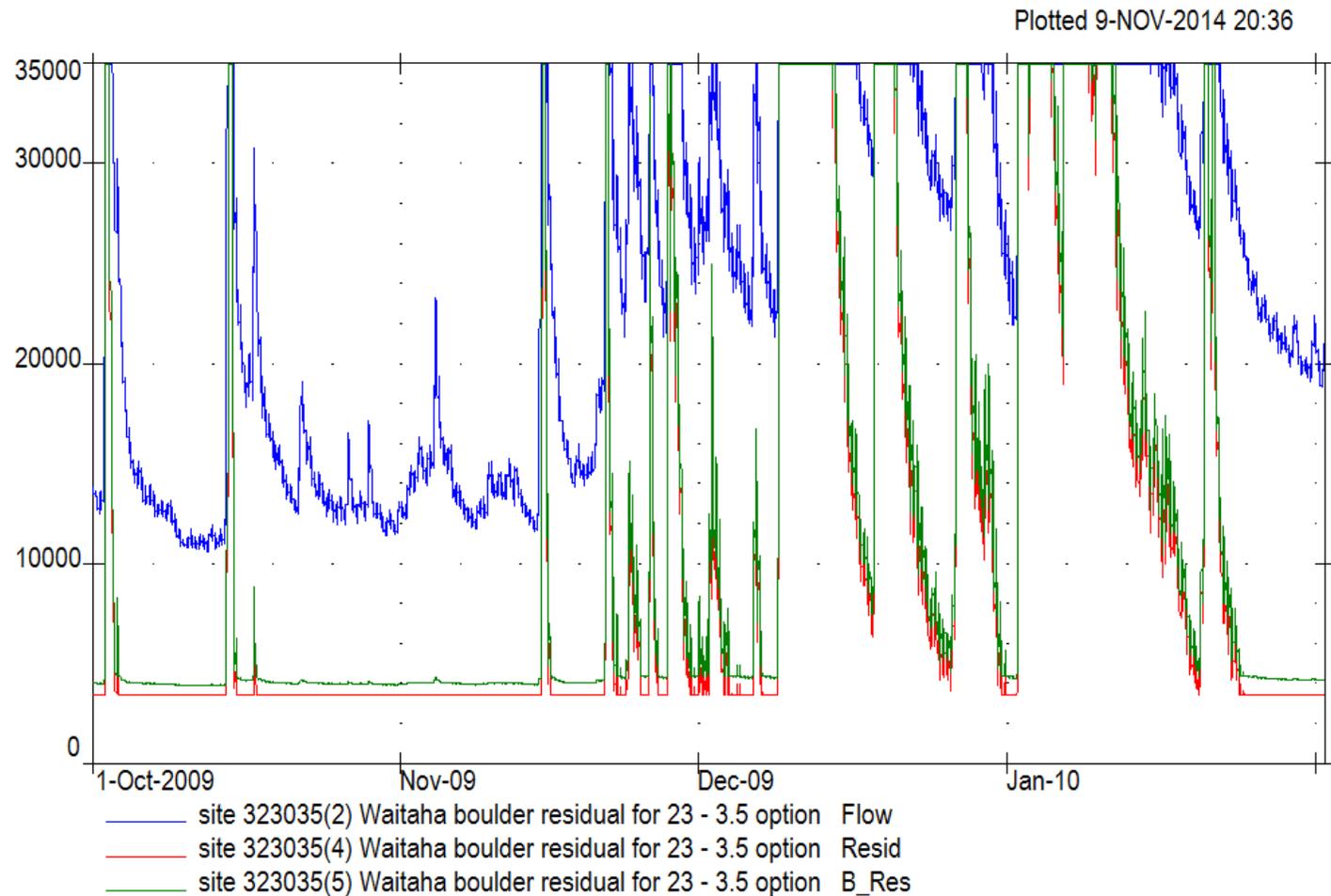
**Spring flow 19 cumec take, 3.5 cumec residual** - This graph shows the natural flow above the intake, and the residual flow (a) immediately below the intake, and (b) at the boulder garden reach for the scenario of a 19 cumec take, and a residual flow of 3.5 cumecs. Blue = natural flow, red = residual flow immediately below intake, green = residual flow at boulder garden reach (units are l/s, 19 cumecs = 19,000 l/s).



**Spring flow 21 cumec take, 3.5 cumec residual** - This graph shows the natural flow above the intake, and the residual flow (a) immediately below the intake, and (b) at the boulder garden reach for the scenario of a 21 cumec take, and a residual flow of 3.5 cumecs. Blue = natural flow, red = residual flow immediately below intake, green = residual flow at boulder garden reach (units are l/s, 21 cumecs = 21,000 l/s).



**Spring flow 23 cumec take, 3.5 cumec residual** - This graph shows the natural flow above the intake, and the residual flow (a) immediately below the intake, and (b) at the boulder garden reach for the scenario of a 23 cumec take, and a residual flow of 3.5 cumecs. Blue = natural flow, red = residual flow immediately below intake, green = residual flow at boulder garden reach (units are l/s, 23 cumecs = 23,000 l/s).



## Appendix 6

### Extract from Table 12 of application: Summary of the Assessment of Potential Effects – Recreation and Tourism (at p69)

Natural, Historic or Recreational Value	Scheme Phase	Potential Effect	Assessment of Effect (post avoidance, mitigation and monitoring measures)	Avoidance, Mitigation and Monitoring
<b>Recreation and Tourism:</b> <b>Local</b>	Construction	All setting users above Macgregor Creek (kayaking, tramping, hunting, track maintenance)	Significant but temporary	<i>See Section 9 for suite of suggested conditions derived from recommended avoidance, mitigation and monitoring.</i>
	Operation	Kayaking the upper Waitaha Gorge, including the Waitaha Gorge and Kiwi Flat reach  Kayaking Morgan Gorge	Low - kayak options remain in place  High - residual flow reduces ability to kayak abstraction reach  High - residual flow reduces ability to kayak abstraction reach. Extension to portage below Morgan Gorge  High - change in natural state	
		Kayaking between Morgan Gorge and Douglas Ck  Kayaking whole river Tramping and Hunting	High but may moderate over time - Kiwi Flat Low to Nil - Upper Valley (perceptual only)  Low	
<b>Recreation and Tourism:</b> <b>Regional</b>	Construction & Operation	All activities	Low	

