Report on the Hailstorm at Gray, Mt Elephant and Little Beach areas 31st January, 2009

Acknowledgements

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1. Background

On Saturday 31st January, 2009, shortly before 18:00, an unexpected severe hailstorm occurred in the Gray, Mt Elephant and Little Beach areas on the East Coast of Tasmania. Amazingly, whilst nearby Gray was inundated with at least 5cm of hail, St Marys itself received "only a few drops" of rain, and a vegetation fire started from a dry lightening strike at Irishtown Road, only 4-5 kilometers from the worst hit areas. This took place the day after record temperatures were set throughout Tasmania (on 30th January, the unofficial temperature recorded at Gray was 43.5 degrees). As a result of the hailstorm, countless vehicles, numerous houses, businesses, sheds and gardens received varying degrees of damage.

> "A hot 43.5 degrees one day, ankle deep hail on the ground the next . . . "

A community initiated survey was conducted for the 50 houses in the vicinity of the hailstorm. 27 surveys were completed and returned, at least 8 houses were vacant, and the majority of the remaining houses either had no-one at home during the hailstorm, were unable to be contacted regarding the return of the surveys, or received minimal damage and as such chose not to participate. The surveys helped to establish the parameters of the hailstorm, the concentration of damage and the details of what actually took place. *Note: all quotes within this report are taken from the community surveys or from eyewitness reports.*

The area known to be struck by the damaging hailstorm (based on information gathered from the community surveys and eyewitness reports) is a narrow strip of about 3 kms wide, covering approximately thirty square kilometres south and east of St Marys; from Harefield extending though to the coast around the Little Beach area (however, smaller hail was also reported at Fingal and surrounding areas). It is predominately bushland, but approximately 50 houses and several small farms and businesses are scattered throughout this area. These, as well as a popular beach campsite, were in the direct pathway of the destructive hailstorm. The storm began to form near Cressy, and approximately 20 minutes later, it had reached the East Coast.

Map 1 – The area most affected by the hailstorm.

2. *Aims*

This community initiated report aims: a) to portray the event as experienced and viewed by eyewitnesses, to describe residents' responses to the event and aftermath, and to outline the costs to the community; as well as b) to make recommendations for future preparedness and response to damaging hailstorms in Tasmania, and to increase community awareness of this type of event.

3. *The Hailstorm*

From around 17:30, as a strong easterly wind was blowing, many residents of the area heard thunderstorms in the distance and noticed the sky darkening. Extremely dark clouds were observed from as far away as Coles Bay. Several eyewitnesses from Bicheno through to St Marys described the clouds as "boiling". In St Marys, numerous people saw a mass of dark clouds over the Gray area and noticed lightening and thunder, later accompanied by a strange, "eerie" roar. One eyewitness at St Marys, upon seeing an icy whitish sheet of cloud moving from the west, initially thought of a hailstorm approaching, but dismissed the notion, as all large hailstorms he had previously experienced in the Sydney area have had a distinctive greenish colour. Another eyewitness in St Marys recalled seeing a tornado-type funnel forming from the cloud mass.

At shortly before 18:00, the sound of distant thunder was diminished by an additional continuous, "ominous" roar in the west, described by residents in the hailstorm affected area as being like an approaching squadron of jets. It intensified over several minutes, and culminated in a destructive hailstorm. However, a number of residents did not hear anything approaching, and believed the hailstorm "came out of nowhere". Many of those who had noticed the building clouds and lightening say it came with little warning and was totally unexpected. One coastal resident recalled hearing a very loud "bang", then nothing for about 3 minutes until the hailstorm started.

> "It came out of the west, the sounds were similar to an aircraft at first . . ."

Most describe the hailstorm as starting slowly, with only a few smallish hailstones for the first minute or so, then building up to a ferocious downpour of "golf ball" to "tennis ball" size hailstones. In some locations, the hail was so profuse; it has been described as appearing as a solid sheet or wall of hail pouring onto the ground. Two men in different locations were caught outside in the hail and had to shelter under trees. One man at Gray was less than thirty meters from his house, but was unable to see it due to the density of the falling hail. The noise of the hail on roofs was "deafening" for those sheltering inside houses and sheds. Some reported being unable to hear family members speak, just centimetres away.

