

# **Section 42A Officer's Report: Potential effects of HWP's proposed activities on native bird habitat in the Hurunui River**

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## Scope of evidence

Two main areas:

- 1.Key effects of the proposed scheme
- 2.Mitigation opportunities

Also note that I participated in caucusing with Dr Sanders and Mr Grant and agree with the conclusions as presented in that report.

# Key issues for birdlife

1. river nationally important for a range of native riverbed bird species, yet even with modelled natural and now existing flows habitat is very often at best marginal for key nesting and habitat needs.
2. incremental effects of HWP's proposals could be significant, in a detrimental sense for these birdlife. In particular there is likely to be a loss of key nesting habitat and habitat security in the months of November and December and this could have a severe impact on breeding success.

## Birds and flows – defining needs

- My S42A report for Hurunui Waiau plan described in full how breeding season flows of  $c.40m^3s^{-1}$  and above are best for nesting and  $c.25m^3s^{-1}$  for feeding
- My Table 1, using data from Dr Sanders, shows for a median flow analysis that while existing and natural flows meet the  $40m^3s^{-1}$  threshold most of the time for the months of November and December under the HWP proposal they will not.

**Table 1. Monthly median flows ( $\text{m}^3\text{s}^{-1}$ ) for the Hurunui River below HWP intake 3 (data sourced from Sanders 2012: 21-22) – green shaded cells indicate nesting requirements met in the month; red shades cells indicate requirements are not met.**

	Aug	Sept	Oct	Nov	Dec	Jan
Natural	49	56	70	56	48	39
Existing	49	55	68	52	44	35
Full HWP	44	44	58	29	25	24

## A reminder of the findings from my S42A evidence for the Hurunui Waiau Plan hearing

- Used the same flow figures, 40 and 25m<sup>3</sup>s<sup>-1</sup> for nesting and feeding respectively
- Analysed data from 51 years of hydrographs
- Developed decision rules as to whether under a range of different flow scenarios habitat needs would be met under different flow conditions

# Hurunui modelling scenarios and how they match up with HWP application

- Natural – No abstraction.
- Status quo – Abstraction of 6.2 m<sup>3</sup>/s.
- Scenario 1 – An A Block allocation of 7 m<sup>3</sup>/s.
- Scenario 2 – An A Block allocation of 7 m<sup>3</sup>/s plus a B Block allocation of 10 m<sup>3</sup>/s and B Block gap of 5m<sup>3</sup>/s
- Scenario 3 - ABC seasonal scenario that includes a C Block allocation of 0 m<sup>3</sup>/s for December to February (summer), 16.5 m<sup>3</sup>/s for March to May and September to November (autumn and spring) and 33 m<sup>3</sup>/s for June to August (winter).
- Scenario 4 - ABC all year that includes a C Block allocation of 33 m<sup>3</sup>/s all year

**HWP:** \* Stage 1 is roughly speaking a mix of Scenarios 1&2 above

\* Stage 2 is closest to scenario 4, i.e., with a C block without seasonal restrictions

# Number and % of years when Hurunui flows suitable for breeding birds (N=51)

Scenario		Almost certainly (AC)	Probably (PR)	Possibly (PO)	Unlikely (UN)
Natural	No. yrs	20	15	9	7
	% yrs	39	29	18	14
	%yrs AC+PR	69			
	%yrs AC+PR+PO	87			
Status quo	No. yrs	17	17	10	7
	% yrs	33	33.3	19.6	14
	%yrs AC+PR	67			
	%yrs AC+PR+PO	86.6			
Scenario 1	No. yrs	17	14	12	8
	% yrs	33	27	24	16
	%yrs AC+PR	61			
	%yrs AC+PR+PO	85			
Scenario 2	No. yrs	7	10	19	15
	% yrs	14	20	37	29
	%yrs AC+PR	33			
	%yrs AC+PR+PO	70			
Scenario 3	No. yrs	0	8	8	35
	% yrs	0	16	16	69
	%yrs AC+PR	16			
	%yrs AC+PR+PO	32			
Scenario 4	No. yrs	0	0	4	47
	% yrs	0	0	7.8	92
	%yrs AC+PR	0			
	%yrs AC+PR+PO	7.8			



# Scenario evaluation matrix for flow-related bird habitat requirements on the Hurunui.

Note: any scenario that is 'green' is better than any that is 'lighter green' or 'yellow', and 'red' is worst.