## Appendix 7

### Westpowers comments on the Draft Report and the Departments Responses

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		<b>1.0 Summary of Proposal</b>	
1.18 -1.19	4 - 5	<p><b>Development Envelope Approach</b></p> <p>At paragraphs 1.18 - 1.19, the Department accurately records the envelope approach used by Westpower in preparing this application. The envelope has been refined through a process of option selection, scheme design and location, and expert assessment in order to avoid, remedy or mitigate potential effects. This has been further refined and reduced through the revised landscape proposals provided to the Department on 5 March 2015 and 15 April 2016 with maximum construction and operational scheme footprints of 4.94 ha and 3.87 ha respectively.</p> <p>Within these areas, it is intended that components of the Scheme can be adjusted so that any potential adverse effects can be further reduced (e.g. so that the access road can be aligned to avoid large trees and potential bat roosts). Such adjustments are envisaged by proposed consent conditions and management plans. The envelope does provide a bottom line or standard (in terms of a worst case maximum) against which effects can be assessed.</p>	<p>Application: Section 1.2 pp2 -3 Section 5.1 p32 Section 5.5 p43 Section 8.2 p137 Amended Headworks Proposal March 2015 Revised Landscape Proposal April 2016</p>
<b>Department Response</b>		<p>Westpowers comments are acknowledged, the envelope or corridor/area in which works location adjustment may occur is called the 'corridor', this is shown clearly on a map 5 and map 6 Appendix 1 of the application with green dotted lines. The amended changes of March 2015 do show a reduction in the proposed envelope at the intake site (note in the 'key' the green dotted line description changes from 'Corridor' in the original application to 'Development Envelop' in the March 2015 changes). The April 2016 changes refer to the refinement and reduction of the actual 'footprint' rather than a change to the envelope or corridor. It is acknowledged that any final designs would still fit within the March 2015 Development Envelope.</p>	
		<b>(b) Natural Character</b>	
4.67	20	<p><i>"The Isthmus review disagrees with the overall conclusion of Westpower's consultant that the effects on landscape character at the broad scale would be low or moderate to low. The Isthmus review asserts that the effects would be greater than this and should be regarded as 'moderate'. The Departments consultant agrees that the effects on landscape character at the broad scale should be considered to be 'moderate'."</i></p> <p>A more accurate summary of the Isthmus report would be to say that: <i>"The Isthmus report found that the effects on landscape at the broad scale would be greater than low."</i></p>	<p>Appendix 9: Landscape: External Peer Review Isthmus report (Feb 2014) p7</p>

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
<b>Department Response</b>		<p>The Department agrees that a more accurate summary of the Isthmus report would be to say that: "<i>The Isthmus report found that the effects on landscape at the broad scale would be greater than low.</i>"</p> <p>The Departments consultant was not intending to quote Westpowers consultant rather was putting it more simply on a scale of low/moderate/high. i.e. greater than low is therefore moderate. Therefore the Department recommends changing the report to read:</p> <p><i>"The Departments consultant comments that the Isthmus review disagrees with the overall conclusion of Westpower's consultant that the effects on landscape character at the broad scale would be low. The Isthmus review asserts that the effects would be greater than this and should be regarded as 'greater than low'. The Departments consultant agrees with Gavin Lister that the effects on landscape character at the broad scale should be considered to be 'greater than low'."</i></p>	
4.94	27	Westpower agrees to the recommended additional special conditions in relation to landscape that have been developed as part of the iterative design process.	
<b>Department Response</b>		Westpowers comment is noted.	
4.99	28	<p><i>"Westpower considers that, at a whole of Upper Waitaha catchment scale, the effects of the Scheme on natural character, landscape and visual amenity would be low or moderate to low. The Department disagrees with this assessment and considers the effects at a broad scale to be moderate."</i></p> <p>Westpower's landscape expert James Bentley's opinion is that <i>"the only issue arises around the 'Broad landscape effects' and not the broad visual amenity or natural character effects."</i></p> <p>Therefore a more accurate reflection of Westpower's expert's view would be to say <i>"Westpower's landscape expert considers that, at a whole of Upper Waitaha catchment scale, the effects of the Scheme on landscape to be low."</i></p>	<p>Application: p (iv)</p> <p>Jeremy Head Landscape Architect Ltd April 2016</p> <p>Peer Review of Applicant's Assessment of Natural Character Landscape and Visual Amenity Effects</p> <p>p7, p16</p> <p>Appendix 9: The Landscape report p4</p>
<b>Department Response</b>		<p>The Department acknowledges Westpowers comments but disagree that the statement above would be more accurate, and notes the following;</p> <p>Westpowers landscape consultant (James Bentley) in his report at page 3, item 1 states:</p> <p><i>"At a broad, Upper Waitaha Catchment scale, the effects on natural character, landscape and visual amenity would be low or moderate to low..."</i></p> <p>Page 47 of the consultant's report he also states <i>"at an Upper Waitaha Catchment Scale, it is considered that the proposal will have moderate to low adverse natural character effects."</i> At page 49</p>	

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		<p>the consultant states <i>"The Broad landscape effects of the scheme are considered to be low, and the values associated with this potentially outstanding natural landscape, protected..."</i></p> <p>The Departments consultant states in his report:</p> <p><i>"I agree that the gorge would likely meet the test of an outstanding natural feature within an outstanding natural landscape for the same reasons that Messrs. Bentley and Lister do. It is a dramatic, deeply incised feature that has clearly been shaped through regular high energy river flows. It forms the 'gateway' between the upper and lower catchments, and is currently perceived as an unaltered, very highly natural and wild place. For some, the presence of the proposal could be perceived as curtailing and 'taming' the wild riverine processes.</i></p> <p><i>In my view, the driving force (the wild, turbulent river) behind the resulting highly memorable form of the gorge will be altered. There will be a modification to the source-to-sea progression of water within the catchment (even though relatively small) with the proposal in place. And for this reason, in my opinion, the effects on landscape character are greater than 'low'.</i></p> <p>The Department recommends change wording to <i>"Westpower considers that, at a whole of Upper Waitaha catchment scale, the effects of the Scheme on natural character, landscape and visual amenity would be low or moderate to low. The Department considers the effects at a broad scale to be greater than low."</i></p>	
4.104 - 4.105	28	<p>4.104 <i>"...There does not appear to be any mitigation measures concerning the change of water flow in the abstraction reach; and despite Westpower reducing the potential effects at both the headworks/intake site and at the power house through reviewing their initial proposed mitigation and proposing additional mitigation measures during the application process, the effects at both the intake site and the power house would remain high...."</i></p> <p>4.105 <i>As some adverse effects would be high you will need to consider:</i></p> <p>a) <i>whether the proposed mitigation measures are adequate and where there are not or inadequate mitigation measures you will need to consider whether the effects are such that the proposed hydro scheme should be declined pursuant to section 17(2)(b) of the Conservation Act.</i></p> <p>In response, Westpower refers to its covering letter and letter from Paul Radich QC which explain how the Minister cannot at this point be satisfied that there are no adequate methods or no reasonable methods for remedying, avoiding or mitigating the adverse effects of the activity on natural character, landscape and visual amenity values.</p> <p>In addition, Westpower considers that it has proposed (or accepted) comprehensive measures to avoid, remedy or mitigate effects, as outlined at paragraph 4.94 of the Officer's report.</p>	

