

## **Appendix C11 Canterbury Region Fire Returns 1991/92 to 2006/07**

### **Number of Fires (Figure C1):**

- From 1991/92 to 2006/07 Canterbury had, on average, 553 fires annually or around 18% of the total national number of fires.
- The total annual number of fires varied from just 133 fires in 1992/93 (14% that year's national) to 1,274 fires in 2003/04 (about 30% of that year's national).
- The total number of fires from 1991/92 to 2006/07 displayed a clear statistically significant positive (increasing) trend (regression:  $R^2 = 0.65$ ; F-value = 27.07; P-value = <0.001). The total annual number of fires also significantly correlated with the national increasing trend (correlation coefficient = 0.876; P-value = <0.001).

### **Area Burned (Figure C2):**

- The average annual total area burned for Canterbury was 668 ha (around 11% of national).
- The total annual area burned for Canterbury varied considerably from just 57 ha in 1991/92 (3% of that year's national) to 2,321 ha in 1995/96 (51% of that year's national total).
- The total area burned for Canterbury 1991/92 to 2006/07 showed no statistically significant trend (regression: F-value = 0.00; P-value = 0.991).

### **Number of Fires by Cause (Figures C3 and C4):**

- Around 38% of the average annual total number of fires for Canterbury from 1991/92 to 2006/07 were attributed to miscellaneous causes (annual average around 212 fires); unknown causes accounted for just under 13% of the average annual total number of fires (annual average 70 fires); making 51% of the average annual total number of fires due to combined 'unspecified' causes.
- Land clearing accounted for around 21% of the average annual total number of fires.
- Around 15% of the average annual total number of fires were attributed to vehicle causes (annual average of 80 fires).
- The increase in annual number of fires over the study period appeared to be due to an increase in the number of miscellaneous, vehicle, and land clearing fires.

### **Area Burned by Fuel type (Figures C5 and C6):**

- Around 51% of the Canterbury total area burned from 1991/92 to 2006/07 was grass; average annual total grass area burned was 343 ha (11% of national).
- Around 43% of the total area burned was scrub; average annual total scrub area burned was 286 ha (13% of national).
- Forest made up just 6% of the total area burned; average annual total was just 40 ha (12% of national).

- Canterbury accounted for 92% of the national annual forest area burned in 1995/96.

**Area Burned by Cause (Figures C7 and C8):**

- The area burned by cause in Canterbury was significantly different to the number of fires by cause.
- Around 44% of the average annual total area burned (average 293 ha) was attributed to land clearing; therefore on average 21% of the fires accounted for 44% of the area burned. In addition, years with high number of land clearing fires did not always correspond with years, when large areas were burned from land clearing.
- Large areas burned by railway fires occurred in 1995/96 and 2003/04. Railway made up 21% (annual average 140 ha) of the annual average total area burned but accounted for just 2% of the annual average number of fires.
- Miscellaneous causes accounted for 7% (45 ha) of the annual average total area burned but 38% of the annual average total number of fires.
- The trend of increasing number of fires over time from miscellaneous, vehicle, and land clearing causes was not seen in the area burned. Year-on-year no clear trends were present for the area burned other than the fact that land clearing featured in most years and is usually a large component of the area burned.

**Area Burned by Cause and Fuel type (Figures C9, C10, C11, C12, C13, and C14):**

- The average annual total grass area burned was dominated (49%; or around 170 ha annually) by land clearing.
- Around 14% (48 ha) of the average annual total grass area burned was attributed to railways.
- 9% of the average annual total grass area burned was also attributed to unknown (average annually 32 ha), 9% vehicles (average annually 32 ha), and 9% to miscellaneous causes (average annually 29 ha).
- Large grass areas burned from land clearing occurred in 1994/95 and 1997/98; and railways in 2003/04. As with the annual total area burned, annual total grass area burned was almost always largely due to land clearing fires (1992/93, 1995/96, 1997/98, 1999/2000, 2000/01, 2001/02, 2004/05, 2005/06 and 2006/07).
- Canterbury's average annual total scrub area burned was 41% from land clearing (average annually 117 ha); 29% (average annually 83 ha) from railways; and 18% (average annually of 52 ha) from unknown causes.
- No clear year-on-year trends were evident in annual scrub area burned by cause. Most of the scrub area burned attributed to railways occurred in 1995/96.
- 29% of forest area burned was attributed to incendiary, followed closely by 24% due to railways.
- The average annual forest area burned by cause was greatly influenced by individual causes in individual years. In 1995/96, 150 ha was attributed

to railways and 149 ha was attributed to incendiary. Significant forest area burned from vehicle causes occurred in 1994/95, 2000/01 and 2002/03. Most other causes barely featured.

