

SCHEDULE 2

CHRONOLOGY OF KILMORE EAST FIRE INFORMATION AND PREDICTIONS AVAILABLE TO AGENCIES COMPARED WITH WARNINGS GIVEN

No	Time	Event	Mapped observations	Origin	Title of map and reference	Comments	IECC receipt
1	1149	Fire at Kilmore East first reported to CFA by the Mt Hickey watchtower, ¹ and promptly given exceptionally high priority by State Duty Officer. ²					IMS entry
2	1208	Keating (Kangaroo Ground fire tower) spoke to Coleman (Pretty Sally fire tower) and Jones (Mt St Leonards fire tower) for bearing on fire. Reported to be going towards the blue gum pine plantation and building fast. ³					
3	1228	Linescan requested					
4	1230	The Kilmore fire is reported to DSE. ⁴					
5	1236	Smoke had crossed the Hume Hwy. ⁵					
6	1240	Awareness message. ⁶					Message published
7	1245	Map generated	Linescan requested at 1228	GDA model	"Kilmore East – Saunders Road – 1245 hrs 07/02/2009" WIT.004.002.0402 DSE.HDD.0002.0258	Circles area for line scan See Attachment A	
8	1249	Map generated	Origin of fire assessed at 1202 Point observed at 1231 Active fire area assessed at 1248 ⁷	Generated on CFA's EIMS Mapper ⁸	"Estimated Fire Location – Kilmore East Area" WIT.004.002.0391	See Attachment B	Received in IECC at 1316. ⁹
9	1255	Map generated	Origin of fire assessed at 1202 Point observed at 1231 Active fire area assessed at 1248	Generated on CFA's EIMS Mapper	"Estimated Fire Location – Kilmore East Fire" WIT.004.002.0390	Larger scale version of 1249 map. See Attachment C	Received in IECC at 1317. ¹⁰

¹ Rees, T69; IMS entry, ex 2: WIT.004.002.1466. The Mt Hickey fire spotter was Phil Searle (see Willans, T3026), who has not been called to give evidence. Mount Hickey tower is the controlling tower for Pretty Sally, Strath and Mount Despair fire towers (see Willans, T3027), the operators of which have also not been called to give evidence.

² Patterson, T4267.

³ Keating, T3224

⁴ Tolhurst, T1773

⁵ Munns, T1355; Munns statement, ex 44, annexed logs

⁶ Rees, ex 3, annexure 31: WIT.00.001.0515

⁷ The time of the run was 1247 hrs: Griffiths, T834

⁸ There were CFA mappers in the IECC using the EIMS mapper but Tolhurst was not working with them and he has no familiarity with that software: Tolhurst, T1753 line 7-17.

⁹ WIT.004.002.0429-0430

¹⁰ WIT.004.002.0431-0432

No	Time	Event	Mapped observations	Origin	Title of map and reference	Comments	IECC receipt
10	1255	Map generated	Second linescan at 1255 ¹¹	GDA model	Yet to be produced to the Royal Commission	Fire now spreading out into grassland. ¹² The linescan shows spot fires starting ahead of the fire. ¹³ Tolhurst's assessment was that at the time of the scan, 1245, the fire was around 500-700 metres wide. ¹⁴ According to Tolhurst, the fire was impossible to suppress at this time. ¹⁵ The fire had travelled 3½ kms in 1½ hours, ¹⁶ ie 2km/hr. ¹⁷ The fire would be going slower through the grassland than through the plantation area. ¹⁸	
11	≈1300		Cowan at home puts a quick ruler on a map and works out where the fire was going, and uses CSIRO model to calculate rate of spread. ¹⁹				
12	1300		The Hume Hwy is closed after Murphy, the Kilmore IC, requests this. ²⁰				I MS entry
13	1319		Fire close to Hume Hwy, and spilling over highway reported by CFA as highly likely. ²¹				I MS entry
14	1330		Cowan (on arrival at Kangaroo Ground IC) puts ruler to map and moves it north-easterly to see the effect of wind change; perceives definite impacts to Flowerdale, Kinglake West, Kinglake and St Andrews, and tells others in KG ICC. ²²				
15	1330		Representatives at the Kangaroo Ground ICC raise with the Kangaroo Ground IC (Lawrence) whether an "awareness message" should be sent out, having regard to what Keating in the Kangaroo Ground Fire Tower had just told them, because it was considered that the fire was becoming more intense and possibly would enter the Yarra area. ²³ Lawrence and Barga decide against sending it out while Kilmore ICC has control of the fire or the fire was not in the Kangaroo Ground ICC area. ²⁴ A draft is prepared, but not sent out. ²⁵				
16	1340	Map generated	Fire perimeter captured by Linescan requested at 1233 and undertaken at 1245 ²⁶		"Kilmore East – Saunders Road, Clonbinane – Equestrian Centre – 1233hrs Linescan 07/02/2009" WIT.004.002.0397 A larger image of this map appears at SUMM.035.002.0046	Linescan but no fire area assessment. See Attachment D See Attachment E	Map received in the IECC at 1512. ²⁷
17	1350		BoM wind change forecast chart shows change in Kilmore around 2100 hrs ²⁸				BoM forecast received

