

BEFORE THE INDEPENDENT COMMISSIONERS

IN THE MATTER of the Resource Management Act
1991

AND

IN THE MATTER of the Proposed Canterbury Land
and Water Regional Plan

**EVIDENCE IN CHIEF OF GRAEME JAMES BODDY ON BEHALF OF
THE BUGSPORTS CLUB (INC) AND WHITEWATER NEW ZEALAND (INC)**

4 FEBRUARY 2013

INTRODUCTION

1. My name is Graeme James Boddy and I am writing this submission on behalf of the BugSports Club (Inc) of Christchurch. I am the designer of the river bug craft that the club is based on and I am a foundation member of the club.
2. In the 1970/1980s I worked for 14 years with the Water and Soil Division of the Ministry of Works and later the Water Resources Survey of the Department of Scientific and Industrial Research as a Hydrological Technician measuring river flow, rainfall and snow melt. This work was based in many regions over the years including one year in Rotorua, seven years in Canterbury, two years in Tekapo, and four years in Nelson (including working in the Upper Buller catchment).
3. I have measured most of the major rivers in these regions in all their moods from low flow to extreme flood events. I have also helped out on the West Coast of the South Island on occasions. Included in this work was three years doing snow and glacier surveys in the Southern Alps, as well as extensive travelling in the high country reading rain gauges. This has given me a very extensive knowledge of New Zealand Rivers, particularly in the South Island.
4. On leaving hydrology I returned to Christchurch and in 1997, started a company called Wildwater Designs (NZ) Ltd. and developed the river bug design. This is a new type of recreational river craft that is particularly suited to the free flowing foothill rivers of Canterbury like the Hurunui, Waiau, and Ashley and their tributaries. Without these white water rivers this craft, that has spread round the world, would not have been created.
5. The first river craft I built was a double canvas canoe from a kitset when I was 15 years old. Canvas was the material of choice in 1964. From the canvas canoe I evolved to fibreglass kayaks, to wooden and inflatable dinghies, to catarafts and finally to inflatable river bugs.

6. Public interest in running NZ's challenging and beautiful rivers was growing exponentially during this period and I was fortunate enough to be part of this evolution of improving river craft and skills.
7. I have run many of the rivers of the South Island, in dinghies, oared rafts, catarafts or riverbugs. Many of these rivers I have run numerous times and often as a trip leader/organiser.
8. Rivers I have run include the Takaka, Pearse, Baton, Wairoa, Pelorus, Wairau, Clarence, Karamea, Mokihinui, Ngakawau, Mackley, Matiri, Buller from Lake Rotoiti to Lyell, Gowan, Mangles, Matakitaki, Glenroy, Maruia, Inangahua, Upper Grey, Ahaura, Lewis, Nina, Boyle, Waiau, Hurunui (including the North Esk & South branch), Okuku, Ashley, Waimakariri, Rakaia, Rangitata, Tekapo, Pukaki & Ohau (before they were dammed), Ahuriri, Clutha (before it was dammed), Kawarau, Shotover, Moonlight, Greenstone, Eglinton, Hollyford, Waiau, Grebe, Waikatoto, Landsborough, Okarito, Kakapotahi, Totara, Whitcombe, Toaroha, Styx, Arahura, Taipo, Otehake, Taramakau and Arnold rivers.
9. Though not an extreme river boater I have done a number of probable first descents on what are now popular runs. These early descents were in wooden dinghies and included the Upper Waiau River (from Malings Pass) in Dec 1980, and the Whitcombe River (from the Cropp River Junction) in April 1981.
10. I confirm that I have read and have complied with the Code of Conduct for Expert Witnesses. This evidence is within my area of expertise, except where I state that I am relying on facts or information provided by another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

CREATING THE RIVER BUG AND RIVER BUGGING EXPERIENCE

11. I created the original river bug design in 1996 and since then I have been continuously striving to improve the craft, developing more specialised designs, and evolving the techniques and skills necessary to navigate them down rivers. The craft is basically a single person raft, which is used on a river while strapped in by a velcro waistband and by descending feet first and facing downstream. Webbed gloves are worn on the hands and fins on the feet. A full wetsuit, life jacket and helmet are also worn and rescue gear is carried as part of normal river kit.



