

## LATROBE VALLEY SUSTAINABILITY GROUP SUBMISSION ON EXTREME WEATHER EVENTS AND CLIMATE CHANGE

Date: 14<sup>th</sup> January 2013



To Whom It may Concern.

I am writing this submission to attempt to explain how climate change is affecting Gippsland and how it will continue to adversely impact the area as temperatures increase because of global warming. I do so on behalf of the Latrobe Valley Sustainability Group.

*The Latrobe Valley Sustainability Group is a grass roots community organization that has over 100 members and is committed to the long-term sustainability of life systems in the local area and the world as a whole. We recognise that global considerations affect the local environment as well and take a holistic view of sustainability. For this reason, we campaign strongly for measures that will reduce the impacts of human induced climate change including the elimination at source of industrial carbon dioxide and methane emissions.*

### **Extreme Weather is Now a Worldwide Phenomenon**

Extreme climate events are becoming more and more common all around the world. We have seen this in England and Western Europe where in successive years, there have been oppressive heat waves and drought conditions which have been followed by extremely severe floods caused by unusual downpours of rain and bad weather. Hurricane Sandy on the US east coast caused billions of dollars in damage in an area which had never been subjected to hurricanes, because it was too far north – until now.

### **Extreme Flood Events in Gippsland**

In Gippsland, there is also much evidence that the climate is changing and that these changes are not beneficial. The 13 year drought, which began in 1997 produced the driest 13 years on record in this part of the world and only really ended for certain in the *la nina* year of 2011.

However, in 2007 there were two extremely damaging floods in the MaCalister River Valley and several other large Gippsland rivers, which resulted in huge floods affecting most of the area between Traralgon and Lakes Entrance. In June of that year, Mt Wellington recorded 200 mm of rain in less than 24 hours (about one fifth of the annual average) and the ensuing floods washed away roads and knocked out bridges, drowned hundreds of cattle and other livestock and severely flooded Newry, Tinamba and areas surrounding Maffra. Newry town-ship had not been flooded and the areas around Maffra had not been impacted so heavily, since floods in 1952. However, the difference was that there was virtually no warning with this flood because the rain fell in such a short period of time. The floods went right through the Gippsland Lakes and exited into the ocean at Lakes Entrance. Most of the central business district of the township of Lakes Entrance was flooded and the State Emergency Service isolated much of the township for 4 days. Fish, which had been washed up in back flow from the street drains were found in peoples' back yards and in the gutters when the water receded. Again, this is the worst flooding that I had ever heard of happening in this part of the world.

Later that same year, another less severe flood again affected all this area. Despite these immense amounts of water deluging the area, the drought still persisted. These rainfall events came out of the blue as it were. Nearly every other month that year, showed below average rainfall. This is totally different to the rainfall patterns that I had experienced in my life time of living in Gippsland. It seems that our climate now has fewer rainfall events, but it is more concentrated when it does fall and this is what causes the damage – from storms and flooding.

### **Sea Level Rises**

It is usual for the water to back up through the street drainage system and the sea -water to spill out onto the roads in the Lakes Entrance CBD on the occasion of a king tide now. This was never evident until recent times. One would think that this is evidence for sea levels rising.

### **Drought and Mega Bush Fires**

The Alpine area of Central Gippsland experienced mega fires burning hundreds of thousands of hectares in 1997, 2001, 2003 and 2006-7. The lack of rainfall had made the Great Dividing Range a tinder box and the combination of human carelessness and lightning strikes set in train the most destructive fires seen in this region since Black Friday 1939.

Because of the loss of forest and understorey cover, even small rainfall events caused massive erosion around the upper catchment water courses. The 2007 flood was made even more devastating because there was little regrowth to hold the soil and rocks together after the mega fire that had burned just six months previously in the Great Alpine Fires of 2006-7. The water in the Glenmaggie Reservoir was a vivid red brown colour for some years after because of the sediment and colloid load from the erosion. This caused problems with Maffra's water supply for many months, because it is sourced from the MaCalister River.

### **Bush fires in the Strzelecki Ranges**

Up until the mid 2000's there had only been one serious bushfire in the Strzelecki Ranges, which lie to the south of the Latrobe Valley. This was in 1949. The old timers used to joke that it rained in the Strzeleckis for ten months of the year and it dripped off the trees for the other two months. Many farms which had been cleared in the 1880's were subsequently abandoned there because the climate was too wet.

However, the dry decade of from 2000 onwards left the hills very vulnerable to bush fires. The first bushfire that most people could remember there occurred in 2007 and were supposedly deliberately lit. Similarly, small but threatening fires occurred in the next summer of 2008.

In the Black Saturday fires of 2009, there were large bushfires already burning about a week before Black Saturday. However another fire started near Churchill on Black Saturday and on top of the damage already inflicted by the week old fires caused the deaths of 11 people in the Calignee and Traralgon South areas.

The significant thing to note is that climate change has made an area, which used to be bush fire proof in to a danger area, because of reduced rainfall and hotter summers.