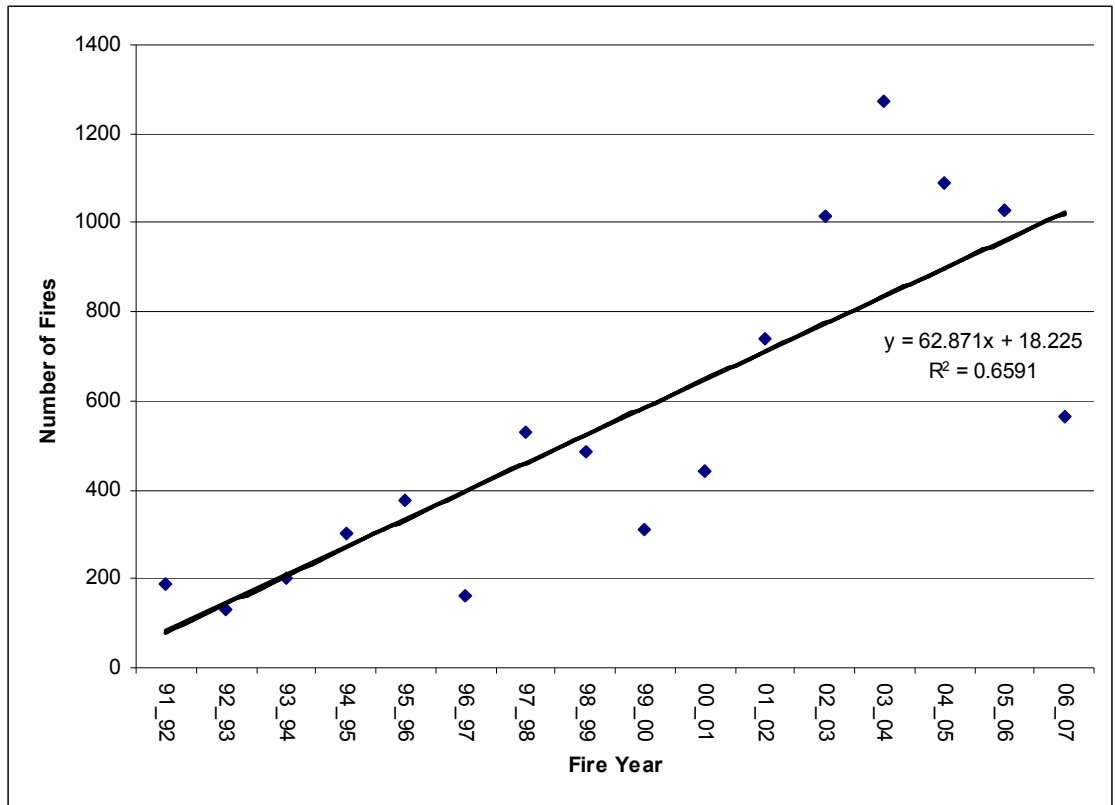


Figure C1. Canterbury Total annual number of fires from 1991/92 to 2006/07.

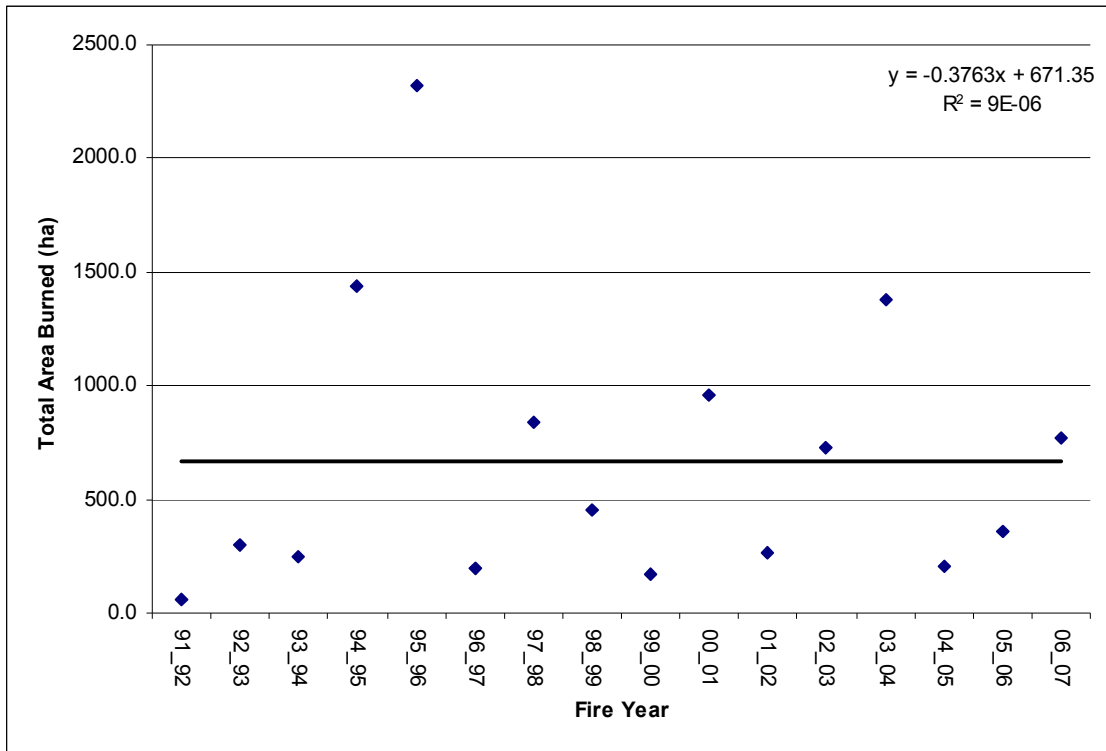


Figure C2. Canterbury total annual area burned from 1991/92 to 2006/07.