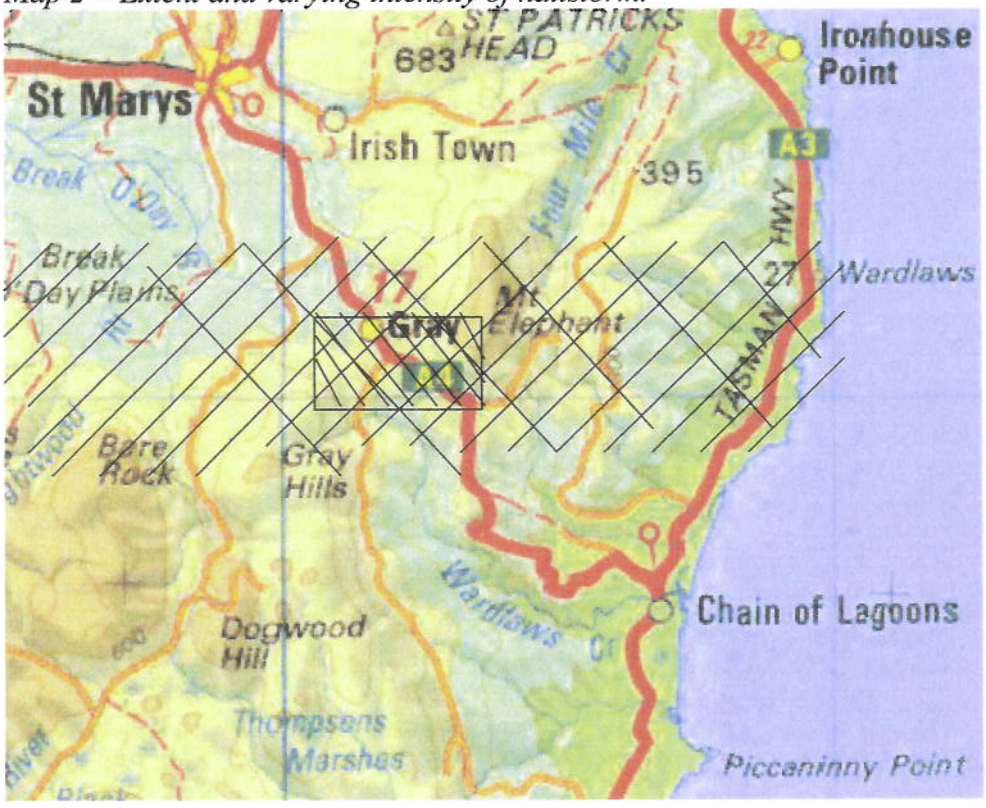
> "The amount of hail increased to a deafening downpour."

Reports of the size of the hailstones, density of the hail (both falling and settled on the ground) and the duration of the hailstorm vary, but are relatively consistent with location. The greatest density, size and length of time (10-20 minutes) were reported at Gray along both sides of Elephant Pass Road, specifically in the area at the start of Dalmayne Road. Residents at Little Beach area also reported approximately 10-15 minutes duration, but the density seems to be less than that at Gray. Furthermore, although, most households reported the hailstones as being an average size of golf balls, the larger hailstones, of tennis ball size were consistently reported in a narrow strip on both sides of Elephant Pass Road through to Little Beach campsite and in just a few other small locations. Several hours later, a resident cut a hailstone, revealing at least 5 distinct layers, and no evidence of clustering of smaller hailstones.

> "During my life, I've never seen anything like this . . . hailstones as big as tennis balls."

Decreasing duration and intensity was reported either side of this worst hit strip, thus petering out as the distance from Gray/Dalmayne Road increased. See Map 2. For example, hail was reported at about two-thirds the size of golf balls and lasting only about 5 minutes at Harefield, however damage was still sustained with some broken windows and destroyed gardens. Also, duration as short as 2 minutes with ground coverage of hail at only about 10% was reported at Curtis Road (approximately 2 kms from the worst hit area). Some residents of Fingal received damaged gardens, but no reports of damaged structures or vehicles have been obtained. Importantly, the residents' reports of the intensity of the hailstorm are congruent with the damage sustained.

Map 2 - Extent and varying intensity of hailstorm.



The hailstones were reported as bouncing more than a meter off the ground. One Mt Elephant resident opened her westerly facing door only to have hailstones larger than golf balls bounce several meters into her lounge room. Some state that at times the hail was coming at their houses almost horizontally. Power was cut by a falling tree approximately halfway through the hailstorm at Gray. This caused the power to go out on the coast just prior to the hailstorm reaching there.

