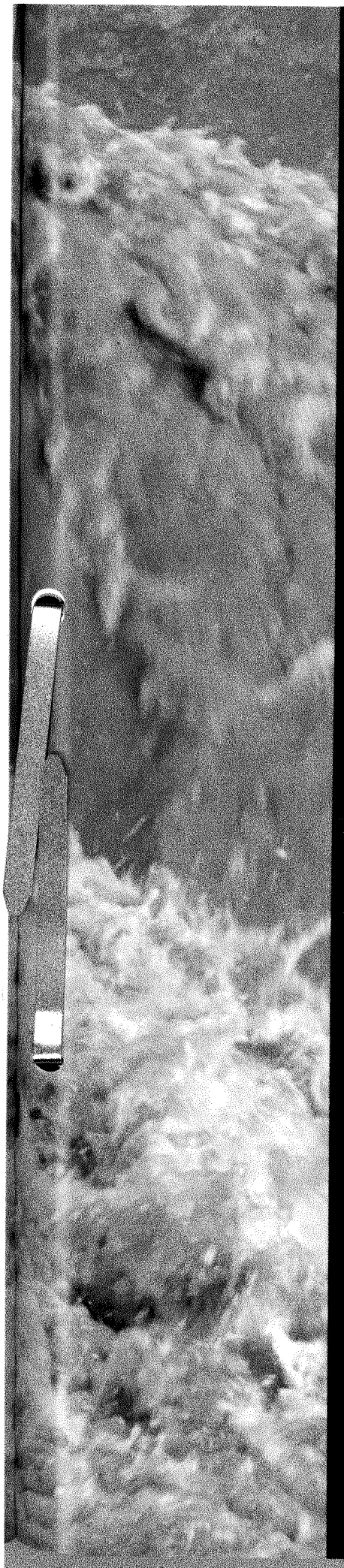


to FLOOD

Flood History in Gippsland

The flood history in Gippsland is not very comprehensive; therefore the following dates are only a guide.

1893
1936
1952 – December
1970 – May
1971 – January
1973
1974 – June
1978 – June
1984 – June
1985 – October
1990 – April
1991
1992 – June
1993 – September
1998 – June
2007 – June

Flooding in Gippsland can occur very quickly as a result of heavy rainfall in upstream catchments. Sudden rapid rises in stream levels have the potential to cause considerable loss and damage.

Flooding can't be prevented but flood warning systems have been established to provide a warning that stream levels are rising.

Flood warnings can provide an indication of when water levels are likely to peak and warn that action should be taken to protect the safety of people, stock and properties likely to be affected.

Minor flooding causes inconvenience to the community through the need to remove stock and equipment from areas likely to be inundated.

Evacuation of houses may be needed in some areas and some main traffic bridges may become impassable.

When major floods hit, properties and towns are isolated, such as what happened in the 2007 floods. Major traffic routes become unusable and considerable destruction is left in their wake.

To Planning Panels Victoria 16 May 2021

Submission for Fingerboards Hearing

Dear Panel,

My name is Bill Reid and I farm superfine wool sheep at 'Broadlands' which is five kilometers from East Bairnsdale. My southern boundary is part of the northern boundary of Jones Bay where both the Mitchell and Nicholson Rivers empty into.

We have been here for 70 years and kept detailed rainfall records for most of that period. My concern regarding the Kalbar mine is that they do not comprehend the East Coast weather and how rain events affect the environmental systems in this area. Having read some of the EES statements it is quite pleasing that Kalbar has made some effort to direct environmental flows around the mine site. However, the detail of how they are going to do it is seriously lacking.

No mention is made of the detail of construction of the diversion walls on banks, the actual flow rates of water during an East Coast low, and the size of holding dams prevents this water being contaminated.

It should be noted that with an East Coast low event this produces extreme amounts of water. eg in June 2007 in three days, thirteen and a half inches of rain fell at 'Broadlands' (five kilometers east of Bairnsdale) and an unconfirmed report of seventeen inches fell at the back of Mount Taylor which is not far from the Fingerboards mine site.