Riverbug design developed on Canterbury's foothill and mountain rivers.

12. Not only was it a new type of craft but river bugging was a new sport with new skills that had to evolve. River bugging has been my main summer sport since then, and I have river bugged most of the rivers in Canterbury, as well as many of those listed above. Because the river bugs are easily carried I have also done probable first ever descents on the Upper Matakaitaki (Buller), Mackley (Buller), Otahake (Arthurs Pass), and Upper Greenstone (Wakatipu) rivers.

13. Outside of the South Island I have river bugged rivers in the North Island, Australia and North America while promoting river bugs.



Commercial river bugging operation in Korea.

THE BUGSPORTS CLUB

14. The mission statement of the club, as stated in the constitution, is "To promote, encourage and enable safe participation in bugpolo and river bugging". Bugpolo is a pool based game that is a cross between water polo, canoe polo and netball. River bugging involves making white water trips using the river bugs. Our vision is to grow the sports and activities so that they operate in other centres both nationally and, eventually, internationally.
15. The club was formed in 2007 to provide an organised group structure for the growing interest in bugpolo and river bugging in Christchurch. I had developed the river bug in 1996 and since then have been taking

friends and anyone interested down rivers in them. In 1999 I developed a pool game called bugpolo. This game was very easy to play because the bugs were so easy to use. The river bugging and the bugpolo have grown from then to the point where a club was needed to take it to the next level.



River bugging instruction on the South Branch of the Hurunui River.

16. The club now has approximately eighty members. It now owns seventeen river bugs, as well as life jackets, helmets, gloves and fins that it hires out to club members. The keener club members are now purchasing their own gear to do regular river trips, and with the development of more high performance river bugs the technical “white water” skills of these club members is growing rapidly.

RIVER BUGS AND RIVER BUGGING

17. River bugs excel in the rivers of the Canterbury alps and foothills, but are not as suited to the slower moving flatter water of the rivers on the Canterbury plains. They are ideal for playing on river features but are not suited to being propelled long distances on flat water. When river

bugging, it is most enjoyable if one can use the river like one would use an escalator, just letting the current transport you along and getting on and off when you like. Hence rivers with lots of current and challenging hydraulic features are best.



Maori Gully on the Hurunui River – a river deserving of protection in its natural flows for future generations.

18. Although river bugs may not be fast they are very manoeuvrable and easy to use on rivers, and are challenging and fun to navigate down, through, or around, pours, chutes, breaking waves, holes, waterfalls, standing waves, cliffs and boulders.
19. Skilled bug paddlers can roll upright if capsized, pirouette (stand vertically upright in the water), and surf. Enjoyable activities include “catching” eddies (still water) behind boulders and bluffs, surfing on waves formed by underwater boulders or buffer waves on the front of boulders and bluffs. It is also fun to do gymnastic moves like pirouetting down eddy lines and doing deliberate rolls in waves and across eddy lines.

RIVER FLOWS SUITABLE FOR RIVER BUGS

20. Because a river bug is probably the smallest white water river craft in the world, it does not require a lot of water, depending on the bed features of the river. Flows as low as 5 cumecs are still enjoyable in steep confined channels like the upper Boyle River (upstream from Boyle Lodge), even if they are a little “boney” (shallow and difficult to navigate).



Maori Gully on the Hurunui River – the home of river bugging in Canterbury and the world.

21. However, there is a difference between having enough water to float down a river and the flow required to create good hydraulic features that are powerful enough to play on. Having white water hydraulic features of value is most important. It is important also to have enough water to not be continually hitting the bottom with ones feet or the bug. When river bugging, it is best to only use the hands to propel

oneself and steer in shallow water, and to only use the feet when the water is over half a metre deep.



The lower Boyle River provides enjoyable river bugging at all flows.