		Uncertainty		
		Low	Medium	High
Probability (chance of achieving outcome)	Almost certainly			
	Probably	Natural, Status quo Scenario 1		
	Possibly			Scenario 2
	Unlikely	Scenario 3 Scenario 4		

# A reminder of the findings from my S42A evidence for the Hurunui Waiau Plan hearing

- Clear to me that a river which is considered of national importance for native birdlife, but which is already marginal in terms of providing key habitat needs, will likely suffer from unsustainable cumulative effects as a result of implementing the HWP project (and other related projects downstream). These effects will be direct and indirect:
  - Direct effects - reduced flows leading to higher levels of mammalian predation which will likely reduce 'threatened and at risk' bird species population sizes.
  - Indirect effects - associated with increased vegetation encroachment resulting from reduced flows and reduced sediment transport. This increased vegetation will in turn provide more habitat for predators and less habitat for riverbed nesting birds – resulting from both will be increased predation and also nest loss from flooding.

# Conclusions about likely effects of the HWP proposal on birdlife

- To quote from my para 2.2.6: Dr Sanders' concludes (p30) that the “effects of the HWP on breeding success, and, ultimately bird population size, would probably be impossible to detect because they would be small, and would occur over a long period, against a background of highly variable breeding success and numerous other factors that influence bird breeding success”. I agree only partially with this view – the birds appear at the moment to be ‘holding on’ in marginal conditions. I suspect the loss of key breeding season flows resulting from HPW will be so significant as to jeopardise bird populations and that population declines for some species might be quite rapidly detected, although I accept cause and effect may be difficult to attribute.

# Mitigation

Three main possibilities:

1. Predator, mammalian and avian, control
2. Weed control
3. Flow management

I next address each of these:

# Predation

- No cost-effective mammalian predator control programme currently available that will protect braided river birdlife. The only relatively effective control on mammalian predators is provision of a suitable flow regime.
- Black-backed gulls and harrier hawks may be significant predators on the Hurunui:
  - Control of the former is easy and cost effective and should be contemplated, although I accept this cannot be a condition on any granted consent.
  - As a target I would recommend actively controlling the numbers of black-backed gulls on the river, by reducing them to around 10% of current numbers, but also looking to totally exterminating some colonies, especially in the Mandamus to Lowry Range reach of the river.

# Weeds

- C.50% (2500ha) of the potential area of riverbed habitat (5000ha) occupied by invasive exotic vegetation.
- If this could be successfully controlled then in my view, and in association with the avian predator control suggested above, there could be a net conservation gain for braided river birdlife.
- I assessed ECan data based on costs of 'clear fairway' policies on Canterbury rivers. Current costs c.\$350/ha based on a 3-yearly spraying rotation. Based on this information I have calculated a minimum annual cost of around \$300,000pa for weed control.

# Flow management

- support a consent condition requiring provision for a proportion of freshes to be passed down the river during the bird breeding season.
- Benefits would occur for food production and bird feeding. Ideally such a regime would manage the diversion intake such that the median number and peak sizes of freshes does not change over time.

# Conclusions

- Birdlife of the Hurunui River is considered nationally important, yet recent research presented at the Hurunui Waiau Regional Plan hearing suggests habitat conditions are at best marginal.
- Given these marginal conditions it seems highly likely the proposals from HWP will have a significant detrimental effect on native riverbed nesting birdlife.
- I believe these negative impacts can be mitigated by a staged programme of avian predator control and riverbed weed control, supplemented by better management of freshes, and supported by an integrated monitoring programme.