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		<p>The reduced flow in the abstraction reach is an operational or residual effect of the scheme (refer Application (p iv). The Department's landscape consultant did not raise any issues with the lack of mitigation measures concerning the change of water flow, as raised here, rather he found that the effects have been adequately addressed. The relevant comments are found at p7 of his report:</p> <p><i>"Turning to the broader catchment based scale, the level of built intervention is relatively small, with much of it subterranean. Any effects on landscape 'character' will therefore be confined largely to altered flow rates of the river within the abstraction reach. And while the origin of change (the weir and the intake) may not even be visible from many parts of the catchment, it could be perceived that there has been some modification to the river and thus effects on the landscape character. These changes may be perceived more acutely by people who are familiar with the river's more subtle states, such as kayakers, rather than 'one-off' visitors for example. And the effects on landscape character would be more heightened for those who eventually observe the built changes, and therefore understand why river flows may have altered.</i></p> <p><i><u>The report adequately addresses these effects.</u> Changes in the river are quantified and scientifically presented. A conclusion is reached where there would be a 'moderate' effect on landscape character within the abstraction reach. Given the degree of natural fluctuation of river flows throughout the year and the relatively inaccessible nature of the gorge and abstraction reach – even to advanced kayakers, this is a fair conclusion. Other than this effect, there are no other significant landscape effects in my opinion."</i> (our emphasis added).</p> <p>With regard to effects at the intake site and the powerhouse, the Department's landscape expert (Mr Head) acknowledges that Westpower has followed an "iterative design process" of constant refinement to reduce effects as far as possible at these sites. Mr Head agreed with the overall conclusions reached by Westpower's expert. One of those conclusions is that notwithstanding the high localised effects, the Scheme is appropriate (p4 Landscape report). Mr Head also recommended (p16 of his report) that further measures be implemented to increase the certainty of outcome, as follows: (Westpower is willing to implement these measures).</p> <p><i>"I agree with the overall conclusions reached, and provide some recommendations in the form of additional conditions with particular regards to further mitigating potential adverse effects at both the intake and powerhouse sites. With these few additional conditions included in the final application, a better certainty of outcome would be provided. In my opinion, these additional conditions are necessary as the scheme (particularly at the intake end) is located at the entrance to an outstanding natural feature, and for this reason would require its effects to be further mitigated to avoid this area becoming dominated by structures."</i></p> <p>Lastly Westpower refers to other instances in the Officer's report where the Department recognises that Westpower has implemented a suite of measures to minimise adverse effects on landscape. For example, CGP Policy 11.3(b) requires that <i>"When new utilities are installed ... they should be of a scale, design and colour that relates to, and is integrated with, the landscape and seascape."</i> At paragraph</p>	

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		<p>4.532 the Officer's report states:</p> <p><i>"In terms of CGP Policy 11.3(b) it is considered that there are a range of measures proposed that help integrate the structure with the landscape, such as facing visible parts of the intake, weir and portals, the colour for the power house being 'ironsand' and a suitable planting plan to be developed for around the powerhouse / bund area."</i></p>	
<b>Department Response</b>		<p>The Department acknowledges Westpowers comments and agrees that the statements quoted from the reports mentioned above are correct. However as also noted in this report at 4.105 some of the adverse natural character, landscape and visual amenity at a local scale are agreed by all parties to be high despite proposed mitigation. A decision on whether the effects are considered adequately mitigated still needs to be made as provided in 4.105.</p> <p>In regards to 4.532 CGP 11.3(b) 4.535 (numbering changed) states that the range of proposed mitigation measures would 'help' integrate the structure with the landscape not whether the range of measures are such that the structures would be 'adequately integrated' to meet the requirement of policy 11.3(b).</p>	
		<b>(d) Assessment of Effects - Birds and Bats</b>	
4.144	36	<p><i>"The Department agrees with the report commissioned by Westpower from Wildlife Surveys Ltd in terms of its major finding that the <u>'envelope'</u> has significant conservation values for birds and bats."</i> (our emphasis added)</p> <p>It would be more accurate to refer to the "survey area" rather than "envelope" as above. The Wildlife Surveys Ltd report does not use the term envelope; rather it refers to the survey area. This envelope is a subset within the survey area and as described below, the report finding refers to the survey area.</p> <p><i>"The survey area included lowland hillside forest, valley floor and riverine habitats below Morgan Gorge, and forest and scrub habitats surrounding Kiwi Flat. Refer p (i) and Figure 1, p 2 showing survey areas (2007, 2012) and area of works.</i></p> <p><i>The survey area was chosen to include all lowland habitats that would possibly be affected by the Scheme. At the time of the survey the design plans were not finalised, therefore the survey area was extended beyond the then defined footprint options. Consequently, the area of survey was considerably broader than the final Scheme footprint (figure 1)." Refer p9.</i></p> <p>The conclusion on significance provided in the Wildlife Survey report is based on the survey area as follows:</p> <p><i>"The <u>survey area</u> is considered to contain areas of significant habitat for indigenous fauna based on assessment of guidelines/criteria for significance set out in the West Coast Regional Policy</i></p>	<p>Appendix 16: The Birds and Bats report</p> <p>Exec Summary pi</p> <p>Figure 1 p2</p> <p>p9 p32 p35</p>

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		<p><i>Statement 2000 (the RPS) (West Coast Regional Council 2000) and the Westland District Plan 2002 (the WDP) (Westland District Council 2002). The survey area has high natural heritage values based on assessment criteria in the West Coast Conservation Management Strategy 2010-2020 (the CMS) (Department of Conservation 2010). The RPS and WDP criteria are for the purposes of Section 6(c) of the Resource Management Act 1991 (RMA), whilst the CMS criteria are for the purposes of integrated conservation management of natural and historic resources under the Conservation Act 1987."</i> p32</p> <p><i>"Surveys for bats and birds have found five Threatened and five At Risk species present within the survey area (Table 3). These include two Nationally Critical species (long-tailed bat and grey duck), one Nationally Endangered species (kea) and three Nationally Vulnerable species (blue duck, falcon and kaka). Therefore, this criterion has a high value of significance for the Scheme."</i> p35</p> <p>(our emphasis added)</p>	
<b>Department Response</b>		The Department agrees with Westpowers comment and recommends changing the word 'envelope' to 'survey area' at 4.144.	
4.153	37	The experts in their assessment refer to the "potential effects" of the Scheme and have used this term in their assessments. This is important to note because "potential" was used in the sense of the types of effects that could (hypothetically) be generated from the Scheme, as opposed to their actual findings of effects which are presented later in the reports, following further study and examination.	Application: p82
<b>Department Response</b>		Comment noted, p82-83 of the application discusses both potential adverse and positive effects, the Department is referring in the report only to the 6 negative or adverse effects mentioned. No comment is made on Westpower's claim in regards to the potential positive effects of the scheme. The Department recommends changing the words at 4.153 to read: " <i>Westpower notes six negative effects of the proposal on fauna (p 82-83 of application).</i> "	
4.154	37	<p><i>"The greatest impact overall on birds and bats is potential loss of bat roosting trees. Bats concentrate in social groups (colonies) to breed and the felling of individual trees could be catastrophic if a bat colony is present. Therefore, if roosts are felled during the operation, <u>the effects would be significant rather than negligible (as was suggested in the application, P127).</u>"</i></p> <p>(our emphasis added)</p> <p>This underlined statement appears to have been taken out of context. The assessment as negligible is applied post avoidance, mitigation and monitoring measures as indicated in column 4 of Table 12.</p> <p>Westpower agrees that the effects would be significant for local bat populations if trees occupied by roosting bats were felled, therefore proposed various mitigation measures as reflected in the proposed draft conditions to help protect the local bat population.</p>	<p>Application: Table 12 p127</p> <p>Appendix 16: The Birds and Bats report. Discussion pp 50 -51</p> <p>Amended Headworks Proposal March 2015. Appendix 5 p1</p>