Hailstorm north of Little Beach
D. Brewster

During the ordeal, many residents reported varying degrees of fear. This included being traumatised, terrified, extremely frightened, or responding with shock, horror and disbelief. Some have said that even several weeks later, they were on edge whenever loud noises (such as airplanes overhead) were heard or dark clouds began to form. Additionally, several reported that farm animals and pets were terrified, with some running into the bush to try to escape the hail. Numerous sheep were bruised and bleeding from the hail.

Hailstorm at Gray
B. Kilner

"The ferocity of the storm was totally frightening . . . we were fearful of windows breaking and our roof being damaged, and all we could do was wait and pray that our house stayed safe."

B. Kilner

Immediately after the hailstorm at Gray. *E. Rubenach*

Afterwards, hail and debris covered the ground. The average reported depth of hail in the worst hit areas was 5 cm-10 cm deep, with some piles of hail (fallen from roofs or along fencelines, etc) up to half a meter deep. One resident at Gray measured the depth of hail at 2.6 inches (66 mm). Many residents claimed it looked like a heavy snow had fallen. In some areas, such as Dalmayne road, Hills Road and Elephant Pass Road there were still many patches of hail on the ground 24 hours later, and some drifts remained for several days. Several residents reported seeing a "strange" white mist hovering just above the ground immediately after the hailstorm ceased.

"It looked like it had snowed with white hail all around."

After the hailstorm at Gray. *E. Rubenach*

Hailstone collected nearly 24 hours later. *H. Rubenach*

Hail at Little Beach. *D. Brewster*

Hailstones collected at Gray 48 hours later. *P. Denney*

4. *The Damage and Aftermath*

Gradually, residents emerged from their shelters and began to assess the damage and check on the wellbeing of their neighbours. The exact number of structures damaged is not available as many properties had several structures (such as a house, sheds or businesses) damaged. However, nineteen properties reported receiving noticeable through to substantial damage to structures such as broken windows, skylights, collapsed small sheds, severely dented roofing, and destroyed guttering. One household had an $8000 insurance claim on the house, for broken windows, skylights, etc. Numerous houses and sheds received internal water damage due to broken windows/skylights. For example, one household on Dalmayne Road received water damage to eleven rooms, while another house nearby had 13 windows broken. The majority of structural damage occurred in the immediate vicinity (within one kilometre radius) of the intersection with Dalmayne Road and Elephant Pass Road, particularly where Dalmayne Road sits on a ridge with gullies on both sides. However, damage was also reported in other locations consistent with reports of the areas being hit with the more intense hail. Additionally, numerous vehicles (including caravans and motorhomes) were damaged, with many being written off by insurance companies. Much vehicle damage occurred at/near Little Beach. Also, a private museum at Gray, containing local history, received extensive water damage.

Damaged skylights.
E. Rubenach

Dents in car roof.
H. Rubenach

Damaged pot plants.
E. Rubenach

Birds killed by the hail at Little Beach
P. Rubenach

Broken clothes peg.
E. Rubenach

Interestingly, while most properties sustaining damage were hit predominately from a westerly direction, a handful of properties on the western side of Mt Elephant, mostly to the north of Elephant Pass Road were hit from a south-easterly direction. Eyewitnesses state the hailstorm hit Mt Elephant, splitting into two, with one section continuing toward the coast and the other bouncing off the mountain to come back and hit the properties it had previously missed. This phenomenon has been verified by radar images viewed by the weather bureau. See map 3 for reported direction of damage in the worst hit area. While most of the hailstorm came from the west, it seems that gusts within the hailstorm approached from various directions.

