

SUBMISSIONS TO CORONER MARIA DOOGAN ON BEHALF OF TONY BARTLETT.

*INQUESTS INTO THE DEATHS OF DOROTHY McGRATH,
ALISON MARY TENER, PETER BRABAZON BROOKE AND
DOUGLAS JOHN FRASER,*

AND

INQUIRY INTO THE FIRES OF JANUARY 2003.

INTRODUCTORY COMMENTS

Mr Bartlett gave evidence during the Inquiry. He played an active role as a senior bushfire fighter during the course of the fires. At the time of the fires he was the Director of ACT Forests. The evidence shows that he was and is a person of significant experience of bushfire management. He is still involved in bushfire fighting activities.

A significant part of your Honour's function as Coroner inquiring into the devastating 2003 fires is to make recommendations. Whilst it is important to look at mistakes which might have been made during the fires it is far more important to make recommendations for change to try and ensure that the lessons learnt are not forgotten. It is vital that everything possible be done to minimise the likelihood of the same mistakes being repeated.

The sole purpose of these submissions is to be of assistance to your Honour by suggesting some recommendations which you might consider making in discharge of your functions prescribed by the *Coroners Act (1997)* which permits you to make comments and recommendations. The suggestions are Mr Bartlett's, and although in one respect he was simply a witness in the proceedings, he was, and is, a person who has a vital ongoing interest in some of the matters upon which your Honour may comment or make recommendations. There are recommendations

relevant to the land managers; the Rural Fire Service; co-ordination with NSW as well as for the community.

These submissions initially make some comment upon a number of matters which have been the subject of evidence before your Honour. Those comments are then followed by some detailed suggested recommendations.

As he said in his statement and oral evidence he has had significant experience in the suppression of remote forest fires and had documented the development of and lessons from bushfires in the Byadbo wilderness of Kosciusko National Park during 1988. Many of the circumstances and the lessons from those fires are particularly relevant to the circumstances surrounding the 2003 ACT Bushfires.

It is important to recognise that under similar circumstances there is the potential for fires in the Brindabella Ranges to impact on Canberra in the future. The evidence shows that under conditions of hot northerly winds wildfires in this region can spread more than 15 km in one day. There must never be complacency amongst fire managers that small remote forest fires do not pose any danger to seemingly distant rural and urban assets. This fact is demonstrated by what in fact happened during the January 2003 fires.

During the 2003 fires urban and rural assets were destroyed in a range of circumstances, including adjacent to pine plantations, native forests and heavily grazed agricultural land. While issues related to fuel levels, vegetation types and buffer zones on the western side of the Canberra suburbs are important, it must be recognised that under conditions of extreme fire weather any fire burning through forest or grassland has the potential to impact on and cause threats or damage to life and property. Therefore your Honour's findings and recommendations should, it is submitted, cover fuel management, suppression capability and need for the community to share some of the responsibility in the interface zone.

Under extreme fire danger conditions it is virtually impossible to stop the forward spread of a wildfire within a pine plantation or a native forest. Both Mr Cheney and Mr Roche accepted that once the January fires took hold they became unstoppable. At T514 L21

Mr Cheney said that by 8 o'clock on the morning of the 18 January there was nothing that could be done to control the fires.

As was shown during the 2003 fires, with large forest fires there will always be significant ember loads deposited downwind of the wildfire front for at least a hundred metres and therefore residences in the urban interface zone need to have strategies to deal with this issue, particularly in seasons where there is the potential for significant wildfires to develop.

During the 2003 Canberra bushfire, buffer zones of 40-55 metres, when coupled with extreme fire behaviour, high fuel loads in suburban gardens and urban open spaces, were insufficient to preclude significant house destruction in areas adjacent to pine plantations. Fuel reduction burning in a "Crown Fire Reduction Zone" in Stromlo Plantation adjacent to Eucumbene Drive in Duffy two years prior to the 2003 fire had little or no impact on the number of residences that were destroyed.