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		<p>With the reduction in vegetation clearance due to the amendments to the headworks construction and footprint of the Waitaha Scheme, Westpowers terrestrial fauna expert advised:</p> <p><i>"In terms of terrestrial fauna the amendments are positive in effects, as the area of habitat removal is substantially less, and no longer involves removal of or risk to large diameter trees or podocarps that have greatest importance to indigenous fauna (Particularly bats, kaka and riflemen that inhabit this area)."</i></p>	
<b>Department Response</b>		<p>Westpowers comment is noted; The Department agrees with Westpower that the proposed reduction in the vegetation clearance at the intake site would reduce the risk to bats by no longer requiring the removal of at risk to large diameter trees or podocarps that have greatest importance to indigenous fauna (Particularly bats, kaka and riflemen that inhabit this area)." The Departments comment that <i>"if roosts are felled during the operation the effects would be significant rather than negligible"</i> is still valid, this is because there is still potential (although low) that bat roosting trees in the envelope area. The Department concludes that if Westpower could avoid felling bat roosts then potential effects on bats would be considered minor.</p> <p>The Department recommends removing at 1.161 the sentence <i>"However it may be more difficult to avoid impacting large trees, as suggested in the Wildlife Surveys Ltd report"</i></p>	
4.156	38	<p><i>"In addition, there are potential changes to the character of the river below the developed area either through changes in flow regime and/or resulting from channelization or sediment changes, which potentially could affect breeding, braided river birds (Table 1)."</i></p> <p>Westpower wishes to clarify that the potential effect due to proposed changes to the character of the river below the developed area has been discussed in other reports and is considered negligible.</p> <p>Murray Hicks of NIWA describes this in his letter of 11.12.13 regarding Bed/Channel Stability. In summary the report concludes that the Scheme will not alter the existing suite of natural processes and fluvial features that occur with the Waitaha River, nor the frequencies of their occurrence or physical characteristics. Since the proposed project will have no significant effect on the discharge of water and bedload from Kiwi Flat during floods, it should also not affect channel processes, characteristics, and stability in the reach between the Scheme's take and return points.</p>	Appendix 7: NIWA Letter 11.12.13 re Bed/Channel Stability
<b>Department Response</b>		The Department accepts Westpowers comments and recommends removing paragraph 4.156.	
4.164 (now 4.163)	38 - 39	<p><i>"Westpower suggests only a low number of threatened species are present however the Department does not agree with this statement. The site contains significant populations of threatened and representative bird and bat species. Impacts potentially include loss of breeding....."</i></p> <p>Westpower considers that, based on the evidence, it would be more accurate to say that the site contains "significant habitat" for threatened and representative bird and bat species. However the</p>	Appendix 16: The Birds and Bats report Exec summary p vii Figure 5, and Figures11-14

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		<p>conclusion with respect to the population numbers of the threatened species within the area is considered low. In paragraph 4.150 the Department agrees with the report findings.</p> <p>The survey work identified a number of threatened species within the survey area as listed in Table 3 of the Terrestrial Fauna report and as referred to in our previous comments on paragraph 4.144. Refer to section 4.3.2 p31 for the actual findings, and the maps showing distribution of the various species throughout the survey area and works area.</p> <p>The Bird and Bats report concludes (p53):</p> <p><i>"In my opinion, predators are a far greater threat to terrestrial fauna in the Waitaha Valley than any possible adverse effects from the Scheme. The absence of kiwi and short-tailed bats, and relatively low numbers of Threatened bird species and individuals are indications of high predation levels in the Waitaha Valley.</i></p> <p><i>In my assessment, while the overall design of the Scheme means that there will be negligible adverse effects on terrestrial fauna (bats and birds), any remaining adverse effects will be further reduced by the mitigation and associated monitoring proposed in this report."</i></p>	<p>p31 4.3.2 p53</p>
<b>Department Response</b>		<p>Paragraph 4.144 (not 4.150) agrees with the reports major finding, that is the survey area has significant conservation values for birds and bats.</p> <p>The Department agrees it might be more accurate to say the site contains significant habitat for threatened and representative bird and bat species. The Department agrees to change the words from 'population' to 'habitat'.</p> <p>The Department still believes that while bat roosts should be able to be avoided with adherence to the proposed mitigation measures, it is still a potential affect albeit a reduced one with the reduction and refinement of the headworks footprint area that a bat roost could be affected, and if this was the case this would be a significant loss.</p>	
		<b>(e) Assessment of Effects - Lizards</b>	
4.165 - 4.195 (now 4.169-4.173)	39 - 44	Westpower agrees with the Department that any potential effects on the lizard population can be effectively managed by mitigation. Westpower has no issues with implementing conditions that will assist in protection of the lizard fauna, including undertaking an additional pre-habitat disturbance survey for skinks using 'Artificial Cover Object's'.	
4.172	40	There is insufficient evidence to say that " <i>Mokopiriakau spp. are undoubtedly present</i> ". The presence of lizards in the footprint is assumed rather than proven. They are probably present, as Tony Whitaker concluded.	Appendix 17: The Lizard report

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
<b>Department Response</b>		The Department agrees with Westpowers comments and recommends changing 4.172 to read " <i>Mokopiriakau spp. are probably present</i> ".	
4.175	40	<p>"Any loss of individuals of the Threatened species is considered nationally significant (Pers. Comm. C O'Donnell) and locally. Both the loss of individuals and habitat would be a significant loss"</p> <p>This comment appears to refer to all threatened species of lizards potentially present in the Scheme footprint, rather than selectively to <i>O. infrapunctatum</i> Chesterfield, the only potential inhabitant with a threat status so precarious that the avoidable loss of a single individual would be regarded as 'nationally significant'.</p> <p>Information on the Chesterfield skink is provided on the DOC website:  <a href="https://blog.doc.govt.nz/2016/01/14/recovering-the-chesterfield-skink/">https://blog.doc.govt.nz/2016/01/14/recovering-the-chesterfield-skink/</a></p> <p>The Chesterfield skink is currently known only from the Chesterfield area. Its current known range is less than one hectare. The chances of the Chesterfield skink turning up in the Waitaha catchment are remote. The chances of them turning up in the footprint of the proposed Scheme are even smaller still. The language used in this section is therefore inappropriate, given that the only 'species' of lizards likely to be affected by the Scheme are those with moderate-low threat rankings or with no threat ranking at all. In this respect, the lizards are much the same as the birds. (Pers comm. Dr J McLennan).</p>	
<b>Department Response</b>		Westpowers comment is noted and while the Department agrees that the chance of the taxonomic entity <i>Oligosoma infrapunctatum</i> Chesterfield being present is low, it is not impossible. It is also not impossible, given the current knowledge of the <i>O. Infrapunctatum</i> clades, that a new one wouldn't be found in which case the situation might be analogous to the Chesterfield situation, or the Reefton one. As Dr Whitaker said in his original report for Westpower "the effects of the scheme on the conservation status of skinks cannot be predicted until their specific identity is known." (Whitaker 2013)	
4.185	42	The reference to " <i>100ha development envelope that was surveyed</i> " is incorrect – the area surveyed was not the (smaller) development envelope as previously described in the Officer's report but is more akin to the "project area" which is defined in the Whittaker report as being the area "... <i>extending from the confluence of the Waitaha River and Macgregor Creek to the Waitaha Gorge at the upstream end of Kiwi Flat, and up to approximately the 400 m contour (see Figure 1). This includes the 'project footprint' (see below) plus areas where any direct effects may occur (e.g. aggradation), the abstraction reach and where the ecological surveys have been undertaken.</i>	Appendix 17: The Lizard report p2
<b>Department Response</b>		The Department agrees with Westpowers comment, it is recommended to change wording of 4.185 to read: " <i>proposed Waitaha Hydro Scheme Project Area that was surveyed (approximately 55ha)</i> "	
4.186	42	The reference to " <i>...project envelope area of approximately 8ha...</i> " should be a reference to the project footprint which is defined in the Whittaker report as being " <i>the area that would encompass the</i>	Appendix 17: The Lizard report p2