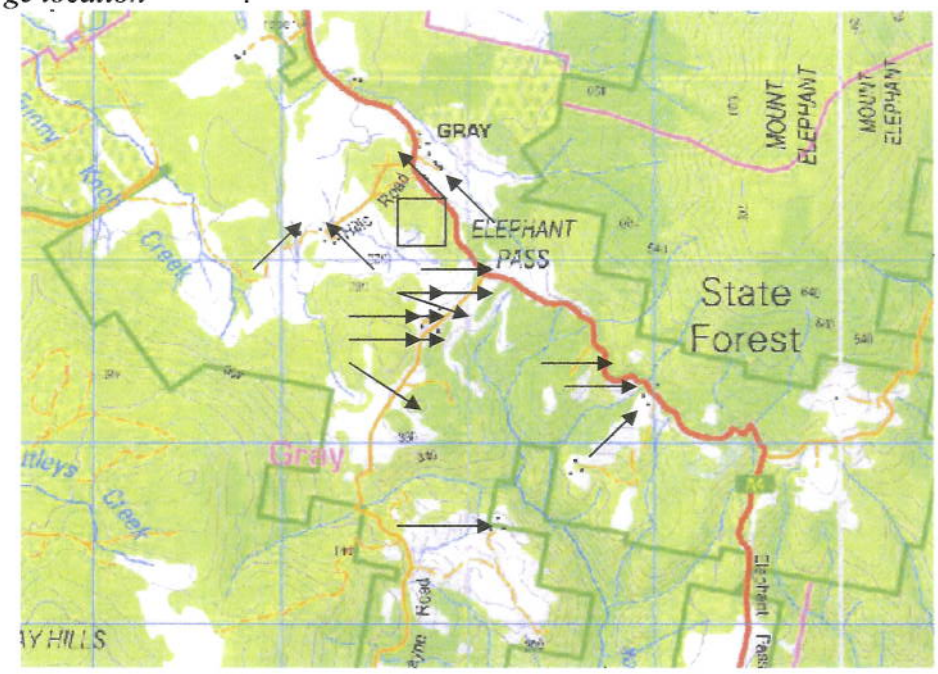
Additionally, a location in which damaging winds occurred has been identified by residents at Grid Reference 016 910, just 150 meters from houses. At least twenty large trees (up to a meter in diameter) have fallen in about ½ hectare of bushland, with some being uprooted and others snapped off up to ten meters above the ground (indicating wind speeds of 179-250 km/h – Fujita Damage Scale number F2). Some believe that a tornado had started to form in this location, thus explaining the changing wind directions, and fitting with the St Marys eyewitness account of a funnel starting to form from the dark clouds.

Wind surge location at Gray. *A. Rubenach*

Wind surge location. *P. Rubenach*

"There were no houses in the direct path of this wind, if so they would have been flattened."

Map 3 – Reported direction of damage to structures in the worst hit area as well as the wind surge location = ☐ .

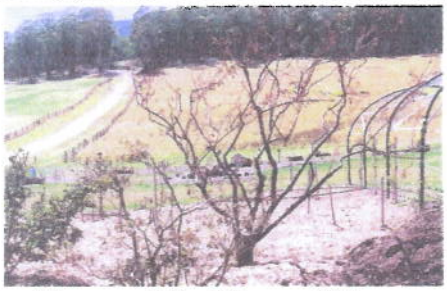


In addition to structures being damaged, numerous households reported gardens being destroyed and driveways washed-out. Even gardens with hail-proof netting were damaged as supports bent (even 1 ½ inch steel water pipes) and netting collapsed under the weight of the extreme quantity of hail. Many residents were very upset to find their insurance companies would not cover damage to gardens and driveways, and as such will have to invest much time and money into restoring these. This is made harder for the many households in the area with pensioners or low income earners. Numerous households rely on vegetables and fruit from their own gardens, and the hailstorm occurred at the peak harvesting time. Additionally, several small businesses in the area rely on their gardens for produce to sell or to make products from. Also, much seed was lost, being particularly devastating for those who save their own seed. Several residents commented that there were no butterflies or bees and few birds around for several weeks later.

Devastated! Like a giant slasher and shredder had passed by. Thousands of dollars worth of damage – vegetable garden totally flattened, fruit trees with severe bark damage.

Many residents remained optimistic, reporting surprising regrowth within two weeks of the hailstorm, and some residents positively announced they no longer need to mulch or weed their gardens! However, time will tell whether de-barked fruit trees will continue to survive.

Damaged driveway
B. Kilner



Damaged fruit trees at Gray.
P. Rubenach

Flattened vegetable garden.
H. Rubenach

"Twenty minutes later, I drove up Mt Elephant, through a road lined with piles of hailstones and covered in a green carpet of leaves".

Bushland was also severely damaged. A strong smell of eucalyptus was reported from Clover Banks (immediately south-east of St Marys), arising from the bruised bush. In some locations, this smell remained strong for more than two weeks. The southern end of Mt Elephant is of particular concern. Having already sustained extensive damage in the 2006 East Coast Bushfire, regeneration may now be slowed even further, as new seeds and flowers were relentlessly battered and destroyed by the hailstorm.

" . . . surrounding wattle trees denuded, trees and branches brought down . . . man ferns in the bush look as if they were 'burned' by the hail."

