

Conference Proceedings – Speaker Transcript

Using fire for restoration – case study of a prescribed burn at Coal Point Reserve

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[Link to Slides](#)

My name's **Craig Holland**. I'm the Natural Areas Officer for Lake Macquarie City Council and deal with bushfire mitigation (Slide 2). I'm presenting today, along with Senior Fire Fighter Matt Anderson, Bushfire Officer North, Fire and Rescue NSW, and Suzanne Pritchard, President of the Coal Point Progress Association Landcare Group.

Our presentation is about a hazard reduction burn that was organized and carried out that ultimately had positive ecological benefits to a bushland reserve in Lake Macquarie, by removing a weed mass that was essentially a 'mission impossible' for Suzanne's Landcare group.

In 2010 (Slide 3), Coal Point Progress Association approached Lake Macquarie City Council and asked them if the reserve at Stansfield Close, Coal Point, could be considered for a prescribed ecological burn to reduce the weed mass which had invaded the bushland reserve.

Coal Point is approximately 150 kilometres north of Sydney and 30 kilometres south of Newcastle (Slide 4-6). Coal point is a small, leafy peninsular located in Lake Macquarie that includes a predominant ridgeline, bushland areas and residential housing. The peninsula is 3 kilometres long, 500 metres wide, jutting out into Lake Macquarie. Coal Point's elevation is 60 metres AHD. The climate is warm, temperate with a maritime influence, and the average annual rainfall is 1250 millimetres. Predominant sea breezes are north easterlies and easterlies, and occasional southerlies and westerlies. The bushland area, including private properties, is 6.6 hectares.

The eastern side of the bushland reserve, which is shown by the red polygon (Slide 7) was a blanket of asparagus fern half a metre thick, along with other weeds such as African olive, lantana, bitou and other garden escapes. The weed mass, along with the remnant native vegetation, created significant bushfire fuel estimated at 20 tonnes per hectare.

Considerations for the prescribed burn (Slide 8). First of all, Council owned the majority of the land on the ridgeline along with seven private property owners, who, after consultation, all agreed to incorporate their land into the burn and signed consent to enter forms.

I had to consider whether the proposed burn was a hazard reduction burn or an ecological burn (Slide 9). There are different environmental approval procedures required for each, but in this case it was easy to justify hazard reduction, to protect life and property using a Hazard Reduction Certificate under the Bushfire Environmental Assessment Code, which has a streamlined environmental approval. The decision was based on the adjacent urban interface, despite the fact that the proposed burn was originally asked for from an ecological perspective.

From 2010 to 2013, the burn wasn't a priority for Council, nor Fire & Rescue (Slide 10). There were other burns already approved that sat higher in Lake Macquarie's risk plan, and we were coming off the back of a couple of poor burning seasons due to inclement weather. However, Fire & Rescue had said to put it on the list.

The next step for me to do was to investigate and complete environmental searches required to satisfy the Bushfire Environmental Assessment Code (Slide 11). Most of these could be completed at a desktop level. I concluded that at Coal Point there was no Aboriginal heritage from an Aboriginal Heritage Information Management System search. There was no cultural heritage through Council records. There were no soil erosion issues due to the slope being less than 18 degrees and there were no ecologically endangered communities. The reserve had a conservation zoning and the land wasn't excluded or restricted by the Bushfire Environmental Assessment Code, meaning that it wasn't a SEPP 14 Coastal Wetland or a SEPP 26 Littoral Rainforest. It also wasn't critical habitat under the Threatened Species Conservation Act.

Council and Wildlife Atlas records show that *Tetratheca juncea*, a vulnerable species under both State and Commonwealth threatened species legislation, is within the bushland reserve (Slide 12). However, the clumps were actually mapped and recorded outside of the proposed burn area.

There were two merging vegetation communities (Slide 13), being Lake Macquarie Spotted Gum Forest, which has a Keith Class of Hunter-Macleay Dry Sclerophyll Forest, and Sugarloaf Lowlands Bloodwood-Apple Forest, which has a Keith Class of Sydney Coastal Dry Sclerophyll Forest.

There were also numerous weeds within the reserve, and the dominant and main weed targeted for this burn was the asparagus fern (Slide 14), *Asparagus aethiopicus*. African olive, lantana, bitou, privet and other weed species became secondary targets. The asparagus was the real problem for the Landcarers at this site.