Also local knowledge has informed me that some of the gullies on the mine lease site can have four to six feet of water gushing through them. As this is the case where is the detail for construction of bund and diversion walls and banks to avoid contamination of Mitchell and Perry Rivers? Where are the calculations of flow rates of diversion water during an East Coast low? Where are the plans and elevations of the mine structure in detail so that evaluation can be made?

It should be well noted that any further pollution of the Gippsland Lakes would be extremely detrimental, not only to the health of the Lakes but to the economic benefit of East Gippsland. As you should be aware the East Gippsland Lakes are a declared RAMSAR site and I would urge you to consider the legal ramifications of any pollution of this site.

Following the 2007 flood it was quite noticeable that there was little or nil bird life on Jones Bay for at least twelve months – the thought being that so much sediment was washed down after the devastating 2006 bushfires. It is therefore obvious that any discharge of mine contact water into the Mitchell or Perry Rivers cannot be tolerated and needs to consider the legal ramifications of the probability of any pollution of this site.

East Coast low events are more common than Kalbar seems to admit. 1936 is always quoted as the 1 in 100-year flood event and I have been told that there is a mark on the old rowing shed at Bairnsdale township to confirm this. However, numbers on their own do not tell the full story (see rainfall chart as supplied)

In my lifetime the following are some of the flood events that I recall:

1. In 1952 the Stratford Avon River bridge was washed away with the loss of a woman being drowned (she was trying to save her cattle). The rainfall record shows 1044mm for the year as against the 1936 total of 774mm. The remnant driftwood from the flood can still be seen along one bank on Jones Bay and is still the highest flood mark.
2. 1990 was an extreme flood yet the total for the year was only 658mm compared to 774mm total for 1936 (see photo supplied)
3. 1998 was an extreme flood event yet the total for the year was 716mm. The flood levels in Jones Bay were just below 1952 driftwood level (See detail of key events)
4. 2007 was another large flood event as previously mentioned with 13 inches in 3 days at 'Broadlands'. The flood level in Jones Bay the same as 1952. I still have my own post marks where the level came up to.

It is interesting to note that mention is made of the possible (winter – fill) impact on Jones Bay and Lake King due to low flow rates. The opposite would apply in flood situations where polluted water is put into the Mitchell River and deposited in these two RAMSAR water systems. It is generally accepted that Jones Bay is one of the primary fish breeding grounds in the Lakes system.

My second concern is the processing and storage of the uranium and the thorium concentrate. Initially we were told that the uranium and thorium would be separated from other concentrate and stockpiled and stored for future sale.

From discussion with KALBAR at the East Gippsland Field Day we now know that hey are combining the uranium and thorium with the other concentrate and shipping it all together.

Where are the permits that allows this material to be transported and where are the permits to allow sale of uranium and thorium overseas?

With the uranium and thorium storage I would like to point out to you the comparison of a rubbish tip storage site and the detailed construction that a Shire Council has to comply with for E.P.A and other regulations. Very briefly the procedure is as follows:

1. Excavation of site with specific angles for side walls which is then covered with specific material
2. Floor of tip site to be laid with specific material and drainage pipes laid
3. Specific material placed over pipes
4. Special plastic membrane laid over this and up side walls
5. Specific material laid over membrane
6. Membrane is then sealed at top and vented to allow gas to escape

Considering that this is what a Shire Council now has to do to comply with the regulations – how is it that KALBAR doesn't have to, even though they are dealing with a much more environmentally dangerous product. Where is the detail for this part of the project? Where are the plans and elevations, bund wall sizes, flood water accumulation numbers etc etc? In an East Coast low event how is the floodwater prevented from contaminating other water? Where are the numbers and plans?

As we have been given this beautiful planet to live on, please do not ~~allow~~ allow a greedy few who consider money is the more important, to wreck this world for all future generations to come.

Yours Faithfully

W. P. Reid.

William Patrick Reid

(et al at 'Broadlands')

P.S DON'T LET THE KALBAR COWBOYS WRECK EAST GIPPSLAND AND **YOUR** FOOD SUPPLY.