### **Black Saturday**

On Black Saturday, the power supply to Melbourne was threatened by fires in this area and also by the Bunyip Ridge fire further west that could have burnt the power lines taking electricity from the Latrobe Valley to the city. Most of Victoria's electricity is carried to Melbourne via several large High Voltage power lines. Even if one of these was rendered inoperable, much turmoil would be created in the nation's second largest city.

At one stage the Loy Yang open cut mine was threatened when a wind change came through. Countless CFA fire trucks had to be diverted and put on stand-by to ensure that fire did not break out in the mine as fires in an open cut coal mine are extremely difficult to deal with and can potentially last weeks before they are extinguished as has happened in the past. These fire trucks could have been used to save homes in the Calignee, Traralgon South, Koornalla, Geeralang and Hazelwood North areas and possibly have saved the lives of some of those that perished.

After starting the year with ample rainfall the last 2 months of 2012 were amongst the driest on record for many parts of Gippsland. Because it is not a *la nina* year, it seems that we might be going to experience below average rainfall again for the foreseeable future.

### **Effect of Drought on the Gippsland Lakes**

The Gippsland Lakes are the largest inland waterway in Australia. They are a tourist draw card for thousands of Gippslanders and increasingly people from other states and overseas. During the drought, the Lakes were subjected to infestations of Green Shore crabs, an introduced species originally from Europe. Because of the low inflows during the drought, the Lakes became more salty and more amenable to the Green Shore crabs. Indigenous species of fish such as the black bream and whiting reduced in numbers as the salt incursion increased and the crabs predated a lot of their food source species.

As well a concentration of nutrients built up in the lakes because of the lack of flushing water and in most years there were outbreaks of blue green algae, which often occurred in the peak tourist season, costing the accommodation and tourism industry millions of dollars in lost earnings.

After the big flood events, there were always more blue green algae outbreaks as nutrients, which had been washed off the farming country built up again once the inflows decreased.

### **An Overall Drying Trend**

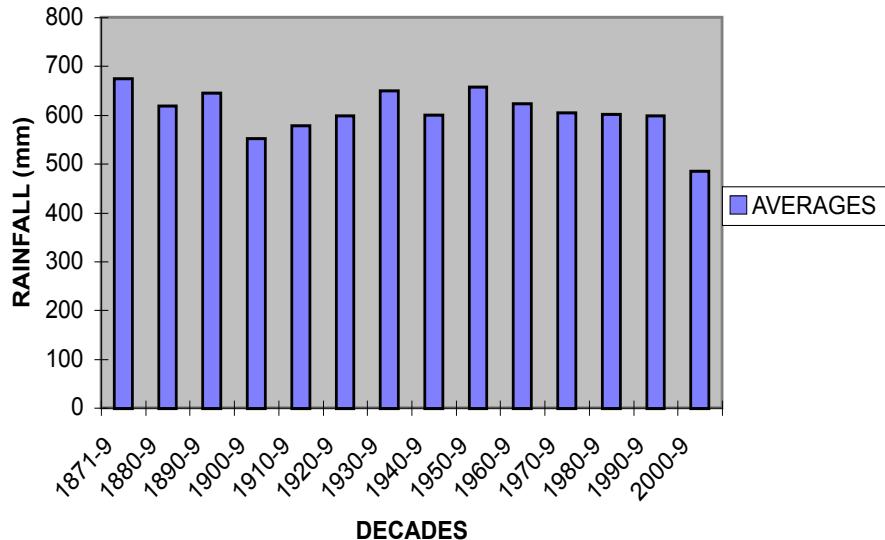
The CSIRO and the Bureau of Meteorology have both said that there is a trend for southern Australia to become drier, particularly in winter. In Gippsland, the records show that, like the predictions and the observations for the rest of the country, winters now have decreased rainfall. *El Nino* years have recently seen very much lower rainfall figures and conversely the less frequent *La Nina* years have shown very high amounts of rain falling in more concentrated bursts. Below is a graph of the rainfall for Sale over the decades since rainfall records were kept. The decade that ended at the start of 2010 was the most rainfall-deprived decade of all, clearly much worse than the Federation drought decade at the beginning of the last Century.

#### 10 YEARLY AVERAGES SINCE 1871

##### YEARS      AVERAGES

1871-9	674
1880-9	618
1890-9	645
1900-9	552
1910-9	577
1920-9	598
1930-9	649
1940-9	600
1950-9	658
1960-9	622
1970-9	604
1980-9	601
1990-9	598
2000-9	484

#### AVERAGE ANNUAL RAINFALL BY DECADES SINCE 1871 FOR SALE



The most recent decade showed a rainfall deficit of over 20 % of the long -term average.

Below is a graph of monthly average rainfall totals for each decade. The trend lines have been added for the months of January, February, June, July and August. The brown, green and royal blue lines (winter months) seem to be showing a steeper decline than the January and February lines.

Please accept our submission.

Dan Caffrey (secretary LVSG)