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		<i>proposed temporary and permanent installations, infrastructure and access ways</i> " (Refer comments at paragraphs [1.18] – [1.19]) with respect to the size of footprint – noting that the operational footprint is contained within the construction footprint).	
<b>Department Response</b>		Westpower's comment is noted, however the Department is referring to the larger development envelope area within which the project footprint would be located. No change recommended.	
		<b>(g) Assessment of Effects – Aquatic Ecology/Benthic Communities and Fish</b>	
4.248 (now 4.250) C18.6	53 154	Westpower's expert hydrologist Martin Doyle advises that that it would be dangerous to undertake monitoring of NTU and sediment at a site 200 m downstream from the weir and within the Morgan gorge which is a high energy and inaccessible area.	
<b>Department Response</b>		<p>Westpower's comments are noted however the Department notes that permanent installation of a turbidity recorder (telemetered to allow real-time interrogation of turbidity) that is appropriately designed for the high energy environment could potentially, avoid risks to humans and this should still be explored. Having a measuring point 200 metres distance downstream of impact sources is typical and based primarily on the need to allow adequate mixing of the water assimilating potential contaminants. If there was some need for variation to the 200 metres distance in order to find a practical and suitable location that is both safe and adequately protected from the high energy environment, then such a location should be considered.</p> <p>The primary objective of having an accurate measure of sediment arising from scheme construction or discharges compared with an upstream baseline would still have to be met if Westpower propose to vary where to put the measuring point.</p>	
4.257 (now 2.56) C18.11	55 156	<p><i>"A monitoring and mitigation programme shall be designed to ensure that recruitment levels of koaro are sustained at levels no more than 10% different from those occurring prior to weir construction."</i></p> <p>Shelley McMurtrie, Westpower's aquatic ecology expert has queried whether the 10% target is reasonable, as explained below:</p> <p><i>"A difference of no more than 10% seems particularly conservative given that whitebait species do not home to the rivers they were spawned in. Thus yearly recruitment is dependent on metapopulation dynamics (i.e. that of the metapopulation of the west coast) outside of the control of the scheme. Monitoring could certainly be done to ensure that trout and eels are not getting above the weir, and that koaro are getting over the weir. This could be done with monitoring at the weir during migration periods and fish surveys of tributaries of Kiwi Flat (the latter particularly to check for the presence of eels and trout)."</i></p> <p>In regards to developing a mitigation programme to manage mortality rates for koaro larvae to no more</p>	

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		<p>than 10% of those occurring naturally –“ <i>it will be virtually impossible to determine the natural mortality rates of koaro larvae migrating out to sea in order to determine if mortality rates through the scheme are within 10% of that naturally. In addition, as an ‘r-selected’ species they have high natural mortality/attrition of larvae/whitebait, with all whitebait species being referred to as having &lt;1% survival from eggs to adults</i>” (Dr Mike Hickford, University of Canterbury, pers comm.to S McMurtrie).</p>	
<p><b>Department Response</b></p>		<p>The Department agrees the natural variation in recruitment levels of migratory native freshwater fish metapopulations (including koaro) does provide a challenge in discriminating scheme effects over time.</p> <p>However, this does not remove the need for Westpower to demonstrate with a high level of confidence that the scheme is not causing adverse effects on the koaro populations above the weir (and elsewhere- e.g. Stable tributary) over and above natural variations. Ideally several years of pre scheme koaro whitebait data would be available as a baseline (i.e. at the proposed weir location) to measure the post weir koaro whitebait numbers against and likewise for the adult koaro populations in the tributaries above the weir (details of koaro populations age-size structure). A long term significant divergence in the population's structure from a pre weir baseline (i.e. more or less of particular koaro size classes) would indicate that change is or is not occurring. It is agreed that surveys to check for eels and trout in tributaries above the weir is needed, so at the same time quantitative data (numbers and fish size class) could be collected (e.g. using multi pass electric fishing techniques) as part of an ongoing programme.</p> <p>Additional information to further discriminate scheme effects from broader metapopulation dynamics could be provided by the selection of suitable control koaro populations in a stream or streams within the Waitaha catchment. Divergence of recruitment patterns in the koaro populations above the proposed weir from the control populations would provide evidence of localised scheme induced effects. Broader scale data on koaro populations from other river systems considered to be part of the general West Coast metapopulation would also provide useful supporting data to interpret the koaro population features within the schemes impact zone.</p> <p>The Department would welcome the opportunity to further discuss (including with Dr Hickford as a recognised population expert) the design of a programme that uses information from the monitoring of koaro whitebait runs at the proposed weir location, the koaro population demography in the tributaries above the weir (pre and post weir) and the background koaro metapopulation dynamics as indicated by suitable West Coast control populations (pre and post scheme). The objective being to optimise a methodology that provides a high level of confidence that post scheme tributary koaro populations are conserved at near natural levels and the suitability of 10% divergence as a reasonable protection level.</p> <p>The Department recommends changing the proposed condition at 4.256 to read:</p> <p><i>‘The weir must be designed, managed and maintained to prevent the upstream movement of all fish except koaro whitebait. A monitoring and mitigation programme shall be designed to ensure that recruitment levels of koaro are sustained at a level agreed by a recognised population expert (as close</i></p>	