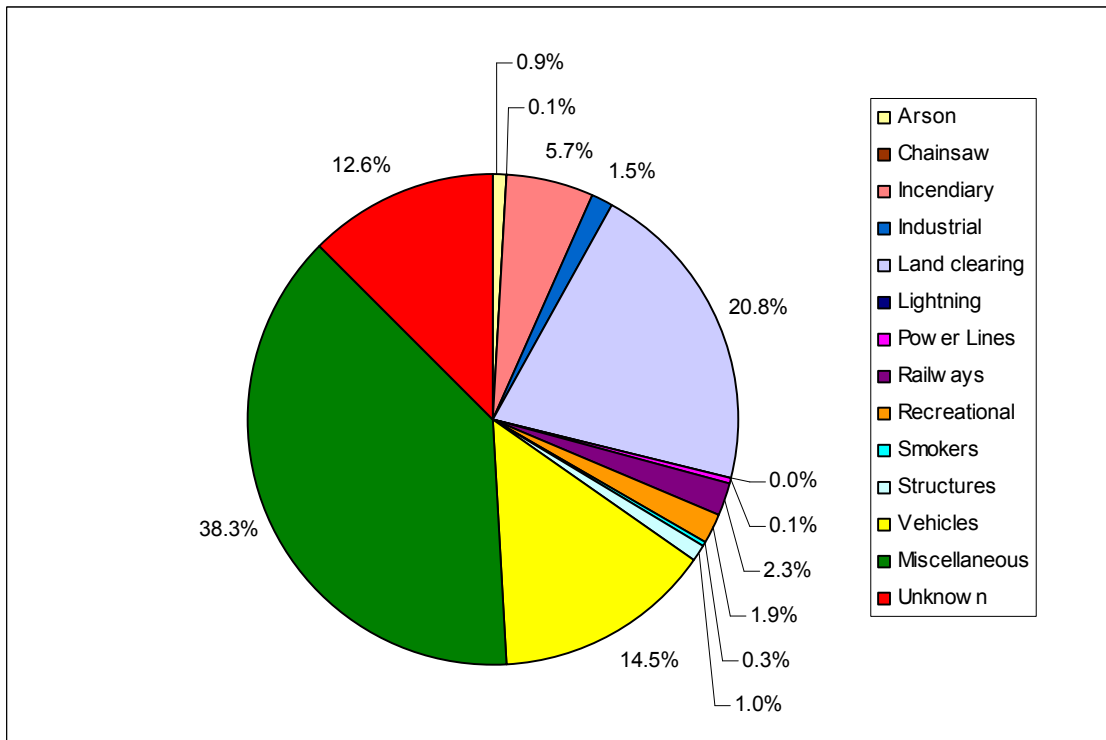


Figure C3. Canterbury total number of fires by cause from 1991/92 to 2006/07.

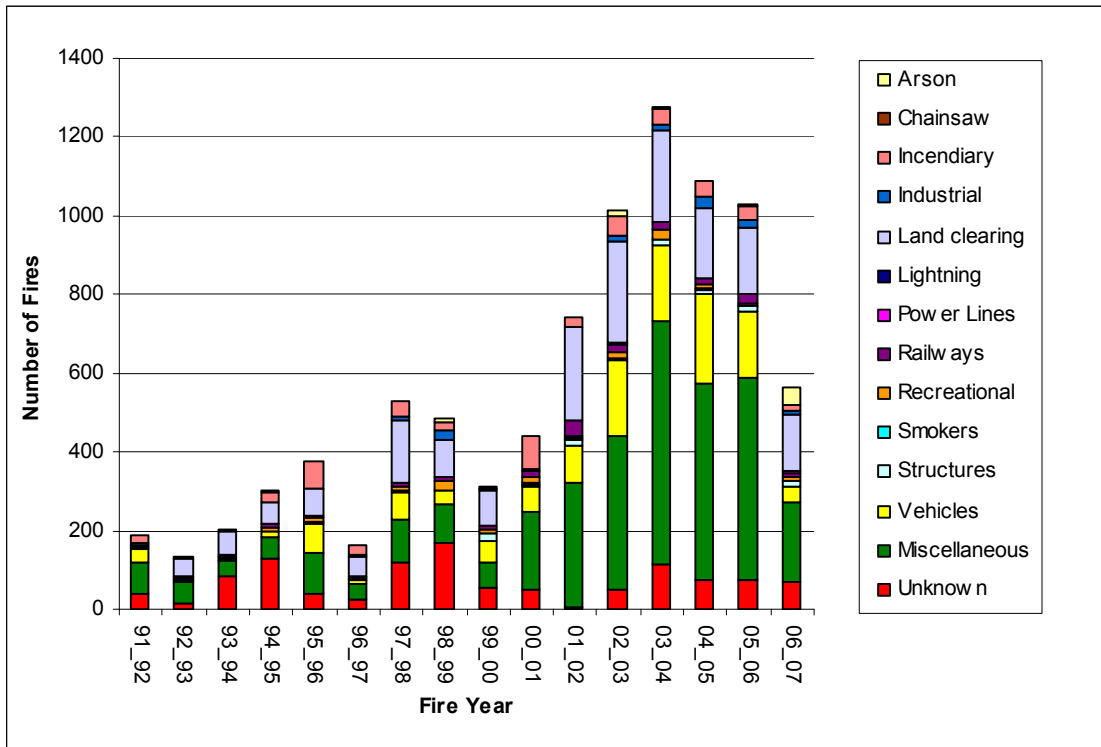


Figure C4. Canterbury total number of fires by cause from 1991/92 to 2006/07.