COMMENTS UPON PARTS OF THE SUBMISSIONS OF COUNSEL ASSISTING

In relation to paragraph 144 regarding the effects of the fuel management works carried out by ACT Forests, Mr Bartlett's evidence indicates that he considers the low intensity fuel reduction burning that was done during 2001 adjacent to Eucumbene Drive to have had some impact on the severity of the wildfire within the mature pines but had no obvious impact on the number of houses that were destroyed in the adjacent area. He also indicated that the high intensity burning that was conducted in a previously harvested area on Narrabundah Hill in autumn of 2002 undoubtedly reduced the intensity of the advancing wildfire before it burnt into mature pine plantation. He therefore submits that these fuel management works did have some impact on the localised fire behaviour, however because of the size and intensity of the fire by the time it burnt into these areas they probably had little if any impact on the level of destruction of residences in the interface areas of Weston Creek. (Mr Bartlett's evidence concerning this issue is to be found at T6014 to T6017 and in particular T6017 L21.)

In relation to paragraph 511, regarding the implementation of backburning operations on the McIntyre fire, Mr Bartlett's evidence was that the NSW fire controller was of the opinion that the ACT

Forests staff who were experienced in backburning operations could not conduct these operations in NSW unless they operated under the control of NSW officers. (See para 50 of Mr Bartlett's statement dated 9 December 2003.)

In relation to paragraph 527, which covers the suppression operations on the Bendora fire from 10-12 January, there is no mention of the problems caused by the overgrown fire trails, particularly the Border Break and the Flat Rock Spur track. (This issue is discussed at length in paras 60, 61 and 69 of Mr Bartlett's statement and in evidence at T5936.) Clearly the chances of successfully controlling a wildfire using indirect suppression during summer will be significantly reduced if strategic fire trails have to be reopened by a bulldozer before suppression operations can be conducted.

In addition, although paragraph 527 mentions Mr Bartlett's estimation of fuel loads in excess of 25 tonnes per hectare in the Bendora fire area (paragraph 145 relating to T6534 to T6535 in particular T6534 L46) there is no discussion about the impact of such heavy fuel loads on the conduct of the backburning operations on 11 January or the difficulty of containing the fire on Moonlight Hollow Ck on 12 January. Mr Bartlett indicated under cross examination that the high fuel loads did have an impact on the fire suppression operations, particularly the implementation of backburning operations, because the more fuel that you have when you are trying to light a backburn the more difficult it is to keep the backburn under control so progress is generally slower (T6534). It seems clear that the combination of the high fuel loads and the prevailing weather, particularly the wind, made it, for all intents and purposes, impossible to conduct backburning operations on the scale required in a safe manner. Had the fuels been lower in the vicinity of Moonlight Hollow Track, then firefighters are likely to have been able to complete the backburning along that track early in the morning of 12 January, and thus may have been able to contain the fire to that track.

MANAGEMENT OF ACT FORESTS PLANTATIONS PRIOR TO THE 2003 BUSHFIRES.

The fire management strategies adopted by ACT Forests included a well maintained road access network to allow rapid suppression; a crown fire reduction zone around the Weston Creek interface;

prescribed burning of woody debris following clearfelling, and the maintenance of a grassed buffer zone between the plantation and the roads adjoining the residential areas. See Mr Bartlett's record of conversation dated the 11 February 2004 at Q32 and 33.

Mr Bartlett's evidence was that significant programs were implemented by ACT Forests to reduce fuel hazards within these plantations, particularly after the 2001 Stromlo wildfire. His evidence also shows that these programs were carried out within the constraints of a very cumbersome bureaucratic system for obtaining approvals to conduct burning operations. Such operations generated substantial public criticism because of the smoke generated by these burns. It is apparent that the system and community opinions that existed prior to the 2003 bushfire hindered the effective implementation of important prescribed burning programs within the ACT.

In addition to the constraints on the implementation of fire management programs mentioned above, ACT Forests was hindered in its implementation of weed management programs within Stromlo forest as a result of the involvement of the Commissioner of the Environment, following residents concerns about the use of herbicides within the plantations. At no time during the environmental investigation was any consideration given to the competing objective of reducing significant fire hazards within the plantation.

SUGGESTED RECOMMENDATIONS

Management of Public Forested Lands

Introductory comments

There needs to be an ongoing recognition by the ACT Government, the public land managers and the community that the forested and rural lands of the ACT **will** be impacted by wildfire on an ongoing basis and that the potential remains for catastrophic wildfires in the future.

