Submission to Upper Hutt City Council re Proposed District Plan Change 15.

Submitters – Jeff & Noeline Berkett, Don Robinson.

We oppose most of the proposed changes because the data supplied by greater Wellington Regional Council is flawed, contains erroneous information and local farmers and long-term residents were not approached to give accurate eye witness accounts prior to, and during, the study.
Noeline has lived in the Valley for most of her 67 years, her mother lived in the valley for all of her 81 years, Noeline's family farmed there from 1945 until the farm was bought by a partnership of Berkett/Prince.
Jeff started working on farms in Whitemans Valley at the age of 17 and has been involved with farming and contracting throughout the Upper Hutt area for 50 years.
Noeline and Jeff have farmed in the valley since 1974, and still farm 335ha.
Don Robinson has lived and farmed in the Valley for most of his 81 years.
So you could say, between the 3 of us, we have seen our share of floods, small and large, and have a very good idea of where water goes in a flood and where it doesn't.
We have kept rain records since 1976, and these records have been verified by GWRC and found to be within 3% of their figures.
We attach several charts to illustrate where we believe the inaccuracies arise.
Chart 1 was done in 2000. We were building a new house and had to have an engineer's report to show the site was not prone to flooding. This chart, from the report by TCB, contains data from WRC (Wellington Regional Council now GWRC). Compare these figures with Chart 2, which is the GWRC levels in 2005.
You will notice that the levels for the Q20, Q50 & Q100 floods have increased by approx. 10%. When questioned why, the answer was that the figure was an average, and given the short time that records were available, the average would be different.
So, we ask, if there are 20-30 "dry' years, will these levels decrease? Not so, they will be "set in concrete", if UHCC allows this change to go ahead as it is.
Chart 3 lists the individual "Flood Events". We have rainfall for all of these "Events", so we will list the rainfall for those Floods.

20th January, 1980.

16/01/80 11.5.mm
17/01/80 31mm
18/01/80 2.5mm
19/01/80 81mm. GWRC Peak Flow 207

10th April 1980.

7/04/80 7.5mm
8/04/80 11mm
9/4/80 2.75mm
10/04/80 77.5mm
11/04/80 43.75mm GWRC Peak Flow 194

21st May 1981

19/05/81 5.5mm
20/04/81 6.25mm
21/04/81 162.5mm
22/04/81 43.75mm GWRC Peak Flow 245

11th December 1982

11/12/82 32.50
12/12/82 87.50 GWRC Peak Flow 192

18th October 1984
17/10/84 3.25mm
18/10/84 69mm GWRC Peak Flow 161

19th August 1985
19/08/85 5.5mm
20/10/85 80mm GWRC Peak Flow 186

7th August 1991
4/08/91 3mm
5/08/91 3mm
6/08/91 2.5mm
7/08/91 75mm GWRC Peak Flow 156

8th November 1994
5/11/94 1.5mm
6/11/94 16m
7/11/94 33mm
8/11/94 66mm GWRC Peak Flow 194

4th October 1997
5/10/97 28mm
6/10/97 110mm GWRC Peak Flow 227
We have this down as a "big Flood', GWRC doesn't even rate it as a Q10 flood!

21st October 1998
20/10/98 23.5mm
21/10/98 75mm GWRC Peak Flow 187

28th October 1998
28/10/98 128mm GWRC Peak Flow 239
We have this as a "big Flood". Only just scrapes in as a Q10.

2nd October 2000
1/10/2000 44mm
2/10/2000 78mm GWRC Peak Flow 189

3rd October 2003
1/10/03 17mm
2/10/03 none
3/10/03 2mm
4/10/03 132mm GWRC Peak Flow 231

16th February 2004
13/02/04 19mm

14/02/04 29mm
15/02/04 120mm GWRC Peak Flow 252
We have this as a "big Flood", not even a Q20 with GWRC data.

6th[th] January 2005
5/01/05 2.5mm
6/01/05 83mm GWRC Peak Flow 247
Still not even a Q20 Flood.

