

“Chance favours the prepared”¹

Submission to NSW Bushfire Inquiry and Royal Commission into Australia’s Black Summer Bushfires
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Figure 1: 69 Ridge Ave on 5th January 2020

We write this submission in the hope that our experiences can provide some information and insight about what individuals who choose to live in fire-prone areas in Australia can do to help reduce the risks to themselves and their properties (and perhaps those of their neighbours), from bushfire, and increase their “chances” should the worst occur.

Our submission to this inquiry starts with our ‘story’. We think it is useful to understand the history and setting of our house and to know a little about us because, in this context at least, we appreciate that we probably have an uncommon perspective when it comes to fire and living in forests. In telling our story we address, from our experiences, some of the matters raised by the Inquiry.

On the morning of New Year’s Eve 2019 parts of the coastal town where we live on the NSW South Coast - Malua Bay - were burnt by a fast-moving bushfire that originated from the Currowan Fire (later called the Clyde Mountain Fire) that started some several weeks earlier from lightning.

On New Year’s Eve 2019 (NYE) many parts of the New South Wales South Coast were burnt; in our Shire of Eurobodalla hundreds homes, including around 50% of the houses on our street, were destroyed and many other buildings damaged, but despite being in the direct line of the fire our house was not one of them (although our forest, gardens, landscaping and swimming pool were all burnt). This may seem unremarkable as most houses in the Shire did not in fact burn, but without exception the response of people who know us,

¹ Taken from a Lecture by Louis Pasteur in a lecture at the University of Lille (7 December 1854) "in the field of observation, chance favours only the prepared mind"

who know our house, or who have come to our house since the fire has been “I can’t believe you still have a house”; and to some degree, neither can we.

While we sheltered with about 1500 other people on Malua Bay beach on NYE 2019 watching the fire approach we accepted the worst and started planning for the future, but we both had an inkling of hope that everything we had done would pay off; and it did - we do still have our house. People have called it the “miracle house” but we take some offence to that because it was not a miracle that saved us – it was something we had worked hard for over many years, and on that day we believe chance favoured us because we were prepared.

About us and our house.

We bought our house in 2001. It was built in 1997 and is known as a “storybook house”. It is mostly made of timber – treated pine pole piers, pine framed, Oregon weatherboards and roofed in corrugated iron. It is situated half-way down a south west facing slope.

Our property is about 2.5 hectares of tall mixed ironbark (*Eucalyptus paniculata*), bangalay-blue gum hybrid (*E. botryoides* x *saligna*) and spotted gum (*Corymbia maculata*) forest, with a small rainforest gully, a creek, one small dam (ours) and a larger dam (our neighbour’s to which we have some water rights) at the bottom. We also have a swimming pool (about 40,000l), a concrete water tank (about 50,000l) and two smaller plastic water tanks. On the southern side of the creek there is a partially cleared area with scattered Acacia. We had a mostly native-plant garden surrounding the house, lawn immediately on the south side below the house and along an old driveway to the north. Many species of wildlife live in and visit our forest – there is an extensive bird list; mammals including swamp wallabies, feather-tailed gliders, sugar gliders, yellow-bellied gliders, eastern grey kangaroos, antechinus, bush rats and echidnas; and many species of frog, lizard and snake. These are the reasons we bought our house.

When we bought our house, we knew fire might be an issue at some point in time and that it was *our responsibility* to make sure that we and our property was prepared for that eventuality.

How did we know this? Ken is a forester. He worked in public sector forestry organisations (in NSW and QLD) for decades, gaining extensive knowledge and practical forest fire experience. He is very familiar with the topography and forests on the NSW South Coast. He was part of the fire-fighting effort for the 1994 fires that almost reached Batemans Bay (following a very similar path to those that occurred on NYE2019), and many other fire campaigns since then. I am a geographer, with different fire knowledge and experiences. I was also employed in public sector forestry for 15 years and helped on a few local fires and I have worked with indigenous groups in North Australia on savanna fire projects. I have the added experience of growing up in the Adelaide Hills where my family were on Ash Wednesday 1983. The details of that are not relevant to this inquiry other than to point out that compared to many we have a pretty good idea of what fire can do.

And we still chose to live where we do.

To give you an idea -below (Figure 2) is a picture of our house taken in 2012 - the forest did NOT look like this in the lead-up to the fires.



Figure 2: [REDACTED] in 2012

Our Surrounds

Ridge Avenue, Malua Bay, is a no-through road, along a ridge-top. The area was partially cleared probably in the early 1900s, with some large paddock trees left, but much forest has regenerated since then. Many of the existing houses were built in the 1980s and 1990s; there are few new houses. The residents are a mixture of 'long-term' owners of original houses and newcomers, arriving in the last 5 or so years. We fit in somewhere in between.

To the west/north west and east, our neighbours have retained much of their forest. To the south and south-east some neighbours have cleared their properties. To the north, neighbours have a mixture of cleared, garden, olive grove and forest. Two northern neighbours had an extensive and intensive hazard reduction burn undertaken by the RFS in winter 2018. This was the first time since we've lived here that we think this happened; while bonfires are frequent, 'broad area' hazard reduction is not. Our immediate neighbours (west and east) did very little forest management or hazard reduction on their properties.