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		<i>as possible to and no more than a 10% difference from those occurring prior to weir construction. Details of reporting and mitigation options to achieve this level of recruitment shall be detailed within the EMP and be approved by the grantor.'</i>	
4.259 (now 4.258) C18.12	56 157	Determining larval mortality rates through the turbines should only be required if the larval drift monitoring shows large numbers of larvae in the drift and large proportions of those larvae entering the scheme (based on proportion of flow at the time that larval drift is found to occur).	
<b>Department Response</b>		The Department notes Westpower's comment however believes this would be the first step only, but the programme would need to be comprehensive enough to accurately target seasonal outmigration events. Trigger levels related to the use of the term "large numbers" should be more narrowly defined in terms of likely scale of population effect along with the details of an investigation programme.	
4.267 (now 4.266) C18.14	57 157	In regards to a monitoring programme to ascertain the level of fish and invertebrate stranding in the abstraction reach, S McMurtrie questions the rationale for monitoring invertebrate stranding. Given the dominance of the system by those invertebrate taxa able to survive in highly disturbed systems (which have a-synchronous life cycles), their small size and ability to move into the substrate, she also questions the value of doing such monitoring and how it would be done.	
<b>Department Response</b>		<p>The Department notes Westpower's comments.</p> <p>A condition related to the investigation and mitigation of fish stranding has already been promoted by Westpower. Including the investigation of invertebrate stranding at the same time as the fish stranding studies would be an efficient way of examining invertebrate stranding levels. It may be the case that the scale of effect on invertebrate populations is not significant; however, currently the Department does not have information to confirm this. The proposed ramping studies would identify fish stranding risks and mitigation opportunities to avoid fish stranding and these rates may also protect invertebrates adequately.</p> <p>If the scheme ramping rate induced large numbers of invertebrates to strand and be killed or depopulate within the ramping affected reaches by catastrophic drift (a commonly reported effect), then freshwater conservation values associated with the intrinsic values of invertebrates would be reduced. Invertebrates are also key food resources for native fishes, trout, and some riverbed and riparian associated birds/bats. Under fast and frequent rates of ramping a barren varial zone denuded of invertebrates within the zone of hydro scheme induced fluctuation has been a feature of some New Zealand rivers and those overseas.</p> <p>It is suggested that sampling the abundance and composition of benthic invertebrates under typical peaking cycles over extended periods and the export rates of drifting invertebrates would be needed to evaluate overall losses of invertebrates downstream- compared to non- impacted sites. Deeper</p>	

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		<p>substrate sampling would confirm Ms. McMurtrie's suggestion that invertebrates may find refuge within the substrate- but the influence of temperature and other factors would need to be taken into account. Methodology for studying hydropeaking effects on invertebrates are described in Irvine, J. R. &amp; P. R. Henriques, 1984: A preliminary investigation on effects of fluctuating flows on invertebrates of the Hawea River, a large regulated river in New Zealand. New Zealand ( J. Mar. Freshwat. Research 18: 283–290; Other NZ literature that considers hydro peaking effects includes <a href="#">Wairau River Environmental Flow Review - Cawthron Report</a> ; Strickland R.R, Hayes J W, Boubee J. 2002 Project Aqua: Environmental Study-Aquatic Ecosystems: fish stranding. Prepared for Meridian Energy Limited, Cawthron Report No. 715. For international studies on hydropeaking effects see Bruno et al 2010 : Short time-scale impacts of hydropeaking on benthic invertebrates in an Alpine stream. <a href="#">Limnologica - Ecology and Management of Inland Waters</a> 40(4):281-290.</p> <p>No change to the report is recommended.</p>	
		<b>Measurement of Scheme Impact on flows</b>	
4.277 (now 4.276)	60	<p><i>"However the Department also acknowledges and agrees with Westpower's consultant that there is a level of uncertainty that remains regarding the long term effects of the Scheme on the koaro population upstream of Morgan Gorge and 'At Risk' native fish in the abstraction reach."</i></p> <p>Westpower recommends that this statement needs to be read in context as described in the conclusions of the Fish report and as provided in paragraphs 4.214 - 4.225, which explain the range of measures proposed to avoid, remedy or mitigate potential effects (including on 'at risk' fish).</p> <p>Westpower's expert concludes that the life-supporting capacity of the Waitaha River and its tributaries, with respect to fish communities, is not likely to be significantly affected by the Scheme provided the recommended mitigation measures are implemented. This is particularly so given that, as noted above at paragraph 4.257, ultimately the future of the koaro population is affected by what happens to the metapopulation, which is outside of the sphere of influence of the scheme itself.</p>	Appendix 11: The Fish report p3-4
<b>Department Comments</b>		<p>Westpower's comments are acknowledged, the Department agrees that it is likely that the range of measures proposed would avoid, remedy or mitigate the adverse effects of the scheme. However, if the concession was to be granted this would need to be demonstrated by monitoring. This would quantify the population before the scheme's impacts (natural baseline) while ongoing monitoring would show whether the range of measures have adequately protected the populations of koaro (and other values as appropriate). Determining the natural baseline in the case of tributary koaro populations where both scheme impacts (construction impacts, weir migration effects, tailrace entrainment influences, hydropeaking, reduced flows in abstraction reach etc ) <b>and</b> metapopulation factors would be affecting the population at different scales and times (scheme construction and operational phases) adds complexity. As discussed above in response to Westpower's comments in relation to koaro (4.257) a combination of evidential methods would be necessary to resolve natural West Coast metapopulation</p>	

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		scale influences versus scheme effects.	
		<b>(h) Assessment of Effects – Blue Duck</b>	
4.299 (now 4.298)	66	There is no impoundment of water behind the weir in this scheme as described in the application and explained in the NIWA report on Sedimentation Investigations:  <i>"The Scheme is a run-of-river design with no instream storage (i.e. does not require the impoundment of water above the intake). It includes a low weir and diversion structure at the entrance to Morgan Gorge."</i>	Application: p1 p32 Appendix 7: Sedimentation Investigations June 2013
<b>Department Comments</b>		The Department agrees with Westpower's comment, this is an error the Department recommends changing sentence to read " <i>The Department considers that there are still some uncertainties around the weir construction.</i> "	
		<b>(j) Assessment of Effects on Recreation and Tourism Values</b>	
4.324 (now 4.323)	69	A table providing the summary of effects for recreation and tourism has not been included in the Officer's report (as was provided for the other assessment of effects sections). A word version of this section of table 12 is attached.	Application: Table 12 p131-132
<b>Department Response</b>		Westpower's comment is accepted the Department recommends adding this table to the report as appendix 6 so as not to change the paragraph numbering. The words 'An Extract from Table 12 of the application: Summary of the Assessment of Potential Effects – Recreation and Tourism can be found at Appendix 6.' Will be added at 4.322.	
4.387 (now 4.386)	78	To be more accurate the information provided in the application states:  <i>"While the preferred kayaking flow for Morgan Gorge is unclear, mid-range flows of 11.8 - 23.3 m<sup>3</sup>/s which currently occur for 40% of the time annually, will be available under the Scheme for 7% of the time annually (146 days per year to 26). Over summer (Dec, Jan, Feb), that flow range will be available for 13% of the time compared to 33% naturally (30 days per year to 12).</i>	Appendix 19: The Recreation report p7
<b>Department Response</b>		Westpowers comment is noted.  4.385 states: <i>"The number of days that the annual estimated 50 – 100 kayakers who paddle the Waitaha River and continue their journey from below Morgan Gorge and the 5 km's downstream to the take out point is not known. From the information provided in the application it appears that when the scheme is operating, between 12 and 26 days per annum are available at mid range flows of 11.8 – 23 cumecs</i>	