22. Lower river flows commensurate with high quality white water features are often the most suitable for beginner river trips. As the flow increases the speed and power of the water also increases and river hydraulic features increase in size. Larger white water features are normally sought after by more experienced river buggers. These white water features will eventually be drowned out as the river rises and be replaced by other features that will appear. As a generalisation, rivers get harder as their flow increases (there are exceptions, such as the Rangitata Gorge, that also get very difficult at low flow).
23. Compared to the upper Boyle, wider river channels with less gradient like the Lower Boyle (below Engineers Camp) or the Ashley Gorge require a minimum flow of 10-15 cumecs to be navigable, and 20+ cumecs to develop good play features.

24. I have never seen Maori Gully on the larger Hurunui River too low to navigate, as the channel is confined by bedrock. When it gets below 20 cumecs (at Mandamus) and is warm and clear in the late summer, it is ideal for beginners learning to river bug. At flows from 20-40 cumecs it is just a great intermediate trip with different flow levels providing different challenges. Above this flow it is only suitable for experienced river buggers with a reliable roll.

WHAT GRADE RIVERS ARE SUITABLE FOR RIVER BUGS?

25. All the commonly kayaked or bugged rivers in Canterbury are graded. Grade one and two sections of river are used mostly for beginners and children's river bug trips, and grade 3 is the most popular level of difficulty for club members. Lesser numbers seek the challenge of grade four, and only a few are running grade five water (see Dr Rankin's evidence for a definition of white water river grades). River bugs are equally at home on small, tight, technical and steep white water runs, such as the Upper Boyle River, as they are on big water runs, such as the Rangitata Gorge.



Walking in and river bugging out is possible in many of Canterbury's rivers.

26. A river bug is very light (7kgs) and is particularly suited to be carried into the headwaters of rivers where there is restricted road access. These rivers are often steep and confined and of grade 3-4 difficulty. Examples are Upper Waiau, South Branch of the Hurunui, Okuku, North & South Ashburton, and Taipo Rivers etc.
27. River bugs are ideal for introducing young people to rougher rivers as they are easy to learn how to use, and for rescuing people who have capsized. A capsized person can also normally rescue themselves as they can just climb back on their bug without going to the bank. Outdoor Education Centres are starting to use them on grade 2-3 water, and sections of river like the Upper Hurunui (downstream from the Jollie Brook) and the Boyle River are particularly suited to this type of activity.



Teenagers enjoying summer low flow conditions on the Hurunui River when the water is warm and clear – flow less than 20 cumecs.

DESCRIPTION OF RIVERS USED FOR RIVER BUGGING IN CANTERBURY

28. As stated above the rivers of the Canterbury foothills and alps are excellent for river bugging. They are a wonderful recreational resource and their appeal includes:
- a. Their white water challenge which provide numerous permutations of character and difficulty through a wide range of flows;
 - b. The micro environment of gorges and native bush often enclosing the river;
 - c. The more distant vistas of bush/tussock/snow covered ridges and mountain tops; and
 - d. The stimulus, the exercise and the camaraderie they engender.
29. I will not attempt to describe every river in Canterbury (see Appendix I for rivers that have been bugged in Canterbury). I will only describe those that are the most used and valued for river bugging at the present time, and some that are likely to be explored in the near future.

The Waiau River and its Tributaries

30. The Waiau is one of our most valued rivers in Canterbury and it has two very different major tributaries. One of the tributaries includes the branches of the Hope, Boyle, Doubtful, Nina and Lewis. These branches are of generally moderate difficulty and are accessible from the Lewis Pass Highway. The other tributary referred to is the Upper Waiau (above the Hope River junction). It is more remote and of greater difficulty.
31. There is also a section of the main stem from the Hanmer road bridge down to the irrigation intake that is of moderate difficulty. This section has been run commercially by river bugs.

32. The Boyle River has two separate sections that are popular with club members.
33. The Boyle River between the Engineers Camp and the Hope walkway footbridge, that is sometimes referred to as the Lower Boyle, is a good intermediate grade 2-3 run. Though short, this section has a number of play features located beside upstream eddies that allow one to attempt the same features many times. This is of particular value when training beginner to intermediate paddlers. This section can be run all year round, although it can get a little low at times in late summer.
34. The Upper Boyle run, upstream from the Boyle Lodge, is a favourite spring bugging trip when it becomes a busy mountain torrent. Club trips normally walk upstream for about 1 $\frac{3}{4}$ hours to river flats before bugging back down, which takes about the same amount of time. This is a grade 3+ run in moderate flow and becomes grade 4 in high flows. It is particularly pleasant doing a walk-in float-out trip like this, because there is a mixture of activities and you finish the trip back at your car with no shuttle required for the vehicles. Unfortunately, it gets too low to run by December unless there is considerable rain.