A tributary of Dunn's Creek runs through our property and into Dunn's Creek valley, in which most properties are rural residential and mixture of cleared paddocks and forest. Surrounding ridges are mostly forested.

At the eastern end of our street is a forested timber reserve and beyond our immediate area there are large areas of forested crown land including State Forest and council reserve.

The following images (Figure 3 and Figure 4), taken from Google Earth, position our house in the landscape. Our house is the most 'in the forest' house on our street.



Figure 3: Landscape Context



Figure 4: Street context

The NYE fire travelled from the North West. The image below² (Figure 5), shows the location of our house relative to fire path.



Figure 5: NYE fire path, showing 69 Ridge Ave.

It was a very dry year!

The Royal Commission is inquiring into:

- b) *Australia's arrangements for improving resilience and adapting to changing climatic conditions, what actions should be taken to mitigate the impacts of natural disasters, and whether accountability for natural disaster risk management, preparedness, resilience and recovery should be enhanced, including through a nationally consistent accountability and reporting framework and national standards.*

The NSW Inquiry is considering the matter of:

1. *The causes of, and factors contributing to, the frequency, intensity, timing and location of, bushfires in NSW in the 2019-20 bushfire season, including consideration of any role of weather, drought, climate change, fuel loads and human activity.*

We are of the opinion that extremely dry conditions significantly contributed to the intensity and spread of the fires, both generally (State-wide) and locally. In 2019 we recorded the lowest rainfall in 15 years of measuring- just 587 mm (our average over 15 years being 950mm) and statistics for Batemans Bay³ also show well below average rainfall for the year. In the period July to December we recorded just 136 mm of rain – a

² <https://www.abc.net.au/news/2019-12-31/nsw-south-coast-fires-rfs-emergency-warnings/11833712>

³ <http://www.bom.gov.au/jsp/ncc/cdio/cvg/av>

relatively short but deep dry spell. It is worth noting that, in the most recent previous serious fire season in our area (2009) annual rainfall was the next lowest as recorded by us (677mm). Thus, we believe that seasonal rainfall is the most significant factor influencing fires in our area.

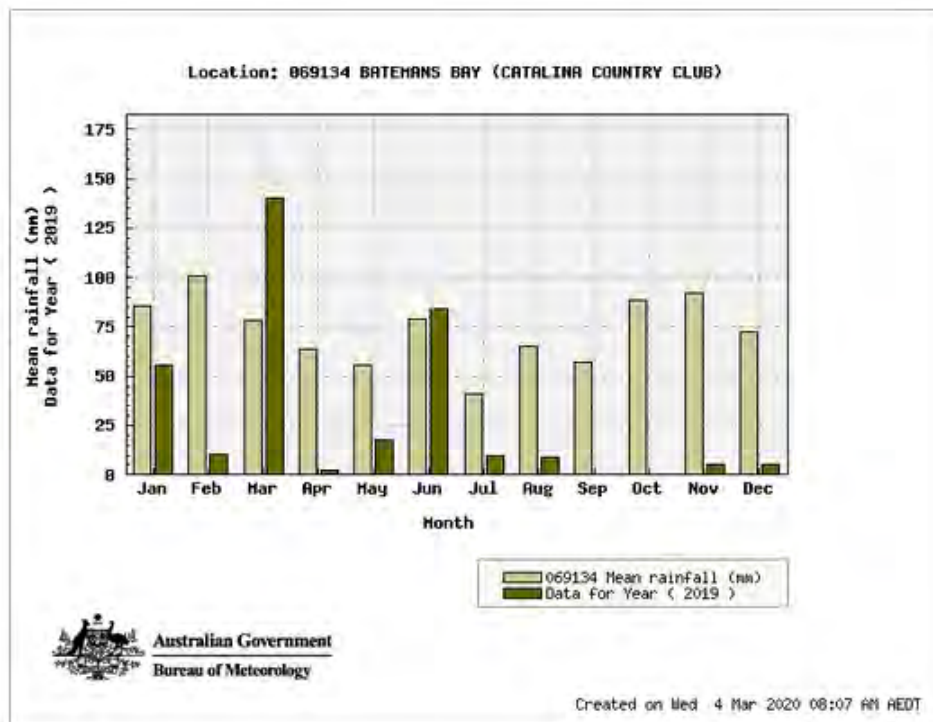


Figure 6: Annual and mean rainfall for Batemans Bay - source BOM

Our only source of water is rainwater and we had resorted to buying water for the first time in 20 years. Our garden was dry and brown, plants were dying, and trees were shedding leaves with annoying regularity. Our dam level was very low. These are all significant factors signalling the work that we needed to do to prepare our property for the likelihood of fire. The image below (Figure 7) shows the view from our house on December 9th 2019 - the lawn (foreground) and grassy break in the forest are very brown and dry.



Figure 7: View at 69 Ridge Ave on 9th December 2019

We had also started to notice the browning of tree crowns in surrounding forests - including in Mogo State forest (Figure 8), and in areas of the escarpment around the Clyde Mountain, which were areas from where the fire travelled on NYE. The mostly granite soils of the area are very poor at retaining moisture. The browning of the canopy had resulted in significant leaf drop (increasing ground fuels), and the understory plants were also drying (increasing elevated fuels).