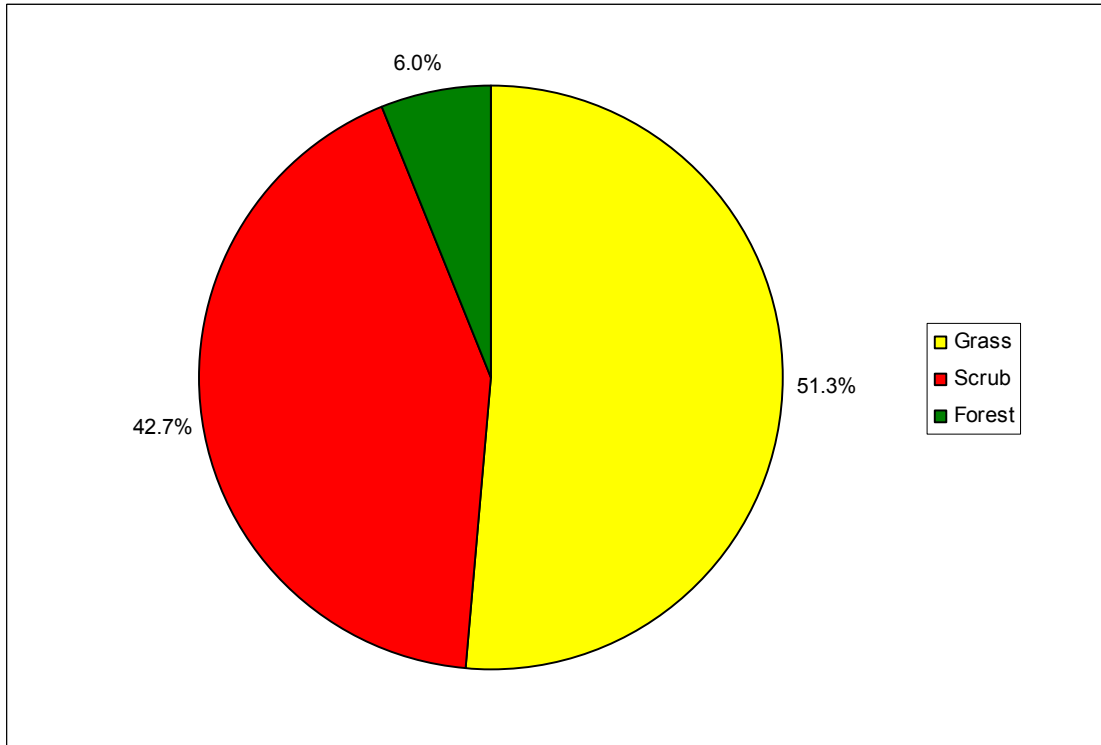


Figure C5. Canterbury total area burned by fuel type from 1991/92 to 2006/07.

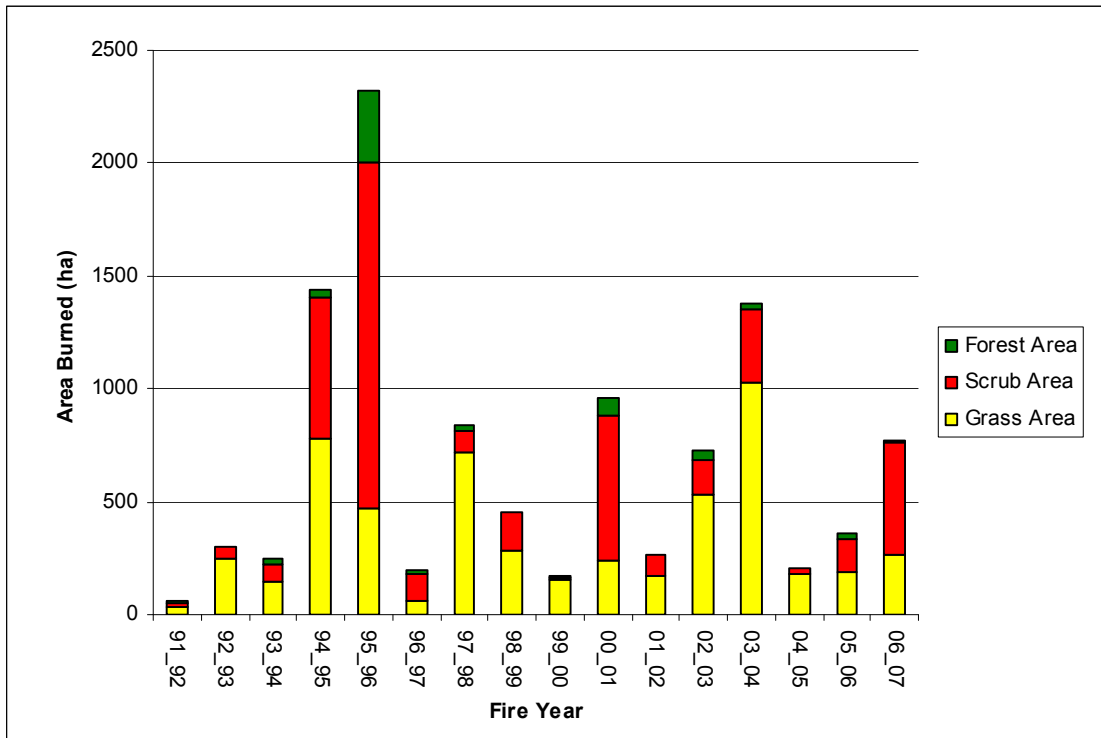


Figure C6. Canterbury total area burned by fuel type from 1991/92 to 2006/07.