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		<p><i>and there would be a higher number of days when the flow is greater than this."</i></p> <p>This statement provides some analysis of information provided by Westpower in their application.</p> <p>The Department recommend's changing this sentence at 4.385 to read "... <i>From analysis of the information provided in the application (refer to 4.373 of this report) it appears that when the scheme is operating, between 12 and 26 days per annum are available at mid range flows of 11.8 – 23 cumecs and there would be a higher number of days when the flow is greater than this."</i></p>	
4.417 (now 4.415)	82	<p><i>"The Grantor will review the number of no-take days and their management on a 5 yearly basis."</i></p> <p>Westpower agree to the inclusion of a 5 year review period as proposed.</p>	
<b>Department Response</b>		Westpowers comment is noted.	
4.433 (now 4.431) 4.626 – 4.627	84 115	<p><i>"The Department notes Westpower's conclusion that mitigations are available to avoid and mitigate the scale of effects on kayaking through a number of the proposed conditions including no take days / ceases to abstraction. The Department nevertheless has reservations about the adequacy of that mitigation in light of the fact that the river would change from its natural state and would no longer be available to kayakers except on a very small cease to abstract days"</i></p> <p>Westpower considers that the suite of conditions it is suggesting does adequately avoid or mitigate the effects of the Scheme on recreational users, including kayakers.</p> <p>With regard to the conclusion that the river <i>"would no longer be available to kayakers except on a very small cease to abstract days"</i>, there is a reduction in opportunity however the opportunity to kayak on days other than 'cease to abstract' days remains. This reduction has been quantified by Westpower, to the extent possible given the low use (as reflected in [4.372]-[4.375] of the Officer's report).</p> <p>Considering the number of days that the Gorge is ever kayaked, Westpower is proposing maintaining the same level of activity as currently exists. The proposed cease to abstract days are the days when people can request to kayak without the Scheme operating, in addition to when the Scheme is not operating for operational and maintenance reasons. Westpower has proposed 2 cease to abstract days per year, based on the fact that since 2002 and over a period of 13 years there have been 6-7 attempts (successful and not) to kayak Morgan Gorge. Westpower has also included a condition that any additional requests for no take days shall be considered. Westpower remains willing to discuss the appropriate number of cease to abstract days with the kayaking community.</p> <p>Considering the number of days that the Gorge is ever kayaked, Westpower could maintain the same</p>	Response to Request for Further Information 30 April 2015 (Recreation – Kayaking)

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		<p>level of activity as currently exists. Westpower has proposed a range of conditions including the development of a Protocol outlining the specific details of the “no-take” regime which will be finalised in consultation with Whitewater New Zealand prior to operation of the Scheme.</p> <p>It is important also to clarify that it is only the abstraction reach, a 2.6 km section of the river, where a reduced opportunity to kayak exists.</p> <p>Westpower also wishes to emphasise that recreation and tourism local/regional values are much broader than just one interest group. The effects on tourism, and other recreational groups (hunters, walkers) would be largely localised and in some instances positive - for example the improved access track will facilitate access into Kiwi Flat.</p> <p>The fact that adequate measures are offered to mitigate any effects on recreation and tourism values (including minimising effects on kayakers) is reflected in the view, held by the Department and Westpower, that remote backcountry outcomes for the CMS for the Hokitika place will still be achieved with the scheme in place. See paragraphs 4.626 – 4.627 quoted below:</p> <p><i>"The Department considers that the proposed hydro scheme is consistent with the back-country remove zone objectives and policies 3.6.1.4 above. The desired outcomes for the Hokitika Place would still be maintained although the Department considers there would be a degree of loss of the solitude and sense of isolation for those recreating in the location of Kiwi House and the powerhouse. However it is considered that huts and tracks would still provide the opportunity for solitude for those who seek a greater degree of isolation as required by policy 3.6.1.4 2(c).</i></p> <p><i>A range of recreational opportunities enabling people to enjoy the natural setting of the Waitaha River would still remain, proposed mitigation methods that help the structures blend in with the landscape and alternative track access would help to avoid or otherwise reduce effects on the natural setting."</i></p>	
<b>Department Response</b>		<p>Westpower's comments are noted; In regards to flows remaining if the scheme goes ahead; there is currently conflicting views/information on the availability of the required flow for kayaking the river if the scheme goes ahead. While Westpower states that there would be a reduction in opportunity they also believe that there would be the opportunity to kayak on days other than on any 'cease to abstract' days that they can provide (and quantified in paragraphs 4.372-4.375 of this report). However Whitewater NZ has commented that if the scheme was operating and in those circumstances where the flow was in the right range for kayaking it is likely that this would be when the river is falling or rising relatively quickly and in these conditions the actual flow at a given time is difficult to predict, making the river unsafe for kayaking at these times.</p> <p>The Department does not agree with Westpower's comment: <i>"The fact that adequate measures are offered to mitigate any effects on recreation and tourism values (including minimising effects on kayakers) is reflected in the view, held by the Department and Westpower, that remote backcountry</i></p>	

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		<p><i>outcomes for the CMS for the Hokitika place will still be achieved with the scheme in place. See paragraphs 4.626 – 4.627 quoted below”</i></p> <p>While the Department agrees that the desired backcountry-remote outcomes for the CMS would still be achieved if the scheme went ahead this does not mean that the Department agrees that effects of the scheme on recreation (especially kayaking) are adequately mitigated for as noted in 4.431 of this report.</p> <p>No change to the report is recommended.</p>	
		<p><b>The Departments Summary and Conclusions from the Assessment of Effects of Waitaha Hydro</b></p>	
<p>4.453 - 4.454 (Now 4.452 - 4.453)</p>	<p>86 - 87</p>	<p>Please refer to Westpower's covering letter and the letter from Paul Radich QC which explain how the Minister cannot at this point be satisfied that there are no adequate methods or no reasonable methods for remedying, avoiding or mitigating the adverse effects of the activity on natural character, landscape and visual amenity values.</p> <p>In addition, please refer to the comment on paragraphs 4.104 - 4.105 above explaining how Westpower has proposed (or accepted) comprehensive measures to avoid, remedy or mitigate effects.</p>	
<p><b>Department Comment</b></p>		<p>The Department does not agree with Mr Radich's views concerning the interpretation of s 17T of the Conservation Act. Section 17T(2) is an initial knock-out provision requiring a decision within a timeframe that would rarely if ever be possible to meet in complex applications such as this. The requirement for public notification only arises if the decision maker forms the intention to grant the application. The decision maker could only form an intention to grant if s/he has considered the application in terms of the matters (where relevant) set out in s 17U(1). Where the potential effects are high and the proposed mitigation does not demonstrably reduce the level of effects, s/he may decline the application in accordance with s 17U(2)(b) and must decline it if the matters set out in s 17U(3) represent. No change to the report is recommended.</p>	
		<p><b>17U (2) Minister May Decline Application</b></p>	
<p>4.477 (now 4.480)</p>	<p>90 - 91</p>	<p>Please refer to Westpower's covering letter and the letter from Paul Radich QC which explain how the Minister cannot at this point be satisfied that there are no adequate methods or no reasonable methods for remedying, avoiding or mitigating the adverse effects of the activity on kayaking.</p> <p>In addition, refer to Westpower's comments on paragraph 4.433 above which explains how the mitigation proposed adequately addresses the effects on kayaking, and how the effects on other recreational users also need to be taken into account.</p>	