Memoirs of the 2007 Flood in Gippsland

After so many months of drought, dams being empty and Stage 4 water restrictions, rain was forecast. The usual signs were talked about ***"Did you see the ring around the moon last night?"*** and ***"There were flying ants everywhere!"*** Was it really going to happen or once again were we just going to be passed by with maybe a sprinkling of raindrops to remind us what it's like? Then it started, about 6pm, and in 24 hours 180mm of rain fell. Fantastic, just what we needed. Creeks were starting to run and dams were filling up, then seven days later down it came again! Another 155mm fell in 24 hours. The Mitchell River flood warning went from minor to major extremely quickly. Farmers whose land was threatened worked frantically to raise stock and machinery to higher ground.

You could see the Mitchell River nearly bursting its banks and hear the roar of water as it continued to pour in from the catchments. Next morning, it was still raining so we went for a drive and could hardly believe our eyes, there was water as far as you could see. Roads, fences, paddocks and crops, were all under water.

The floodwaters rushed past in their awesome strength, bringing dead stock, a poly water tank and whole trees which were uprooted. All were swept out to sea.

Some residents of Bairnsdale were cut off from the main shopping precinct and others were unable to get to work, as the highway was closed due to floodwater covering it. The same morning there were no newspapers as the delivery truck couldn't get through. That really made you realise how stranded we were.

Several new houses couldn't cope with such a deluge and SES personnel worked tirelessly helping residents salvage what they could and trying to stop further water damage. Sandbags were another much needed item, and filling them kept crews busy for hours.

Then came the talk of a king tide. That meant approx 540 billion litres of floodwaters had to go out to sea through the single opening at Lakes Entrance. With a king tide at the same time, this meant that the water was forced up onto the Esplanade, flooding out shops and motels.

Once the floodwaters receded you could see the devastation that was left behind. Fences were covered with branches, sticks and debris. Roads were left with whole sections washed away and bridges were no longer in existence. Road signs were bent out of shape or gone and a fine layer of silt and dirt covered everything. So much to do and help seemed to come from every direction.

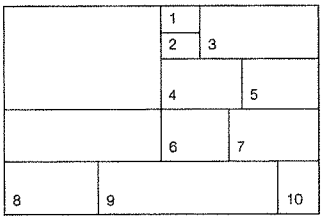
1990

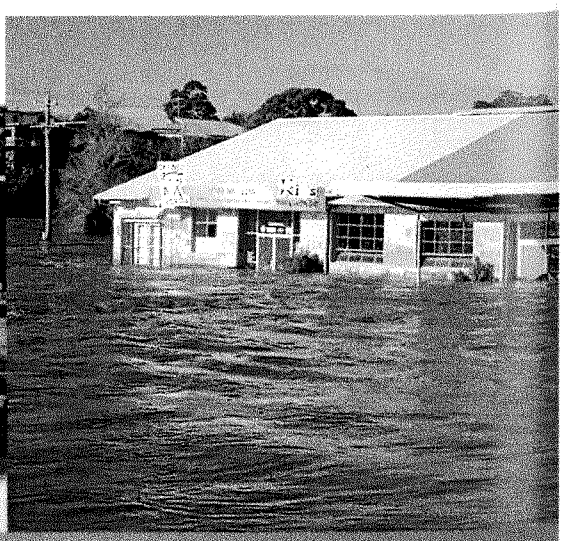
1998

Businesses paid a price

The businesses in this area lost custom during the floods and after as a result of the surrounding road damage.

1. The Imperial Hotel.
2. The Imperial was ready for all situations.
3. This rushing water was so forceful that it caused waves.
4. The force of this water caused a great deal of damage to the road.
5. Water was over the road on the Main Street.
6. As the waters subsided the damage caused by the flood was evident.
7. The Davison Oval skate ramps totally disappeared.
8. Repairs started at once to repair the road damage.
9. The building was inaccessible.
10. The Old Butter Factory.





Damage at a glance

• $39.6 million - Estimated total stream damage to 3000 sites identified by EGCMA.