Mt Elephant
A. Rubenach

Many residents in the Gray and Mt Elephant areas believe the bushfire risk has been dramatically increased due to the resulting leaf litter. A fine fuel assessment in bushland at 36 Dalmayne Road has revealed locations in which there are between 50 - 100% coverage of new fine fuels of around 1 – 2 cms depth. This correlates to between 2.5 and 10 tonnes/hectare of additional fine fuels. Also, firebreaks on this property had received 30-50% coverage of leaf litter of about 1 cm depth. However, canopy and scrub cover has been somewhat reduced, thus mediating some of the bushfire risk, until it re-grows.

Leaf litter in Bushland at Gray.
H. Rubenach

Leaf litter on a firebreak at Gray. *H. Rubenach*

Three households received assistance for temporary tarping of windows and re-roofing from the State Emergency Service (both the local Break O' Day unit and the Launceston based General Rescue Team), who began arriving within half an hour of the end of the hailstorm. SES members, a police officer, an off-duty volunteer ambulance officer and a volunteer firefighter visited numerous properties to check on the wellbeing of the occupants and to determine the extent of damage. Residents expressed they felt a huge relief when emergency volunteers and police arrived. Those receiving visits were grateful for offers of assistance, although most chose to deal with the aftermath themselves. Additionally, residents checked on each other (phonecalls and visits) to ensure all had "survived" the ordeal. There is a concern, however - at least one unoccupied house received several broken windows resulting in internal water damage. While this was identified and rectified by neighbours shortly after the hailstorm, thus keeping damage to a minimum, there may be other houses that as yet have not been checked.

"Members of the community were here to help and wonderful neighbours".

SES members providing temporary emergency assistance

5. *Recommendations*

- This type of event is not necessarily isolated, nor rare due to the increasing impacts of climate change. Thus it is important the community be educated of the potential of future hailstorms of this intensity in Tasmania, as awareness will aid preparation for the future.

> "If it had hit a town, the damage most certainly would have been severe and extensive."

- Several residents expressed a need for early warning systems to alert communities of the possibility of approaching hailstorms or other severe weather. This is a particular concern of pensioners and those with disabilities or illness.

- There is a need for a more systematic approach for checking residences following this type of severe weather event. After this hailstorm, random checks of residences were conducted by both emergency services and community members. However, many households were missed in this process. Some people did not receive checkups or offers of assistance by neighbours until many days later, and some thought they were the only ones hit by the hailstorm. This is of particular concern, as many pensioners and single people live in the area. Many unoccupied houses may still remain unchecked (absent owners may not even be aware the hailstorm had taken place). Either a semi-formal voluntary community structure could be established (possibly by council) where residents can register to be checked on and can become part of the community responding network, or a more comprehensive response by emergency services and councils could be established and implemented to ensure no residences are missed.

- Several residents did not consider calling emergency services for assistance, as they were not fully aware of their role or the process to obtain services. Therefore, community education on the role and accessibility of emergency services may need to be increased.

- As there was a massive amount of debris created by the hailstorm, some residents expressed difficulties in the clean-up process. For example, one resident requested tip fees be waived by council to assist in the clean-up. However, there was a concern with the amount of time this process took as well as the rather cumbersome procedures to be followed. Most residents had carried out clean-ups prior to this process being implemented, and it was not publicised by council. One resident suggested that council provide a skip in strategic locations following this type of severe weather event so as to assist in the clean-up by increasing community access to disposal facilities.

- Many residents expressed dismay at not being covered by their insurances for damage to gardens, driveways and fences. These can be expensive and time-consuming to replace. This could be alleviated by a community donation campaign to obtain seeds, plants, cuttings, etc or to establish "working bees" for the aged or disabled. One household was amazed by the wider community response to their needs (donations of vegetable, fruit and money to assist with the purchase of new plants, etc), however, many may not have these supporting community networks. In regards to driveways, one resident suggested that council provide free gravel to assist with driveway repairs.

> "The most devastating part was going outside to see the garden totally decimated. Rows of beans, peas, corn, etc were flat on the ground. Hardly any fruit was left on the trees, and that which did hold on was extremely battered and would not survive".

- Several small businesses/sole traders in the area, who are dependent on their gardens (as well as individual families) have had reduced productivity of their land, and as such one resident would like to see processes in place to assist these small businesses (and individuals) until they can become re-established, such as waived or reduced council rates until full productivity can be re-obtained.

- As many residents experienced trauma during and after the hailstorm, it may have been appropriate to have promoted counselling service options within the community to ensure all were aware of the availability and accessibility to support.

Re-growth after six weeks.

> "The hailstorm caused much of the landscape to go from the full bloom of mid-summer to the desolation of mid-winter, but now we are experiencing the joy of the regeneration of spring in autumn."