While the fire management strategies being applied in Namadgi and Brindabella National Parks may have been a result of public attitudes and precautionary approaches to the planned use of fire and the role of access tracks, it has to be accepted that these strategies contributed to the difficulty experienced by firefighters in

attempting to control the wildfires. It should be recognised that landscape fire of the magnitude of the 2003 bushfires is a disaster for ecosystems, water catchments and the community.

The absence of any significant prescribed burning in these forests since 1983 and the fact that many strategic access tracks (eg Stockyard Spur Tk, Long Flat Spur Tk) were allowed to become overgrown was problematic from a fire suppression perspective, by compromising the capacity for rapid initial attack and delaying the implementation of backburning operations.

Suggested recommendations.

1. In the future, it should be unacceptable to contemplate trying to exclude fire from large areas of Namadgi National Park or the ACT's water supply catchments. Effective strategies are required to manage fire within the forested lands including appropriate strategic use of prescribed fire on a regular basis, covering at least 25% of the forest, and the effective suppression of wildfires. It is noted that this suggestion accords with the suggestion made by counsel assisting in pars 46 f of the 4 May 2006 submissions. A strategic fire track network needs to be established and maintained to enable indirect fire suppression operations to be implemented without having to construct major new tracks at the time of a wildfire.
2. There needs to be a greater recognition within the public land management agencies of the importance of fire management. Senior managers within the public land agencies must have appropriate experience in fire management and must have adequate resources and be accountable for the effective implementation of fire management programs. They need to be able to provide leadership in and develop a culture of active public land fire management (T6540).
3. Public land managers must have the authority to implement prescribed burning operations under pre agreed standard burning prescriptions if they are to be accountable for implementation of identified fire management works under approved fire management

or operational plans. (This issue is discussed at length in paras 23-29 of Mr Bartlett's March 2004 statement on fuel management, and also on pages 18-19 of his interview with the AFP of 11 February 2004.)

4. There is a need to maintain an integrated approach to fire management within the ACT. In order to best achieve this, the urban and non urban public land managers should ideally be within the one department, preferably reporting to a single senior executive.
5. A Fire Management Unit should be maintained within the department or departments responsible for public land management to ensure that fire management is properly planned, coordinated and implemented without distractions from other responsibilities. The ACT Government needs to establish an appropriate operating budget for fire management on public lands that is sufficient to ensure that the required fire management works are undertaken each year on an ongoing basis. There also needs to be an effective funding mechanism which will allow additional works to be undertaken in a timely manner in years where seasonal conditions result in significant additional fuel loads in the lead up to the summer.
6. Staff within the public land management agencies (Even if recommendation 4 were adopted there may still be several land management agencies within that department), must take an active role in fire management. It should be mandatory for all operational staff to participate in fire management, and there should be a culture where fire management is considered an important part of annual works programs.
7. When investigations are conducted by the Commissioner for the Environment into management of forested land, there needs to be a formal consideration of the need to balance fire management and environmental outcomes. (These issues were discussed in paras 34 and 42 of Mr Bartlett's statement of the March 2004.)

8. The community needs to be educated that there will need to be some smoke over urban areas in autumn and spring if forest fuels are to be reduced on lands on the western side of Canberra. (Discussed at T6016. See paras 16-22 of Mr Bartlett's statement of March 2004.)

Fire Suppression

Introductory comments

There needs to be a clear recognition within the Emergency Services Authority and the Rural Fire Service that suppression of remote forest fires requires different strategies, skills and experience when compared to suppression of grass and bushfires in the urban and rural areas of the ACT. It is vital that forest land managers, with experience in forest fire suppression, be heavily involved in fire suppression in both incident management and operational roles.

For remote forest fires the Standard Operating Procedure of deploying tankers and light units may not be the most appropriate suppression strategy unless the fire is located close to an existing track. Mr Bartlett gave evidence at T6546 and T6595 (specifically L19) that adequate numbers of Remote Area Firefighting Team (RAFT) ground firefighters is the most important resource needed (initially) at remote wildfires.

Mr Bartlett also gave evidence about his experience from Victoria of the benefits of having access to fixed wing fire bombing aircraft that can deploy fire retardant on remote wildfires (T6593 and T6594), highlighting why this technology is generally more effective than water bombing at remote wildfires.

There should not be a situation where resources are not deployed to wildfires unless all available resources are committed. There must be a strong recognition that during the fire season there needs to be a concerted and sustained effort to suppress all wildfires and that at the height of the fire season any unavoidable delays in deploying the appropriate level of suppression resources significantly increase the likelihood of a large uncontrollable wildfire developing.