Figure 8: Mogo State Forest December 2019

Other signs that this was not going to be a normal summer or fire season was the southward spread of large fires from Queensland through coastal NSW, the endless news stories, warnings about ‘having your fire plan’ and the constant smoke haze. Fires and smoke haze were frequent topics for discussion and “its dry, isn’t it dry” became a somewhat sardonic expression, almost on a daily basis. It was impossible not to be fore-warned, and yet some people were still surprised.

How did we prepare?

The Royal Commission is inquiring into:

- a) *the responsibilities of, and coordination between, the Commonwealth and State, Territory and local Governments relating to preparedness for, response to, resilience to, and recovery from, natural disasters, and what should be done to improve these arrangements, including with respect to resource sharing;*

The NSW Inquiry is considering the matter of:

2. *The preparation and planning by agencies, government, other entities and the community for bushfires in NSW, including current laws, practices and strategies, and building standards and their application and effect.*

There are many organisations that have roles and responsibilities in fire preparation and planning, but *we take responsibility for preparation and planning for fire on our property* – and we believe that everyone who chooses to live in fire prone environments should also be responsible and prepared. We don't intend to criticise our individual neighbours about what they did or did not do to prepare themselves, but we have been very aware that what people do or don't do does affect others.

We support broad area and strategic fuel reduction including through burning and by mechanical means on all land tenures as a strategy to reduce bushfire risk but we also know that this is not intended to, and does not, totally eliminate the risk of fires– particularly given the conditions at time of these.

In the event of serious fire our plan has always been to prepare, monitor the fire and, unless it was clearly a slow moving and low intensity fire, to leave.

House and contents Insurance

We have both house and contents insurance which we review and update regularly.

Hazard reduction

We have always undertaken fuel reduction activities on our property, including making fire-breaks and collecting, moving and burning fallen forest debris, in particular in the areas below the house and along the driveway. We have long recognised that as our primary 'escape route' our driveway, which is long, up-hill and surrounded by forest makes us vulnerable. In autumn and winter 2019 we slashed, raked and burnt the vegetation below our driveway and mowed the area above it. We could not possibly count the number of bonfires (pile burns) we have had over the years and we have also tried to undertake small strategic 'patch burns' to reduce fuel and for forest health. These typically 'dribble' through our bush within small containment lines. The photo (Figure 9) below is an example of a burn we did in June 2018.



Figure 9: Typical fuel reduction burn on 69 Ridge Ave, 2018

In the lead-up to the fire we raked and raked and raked leaves and picked up sticks and branches. Early in summer, but particularly once the Currowan fire started, we started raking every day, focussing on the area inside and immediately outside the garden fence. The purpose was to create close-to-earth breaks. Debris was put on piles as far as possible from us and our neighbours. In some places this did create a bare earth break – although due to the very dry weather leaf-drop seemed endless and some areas were raked several times. In other places – such as on garden beds - this was more difficult, and we (actually I) left some leaves for mulch

around the base of plants in the hope they would retain some moisture and live. With hindsight this was a mistake – as most of those plants now show little sign of recovery, where others do. The photo (Figure 10) below shows an area between our dam and our house that we raked several times before the fire. It is unattractive but it was ultimately effective.



Figure 10: bare earth zone below house. Had been raked previously and was raked again prior to NYE

Above the house, we reduced fuel by slashing with a ride-on mower. We did burn this area one year with neighbours, and we had just spoken about doing this again (too late). Neighbours on the northern side of Ridge Ave sought assistance from the RFS to undertake a hazard reduction burn in 2018. There is evidence of this in Figure 4, and they were concerned it was too intense. Other than this we are not aware of any other hazard reduction activities by our neighbours.

We bought a leaf blower – we’ve never been big fans of leaf blowers, but it was extremely useful for blowing leaves out of gutters, off paths and away from poles and sprinkler poly-pipes.

We moved the flammables out of the shed and away from the house in our “paddock basher” and parked this within range of a sprinkler (that we later decided not to turn on - a close call).

We cleaned out the gutters.

We have observed over many years, a tendency for the season in which fuel reduction burning can be undertaken without a permit to be shortened, regardless of the conditions at the time, and for agencies (in this case the RFS) to be increasingly cautious. Property owners are required to notify the RFS (regardless of the season) and give neighbours at least 24 hours notice of intent to burn. This discourages property owners from managing their own fuel levels when the conditions are optimal.

Sprinklers

We have no doubt the combination of sprinklers and hazard reduction saved our house.

Built in 1997, our house is not designed to meet any current bushfire building standards and we are BAL 40 (self-assessed) in a designated bush fire prone area (RFS online tool). But without any of these recent tools or standards common sense told us we needed to take extra measures to protect our house.

We have a system of sprinklers on and around the house (Figure 11). We installed most of these in 2011 and they are nothing very fancy, with parts coming mostly from local hardware and plumbing stores. The main sprinklers run off a fire pump on our small dam. There is a line of sprinklers on metal risers at the bottom of the garden, some in strategic places leading up to the house and there is a wall of vertical sprinklers on the downhill face of the house protecting the verandas, which we thought were particularly vulnerable (Figure 12, blue). Standard garden hoses and sprinklers were placed on the flat roofs over verandas and on the timber decks (Figure 12, yellow).