¹¹ Tolhurst T11736, lines 27-28: the linescan was taken at a lower elevation to that taken at 1245 hrs: T11737 line 5.
¹² Tolhurst T11737 line 13-14; according to Tolhurst, the fire had "significantly developed" in the period 1245-1255 hrs: T11737 line 22-23
¹³ Tolhurst T11738 line 7-8.
¹⁴ Tolhurst T11739 line 27-29
¹⁵ Tolhurst T11739 line 7-9 (in answer to a question from Commissioner McLeod)
¹⁶ Tolhurst, T11740 line 3-4
¹⁷ Tolhurst, T11740 line 8
¹⁸ Tolhurst, T11743 line 10-14
¹⁹ Cowan, T3730, 3751
²⁰ Murphy, T1280; IMS entry: WIT.004.002.1466
²¹ IMS entry, ex 2: WIT.004.002.1466
²² Cowan, T3731-2; see also Munn, T1355-6
²³ Munn, T1357
²⁴ Munn, T1357
²⁵ Munn, T1359: the draft was deleted: Munn, ex 44, [26].
²⁶ Tolhurst T11736 line 25.
²⁷ WIT.004.002.0423-0424

No	Time	Event	Mapped observations	Origin	Title of map and reference	Comments	IECC receipt
18	1350	Map generated	Fire perimeter captured by Linescan Firemap – fire area assessed: 1338	GDA Model Produced within "firemap" Clonbinane – Equestrian Centre – Approx Perimeter 07/02/2009" WIT.004.002.0405 ²⁸	"Kilmore East – Saunders Road, Clonbinane – Equestrian Centre – Approx Perimeter 07/02/2009" WIT.004.002.0405 ²⁸	10 minutes later, a fire area assessment is added to the preceding linescan map – unclear by whom – Tolhurst was not aware of it until shown it during his evidence. ³⁰ See Attachment F	
19	1353	Map generated	Fire perimeter from observations between 1338-1352	CFA EIMS Mapper "20090207_120225_Kilmore_11352" WIT.004.002.0388 ³¹	Fire twice the length compared to width at 1245. ³² See Attachment G	Map received in the IECC at 1402. ³³	
20	1358		Fire crosses Hume Highway. ³⁴			IMS entry	
21	1400		A prediction map of the Kilmore fire is requested by the IECC. ³⁵ Tolhurst within the IECC commences working on it. ³⁶				
22	1412		Coleman (Pretly Sally tower) tells Keating (Kangaroo Ground tower) that fire heading for Mt Disappointment and Kinglake West, ³⁷ but not passed on to Kangaroo Ground ICC. ³⁸				
23	1413		Kangaroo Ground Fire Tower observes burnt leaves falling in Kangaroo Ground area from Kilmore fire. ³⁹				
24	1416	Map generated	Fire perimeter from linescan at 1233 together with spotting observations on perimeter of fire	GDA model produced within "firemap" "Kilmore Saunders Road A3 Overview Map" – SUMM.035.002.0129	Linescan outline of Kilmore fire together with spotting indicated. See Attachment H		
25	1430		Draft awareness message prepared by Kangaroo Ground ICC. ⁴⁰				
26	1433		Haynes (CFA) on ABC radio says the fire is spotting into Wandong. ⁴¹			Haynes	
27	1437	Map generated	GDA Model produced on "firemap"	"Kilmore Saunders Road Media Map" WIT.004.002.0308	Media map. When created, the map is nearly 2 hours out of date as it records the linescan taken at 1245. It was not distributed for a further 2 hours, at 1611 hrs. See Attachment I		
28	1435		Strath fire tower spotter in Mt Disappointment state park evacuates, ⁴² signifying serious issue to Cowan. ⁴³				