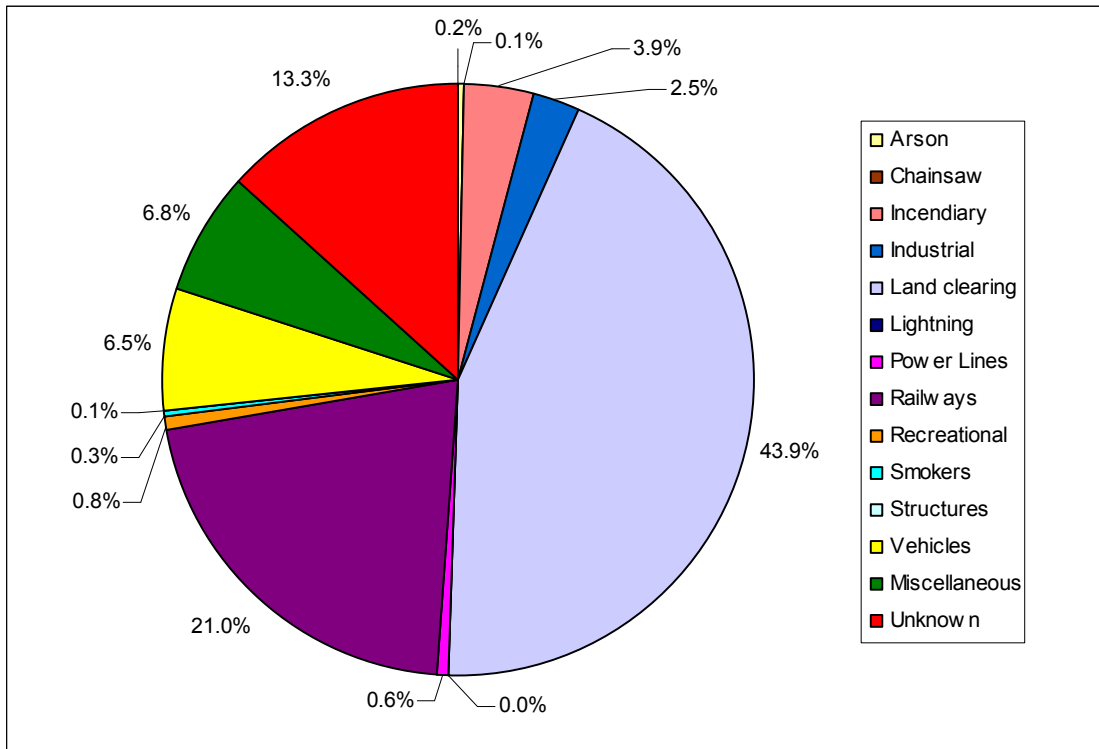


Figure C7. Canterbury total area burned by cause from 1991/92 to 2006/07.

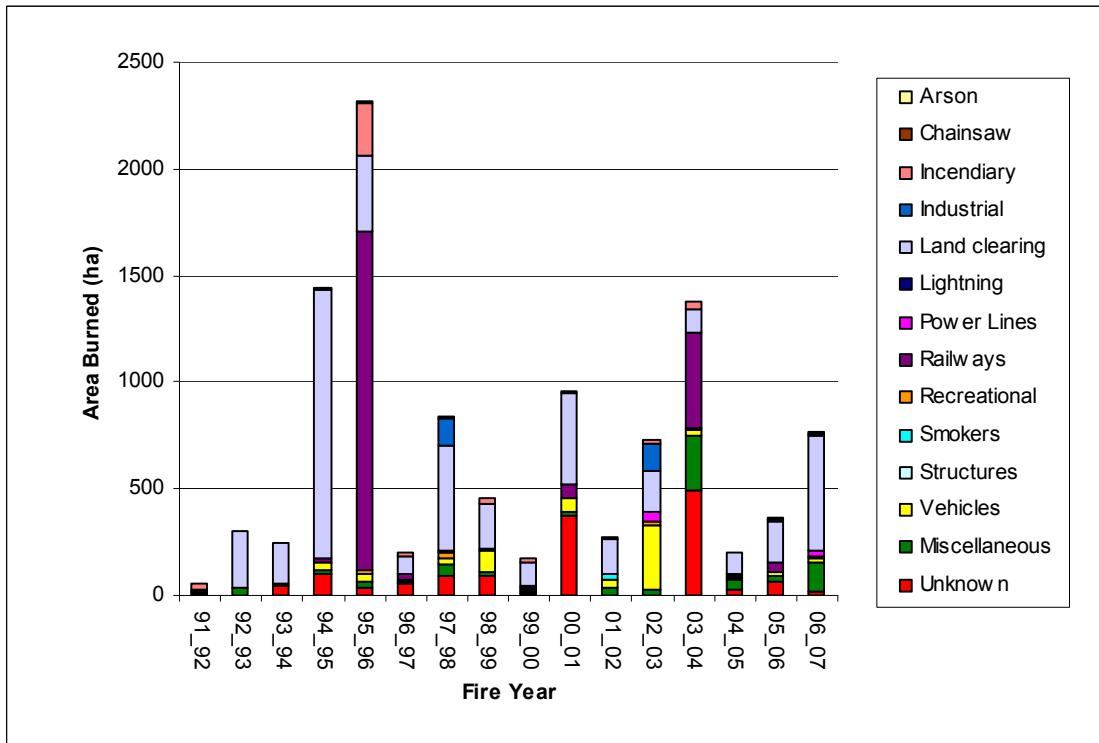


Figure C8. Canterbury total area burned by cause from 1991/92 to 2006/07.