We had been using the sprinklers to try and keep the garden alive so we knew that our fire pump would run for about 3 hours on one tank of fuel.

About 3 weeks before the fire we decided that we needed another set of sprinklers on the shed and around the north-eastern side of the property. We had previously thought this area less vulnerable, but the very dry conditions (and evident fire risk at that time) made us reconsider this. This ran off the water tank and fed 6 sprinklers, mostly on plastic risers placed on the shed and inside the fence to the north east. All but two had plastic butterfly heads, the two others had metal directional heads pointed at the house.

We tested and checked the sprinklers.

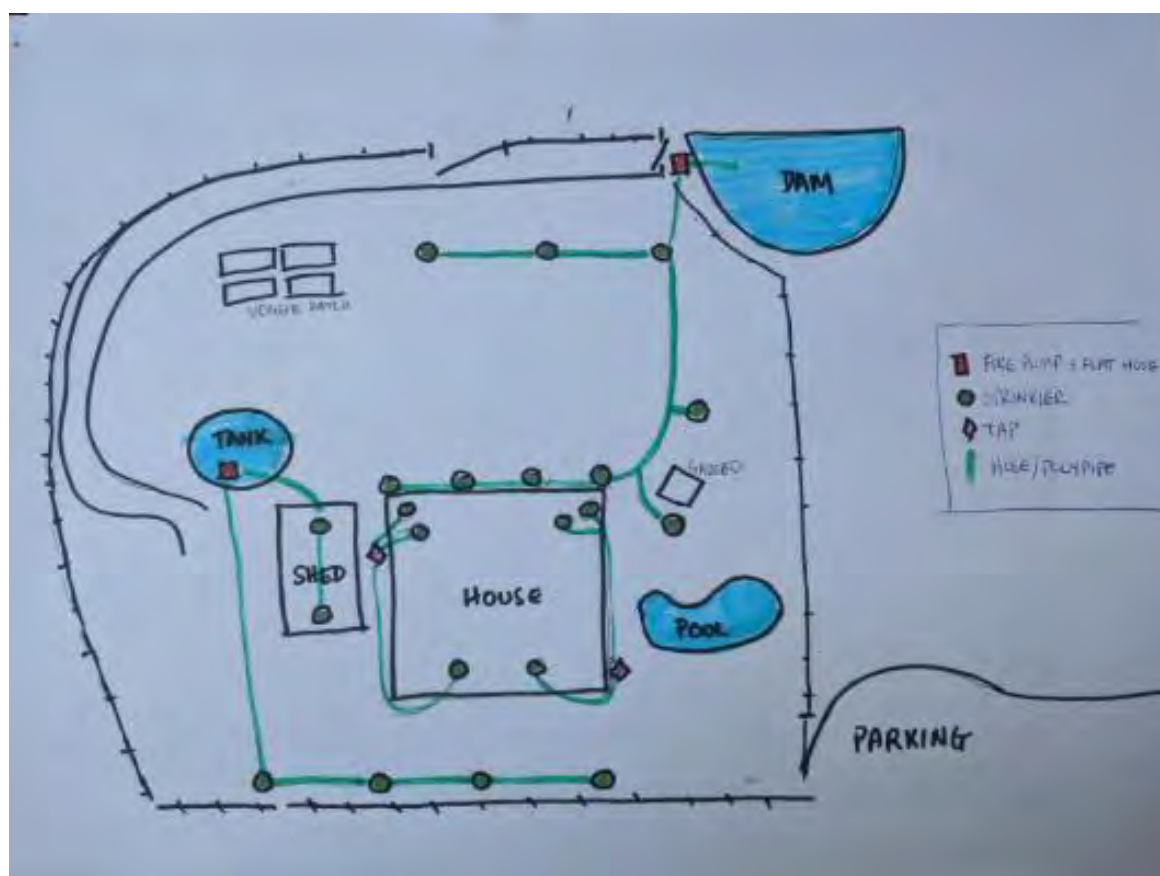


Figure 11: Sketch of pumps, sprinklers and water sources



Figure 12: Sprinklers on face of house

We also put a sign on the door just in case we were not at home and there was a fire, in the hope that if someone else came they could turn on the sprinklers and also so that the location of water sources was obvious to anyone who needed them (e.g. RFS).



Figure 13: Sign on front door

The availability of water and our sprinkler system were essential in our ability to defend our property. We think that building codes in fire prone areas should include minimum requirements for these, balanced with requirements for building material and hazard reduction zones that are shared between neighbours – regardless of tenure.

We packed essential valuables.

From September 2019 there were several possible reasons why we might not be at home for extended periods (work, personal, holidays) so we took two bags of essential valuables and one small bag of emergency clothes to a friend's house in Broulee (that we assumed would be at low risk of fire) and asked if we could evacuate to there if we ever needed to (we did!).