The upper Boyle River has enough flow in spring to offer challenging river bugging.

35. The Nina has been bugged a couple of times but requires considerable Northwest rain to have sufficient flow. It has a challenging short gorge near the bottom that reaches grade 4 in higher flow.
36. The Lewis is of moderate difficulty but requires considerable rain to have sufficient flow.
37. Until recently the Upper Waiau River was usually accessed by helicopter for river boating but now, thanks to DoC, it has been opened up with better access for recreation. The Upper Waiau River above the Hope River junction is a remote two day trip and I regard it as the best multi day wilderness river trip in Canterbury for advanced river boaters. Once the four wheel drive access track over Malings Pass is left behind there are two long days of challenging white water boating including many gorges of grade 3-5 difficulty (depending on the flow), and the mountain scenery is stunning.

38. The river is normally run by most boaters in the early spring when it is high from snow melt. However for river bugging it is more enjoyable to run it in the late spring or early summer when the water and air are warmer, or after rain. The river bugs don't mind a little less water, however, it is still a challenging trip that requires a high level of skill and the ability to roll.
39. It is definitely the pinnacle of multi-day river bugging in Canterbury.
40. The Hope River and her tributaries provide enjoyable moderately difficult white water challenges that are easily accessible as day trips from Christchurch. In contrast, the Upper Waiau is a full weekend challenge for expert river buggers. Because river bugs are more suited to day trips the Boyle River is the most popular river bugging run in the Waiau catchment at the present time.

The Hurunui River

41. The Upper Hurunui River is the most important river in Canterbury for the BugSports Club.
42. The ideal river for the BugSports Club is:
 - a. Close enough (to Christchurch) to be run as a day trip;
 - b. Have enough water for year round boating;
 - c. Be free flowing providing a wide range of flow conditions from low to high fresh;
 - d. Have technical white water ranging in difficulty from grade 2 to grade 4, with the separate grades of water being concentrated in different sections of the river, divided by good access points;
 - e. Have several kilometres of continuous rapids with a range of features including: strong eddy lines, boulders above and below water level, shallow holes, steep breaking waves, and chutes;

- f. River banks and vistas of high scenic value;
 - g. Have little or no tree debris in the river;
 - h. Have good access by vehicle to both put in and take out points;
and
 - i. Have a short shuttle distance – the distance between the get-in point and the take-out point.
43. The Hurunui fills the criteria in every area except a Grade 4 section, but this is present in Maori Gully in flows over 120 cumecs. It is interesting that these requirements are very close to those required by the average kayaker. No other river has as many of these attributes for recreational white water boaters living in Canterbury.
44. The Hurunui has become the most important river for the BugSports Club, with the run between the Jollie Brook and the Seaward River being the best for beginners, excluding Devils Fang rapid which we often walk beginners around, and the run downstream from the Seaward River through Maori Gully for intermediate and advanced river buggers.
45. River bugs can also be easily carried above the Sisters Gorge for an enjoyable grade 3 run down through the Gorge to the Jollie Brook.



Running a rapid in a river bug in the Hurunui River.

46. It is very important for the club that these reaches in particular remain free flowing in their natural state.
47. The South Branch of the Hurunui has only been river bugged once due to extreme difficulty of public access. However, the trip proved it would be ideal for running in river bugs particularly in the spring and after rain. The BugSports Club requests that the Hurunui South Branch also remains free flowing, not only because of its influence on flows of the main stem but also because of its potential as a river trip in its own right, if/when access improves.

Ashley River

48. The Ashley River, when it is flowing, is comparable to the Hurunui River in enjoyment and difficulty for river bugging. Unfortunately it requires rain from the south to north east, or snow melt to have sufficient flow. Some years it seldom has enough water (15-20 cumecs), but fortunately flows can be checked at the Environment Canterbury website so when it does “flow” this can be taken

advantage of. Normally trips start at the middle gorge bridge with a get out at the camp ground. Because of its proximity to Christchurch and its grade 3+ water it is very highly valued by the club.