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
<b>Department Comment</b>		Please see the Departments response to Westpower's comments on 4.453 - 4.454 above and 4.433 above.	
4.480 - 4.485 (now 4.483-4.488)  8.1	91 – 92  118	<p>The Officer's Report discusses the proposed envelope approach in paragraphs 4.480 - 4.485.</p> <p>As discussed with reference to paragraphs 1.18 and 1.19 above, the development envelope approach has been used to ensure that effects on these areas are avoided or minimised to the maximum extent practicable. Westpower reiterates that given the small maximum construction and maximum operational scheme footprints, and clear conditions proposed, there are bottom lines or standards against which the application can be assessed. This is reflected in the Department's findings (for example, at paragraph [8.1]) that the effects of the scheme on blue duck, bats, lizards, invertebrates and freshwater habitats and species are <i>"small and are adequately avoided, remedied or mitigated"</i>.</p> <p>Westpower is unsure of the connection between the proposed envelope approach and the two areas of concern raised in this section, namely landscape character at the intake and powerhouse sites, and effects on the natural state of the river in particular kayakers.</p> <p>The effects on landscape character at the intake and powerhouse sites have been reduced as much as possible, as described in paragraphs 4.104 - 4.105 above. This is not a case where the development envelope approach will be applied, because, rather the "iterative design process" referred to by Mr Head has already reduced effects.</p>	
<b>Department Comment</b>		<p>The Department acknowledges Westpower's comments and acknowledges that the 'iterative design process' referred to by Mr Head has reduced the potential effects including the size of the envelope at the intake site considerably.</p> <p>The discussion on the envelope approach is not related to the areas of concern namely landscape character at the intake and powerhouse sites, and effects on the natural state of the river in particular kayakers.</p> <p>The sub heading 'The envelope approach' applies to paragraphs 4.483 and 4.484 and not 4.485-4.488. The Department recommends removing the sub heading 'The envelope approach'.</p>	
		<b>Section 17U(3) The Minister shall not grant an application for a concession if the proposed activity is contrary to the provisions of this Act or the purposes for which the land concerned is held.</b>	
4.497 (now 4.500)	93	<p>Please refer to Westpower's covering letter which addresses whether granting the application is contrary to the provision of the Act or the purposes for which the land concerned is held.</p> <p>In addition, Westpower wishes to comment that it has taken all reasonably practical measures to ensure that the values are protected. Each expert has been asked to look at the values within their</p>	

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		respective areas of expertise, and considered how the effects can be avoided or reduced so that those values remain intact. Westpower has worked closely with its experts to ensure that their recommendations are implemented.	
<b>Department Comment</b>		Westpower's comments are noted however this report provides the Departments analysis on whether granting the application would be contrary to the provision of the Act or the purposes for which the land concerned is held. This report also provides the Departments analysis on whether all reasonable and practical measures have been proposed to ensure the values are protected.	
4.519 (now 4.522)	97	In this paragraph the decision-maker is directed to consider whether proposed mitigation of significant adverse effects relating to natural landscape character at the local scale is adequate.  Please refer to Westpower's comments on paragraphs 4.104 - 4.105 above, which explain the comprehensive measures proposed to mitigate adverse local scale natural landscape character effects.	
<b>Department Comment</b>		Westpower's comments are noted and while the mitigation measures proposed are acknowledged as per the Departments response to 4.104-4.105 some of the adverse natural character, landscape and visual amenity adverse effects at a local scale are agreed by all parties to be high despite proposed mitigation. A decision on whether the effects are adequately mitigated still needs to be made as provided in 4.105.	
4.539 (now 4.542) 4.532 (now 4.535)	99 99	The decision-maker is directed to consider whether the proposal is consistent with policy 11.3(b) CGP. Westpower considers that the proposal is consistent with this policy, for the reasons given in our comments on paragraphs 4.104 - 4.105 above (including the Department's specific recognition, at paragraph [4.532] of the Officer's report), that a range of measures are proposed to integrate the structure with the landscape.	
<b>Department Comment</b>		Westpower's comments are noted, however 4.535 states that the range of proposed mitigation measures would 'help' integrate the structure with the landscape, not whether the range of measures are such that the structures would be 'adequately integrated' to meet the requirement of policy 11.3(b).	
		<b>CMS Section 3.7.2 Activities on or in beds of Rivers or Lakes</b>	
4.593 (now 4.596) 4.597 (now 4.600)	110 110	Westpower considers that the effects on the range of matters specified in Policy 1(a) of CMS Section 3.7.2 have been " <i>avoided or otherwise minimised</i> ", as required by that Policy. With regards to kayaking (specifically mentioned in paragraph [4.593]) refer to Westpower's comments on paragraph 4.433 above.  Policy 1(e) of CMS Section 3.7.2 requires that the " <i>natural character within the setting of the activity should be maintained</i> ". Please refer to our comments on paragraph 4.104 - 4.105 above, including	

Paragraph	Page	Comments on the Concession Officer's Report (as provided on 22 June 2016)	Paragraph
		reference to the Department's conclusion that " <i>there are a range of measures proposed that help integrate the structure with the landscape, such as facing visible parts of the intake, weir and portals, the colour for the power house being 'ironsand'.</i> "	
<b>Department Comment</b>		<p>In regards to CMS policy 3.7.2 1(a) The question is whether the effects have been avoided, remedied or mitigated, particularly in regards to kayaking; see the Departments response above to Westpowers comments on 4.593. No change to 4.593 is recommended.</p> <p>In regards to CMS 3.7.2 policy 1(e) see the Departments response to paragraph 4.104 - 4.105 above. While there are a range of measures proposed it is not entirely clear whether these measures would be adequate to ensure that the natural character within the setting would be maintained. No change to 4.600 is recommended.</p>	
<b>Appendix 1</b>		<b>Comments on Appendix 1 Proposed Draft Special Conditions (including changes from further information supplied)</b>	
		Westpower recognises that the condition set is still to be finalised and looks forward to working through further updated conditions with the Department. In the interim, Westpower comments below on some conditions where practical issues will need to be worked through with the Department.	
C1.3	135	Westpower considers amendment to the proposed lapse period is required to ensure it does not commence prior to Westpower obtaining all the statutory approvals needed for the Scheme.	
		Westpower's comment is acknowledged, if the Concession was to be granted the lapse period can be extended if necessary.	
C6.3	140	Condition C6.3 needs to be amended to provide for exceptions in cases of emergency shutdowns (where ramp shut downs will not be possible).	
		The Department agrees with Westpower's comment. If the Concession was to be granted this should be provided for.	
C8.2	143	As noted in the application (p54), works in the river will need to be undertaken in periods of low flow conditions therefore propose the following amendment to allow for works to be undertaken at flows less than 20 cumecs rather than between 10 – 20 cumecs.	Application: p54
		The Department agrees with this and recommends changing any proposed conditions to reflect this.	