Direct Suppression Strategies

Suggested Recommendations

1. At times when remote fires are possible there should be adequate numbers of remote area fire fighting teams on standby and available for two shift operations (T6546 L13 and T6595 L19). This would require at least twelve 6-person RAFT crews over a 24 hour period to cater for 3 possible lightning strikes with 2 shifts. The members of these RAFT crews must have high levels of fitness and training in remote fire suppression. (See also counsel assisting's recommendations in paras 1169-1171)
2. During the declared fire danger season all fires in the remote mountain areas of the ACT and adjoining NSW must be suppressed as quickly and vigorously as possible, and no fires should be left unattended, especially at night, unless either all available firefighting resources have been deployed or there is an unacceptable risk to the personal safety of the firefighters.
3. In the event of a remote fire, RAFT resources need to be deployed as a matter of priority, in preference to deployment of large fire tankers. (T6595 specifically L19)
4. During periods of high fire danger, remote fire suppression operations should be managed by a senior officer with relevant experience in the suppression of remote forest fires from the outbreak of the fire. (See also Counsel Assisting's recommendations at 8.2.2.3)
5. There needs to be a strategic network of helipads located in remote areas and adequate helicopter capacity to ensure rapid deployment of the RAFT crews to the fire after it is detected. In general, the first priority for use of helicopters on remote fires should be to assist with detection and deployment of RAFT crews, followed by firebombing.
6. Whenever possible, RAFT crews should work on both day and night shift on remote fires. Suppression operations should only be suspended during the night if it is too

dangerous to safely conduct the suppression strategies. Such decisions need to be taken by a senior officer with experience in remote fire suppression, and be balanced by the risks posed by delaying suppression operations. (See Counsel assisting's recommendations 5.2.5 168 and 8.2.2.3 32).

7. Arrangements need to be developed for access in the ACT to small fixed wing firebombing aircraft capable of delivering fire retardant to remote fires. Water bombing helicopters will not be sufficient or appropriate for many remote fires. Fire retardant is useful both to slow the progress of the fire until firefighters arrive at the fire and while they are constructing control lines. (See T5934 L45 in relation to Mr Bartlett's experience with the Byadbo fire in 1988 and evidence at T6593 and T6594)
8. The ACT should maintain guaranteed access during the summer to an adequate number of bulldozers with operators experienced in steep mountain country. This should include at least two small (D4-D5 size) bulldozers and transporters, and these should always be deployed immediately for initial attack when a remote fire is detected.

Indirect Suppression Strategies

Introductory Comments

The ACT should maintain the capacity to implement large-scale indirect suppression operations in circumstances where direct suppression fails. Whilst it makes sense to co-ordinate this requirement with NSW, it is not appropriate to assume that NSW will be able to provide key requirements quickly if they have numerous forest fires at the same time as the ACT.

Few people have the required experience and competence to successfully implement large-scale backburning operations whereby 20-40 km of control lines need to be established in a relatively short period, often under somewhat difficult weather conditions. Without the existence of a well maintained strategic fire trail network, access to large bulldozers, aerial firefighting resources and staff, experienced in lighting and controlling many

kilometres of backburns in one night, this important fire suppression strategy cannot be implemented with any confidence.

It must also be recognised that indirect suppression will inevitably fail (as was the case with the ACT fires and the NSW McIntyre Hut fire) if large areas of unburnt country remain within the established control lines. To overcome this, the fire agency must have access to technology to conduct aerial ignition and be able to utilise this tactic well in advance of predicted days of high to extreme fire danger.