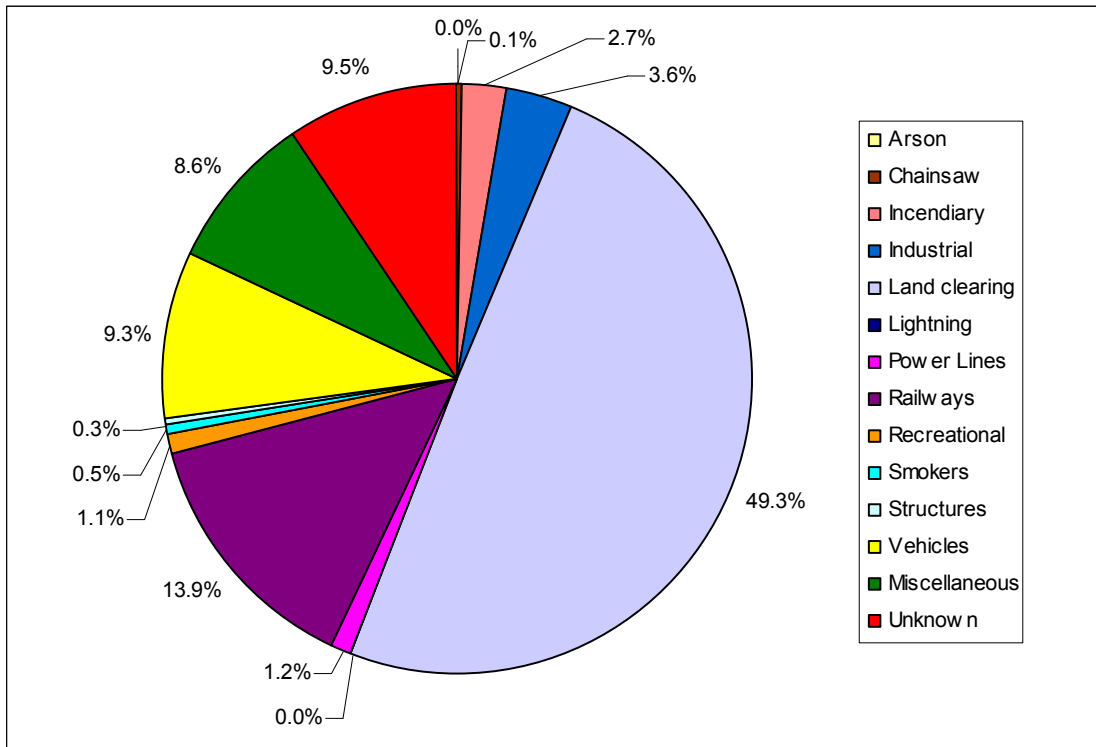


Figure C9. Canterbury average total annual grass area burned from 1991/92 to 2006/07.

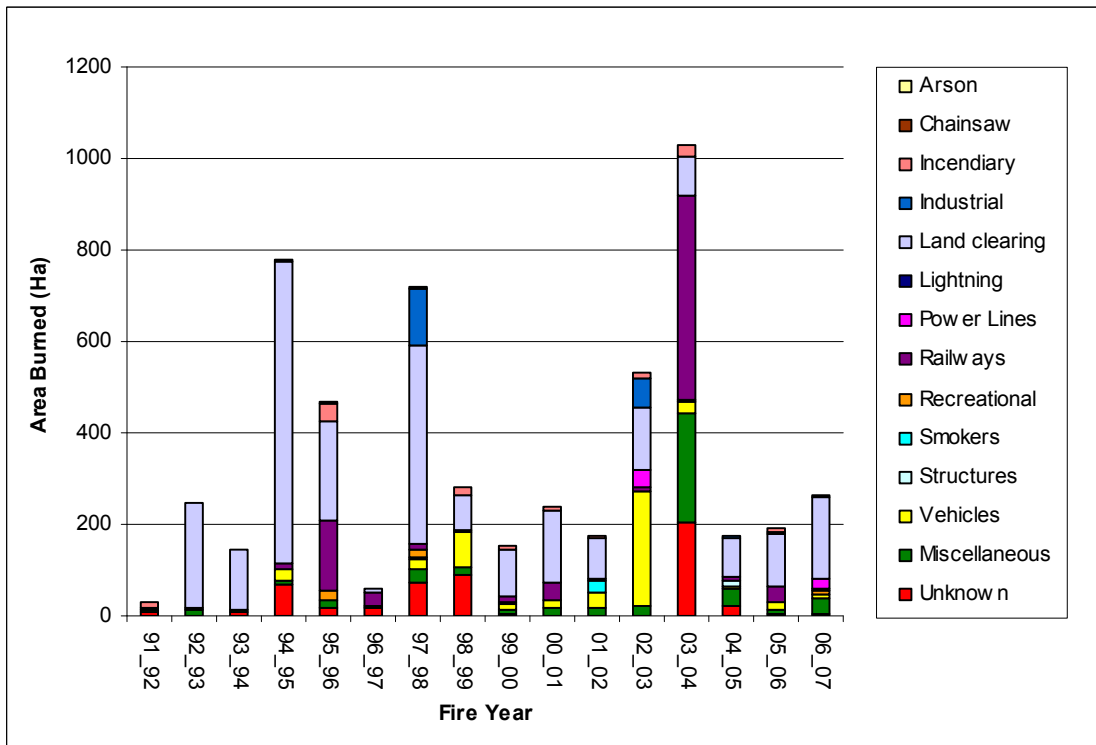


Figure C10. Canterbury total grass area burned by cause from 1991/92 to 2006/07.