So, in 25 years of recorded floods, we have not had even a Q20 flood. Our point is, where do GWRC get the idea we will ever have a Q20, let alone a Q100, which has a peak flow of 372. For the same size floods, TCB, quoting WRC figures in 2000, had a Q100 of 330, 80% of the GWRC figure in 2005. So, why the difference, we know floods aren't getting bigger. Since 2005, we have had "small floods",

- 7th July 2006 (198mm in 2 days),
3rd August 2006 (53.5mm in 2 days ,
19th November 2006 (101mm in 3 days),
24th May 2009 (72mm in 2 days),
31st August 2009 (94mm)
24th July 2012 (68mm in 4 days).

As you are probably aware, the authors of the GWRC study, Sinclair Knight Merz, built a model of the river and this was the method of calculating flood patterns. We have repeatedly asked GWRC how much rain was put onto the model to produce a Q25, Q50, Q100 flood. They will not tell us, it would answer a lot of questions as we know how much rain we got to have a flood that doesn't even qualify as a Q20 flood. The other very disturbing aspect is the lack of contact the SKM people had with locals, none of the "old-timers " were visited or were asked to have any input whatever. How can someone with no local knowledge, make decisions that affect our future. They are telling us that their word is more knowledgeable than our memories and photos.

One area that is completely wrong is the "ponding" that will supposedly happen to the south of the main road opposite Gorrie road up to "Barkers" Bridge. In my memory, there has never been a flood to go through this land, let alone "pond" on it. Likewise for both sides of Gorrie road, it just doesn't go that way. During a very big flood in the late 1970's, before we did records, the water came up beside the bridge at Keys Corner, flowed under our house and went across the paddocks towards Cunninghams (no house there then). There was no water where GWRC says it will go, so where do those figures come from? Even that flood didn't reach the areas designated as 'ponding" in the Plan.

One of the co-submitters, Don Robinson owns or leases the land to the south and west of the main Whitemans Valley road, and he cannot remember any water ponding on the area, he is now in his 80's.

Other problems we have with the use of a model to determine water flow are-

1) Different soil types greatly influence river levels. Some soils absorb water, others allow more water to run into waterways.
2) After a very wet period of rain, it takes very little rain to cause a flood. In drier periods, if we have a couple of drizzly days, the rain will soak in with little or no flooding. After a dry spell, heavy rain will run straight into the waterways because the ground is too hard and won't absorb the rain.

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3) In Whitemans Valley, the rainfall varies considerably throughout. There is a band of rain that follows the ranges, from Kakariki, over Mt Devine (end of Russells Road), over Misty, Mt Climie, across parts of Mangaroa, and then hits Te Marua Twin Lakes area. In the "big flood' in the early "70s, there was 14"(350mm) at the Johnsons Road end of the valley, the middle of the valley got 12" (300mm), and at the Wallaceville corner we got about 10" (250mm), if I remember correctly. How can a model replicate these events? That was another flood that failed to reach the areas designated as 'ponding" in the Plan.

We ask the Council to take these factors into consideration before altering the district Plan in a way that will impact largely on the landowners. There are areas of the Plan that make sense, but there is still a lot of questionable data being put forward as fact.

We wish to be heard in support of our submission.

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Noeline Berkett
Don Robinson.

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Chart 1

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TRUEBRIDGE CALLENDER BEACH LTD

4 April 2000

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ENGINEERS
AND PLANNERS
RCE MANAGERS

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Site Investigation for Berkett Property, Whitemans Valley

We have been engaged by Nolene Berkett of Whitemans Valley to undertake a site investigation of her property with regard to floor levels for a proposed dwelling. We have now completed a field survey, contacted Wellington Regional Council (WRC) regarding peak flows and undertaken the appropriate calculations with the results as reported below.

The proposed building site lies approximately 70m to the West of the Mangaroa River and approximately 150m downstream of the intersection of Mangaroa Valley Road and Whitemans Valley Road (refer to attached aerial). The WRC has undertaken modelling of the Mangaroa River catchment to the confluence of the Mangaroa and Hutt Rivers, some 10 kms downstream of the proposed site, with a total catchment area of 104 000 ha. The results of this study are tabled below.

Peak Flows for Total Mangaroa River Catchment

Return Period	Peak Flow (m^3/s)
100 yr	330
50 yr	300
20 yr	250

The Mangaroa River catchment area to the proposed building site is 5528 ha - approximately half the area of the WRC study catchment. To produce peak flows for our catchment we have proportioned the flows from the WRC study by area while allowing for slightly increased peak flows due to reduced concentration times (refer to attached calculations).