Just before the fire

The Royal Commission is inquiring into:

d) *any relevant matter reasonably incidental to a matter referred to in paragraphs (a) to (c).*

The NSW Inquiry is considering the matter of:

3. *Responses to bushfires, particularly measures to control the spread of the fires and to protect life, property and the environment, including:*
 - o *immediate management, including the issuing of public warnings*
 - o *resourcing, coordination and deployment*
 - o *equipment and communication systems.*

There are many stories about the movement of the Currowan Fire and while we watched closely via the RFS Fire Near Me App and listened to ABC local radio as it spread in all directions, the issue of most concern to us was “when will it jump the Kings Highway?” We assumed (and had discussed with friends) that after the fire jumped the Kings Highway it would spread south and east and eventually reach the outskirts of Batemans Bay, and probably, given what had been happening elsewhere, it would not be contained before Araluen Road or the coast. However, we did not expect it to travel the distance it did in such a short time on 30th and 31st December. So, we continued with our plans to prepare the house for the eventuality of fire, and to travel to South Australia to spend Christmas on Kangaroo Island with family.

We left to drive to Adelaide on 22nd December. As well as watching the RFS Fires Near Me App we had also been watching in horror the fires in the Adelaide Hills around Woodside and Lobethal, which were not that far from my parent's house in Aldgate, and then as fires started on Kangaroo Island, our ultimate destination. It took over 6 hours of driving west from Batemans Bay get past the smoke haze cloaking the southeast of the continent. We passed several fires that were just starting and that would later be significant in terms of how and whether we would get home.

We thought that the weather conditions in the week while we were to be away looked relatively benign and that it would take a while for fires to spread south. But we watched the fire activity very closely while away and after a few new fires started to spring up west of Mogo, following lightning in late December, we started to contemplate coming home early. In the end we decided not to (almost a mistake). We left Kangaroo Island on the afternoon of the 29th December, took Dad home to Aldgate and stayed the night there. Dad woke very early on 30th and this turned out to be fortuitous. We left Aldgate at about 6:15 am and drove almost 18 hours straight to get home at midnight on 30th December.

If we had not, we would not have a house.

While driving we were watching fire and traffic apps in SA, Victoria and NSW. These were essential and very helpful. Our route took us around many fires and closed roads, but we were most concerned about getting down the eastern coastal escarpment before any more roads closed. The fires around Tumut/Adelong (which

were already going when we left for Adelaide) had spread. With the two main roads down the mountain (Kings Highway and Brown Mountain) closed Ken's local knowledge and some intel from a friend left us with the options of Mt Darragh Rd or Tantawangalo Mountain Rd. Fires were also burning around these areas and in the end Tantawangalo Mountain Rd was the only road open to us. We descended in the dark at about 10PM and coming up the road towards us were cars fleeing the coast. It was dusty, smoky, and I was a little anxious.

Driving up the coast to home we drove-by several of the fires that later become so serious. We passed through Cobargo, Qaama and other small coastal villages that also suffered on New Year's Eve and afterwards, but we got home.

On the way home we had been writing lists of things we needed to do but we were still thinking we might have at least a day over which to do them. We were wrong.

On New Year's Eve 2019

On New Year's Eve I woke early and checked the RFS fire app. The fire had spread quickly in the night. A fire warning SMS came in on my phone (*but not on Ken's*) at 6:03 am: "NSWRFS EMERGENCY BUSH FIRE WARNING - Mogo - Leave now East towards the beach and shelter in place". That was the ONLY message we received. It did not mention Malua Bay or any areas closer to us.

Nevertheless, we started quickly working through our list:

- ✓ Put on PPE – we had prepared our old forestry fire fighting clothes, safety-glasses, masks, hats, boots
- ✓ Pack two cars with remaining valuables
- ✓ Put car keys on car seats (so you don't have to find them later)
- ✓ Remove all furniture etc from verandas
- ✓ Stuff gutters with wet rags in plastic bags and fill with water
- ✓ Hang heavy tarp around wood stack to protect from embers
- ✓ Wet towels and place around gaps in doors and windows to protect from embers
- ✓ Take cover off pool and place towels nearby (in case we needed to get in and cover ourselves)
- ✓ Put ladder near tank opening and place towels nearby (in case we needed to get in)
- ✓ Blow leaves off fire pump/sprinkler poly pipe and pump
- ✓ Start sprinklers

Other things that happened while we were working through the list were:

- We got a message from a friend (on a Fire crew) checking we were home from Adelaide; he then messaged at 6:35 and 7:35 telling us where the fire was. At the first call, it was still in Mogo State Forest, almost at Dog Trap Rd– with flame heights of 3-4 m. By 7:36 it was over Dunn's Creek Rd and getting very close to us (see Figure 3 for locational context).
- We had UHF radios – to communicate with each other.
- At 8:10 (while on the roof filling gutters with water) I spoke to our neighbour Nick – he was leaving and asking when we were leaving.
- Not long after a Forestry Corporation fire crew came to our place to see if we had left and suggest we evacuate, and around then we saw the first glowing embers landing on our paving. After they left, we decided to turn on the sprinklers to start wetting down the house and surrounds. We decided not to run the outer ring of sprinklers, to maximise water coming up to the house (a good decision).
- We soon saw and felt billowing red and black smoke just over the ridge to the north and felt the fire-wind, so we decided to leave. This was at about 8:45AM. We noticed our neighbour's cars (James and Joe) on the street.