28 WIT.013.001.0220

29 Also produced at WIT.004.002.0404; WIT.004.002.0389; WIT.004.002.0396.

30 Tolhurst, T1750 line 11-12

31 Also attached to Rees statement, vol 7, WIT.004.002.0417

32 Tolhurst, T1741 line 30

33 WIT.004.002.0433-0434

34 IMS entry: WIT.004.002.1466

35 Tolhurst, T1777

36 Tolhurst, T1107-8; ex 38: SUMM.035.002.0031.

37 Keating, T3227: VPO.001.002.0237_003_R.

38 Keating, T3245; Munns, T1355

39 Keating log, VPO.001.002.0237_003_R

40 WIT.3004.001.0107; Munns, ex 44, [28]

41 ABC radio transcript, ex 7: SUMM.001.002.0245

No	Time	Event	Mapped observations	Origin	Title of map and reference	Comments	IECC receipt
29	1440	Alert message for Kilmore East, Wandong and Clonbinane. ⁴⁴					Message published
30	1440	Map considered			The map has not been produced to the Commission	Barca looked at a map with the Kangaroo Ground Information Officer and ran his finger along where he thought the path of the fire was going to be, leading him to conclude the communities at risk were Kinglake, Kinglake West, Strathewen, St Andrews, Steels Creek, Flowerdale, Humevale and surrounding towns and areas ⁴⁵	
31	After 1440 ⁴⁶	Map generated	Fire spread analysis	Marshall and Cowan in Kangaroo Ground ICC	Hand drawn. The map has not been produced to the Commission	Barca instructed Marshall at around 1440 to prepare a map. ⁴⁷ Cowan was instrumental in preparing it. ⁴⁸ The map was hand drawn and corresponded largely to Barca's own analysis (see entry at 1440 above). ⁴⁹	
32	1459	IMS entry reports "Prognosis as follows: from AAS the fire front will not be held and aircraft are only capable of protection. This fire will run south and east. potential areas impacted include Upper Plenty, Eden Park and Whittlesea" ⁵⁰				IMS entry	
33	1500	Draft urgent threat message for Humevale, Upper Plenty and others, prepared by Kangaroo Ground ICC, but which does not go out. ⁵¹					
34	1502	Draft alert message that the communities of Kinglake West, Kinglake, Pheasant Creek, Strathewen, Arthurs Creek, Doreen, Yanewen, Woodstock, Mernda, Nutfield, Mittens Bridge, Hursbridge, St Andrews, Panton Hill, Arthurs Creek, Smiths Gully, Christmas Hills, need to be aware that the activity in the area has increased and has the potential to impact directly. ⁵² This was based on information received from the Kangaroo Ground Fire Tower. ⁵³					
35	1505	Urgent threat message for Hidden Valley. ⁵⁴				Message published	
36	1509	Kangaroo Ground Fire Tower informs Kangaroo Ground ICC that a fire has started at Glenburn (near Murrindindi). ⁵⁵					
37	1510	Map generated	Fire prediction map	CFA EIMS map	20090207_1428_Kilmore_Saunders_Road; time stamped 1510 hrs WIT.3004.009.0022	Draws confirmed fire edge and predicted perimeter path of fire, and spotting area, past Kinglake Kangaroo Ground ICC mappers found and downloaded at 1600, but was not used by Cowan. ⁵⁶ See attachment J	

⁴² Munns, T1359
⁴³ Cowan, T13734
⁴⁴ Rees, ex 3, annexure 31: WIT.004.001.0530.
⁴⁵ Barca, T3469
⁴⁶ Produced some time after 1440: Barca, T3469
⁴⁷ Barca, T3469
⁴⁸ Barca, T3472; see Cowan, T3736
⁴⁹ Barca, T3469; Cowan, T3734-5
⁵⁰ IMS entry: WIT.004.002.1466
⁵¹ Munns, T1360-61; WIT.3004.001.0109.
⁵² Munns, T1361
⁵³ Munns, T1362
⁵⁴ Rees, ex 3, annexure 31: WIT.004.001.0537.
⁵⁵ Munns, T1360
⁵⁶ Cowan, ex 115, [21]: T3738