Okuku River

49. The Okuku River, a branch of the Ashley, is very highly prized by the most skilled river buggers because of its grade 3-4+ difficulty, but being even smaller is difficult to catch in a suitable flow. A flow of 10-40 cumecs is ideal for bugging.

Waimakariri & Rakaia Gorges

50. The whole Waimakariri and Rakaia Gorges have not been run by a river bug yet because they are considered such long trips, with little technical difficulty in normal flow.
51. However, for the Waimakariri Gorge a shorter trip starting in the lower Broken River is planned. This could prove popular in the future.

North & South Ashburton Rivers

52. From looking at maps these appear very promising for river bugging. They have no road access to their upper catchments but this is no hindrance to the easily carried bugs. Trips are planned.

Rangitata Gorge

53. The Rangitata Gorge is the hardest trip the club runs and is only suitable for the most skilled club members. Fortunately the hardest rapids can be portaged if required. The most suitable flows for bugging are between 50 -100 cumecs.

SUMMARY

54. It is important for the BugSports Club that the rivers in the mountains and foothills of Canterbury are protected for this and future

generations. It is in this environment that the rivers are their most beautiful and challenging, and it is important that as many as possible remain free flowing. These rivers are valued not only by our sport but by kayakers, rafters, fishermen and jet boaters.

55. As the population of New Zealand grows, and particularly that of our cities, these rivers will become more and more valuable for recreation.

Graeme Boddy

4 February 2013

REFERENCES

1. Statement of Evidence of Douglas Alexander Rankin on behalf of Whitewater NZ (Inc), Evidence to be presented to the Hearing Commissioners on the Proposed Canterbury Land and Water Regional Plan, April 2013.

Appendix I: Use of Canterbury Rivers and Waterways by River Buggers

PURPOSE OF SCHEDULE

To identify those waterways that are used by river buggers, and to indicate their use by river buggers. Reference to paddling in this schedule refers to river bugging.

NOTE: This data is unsuitable for use in a multi variate analysis (MVA) or Multi Criteria Analysis (MCA) study.

There are no high or low scores, simply descriptions.

Parameter	Definition/Type	Rating Scale
Grade	River grade according to the International River Grading System	1 = easy; 2 = intermediate difficulty; 3 = moderately difficult; 4 = very difficult; 5 = extremely difficult; these scales refer to low to high river flows but not flood flow regimes where grades may be higher. An explanation of the scale is provided at the bottom of the Table.
Use	Frequency river buggers use the resource	1 = rarely, if ever; 2 = very occasionally paddled; 3 = occasionally paddled; 4 = often paddled; 5 = regularly paddled/popular
User Ability	Number of classes of river buggers of different ability that use the resource	1 to 5; the rating is determined by adding up the number of classes of paddlers of different ability chosen from five classes, namely, novice, beginner, intermediate, advanced and expert. Novice paddlers typically paddle on up to grade 2 water, beginners and intermediates up to grade 3 water, advanced paddlers up to grade 4 water and expert paddlers up to and beyond grade 4 water. For example, if a stretch of grade 2 water is used largely by novices and beginner paddlers then the User Ability score is 2. If another stretch of grade 2 water is used by all grades of paddler then the User Ability score is 5.