- We stopped at the intersection with Ridge Rd and Burri Rd to see where the fire was - and it was visible just down Ridge road - we estimate 200-300m from our house, but it is difficult to be sure. A few people were gathered there, and some people heading towards the fire with small water tanks.
- There were no fire service (RFS or other) vehicles in sight, but we NEVER expected one to come to help us. However, we later learnt that Malua Bay RFS volunteers had not received any messages about the fire and arrived to start their shift at 8:00AM unaware of the rapid overnight spread. It seems communication to them had failed.
- We headed down to Malua Bay beach and were amazed to find people standing around on Ridge Rd in Seabreeze Estate in shorts and thongs, drinking coffee and chatting, unaware of what was coming.
- Initially we parked out the front of the IGA as the grass near the beach looked chaotic with people and cars. But we quickly realised that this was not a good place to be and so we joined everyone else parked near the beach. There were maybe 1500-2000 people, 100s of cars, plus horses, goats, dogs, cats, birds and other pets and animals on the beach.

The Malua Bay SLSC did a fantastic job of trying to keep everyone calm and informed. Based on conversations sometime after the fire we learnt that they had been instructed by the RFS to take control, organise cars and keep everyone on the beach. It is clear that they did the best they could at the time, but they were not resourced to do this. Volunteers were inadequately dressed (in surf lifesaving clothes) and without basic PPE (Figure 14). We shared our spare face masks and safety glasses with volunteers standing in thick smoke directing traffic. It was also clear that most people who evacuated to the beach were also not well prepared. Few had any face masks, or other protection,



Figure 14: View of Malua Bay SLSC on NYE showing crowds of people arriving, and under resourced life savers on roof of club house with no PPE

We sat in the car as the fire approached and watched as people arrived with some belongings but woefully under-prepared.

We watched as the sky turned red and black and flames rose and roared over Malua Bay.

We watched as Pretty Point started burning.

We wondered where the fire trucks were.

We watched as spotter planes and water-bombing helicopters arrived (and people cheered).

We registered with the team in the SLSC building. They were doing the best they could.





The fire spotted crossed George Bass Drive and caught on palm and casuarina trees to the south of the hundreds of cars parked on the beach. There was a moment of frantic panic as people (including us) started trying to retrieve their valuables from the cars – knowing that if one car caught fire it would spread quickly. We breathed a sigh of relief as one single RFS truck arrived to put out that spot fire.

At this point, given the way the fire had come over the ridge, we were assuming our house would be gone. We saw a neighbour who was looking frantically for his wife and son - he had stayed to defend but had to flee as his house started to burn. He wasn't sure about our house but thought it might still have been there when he left - he described the fire as 'parting around our house'.

Nevertheless, as we sat on the beach, we discussed what we would do and decided that we would clear the block and go on a long holiday while we worked out our plans. We were pretty sure of one thing- we would re-build. And we reassured each other several times that everything that would be burnt "is just stuff really" and it would all be OK.

The southerly hit at 11:32 - it was forecast for 11:30. I remember looking at my watch and thinking how accurate the Bureau of Meteorology had been.

At about 12:00 we decided to make a dash for the house. We thought we should try and do this quickly both to get there just in case there was something to save, but also because we knew that roadblocks would probably be set up to stop people returning to burnt areas. And they were. As we drove home, we went past our friend Mike's house in Sea Breeze Estate - the fire had come very close and the treed gully in the centre was completely burnt. We almost turned around then.

Driving up to our street we were very anxious, all the forest we saw was burnt. At the end of our street the first two houses looked relatively intact, although their sheds had burnt. But as we moved along the street the next four houses, two on either side of the road were completely burnt. We looked at each other with grim faces expecting the worst. How could our house still be there if these houses made of stone and brick were gone? The four photos below show our neighbour's houses that were destroyed.



41 Ridge Ave



42 Ridge Ave



51 Ridge Ave



52 Ridge Ave

The Google earth image below (



Figure 15) shows the houses on Ridge Ave and around our house - those destroyed, those damaged and those relatively intact. An observation we made when making that map is that the houses that burnt on Ridge Ave, were on ridge tops and owned by some of the newest residents on the street. We also realised that those people who stayed until the fire was close (like us) or until the fire passed, were longer term residents with some fire experience - either as past volunteers with the RFS, as large rural property managers or with other fire experience.



Figure 15: Map of houses Ridge Ave, Malua Bay affected by the fire

As we entered our driveway, I had my hands over my eyes - I just couldn't look, but I noticed the rubbish bins had burnt. At first glimpse we saw our red roof, then the house and we let out whoops of relief and disbelief. Our house was still there. We literally jumped for joy and found ourselves shouting "it worked...it all worked". And then we stopped, because we quickly realised that our neighbours could be returning to much worse scenes.

We started inspecting the house and putting out things that were still burning. There was no power so the water pump, and therefore garden hoses were not working, so we threw buckets of pool water on the burning retaining walls and vegetation, checking the poles of the house and the verandas, the wood pile and the shed, trying to make sure there was nothing on fire on the roof. The inside of the house was full of smoke and some ash and dust, but we didn't see any visible signs of burning. We later found that the inside of some of our windows had been damaged by radiant venting heat.