• $10.5 million - Roads, bridges and foreshores requiring repairs identified by VicRoads and Shire engineers

• $10 million - Repairs to DNRE controlled land and infrastructure

• $1.8 million - Department of Human Services emergency grants to 1350 applicants

• $842,100 - Estimated value of 33,684 sheep reported dead or missing by landholders (at $25 per head)

• $2.925 million - Estimated value of 7312 cattle reported dead or missing by landholders (at $400 per head)

• $2.23 million - Estimated value of 557,213 metres of fencing damaged (at $4 per metre)

• $2.74 million - Estimated value of 390,995 metres of fencing lost (at $7 per metre)

• $1.6 million - Estimated value of 320 buildings damaged ($5000 each)

• $668,000 - Estimated value of 668 items of plant and equipment damaged ($1000 each)

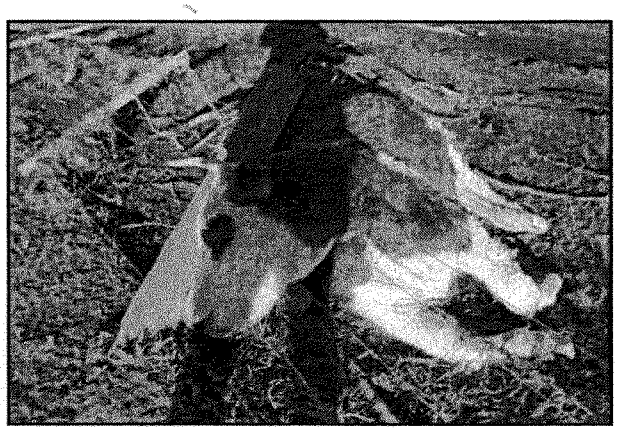
• $194,230 - Estimated value of 38,846 small bale equivalent fodder loss (at $5 each)

• $2 million - Estimated value of 20,000 hectares of pasture reported as requiring renovation (at $100 per hectare)

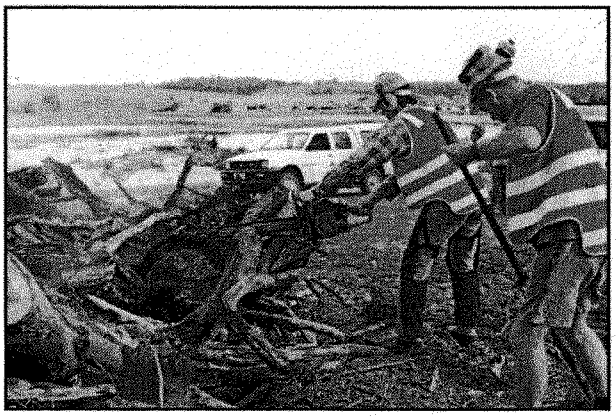
• $2.37 million - Estimated value of 237 crops reported as damaged (at $10,000 each)

Estimated total damage: $77.5 million

*NB: The damage total is an **indicative total only**, based on the assumptions in brackets after each listing. It is impossible to calculate a precise figure, given the incidental damage to individual properties with fallen trees, debris and other storm damage, along with losses to businesses, particularly in the tourism sector from June to December 1998.*



• Stock losses were huge in some areas



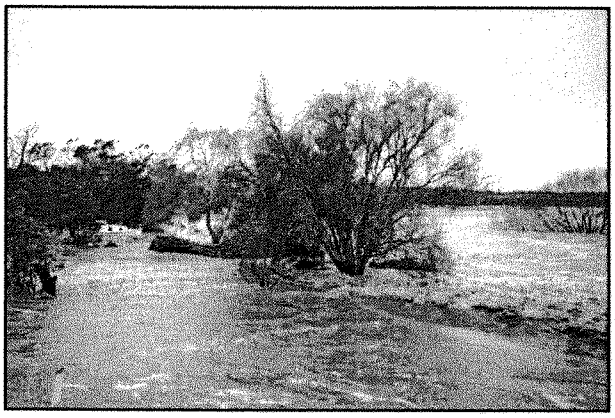
• Thousands of tonnes of debris had to be burned

• Floodwaters inundated up to 320 buildings in the region

Timeline of key events

Week beginning June 22, 1998:

- Extreme weather conditions - 250-355mm rainfall in next 24 hours.
- State of emergency declared as roads closed, properties inundated and severe stock losses - power and communication cuts to remote areas
- Shire and DHS recovery centre opens in Bairnsdale with outreach services at other centres and direct visits to landholders
- Shire and VicRoads engineers start to survey 4000km of roads, 300 bridges and 60km of foreshores
- June 27 - Premier Jeff Kennett visits and pledges ongoing support for flood victims
- EGCMA undertakes aerial survey of flood heights and arranges recording of flood heights throughout the region
- Two separate toll-free 1800 numbers established at the Flood Recovery Centre and DNRE for residents to seek assistance, information or report losses
- Red Cross launches appeal across Victoria to assist flood victims
- A helicopter used for food drops to families in cut-off areas of the Brodribb, near Orbost
- Appeals for fodder start in a project organised by Rotary and other community groups along with the VFF
- Emergency grants start being distributed - final total $1.8 million to 1350 applicants



• Flood waters in the Tambo at Swan Reach

Week beginning June 29:

- June 29 - the Premier announces creation of East Gippsland Taskforce
- Shire establishes dead stock disposal sites and DNRE phone out to all farmers commences
- EGCMA starts emergency work on river banks and assesses extent of damage by air and on-ground inspections
- State Government boundary fencing grants announced - up to $1600 per kilometre to be administered by DNRE
- State Government (DHS) grant of $376,375 to Shire for counselling and community development services. Interim counselling and community development staff appointed
- Deputy Premier hands Shire $500,000 cheque for flood recovery work
- Fodder drive continues with 500 tonnes delivered on a 'Grain Train' to Sale and distributed at half-price to farmers

• River bank clean up work

July 6-19:

- Minister for Tourism and Small Business announces $300,000 Gippsland tourism campaign promoting the message of business as usual in the Lakes and Wilderness region
- DNRE receives $500,000 for infrastructure recovery work on public land to ensure tracks open for logging and tourist facilities in parks are repaired
- VFF subsidised barley program extended for flood-affected farmers; VFF continues to co-ordinate 'grain train' to Sale - State Government freight assistance estimated at $200,000
- DNRE commence local meetings with farmers and Shire/DHS community recovery meetings under way
- July 13 - all schools open in time for beginning of term three
- $100,000 to DNRE for agricultural consultants to develop individual farm business recovery plans
- Federal Government donates $100,000 for freight assistance for donated fodder - VFF announces new program

July 20 - August 2:

- July 20 - $250,000 for repairs to schools announced by Minister for Education
- July 24 - the Premier visits Bairnsdale and announces $10.5 million for VicRoads and the Shire to undertake road and bridge works
- July 27 - East Gippsland Taskforce office opens in Bairnsdale.
- July 31 - $1 million to EGCMA to continue river debris clearing and stabilisation works - equivalent of 30 full-time positions over six months
- Further $1 million to DNRE to continue clearance and repair of forestry and essential fire access tracks - estimated 1700km of tracks, 48 bridges require work
- Interim community development workers funded by DHS, $10,000

August:

- August 6-7 - the Premier visits the Tambo Valley and Bairnsdale and announces $1.4 million in Community Support Fund, Rural Community Development Scheme funding for 18 projects - locals halls, foreshores and park facilities to benefit. Also announces $551,500 Community Support Fund grant for East Gippsland Arts and Cultural Centre