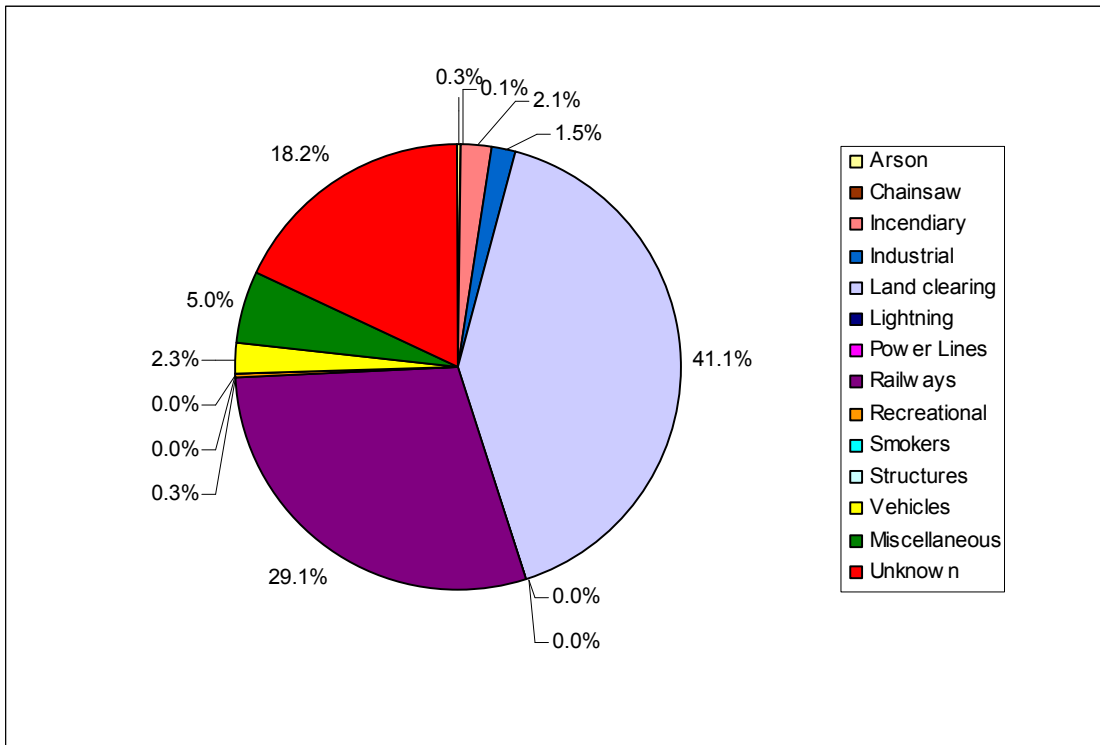


Figure C11. Canterbury average total scrub area burned by cause from 1991/92 to 2006/07.

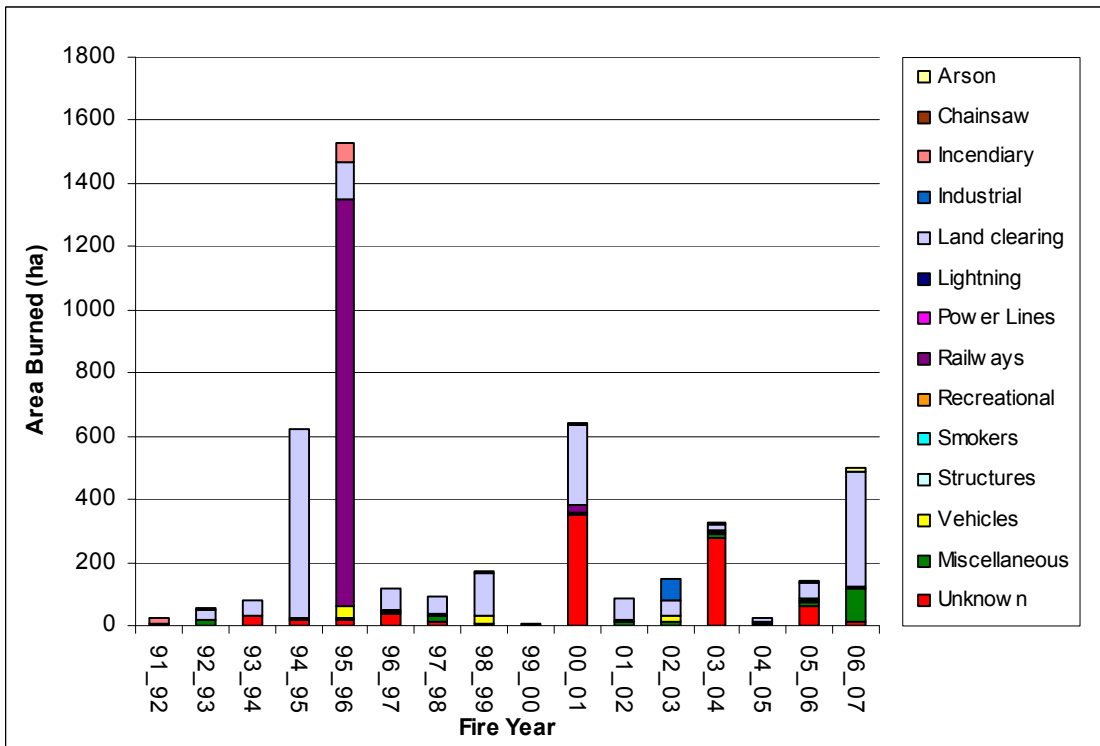


Figure C12. Canterbury total scrub area burned by cause from 1991/92 to 2006/07.