Once I completed the desktop environmental searches (Slide 15), I met with Matt to confirm the burn area, which ended up being approximately three and a half hectares, and the containment lines were required. Down in the south east sector of the burn, containment lines needed to be cut through lantana thickets and along private property boundaries. Conditions within the certificate

were discussed including elements like wind direction as we were burning near a school only 300 metres away, protection of numerous habitat trees, burning intensity, property notifications and consideration of closing streets down.

Once we nussed this out, I could complete the hazard reduction certificate, signed and handed over to Fire and Rescue along with a Fire and Rescue Works Request e-form to complete the burn.

In 2015, five years after we started (Slide 16), I was notified that an Environmental Trust Fund Grant had been secured for the site to support reduction of the weeds. Matt and I reinspected the site and decided that, due to some previous productive burning seasons, we could start preparing this site for the hazard reduction burn. We both felt it was a better utilization of the grant monies if the area was burnt with a moderate intensity burn, as we were pretty unsure about how the asparagus fern would burn. We wanted to provide a clean slate for Suzanne's group, and as you'll see in Matt's slides later on, we certainly gave them that.

The Environmental Trust Fund allowed *Trees in Newcastle* bush regeneration contractors to join forces with Council's Bush Regeneration team and the Landcare volunteers to try and dry out some of the weed mass (Slide 17). Sections of the burn area were sprayed with herbicide for asparagus fern, but native species would not be affected (Slide 18). We targeted the larger weeds, African olive, privet, bitou, lantana, with scrape, cut and paint methods, using 100% glyphosate and dropped some of their fuel on the ground to dry. It was particularly important to try and dry out the south eastern sector of the burn, where the lantana and other mesic weeds had invaded a moist gully line.

When Matt had set the proposed burn date of 6th April, 2016, I organized the construction of the containment lines (Slide 19). This was completed by Councils Bush Regeneration team about a week before the burn.

On the day of the burn at the crack of dawn, Suzanne and myself and one other Council employee removed fuel from around the identified habitat trees. This was quite a task because of the slope onsite, as well as the vegetation being very thick and not easily removed with a McLeod tool as there was no swing room. We also tidied up the containment lines with a leaf blower.

It took six years from start to finish to complete this burn (Slide 20). Hazard reduction certificates were reissued and consents to enter had to be re-signed because they had expired, but in the end Council was extremely happy with the results. We used this prescribed burn as a dual prong land management practice to reduce the threat of wildfire on the adjacent urban interface, as well as support ecological restoration for a reserve smothered in weeds.

Suzanne will report that 20 species of plant not previously surveyed have since resurfaced, and it will be interesting to see whether the *Tetratheca juncea* will regenerate in the burn area where it wasn't previously. I'll now hand over to Matt to discuss Fire & Rescue New South Wales' involvement.

Good afternoon, everybody. I'm **Matt Anderson**, one of four Bushfire Officers with Fire & Rescue New South Wales. As Craig mentioned, Fire & Rescue was first approached in 2010 in relation to conducting works on the site. My predecessor said, yes, put it on the list, and we'll get around to it once we complete works higher in the risk plan.

In 2013, I came into the position and liaised with Craig. Due to some good burning seasons, we were able to lift the burn in priority. Through our inspections of the site there was no evidence of any recent fire activity on the site. It's been a large number of years since there'd been any fire in the reserve.

The first step (Slide 22) for us as an agency to be able to conduct works is receiving the electronic Works Request eform from the land managers, which incorporates the relevant environmental approvals and where things sit in the risk plan. We use that as a worksheet, deeming it as consent from the land manager to go ahead and progress with the works.

For our site inspections, we utilise an in-field app on smart devices, where we can document all the onsite information, go back into the office, produce the burn plans and map it in the GIS.

As Craig stated, we looked at the site and decided we'd try and treat this with a moderate intensity burn. We weren't sure how well the asparagus fern was going to take to the fire. This slide shows (Slide 23) the prescription we came up with for the burn with a wind speed of under 25 kilometres an hour, temperature over 30 degrees and fuel moisture under 18.