THE Primary Producer

Bairnsdale Rainfall

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1880	32	105	125	133	99	33	69	62	120	70	98	38	984
1881	23	65	76	58	94	61	14	22	38	95	142	51	739
1882	22	3	28	74	70	40	36	39	38	104	93	55	602
1883	65	54	34	65	47	26	28	27	140	90	71	34	681
1884	32	39	43	48	30	20	15	31	34	154	41	50	537
1885	8	110	34	66	15	26	15	37	63	65	38	18	495
1886	85	62	50	170	27	12	8	73	22	115	24	149	797
1887	16	98	42	72	23	96	69	26	58	72	144	49	765
1888	69	28	71	8	35	18	11	54	39	26	19	54	432
1889	84	125	2	38	83	95	30	19	71	73	81	28	729
1890	48	121	24	37	121	208	53	35	45	116	76	83	967
1891	106	47	20	65	50	146	127	158	100	53	90	60	1022
1892	99	12	43	143	53	21	37	25	91	107	111	51	793
1893	91	7	70	119	92	44	106	13	82	36	104	238	1002
1894	67	26	46	79	11	94	62	22	47	58	16	63	591
1895	28	51	26	51	20	60	20	85	53	14	0	76	484
1896	36	62	42	23	57	214	45	137	125	18	43	44	846
1897	182	231	25	65	123	5	32	68	37	50	27	28	873
1898	13	67	17	30	202	29	26	28	45	61	57	12	587
1899	74	5	26	242	53	79	63	90	26	76	21	51	806
1900	69	9	121	114	141	133	49	27	96	19	39	25	842
1901	72	9	26	101	9	71	47	76	32	75	18	23	559
1902	87	24	195	17	7	131	97	17	49	98	34	119	875
1903	20	13	39	80	18	25	77	10	128	69	101	78	658
1904	84	116	24	15	70	26	41	39	65	26	33	18	557
1905	120	87	10	23	111	55	66	19	42	204	39	148	924
1906	7	4	257	18	30	19	24	90	34	89	63	111	746
1907	22	18	37	48	30	107	16	40	21	37	34	68	478
1908	36	37	24	17	10	21	28	45	92	66	57	16	449
1909	63	105	61	27	24	156	100	43	42	45	6	56	728
1910	127	19	16	8	34	50	57	17	125	82	81	98	714
1911	156	92	165	10	125	135	62	22	72	22	36	76	973
1912	25	26	11	79	50	30	102	25	80	54	71	58	611
1913	10	20	220	19	117	160	15	46	17	68	56	6	754
1914	41	3	42	36	36	20	88	17	22	12	56	113	486
1915	143	23	31	1	29	21	11	31	57	105	25	27	504
1916	37	118	40	19	18	45	87	37	158	33	83	25	700
1917	95	46	59	92	27	24	30	26	83	79	80	64	705
1918	58	46	76	37	43	97	100	50	59	52	19	46	683
1919	11	59	159	55	102	32	44	156	92	44	44	144	942
1920	222	7	61	98	21	19	17	60	64	126	54	40	789
1921	55	67	26	45	59	14	47	17	53	87	45	43	558
1922	114	55	12	21	40	36	29	30	109	106	30	36	618
1923	36	2	4	2	33	69	68	61	93	74	80	81	603
[illegible]	128	103	48	56	33	9	30	40	37	83	87	59	713
1925	109	82	51	53	79	15	165	35	21	49	56	18	733
1926	88	3	97	64	41	43	38	79	42	40	27	41	603
1927	24	37	44	27	46	8	121	31	52	128	44	28	590
1928	70	120	203	77	37	35	19	17	30	58	34	39	739
1929	24	69	18	27	73	39	21	87	14	69	79	48	568
1930	4	89	6	35	50	116	30	48	52	125	94	133	782
1931	62	30	154	56	46	63	47	21	54	114	81	18	746
1932	1	41	107	43	7	22	150	96	18	68	28	56	637
1933	38	7	46	18	28	146	102	25	32	50	66	94	652
1934	117	62	88	155	1	104	33	40	24	95	109	100	928
1935	79	165	27	211	25	23	20	33	32	65	49	324	1053
1936	85	33	15	109	17	186	54	69	29	54	31	92	774
1937	58	24	34	9	7	82	21	36	51	96	22	75	515
1938	55	15	159	15	12	41	46	22	43	13	50	6	477
1939	23	149	51	34	12	59	22	98	69	79	101	22	719
1940	35	7	8	56	14	22	32	14	79	26	47	85	425
1941	215	21	74	58	16	43	35	66	53	50	37	54	722
1942	20	36	121	21	61	24	25	16	33	76	186	40	659
1943	62	41	16	50	36	58	20	54	50	28	64	71	550