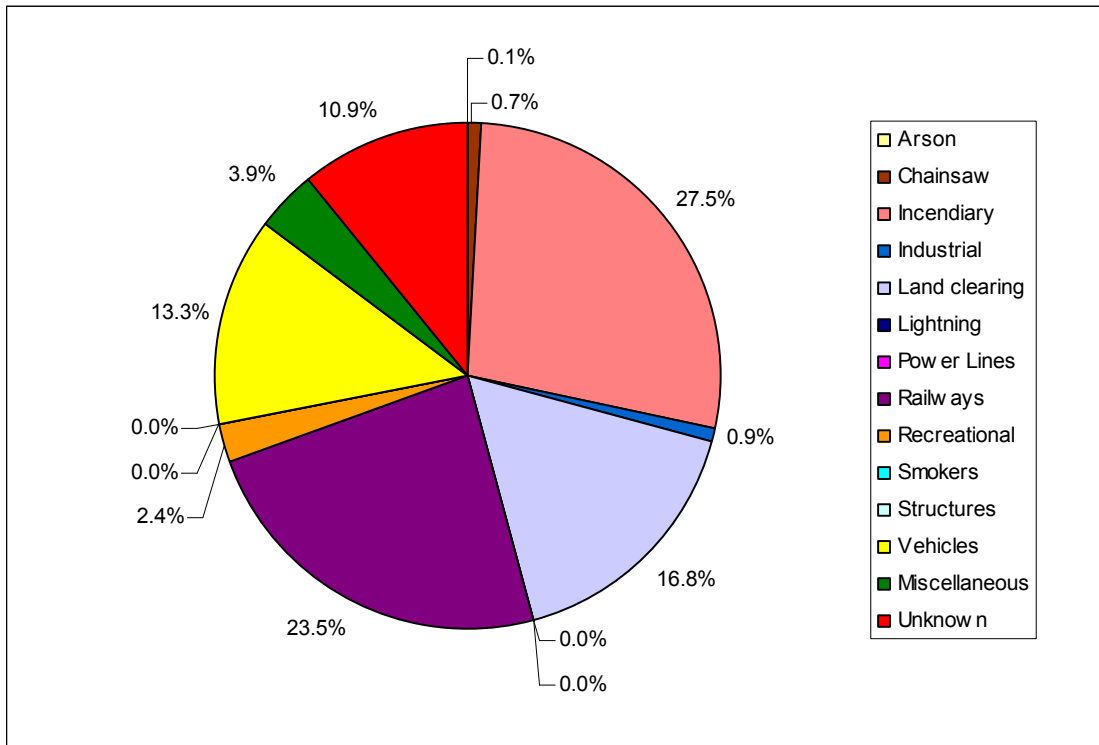


Figure C13. Canterbury average total forest area burned by cause 1991/92 to 2006/07.

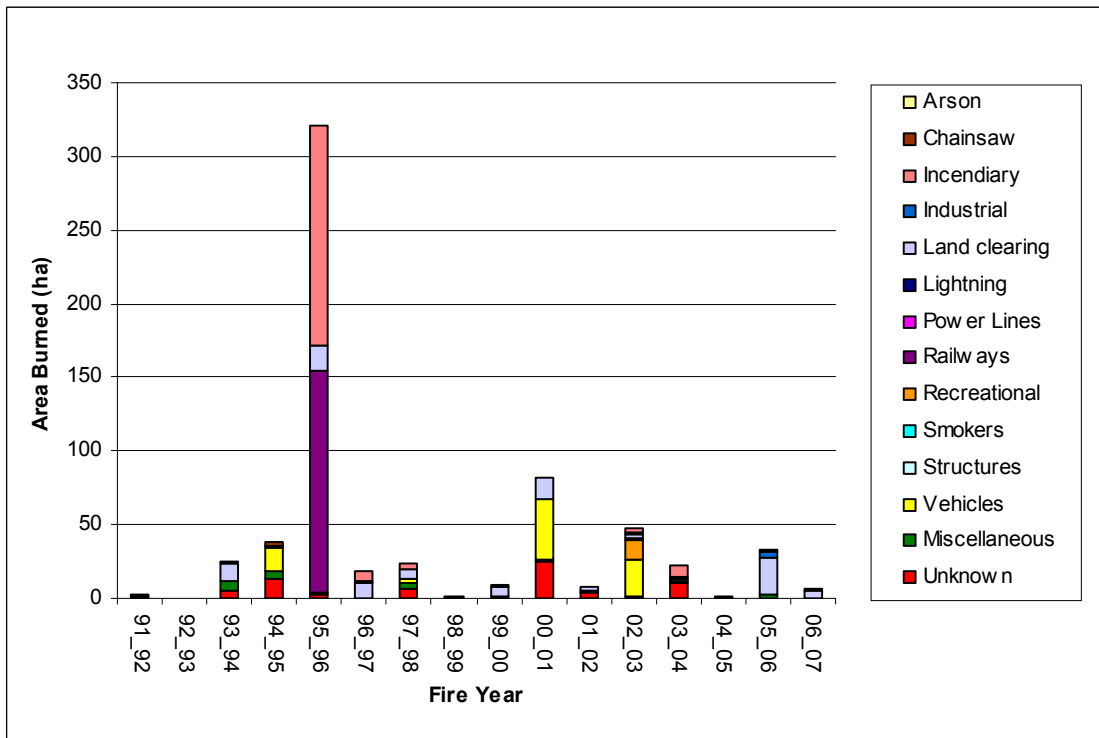


Figure C14. Canterbury total forest area burned by Cause from 1991/92 to 2006/07.