Suggested Recommendations

1. The ACT should develop and maintain a network of strategic fire management trails suitable for backburning operations within remote forest areas. (See in Mr Bartlett's 17 December 2003 interview with AFP at Q298 and paras 60 - 61 and 69 of his statement of 9 December 2003. See also T5936 L46 and T6536 and the evidence of Mr Cheney at T0335.)
2. The ACT should implement regular strategic prescribed burning in areas adjacent to the strategic fire trail network to reduce the available fuels in areas where backburning operations may need to be conducted. (See T5936 L46 and para 17 of Mr Bartlett's statement of 9 December 2003).
3. Because of the critical importance of timely access to a large number of bulldozers in relation to the ability to implement large scale backburning operations (T5936 L5), the ACT should develop regular summer access arrangements for 8 large bulldozers. At least four of these large bulldozers should be available for deployment within 4 hours of a wildfire ignition and the others available within 12 hours. The operators of these bulldozers need to be capable of working in steep mountain country.
4. Careful forward planning needs to be undertaken to ensure that bulldozers can be readily transported by floats on forest roads to a drop off point, preferably within 5 km of any potential remote fire. The land managers need to train staff in the most effective use of large bulldozers at wildfires and have these staff available to be assigned to supervise the

bulldozer operations at each wildfire(See pars 63 and 102 of Mr Bartlett's statement of 9 December 2003).

5. The ACT should develop and maintain adequate numbers of firefighters experienced in the effective and safe implementation of backburning operations. To achieve this a greater number of land management staff will need to become more proficient in the regular implementation of prescribed burning. The skills needed to safely conduct large scale backburns are very different to the skills needed to suppress wildfires. (See T5938, T6004 and para 120 of Mr Bartlett's statement)
6. The ACT should develop an operational capacity (equipment and trained staff) to implement aerial ignition of forest blocks within control lines as well as prescribed burns. (See para 121 of Mr Bartlett's statement and T5936 L36).
7. The ACT should develop the capacity for Planning Section staff to competently plan the implementation of indirect suppression operations, including determining the available "window of opportunity" to implement the backburns (T5935 L13) and hence the required resources to prepare and safely implement the operations prior to any days of very high fire danger.(See T5938, T6555 L18 and para 118 of Mr Bartlett's statement)

Implementation of the Incident Control System

Introductory Comments

Evidence has been given about the way in which the ACT did or did not properly implement the national AIIMS Incident Control System. Questions have been raised about location and resourcing of the Incident Management Teams, capacity to undertake both strategic and operational planning, and the communication between the management team in the ESB headquarters and the field firefighters.

While significant improvements have been made to incident management since 2003, further important improvements are needed to ensure that the system continues to operate effectively

in the ACT into the future and that it has the capacity to deal with large or remote forest fires.

Suggested Recommendations

1. The ACT needs to maintain the capacity to manage wildfires using the National AIIMS Incident Control System, with trained and experienced personnel in all key roles. It is critical that further training is given to personnel who will fill key incident management roles. (See para 116 of Mr Bartlett's statement, T6579 L23 and T6097.)
2. The ACT should develop accreditation for key Incident Management Team roles and ensure that accredited officers get regular exposure to implementation of ICS via interstate deployments and participation in prescribed burns (T6599 L26).
3. An Incident Management Team should be established for all fires that can not be suppressed within 15 minutes, with the IMT generally focussing on a single incident rather than multiple fires. Wherever possible there needs to be continuity of key positions within the IMT, rather than changing the personnel each day (T6597).
4. The Chief Officer should not perform the role of Incident Controller for a wildfire incident, unless there is another officer of equivalent experience available to perform the important co-ordination and legislative responsibilities of the Chief Officer.
5. The Incident Controller must have a full incident management team to manage the fire suppression operations and must have the full responsibility for all decisions related to management of the incident. (See paras 23 and 89 of Mr Bartlett's statement and T5940)
6. There needs to be a better system of scaling up of IMTs (in terms of number of staff and seniority of staff) depending on Fire Type, the complexity of the fire and the potential for assets to be threatened by the fire (T6597).