District rainfall during 20

ROWING EAST GIPPSLAND

l Chart 1880 - 2004

1944	15	6	23	97	233	12	10	24	24	30	22	47	543
1945	84	19	31	116	38	23	44	18	42	83	111	11	620
1946	56	109	58	78	21	85	7	29	42	23	59	53	620
1947	19	50	104	136	10	26	48	36	35	46	28	85	623
1948	68	44	2	88	117	27	7	8	38	121	22	82	624
1949	251	91	91	26	110	169	85	24	14	88	138	24	1111
1950	11	106	204	71	70	33	34	24	48	176	47	74	898
1951	40	186	3	53	35	106	62	193	70	62	64	30	904
1952	24	54	206	122	65	102	41	78	30	72	116	134	1044
1953	66	30	12	34	63	39	35	84	51	131	83	27	655
1954	137	72	19	25	11	98	58	40	41	51	237	63	852
1955	25	89	46	18	46	46	10	18	54	88	37	190	667
1956	130	14	86	27	193	61	55	34	81	82	66	37	866
1957	14	42	58	25	23	30	150	53	50	76	84	56	661
1958	30	96	64	12	60	56	26	51	63	76	105	52	691
1959	39	20	75	30	10	72	50	29	118	82	53	117	695
1960	30	28	26	31	86	63	74	63	100	51	120	73	745
1961	22	24	191	45	47	42	96	77	106	75	65	55	845
1962	111	34	10	47	77	18	20	56	56	49	29	99	606
1963	107	25	36	38	266	18	70	83	58	63	51	36	851
1964	7	57	51	90	46	51	51	41	76	90	32	120	712
1965	5	2	17	90	13	22	36	46	23	82	157	17	510
1966	40	86	43	39	30	67	67	40	83	143	107	134	879
1967	30	7	35	13	91	39	13	68	62	30	49	38	475
1968	48	2	52	35	108	24	44	62	11	54	46	148	634
1969	37	39	79	72	148	64	22	48	57	75	146	68	855
1970	72	48	160	87	117	26	8	96	87	23	81	202	1007
1971	149	105	41	18	38	20	12	22	70	39	114	63	691
1972	47	63	13	12	16	5	5	61	20	47	72	1	362
1973	33	92	60	43	11	83	35	68	27	87	96	56	691
1974	68	30	15	116	141	86	161	136	58	100	121	66	1098
1975	31	35	42	121	19	79	22	103	65	108	41	105	771
1976	60	23	55	16	5	145	18	83	71	89	77	41	683
1977	41	49	46	114	22	83	46	25	124	22	22	13	607
1978	49	49	147	149	149	248	63	31	36	58	85	82	1146
1979	23	14	97	49	50	6	13	32	40	35	31	11	401
1980	140	3	33	17	45	20	20	19	33	74	48	122	574
1981	61	65	9	10	173	61	37	49	32	47	44	56	644
1982	85	10	146	11	20	33	18	15	49	36	4	35	462
1983	34	5	65	73	132	34	51	43	91	79	30	48	685
1984	71	36	30	68	34	29	156	43	68	24	39	46	644
1985	42	8	53	112	28	99	26	42	63	121	151	157	902
1986	59	8	7	29	45	20	36	36	61	46	119	41	507
1987	52	62	43	17	31	31	113	19	53	46	39	81	587
1988	42	13	41	79	86	21	22	44	83	30	222	55	738
1989	17	20	87	70	56	63	91	40	50	69	56	56	654
1990	2	51	62	143	25	15	37	75	63	92	43	50	658
1991	27	14	39	23	14	111	116	52	45	33	9	62	545
1992	82	61	46	50	24	99	20	52	115	71	109	127	856
1993	46	52	59	13	22	23	60	22	150	95	53	77	672
1994	31	192	30	34	33	47	13	8	51	44	90	55	628
1995	113	31	41	41	49	40	35	23	64	125	102	78	742
1996	85	105	11	57	32	20	89	28	40	51	94	38	650
1997	51	10	56	10	37	42	21	11	42	35	35	32	382
1998	35	31	18	18	14	248	24	36	26	59	130	77	716
1999	82	115	63	54	23	22	20	33	32	82	34	32	592
2000	58	21	68	58	101	52	29	49	78	60	55	7	636
2001	48	37	54	70	31	46	42	62	47	63	121	90	711
2002	24	98	41	144	27	53	37	7	22	46	37	49	585
2003	7	16	24	68	17	22	32	55	41	96	63	62	503
2004	50	45	5	158	42	22	33	43	43	33	75	78	627
	7550	**6406**	**7356**	**7352**	**6856**	**7428**	**5975**	**5869**	**7247**	**8655**	**8390**	**8272**	**87356**

Yearly average: 698.84

004

Rainfall up, but down on average

Bairnsdale received a significant Gippsland recordings. Its total of over