Peak Flows for Mangaroa River Catchment to Proposed Building Site

Return Period	Peak Flow (m^3/s)
100 yr	199
50 yr	181
20 yr	151

March 2005
WRegC
Laura Watts

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Chart 2

Summary

This investigation into the flood hydrology of the Mangaroa River includes rainfall analyses for the Mangaroa catchment, calibration and validation of a rainfall runoff model, modelling of design rainfall events and flood frequency analyses using at-site and regional methods.

The rainfall runoff model for the catchment, calibrated using observed flood events at Mangaroa River at Te Marua (29830), produced good results when tested on five validation events. The model can be used with confidence to model flood flows in the catchment, but model performance should be continually assessed as floods occur.

The recommended flood frequency estimates for the Mangaroa River at Te Marua (29830) are those derived by pooling the at-site and rainfall runoff model derived results, which had an average difference of 2.5%. The at-site and rainfall runoff model results were considerably higher than the regional results derived using the method of McKerchar & Pearson (1989). As the at-site and rainfall runoff modelled results were so similar, and there is a decent length of good flood data, there is no need to incorporate the regional results into the final flood frequency estimates. The final estimates (Table 1) are on average 13% higher than the previous flood frequency estimates for the Mangaroa River at Te Marua (29830).

Table 1: Final flood frequency estimates for the Mangaroa River at Te Marua (29830)

	Flow (m^3/s)	Standard error (m^3/s)
Q2	150	14
Q5	198	21
Q10	237	29
Q20	276	37
Q50	329	48
Q100	372	57
Q200	410	65
PMF	1864	n/a

TCB 4/4/2000.

TCB 250. 10%.
TCB 300
TCB 330

The rainfall runoff model for the Mangaroa catchment was calibrated and validated using flow data from the Te Marua recorder site (29830). To select the high flow events for this process, all flood peaks greater than 150 m^3/s at Mangaroa River at Te Marua (29830) were listed. Once the events with no rainfall data available at Tasman Vaccine Limited (E15204) or Centre Ridge (E15122) were removed, the remaining events were assigned as either for calibration or validation (Table 8). This procedure resulted in six calibration and five validation events. The 15-minute flow data for each event was read into the '29830' node in the TimeStudio model so that modelled flow could be compared with observed flow.

Table 8: Flood events for the Mangaroa rainfall runoff model calibration and validation

Date	Peak flow (m^3/s)	Calibration / validation
20 January 1980	207	n/a (missing rainfall data)
10 April 1980	194	n/a (missing rainfall data)
21 May 1981	245	n/a (missing rainfall data)
11 December 1982	192	n/a (missing rainfall data)
18 October 1984	161	Calibration
19 August 1985	186	Validation
7 August 1991	156	Calibration
8 November 1994	194	Validation
4 October 1997	227	Calibration
21 October 1998	187	Validation
28 October 1998	239	Calibration
2 October 2000	189	Validation
3 October 2003	231	Calibration
16 February 2004	252	Validation
6 January 2005	247	Calibration

Data to represent rainfall in the Mangaroa catchment was taken from the Tasman Vaccine Limited (E15204), Centre Ridge (E15122), and Te Marua (E15019) raingauges. Initially, calibration was attempted using rainfall data from Tasman Vaccine Limited (E15204) and distributing this across the catchment according to the annual rainfall contours, but the calibration results were very poor. Significantly better results were achieved by incorporating actual rainfall data from Centre Ridge (E15122) and Te Marua (E15019). For events where no data is available for Te Marua (E15019) (events prior to 1993) the rainfall was estimated based on a correlation with Phillips (E1502A).

The rainfall stations were plotted on the rainfall contour map (Figure 5). The mean annual rainfall in each subcatchment as a proportion of the measured annual rainfall at the nearest rainfall station determined the rainfall volume for each subcatchment in the model, with Centre Ridge (E15122) representing all high altitude parts of the catchment (where annual rainfall is assumed to be greater than 1800 mm). For example, the mean annual rainfall in subcatchment A is approximately 1590 mm and no part of the subcatchment receives more than 1800 mm/year (according to Figure 5), therefore for that subcatchment a