7. Whenever a wildfire is uncontrolled, Incident Management Teams need to operate on a 2 shift basis (day and night) (T6578), and changeover of IMTs should always occur after the briefing of incoming crews (ie the outgoing IMT which has developed the Incident Action Plan implements the crew changeover then hands over to the incoming IMT). (See T6565 L11 and T6098).
8. There needs to be good co-ordination between IMTs in the ESA headquarters when there are multiple fires. The role of the Chief Officer and Headquarters staff is co-ordination and prioritisation of resources between incidents, as well as undertaking government and media liaison (with input from IMTs). (See Counsel Assisting's submission at 8.2.2.2 and 5.1.7 para 1131.)
9. IMTs for Type 3 fires should be located in appropriate offices close to the fire if practical, eg Namadgi Visitor Centre for fires in southern ACT, Stromlo Forest office etc.(See T6556 and T6597).
10. IMTs must have appropriate radio communications systems that can be established quickly so that all units assigned to a particular fire can report to the IMT rather than to ESA Headquarters.
11. If IMTs are located at the ESA Headquarters they must be able to work independently of the co-ordination function. (See Counsel Assisting's submission at 8.2.2.2.)
12. The Planning Unit must have the capacity to undertake both daily operational planning and strategic planning for those fires that can not be controlled within 24 hours. An incident management plan and up to date maps must be prepared for each shift during periods when fires are uncontrolled. (See paras 118 and 119 of Mr Bartlett's statement.)
13. Operations Officers should generally operate at the fire, although they need the capacity to participate in IMT meetings (perhaps twice per shift). At large wildfires (such as the McIntyre Fire), operational staff must not make important strategic decisions (such as backburning on 18 January

2003) without reference to the Incident Controller and without being directly under the control of the Operations Officer. This is simply not possible if the Operations Officer is permanently located at the Fire Control Headquarters. (See T6556 L41)

14. Deputy Incident Controllers and Deputy Operations Officers (with sufficient seniority and experience) can be used in multi-jurisdictional fires or complex Type 3 fires to overcome the problem of periods when the Operations Officer is absent from the fire ground to be involved in IMT meetings.
15. Once resources are placed under the control of an Incident Management Team, the ESA Communications Centre (Comcen) should not redeploy resources at a fire without reference to the relevant IMT (through Incident Controller or Operations Officer). (See T6579 L40 and paras 102 and 164 of Mr Bartlett's statement.)
16. When fires continue beyond 5 days it is important that key incident management staff and firefighters be given at least one rest day to avoid fatigue. (See paras 125 and 130 of Mr Bartlett's statement).
17. There is a need for the ACT to train staff in aircraft management and appoint an air operations manager, an air base manager and an air attack supervisor when more than one aircraft is deployed to ACT fires. While in some circumstances staff may be available from NSW to fill these roles, the 2003 fires demonstrated that when NSW had multiple fires there was insufficient trained experience staff available to manage aerial operations on the ACT fires. (See para 93 of Mr Bartlett's statement).

Improved Coordination between the ACT and NSW in fire management.

Introductory Comments

The 2003 fires highlighted a number of inadequacies in the coordination of forest fire management in the Brindabella Ranges. This included aspects of forest land management in the National

Parks and particularly the arrangements for fire suppression when a fire in NSW had the potential to threaten ACT assets.

Prior to the 2003 bushfires, there was ineffective co-ordination of fire management strategies between the ACT and NSW. There was no integration of fuel management planning and the ACT had little capacity to influence decisions of NSW Incident Management Teams or to have its resources used in key tasks such as managing backburning operations. This was so even though NSW did not have adequate resources to perform these tasks (See paras 49 and 51 of Mr Bartlett's statement).

It is of concern that for the first three days of the McIntyre Hut fire, inadequate resources were deployed by NSW to allow effective implementation of the indirect suppression strategy (See Mr Bartlett's statement at paras 42-44 and 49-50 and T5958).

Throughout the whole 2003 fire event radio communication between NSW and ACT fire agencies and firefighters was inadequate. (See para 156 of Mr Bartlett's statement).

Suggested Recommendations

1. The fire management strategies for Brindabella National Park and Namadgi National Park need to be more effectively integrated, including location and maintenance of strategic fire trails, as well as the planning and implementation of prescribed burns.
2. The current draft Management Plan for Brindabella National Park needs to give more effective emphasis on fire management and the importance of parts of this park in relation to wildfires that can impact on the ACT. Consideration needs to be given to establishing a fire management zone in the former ACT Bushfire Council lease area within the Brindabella National Park.
3. A cross border fire management agreement is needed that allows for improved integration of fire management and fire suppression within 10 km of the ACT/NSW border. This must include the ability for ACT firefighters to initiate first attack on wildfires, participate in IMT roles and conduct backburns at fires within the border zone. (The issue of NSW concerns

about legality of ACT Forests firefighters conducting backburns in NSW in absence of NSW firefighters is discussed on T5995 and T6080)

4. In circumstances where there are multiple fires in the Brindabella Ranges (within NSW and the ACT) there needs to be improved coordination and management of the fire suppression operations between the two jurisdictions.
5. Further urgent enhancement is needed to achieve effective integration of the ACT and NSW RFS radio communications systems. There must be a guarantee that all ACT fire fighting units can communicate with NSW units and vice versa.