Activity spectrum	Number of activities that the resource is used for	1 to 5; determined by adding up the number of activity types that the resource supports and is/has been used for selected from the following six groups: touring, instruction, creeking, play boating, walk in trip, multi-day touring. For example, if a stretch of river is used for touring, play boating, and instruction then the activity spectrum score would be 3. If a run was only used for creek boating then the score would be 1. If a run was used for five or more activities then the score is 5.
Accessibility	Access to the river	1 = walking or helicopter; 2 = 4WD only; 3 = unsealed; 4 = secondary roads; 5 = urban or SH. Note access only applies to the ability to get to the get in and get out and does not include access to roads during the trip, which is absent in many runs.
Availability	Availability dictated by suitable flows	1 = rarely available (<10%); 2 = occasionally available (10-20%); 3 = often available (20-60%); 4 = frequently available (60-95%); 5 = always available (100%)
Flow requirements	Flows in cumecs	Flows in cumecs (cubic metres per second); no flow requirements are given as they are a complex function of user ability, user activity (activity spectrum), river grade and geomorphology, and user preference. Whitewater NZ/BugSports Club can provide guidance in this area when requested for specific rivers.
Disclaimer:	<i>There are no overall scores. This schedule simply identifies those waterways of interest to river buggers, and gives an indication of parameters associated with that current use. There may be rivers not mentioned here that have been and are bugged and the inclusion or absence of any rivers in this schedule does not construe any particular value or lack thereof.</i>	

Index #	Zone	River Catchment	Tributary	Section	Grade	Use	User Ability	Activity Spectrum	Accessibility	Availability	Flow requirements (cumecs)	Modifications	Threats
3	Kaikoura	Clarence	Clarence	Jack's Pass to Acheron	2	2	2	3	3	2	see rating scale		Cattle in river
4	Kaikoura			Acheron to Glen Alton	3	4	5	4	3	4	see rating scale		

21	Hurunui-Waiiau	Hurunui	North branch	N Branch upper	2	1	2	1	1	3	see rating scale		
22	Hurunui-Waiiau			Lake Sumner	1	1	2	1	2	5	see rating scale		dam, paid 4 WD access
23	Hurunui-Waiiau			Lake to Sisters St	2	2	2	4	2	5	see rating scale		irrigation, paid 4 WD access
24	Hurunui-Waiiau			Sisters St to JollieBrook	2	3	3	5	3	5	see rating scale		irrigation
25	Hurunui-Waiiau			JB to S Branch	2	5	5	5	3	5	see rating scale		irrigation
26	Hurunui-Waiiau			S Branch conf to Seaward	2	5	5	5	3	5	see rating scale		irrigation
27	Hurunui-Waiiau			Seaward to Surveyors St	3	5	5	5	3	5	see rating scale		irrigation
32	Hurunui-Waiiau		South branch	S Branch upper	3	2	3	3	2	3	see rating scale		dam, paid 4 WD access
33	Hurunui-Waiiau			Nth Esk conf to bridge	3	2	4	3	2	2	see rating scale		paid 4 WD access
Index #	Zone	River Catchment	Tributary	Section	Grade	Use	User Ability	Activity Spectrum	Accessibility	Availability	Flow requirements	Modifications	Threats

[illegible]

87	Upper Waitaki	Waitaki	Tekapo WW Course		3	3	4	2	4	1	see rating scale	releases	
88	Upper Waitaki		Tekapo River		3	3	4	3	4	1	see rating scale	dry bed for 60 years	

International River Grading System (also referred to as Class, especially inside the USA).	
Grade 1	Not difficult. Current is slow to moderate. Course of river obvious. Beginner's water.
Grade 2	Moderately difficult. Faster current. Way down is clear but simple obstructions present. Small stoppers and small drops. Requires basic whitewater skills.
Grade 3	Difficult. Course of river is passable and recognisable from the kayak/canoe. Waves can be high and irregular; boulders and obstructions can be numerous. Requires sound whitewater skills.
Grade 4	Very difficult. Route not always clear. Most paddlers inspect from the bank. Rapids continuous, waves can be big and numerous. Very fast current. Water can be heavy. Stoppers are powerful. Paddler required to manoeuvre continually. Requires an advanced to expert level of skill.
Grade 5	Extremely difficult. Raging, roiling water with pounding waves. Inspection essential because of serious dangers. Water has large drops, narrow passages, complex boulder fields and difficult holes. Difficulties are continuous. Requires absolute expertise.
Grade 6	The extreme. So difficult that navigation is virtually impossible. Consequences of a mistake are extremely serious.

	Experts avoid water if possible.
(derived from J Evans and Robert R Anderson, <i>Kayaking: The New Whitewater Sport for Everybody</i> . The Stephen Greene Press, Brattleboro, Vermont, 1975)	