I rang my dad at 12:17 only long enough to tell him we were OK before reception dropped out. Getting phone reception was extremely difficult in the following days (and weeks) and this added to stresses both for us and family members elsewhere who were anxious for news. Being able to get messages to them, and via them onto social media sites, was very helpful in being able to communicate with many people at once.

The fire crew that had come as the fire approached returned, also expecting the worst, and they couldn't believe that the house was there. They later told us that as they had left earlier that morning, they had said to each other "well there's no way of saving that!".

By about 2PM police had set up a road-block preventing movement in and out of the area. I had returned to collect a car from Malua Bay and could not get back to the house where Ken was still checking the property. I had no way of communicating with him. He came back out at about 4:30pm.

What we found

We found our house and shed intact but surrounded by burnt trees and scorched earth. Our gardens, landscaping, retaining walls, pool pump and pool surrounds were in various burnt states. The areas inside the zones where we had reduced fuel, and that could be reached by the sprinklers, were mostly unburnt, and there was little evidence that embers had hit the house; although there were some burn marks on the tarpaulin we had put up to protect Ken's wood stack. These came from a direction that did not have sprinklers!

Areas that we had raked had stopped fire coming into some of the garden beds close to the house and others showed signs of small ignitions which did not carry. In the garden beds where we had left leaf mulch the plants were burnt (and have not survived).



Even small amounts of raking stopped lower intensity fire spreading. This photo shows a poly tank that we raked around.

Despite that we had blown the leaves away just before evacuating, the area around the fire pump on the dam had burnt and the lid of the pump had blown off, leaving it very exposed and vulnerable. The flat hose attached to the pump was burnt (useless). Luckily the take-up poly-pipe from the dam had not burnt. If it had, our main sprinkler system would have failed, and our house would have burnt. Below are just a few photos of the scene we found.



View of the house from below



View from the driveway



The burnt pool



and landscaping



Burnt trailer, note very scorched earth



Burnt lawn



Tarpauline protecting woodpile and shed



Fire hose on dam pump - burnt

In our forest there was still quite a bit of crown cover on the trees when we returned, but the leaves were scorched; the understory and ground cover were completely burnt. Some plants in the garden (such as the Kiwi fruit) and rainforest gully where we had reduced fuel were green (Figure 16) and the flame height and tree scorch were evidently much lower in these zones than in others.

The condition of vegetation changed quickly over the coming days as foliage died and dropped and I have kept a photo diary of the changes that have occurred since the fire. Following more very hot and windy days the scorched foliage eventually dropped, creating a stark black canopy. It is also interesting to note that despite this, the Eucalyptus species are recovering well while the rainforest species are very slow to show signs of regeneration.



Figure 16 View to the house 31st December 2:21pm



Figure 17: View from the Dam showing flame height inside garden area that was raked to almost bare earth (left of image)

The two photos below show our house and forest on 5th January and again on 8th March 2020 - over two months apart. They illustrate the 'sprinkler zone' (green in the top photo) as well as the ability of forest to regenerate. The scorched canopy shown in the top photo dropped and was replaced by epicormic growth. It's worth noting that between 8th and 16th February we had 220 mm of rain.



Figure 18: Aerial view 5th January 2020



Figure 19: Aerial view 8th March 2020



Other immediate observations included the silence – the almost absolute absence of birds and wildlife - except for one of the local wallabies sitting amongst the burnt trees - with burnt paws. This was the first of several sad and grim discoveries over the next few weeks.

Digging a hole to bury a burnt and bloated wallaby was one of the few things that made me cry. WIRES and others had to euthanise hundreds during the coming weeks. They did a fantastic job.

Joining efforts to feed the survivors was one of the few positive things I felt I had control over in the following weeks

The support of friends and local shops to do this helped enormously.

On the evening of NYE we stayed with a friend nearby and the following day moved to Broulee where we stayed for 10 days with a kind friend whose house became the meeting and eating place for friends who live in and around the area affected by the still on-going fires.

Post fire

In the days, weeks and months after the fire many things happened, or didn't happen.

- There was no power and very poor mobile phone and internet. In Broulee the lookout became known as 'reception hill' as one of the few places in the area with any mobile phone reception. It also became an impromptu meeting place where information was exchanged and people just went to chat, catch up, down-load, look to see where the fire was up to or have a quiet beer. The Police also came here to pass on information while on patrols – there was some heightened anxiety about looters. On Ridge Ave, there was also some reception at a high point, and it was common to find neighbours parked here making calls - we often heard 'on hold music' coming from people's cars.
- We buried animals - including our neighbour's horse for which we had to arrange the help of another neighbour (the horse's owner having lost everything). Despite asking (and we were given various phone numbers to call) there was no assistance available to help us with this. While we understand there were larger issues (properties with more animals) we were advised by Local Land Services that our property was not big enough to fall under their area of responsibility and receive help.
- We had many fallen and burnt standing trees to deal with. While we were able to deal with many of these ourselves, we called the SES to help with two potentially dangerous trees near the house. It took several days for them to come (understandable).
- I started feeding wildlife. With almost no ground cover there was no feed for the few wallabies and kangaroos that were around. We bought bags of any type of suitable feed (there was a shortage in rural supplies stores, due to roads closures) and collected waste fruit and vegetables from our local IGA and retirement village. The Council was trying to coordinate efforts with WIRES and the many others leaving food out; we kept feeding wildlife until late February and this has been effective in sustaining populations in the area.