Management of the Urban Interface

Introductory Comments

The evidence from CSIRO (Ellis and Leonard) found that no residential properties were ignited or damaged by direct flame contact or radiant heat from flames in the pine forest, bushland or grassland outside the suburb perimeter roads. It found that firebrands directly ignited residential gardens, houses and other structures, urban parklands, access lanes and roadside vegetation. (See also T6017.)

Grassed buffer zones existed between plantations and perimeter roads around Duffy and Holder, but these did not stop the wildfire from penetrating into the urban residences. The minimum setback distances that existed between the plantation and the roads at the urban interface in Weston Creek ranged from 30 to 53 metres. All roads were at least 10 metres wide and the average distance from the plantation to the residential nature strip ranged from 55 to 82 metres (see Table 1 below). This means that the actual buffers that existed between the Stromlo pine plantation and the urban residences greatly exceeded the recommended set back distances between forests and residences for virtually everywhere in Australia. (Discussed in comparison to plantations at Ballarat Vic at T6020 L40)

The actual set back distances and numbers houses destroyed in the interface and second rows of houses (75 m strip), in the Duffy/Holder interface are shown in Table 1. The first two rows of

houses at the urban interface would have been subject to significant ember attack from the burning plantations. Beyond that it is impossible to determine whether embers came from the plantations or from burning houses.

Analysis of the average buffer widths and the number of houses destroyed, suggests that the width of the buffer made little difference to the number of houses destroyed. The average effective buffer widths were 55 metres on Eucumbene Drive, 60 metres on Dixon Drive and 88 metres on Warragamba Avenue. The number of houses destroyed in each location was 56, 16 and 35 respectively.

The following table is not in evidence but was prepared by Mr Bartlett for the 2004 Australian Fire Authorities Conference in October 2004. Leave is sought to make it part of the evidence.

Table 1: Buffer Widths and House Losses in the Duffy/Holder Interface

	Eucumbene Drive	Warragamba Ave	Dixon Drive
Plantation Set Back Distance to Road	30-68 m	53-106 m	30-75 m
Average Set Back to Nature Strip	55 m	82 m	60 m
No of houses destroyed in First Row	24	19	12
No of houses destroyed in 2 nd Row	32	16	4
Total houses destroyed in first 2 Rows	56	35	16

This Table is sourced from Bartlett (2004) Rethinking Fire Management in Plantations. Proceedings of 11th Annual AFAC and Inaugural Bushfire CRC Conference, Perth, Western Australia 7-9 October 2004. pp 34-40

This analysis indicates that the setback distances between the Stromlo plantation and the Duffy and Holder suburbs were sufficient to prevent direct flame contact with residences, but insufficient to prevent ember attack impacting significantly upon the gardens and residences, which ultimately caused the house losses. (See Justin Leonard's evidence).

Suggested Recommendations

1. Vegetation and fuel management standards need to be developed for the urban interface, and both government and private landowners in the urban interface should be required to meet these standards. (See para 39 of Mr Bartlett's March 2004 statement on fuel management)
2. Further research should be undertaken to better understand ember movement and to define appropriate buffer zones between forests (plantations and native forests) and residences.
3. There needs to be a well maintained buffer zone between all forested land and urban residences in the urban interface zone. As an interim guide buffer zones on the north and western sides of urban areas should be at least two times the mature tree height in the forested area.
4. Annual fuel management works in urban interface zones must be completed in these zones by the beginning of December each year.
5. The ESA or the Department of Urban Services must have the capacity to prevent residents from establishing gardens with high fuel loads on the "nature strip" zone in urban interface areas or behind back fences in areas adjoining public land. (See para 39 of Mr Bartlett's March 2004 statement)
6. Residences in defined Urban Interface zones need to be granted exemptions from water restrictions to enable them to maintain green lawns around their houses during summer months.

7. All residences in Urban Interface Zones should be required to meet bushfire building standards.
8. Residents who live in Urban Interface zones must be given information and training about protecting their homes from wildfires and should be encouraged to belong to Community Fire Units.

Dated the 29 June 2006

John Watts
Counsel for Tony Bartlett