The actual weather readings on the day met the prescriptions and are detailed on that slide. We'd scheduled the burn for mid-afternoon, to take advantage of the higher temperatures and the lower humidity, and we had a slight northerly influence with the wind.

Given those temperatures and the humidity on the day, the fire danger index was sitting at high. As a result of that, we had to get my Area Commander to sign off on it, the Manager of the Bushfire Section to sign off on it and the Zone Commander to sign off. Even then at the time, the Incident Controller had itchy feet. He wasn't real keen on going ahead. He's like, 'everything in my head's saying we don't light a fire when we've got weather like this'. But the burn was tailored for the vegetation composition on the site.

Part of that preparation process was also reviewing the burn plan to make sure that the containments lines were still going to be adequate to contain the fire and that we had sufficient resourcing for the burn.

Through that process we decided that with three pumpers, three tankers, we'd be able to get the job done (Slide 24). We had the rehab van there for welfare. The Duty Commander, the Inspector was the Incident Controller on the day and myself there as the Operations Officer.

To provide an overview of the site - along the western containment line there is the top of the ridgeline (Slide 25). There was a small vehicle trail that came halfway down off the end of Stansfield Close. There's an APZ that wrapped around the north-eastern half of the burn. And the total southern half of the burn, was where hand tool lines were utilized to create the containment line. That was serviced by a hose layer of around nine lengths of 38 ml hose fed by three pumpers, and the three pumpers around the interface. The tankers were operating around in the APZ and the small trail.

Council took care of all the notifications for us. We commenced ignition at around quarter to two in the afternoon, starting off on that western containment line, utilizing line ignition. Once we had a depth of around 10 metres, we then progressed the burn around the northern and southern flanks and then continued with the line ignition along the eastern side.

Here's some images of the burn progressing just past the test burn stage (Slide 26), where we were looking to get that depth of 10 metres in before we took things any further. It took a little while to get that depth in, because it plateaued out on the top of the ridgeline. But then as we progressed around, we were able to get a bit of heat into the burn. We probably just got it to the moderate intensity stage, due to the narrow width of the burn. That footage (Slide 27) was from that south eastern corner where it was pretty moist and there was a lot of lantana that the guys had to cut through to create the containment line.

That's another shot (Slide 28) looking up towards the ridgeline from the APZ at the rear of the properties on the eastern side. And this (Slide 29) is in the north-eastern corner.

We conducted a post-burn assessment at the completion of the burn, looking for any dangerous trees or any other hazards for the local community (Slide 30). During that post-burn assessment we came to the conclusion that we'd achieved a greater than 95% burn coverage across the site. Due to the intensity of the burn and the low humidity and high temperatures on the day, there was around 30 to 40% ground scorch as a result.

We removed virtually all of the asparagus fern. I was surprised, because we didn't know how well it was going to burn, but it did a good job. The burn was kept within the containment lines. There was some minor spotting, which was predicted, along the western side. But with the hose lines and the tankers operating there, we were able to keep it under wraps. These images (Slides 31-32) were taken looking down from the top of the ridgeline to the rear of the properties. That image (Slide 33) gives you a good contrast of the before and after.

As a result, you can see that through the collaboration between Lake Macquarie Council, Coal Point Progress Association's Landcare group, and Fire & Rescue, we've achieved a positive environmental outcome for a reserve that was heavily infested with weeds (Slide 34). This has allowed the manual or chemical treatment on the site to be on a manageable scale and has resulted in an increase in the propagation of native species.

We were extremely happy with the outcome, it went far better than we ever expected. I'll now hand over to Suzanne, and she'll go through the work that the Landcare group conducted.

Suzanne Pritchard: I'm here on behalf of the Landcarers who have been Landcaring at Coal Point for over 20 years. This site was our first Landcare project, but it became very obvious that it was an unmanageable project, that we would just never have the resources available. We were happy to get an Environmental Trust grant, a six year grant, and I thank the Environmental Trust for supporting our group. That has given us some leverage to being able to achieve these outcomes.

I'd also like to thank the Hunter Local Land Services for funding to be able to produce this video. Mostly, I'd like to thank Lake Macquarie Council for their support, and Fire & Rescue, and Matt particularly, for their belief that it was a job to be done. This is a video of what we've been doing.

[Link to video](#)