- We went fishing - perhaps a strange thing to do, but it gave a break from the day-to-day activities of going to our house, cleaning up, talking about fires at looking at burnt trees.
- With their permission we pumped water from our neighbour's dam -they did not need it as their house had burnt. We used this water to try and keep the plants in the rainforest gully and around our house alive.
- We bought a generator - with the help of a local 4WD shop who was taking names and 'doing a run' to Sydney to collect a load. This allowed us to move back into our house until power came back on. Most of the power poles on our street were burnt. But the regular sightings of the Essential Energy Crews in the area were very hopeful. All new power poles were up by 19th January and power was back on 20th January. They did a great job!
- We started our insurance claim on 8th January. Our insurer (CBA) was excellent and continues to be in regular communication – no complaints there.
- We started the process of cleaning up and this will continue for months.
- It took us two months to decide to go to the Bushfire Recovery Centre. Initially we felt that we shouldn't go because 'other people needed it more' - after all we still had a house. But as time passed, we realised that there were things we did need help with, so we asked. Everyone was extremely helpful.
- We found it very hard to do any work. As self-employed people, working from home, it was initially the ongoing fire threat (the fires threat did not end on NYE and then the lack of services (power and internet) made this difficult; but over time it was the ever present site of burnt trees, needing to clean up, doing things for neighbours and friends and feeling like we should be cleaning up outside that distracted us.

Things we should have done differently

Although we think we prepared pretty well for the fire there are still things we should have done differently or better.

- We should have come home from Adelaide a day earlier. If nothing else this would have made NYE less stressful.
- Our evacuation kits in the cars should have included more food and drink.
- Despite all our efforts there were still areas where we could have reduced the fuel further– such as around the pool.
- We should have had still more sprinklers - nearer the pool pump and on garden beds below the shed.
- We did not have gutter guards on all gutters.
- We did not bury all the poly pipe. We plan to replace the poly pipe with a more fire resistant material.
- We did not have fire-proof boxes for our fire pumps.
- We could have put more wet towels around doors and windows.
- We should have moved flammables away from the inside of doors and windows.
- We should have opened gates to let wildlife in.

Recovery

Three months since the New Year's Eve fire plants are regenerating, wildlife and birds are returning – although not all, and houses in the street are starting to be cleared or repaired. Ground cover is re-establishing but there are few understory shrubs.



3rd January 2020



22nd March 2020

In looking at the vegetation on our own and our neighbours' properties the impact of fuel reduction efforts is very clear. There were stark differences in fire behaviour and in recovery. In the areas that were frequently mowed or browsed, fire passed over but there were signs that the grass cover was not completely burnt. Nearby, areas in which leaf litter had built up the ground was scorched bare.

The difference is even more apparent in areas of forest. This is difficult to show, but there are clear variations in tree (epicormic) and ground cover regeneration within our property, and between our property and our neighbours'. Of course, a variety of factors influence fire behaviour and only time will show if there will be lasting differences.



Figure 20: Difference in ground cover between mowed and un-mowed areas



Figure 21: Aerial view showing differences in epicormic growth in the forest canopy.

Summary

We live in a timber house surrounded by tall, dense forest. A fast-moving bushfire burnt straight through our neighbourhood burning almost 100% of the area and about 50% of the houses and sheds on our street. All the houses that burnt were made mostly of materials other than wood. We survived, as did our house, by being prepared - through recognition of the obvious threat, preparation for months and years and a well-thought-out fire plan that we followed. Fuel reduction, independent water supplies and sprinklers, and timely evacuation were key elements of our preparedness.

Fire activity and intensity is the other factor. We left our house as planned just before fire finally hit so we have no direct observations of fire activity (we wish we did) but the post fire condition indicates that by the time it reached our hazard reduction area it was low in intensity and in some areas did not even reach the sprinkler zone. While almost 100% of the land area in our neighbourhood burnt, on our property there was no crown fire, there was crown scorch at about 90%. We observed some embers falling it is unlikely there was an ember storm, otherwise our house would almost certainly have burnt.

Our plan wasn't perfect, but we had one and, for the most part it worked - we were prepared and precisely because of that, chance favoured us.

Post-script

This submission was written in January and February 2020, based on notes we started taking almost immediately after the fire. We did this as a reminder to ourselves, knowing how quickly memories fade.

It is now April 2020. Three months after the fire we have already started reducing the fuel on our property again. Much of the partially burnt vegetation needs to be cleared and the remnants of the scorched canopies are dropping their leaves, small branches and bark. Over the coming months the epicormic growth will also die and drop. This will add to fuel for the next fire season.

We do not know whether, as many people predict, “this won’t happen again for many years”. It may be a once in a lifetime event, but we will not take that chance, we will be prepared again.