No	Time	Event	Mapped observations	Origin	Title of map and reference	Comments	IECC receipt
38	1515	Victoria Police officer climbs Kangaroo Ground Fire Tower and tell operator there (Keating) to alert the Kangaroo Ground ICC if fire spotting is observed into Upper Plenty given it has already spotted south of Wallam-Whittlesea Road and that spotting had occurred into Arthurs Creek (attended by CFA). ⁵⁷					
39	1521	Map generated	Fire perimeter	CFA EIMS mapper	WIT.004.002.0427	Perimeter of the fire according to observations taken up to 1516. See Attachment K	Received in the IECC at 1529. ⁵⁸
40	1528	Map generated	Fire prediction map	Prepared by Sutton (Fire Behaviour Analysis Unit team leader in the IECC)	A2 hand drawn on map printed at 1511 hrs DSE.CD03.001.0035 EXH.122.0001	Prediction and spotting lines indicate Kinglake in path of fire. Hand-made amendments take into account further information provided by aircraft surveillance (1530 hrs) and also information provided about the timing of the expected wind change, that it would come earlier. ⁵⁹ Sutton discussed it with Tolhurst. ⁶⁰ Location of the fire at 1530 from aircraft observation was marked on map in evidence by Sutton. ⁶¹ Fore-runner to hand-drawn map at 1615 hrs. See attachment L	FBAN Unit map
41	1530	Aircraft report in IECC of location of fire in Mt Disappointment state park showed fire further advanced than predicted. ⁶²					Aircraft report
42	1530	IECC telephoned Munns saying they would send through an Urgent Threat Message from Kilmore, but it did not arrive. ⁶³					Telephone call about messages
43	1530	Kangaroo Ground IMT meeting predicts spotting into Kinglake ⁶⁴					
44	1535	Kangaroo Ground ICC receives report of spot fire in Humevale ⁶⁵					
45	1538	Kangaroo Ground Fire Tower reports to Kangaroo Ground ICC that it can see a smoke column at 3,000 ft, heading towards Narbathong and was "huge". ⁶⁶					
46	1544	Haynes (CFA) on ABC radio says the Kilmore fire is in the top 6 fires in the State ⁶⁷					Haynes
47	1550	Lawrence given grid reference for head of fire by Dally (Regional liaison in Kilmore ICC) ⁶⁸					
48	1553	Urgent threat message for Whittlesea. ⁶⁹					Message published

⁵⁷ Keating, ex 98, log: VPO.001.002.0237_004_R; Keating, T3230

⁵⁸ WIT.004.002.0427-0428

⁵⁹ Sutton, T4065; Tolhurst, T1783

⁶⁰ Sutton, ex 122, [67]; although Tolhurst did not recall it: Tolhurst, T1782

⁶¹ Annotated by Sutton when giving evidence: Sutton, T4091.

⁶² Sutton, T4065, 4069

⁶³ Munns, ex 44, [33]: WIT.3004.001.0072

⁶⁴ Barca, T3475

⁶⁵ Barca, T3475

⁶⁶ Munns, T1363

⁶⁷ ABC radio transcript, ex 7: SUMM.001.002.0284

⁶⁸ Lawrence, T1593; Lawrence, ex 50, log: WIT.3004.001.0212

No	Time	Event	Mapped observations	Origin	Title of map and reference	Comments	IECC receipt
49	1555	See Attachment M	A modis satellite image becomes available at this time, showing the approaching cold front and an alignment of fires and smoke plumes together with cloud pattern. ⁷⁰				
50	1556	Urgent threat message for Hidden Valley (again). ⁷¹					Message published
51	1600	Map generated	Fire shape	CFA GIS	Lower Yarra Catchment WIT.3004.009.0024	Confirmed edge at 1600 hrs downloaded from GIS Ground ICC. Prediction lines added by Cowan and printed at 1705, and used for general discussion. ⁷² See attachment N	
52	1600	Kangaroo Ground Fire Tower informed that embers are falling into Smiths Gully. ⁷³ Kangaroo Ground ICC informed of ember attack at Kinglake West, Coombs Rd, Eagle Nest and Paton Hill area. ⁷⁴ Barca logs need for Kinglake to receive threat messages. ⁷⁵					
53	1600	Joint CFA/DSE fire situation report refers to Kilmore fire as significant at 1,000 ha, and could impact on Whittlesea within 5 hours. ⁷⁶					Report
54	1605	Urgent threat message for Hidden Valley (again). ⁷⁷					Message published
55	1608	DSE fire situation report notes spotting activity in Kinglake West ⁷⁸					Report
56	1610	Murphy approves urgent threat message No 6 for communities including Clonbinane, Kinglake and Humevale. ⁷⁹ It is not published to the CFA website or ABC radio, but is sent to the IECC at 1635 and see Haynes comments on radio at 1639. ⁸⁰					
57	1611	Email distribution of 1437 media map ⁸¹					
58	1615	Map generated	Fire prediction spread as of 1600 hrs	Sutton's hand drawings on map generated from "Fire Map" - GDA Model	Hand drawn A3 "Kilmore Fire Prediction Map" WIT.004.002.0386 WIT.004.002.0410 DSE.CD03.0001.0007 TEN.020.002.0001	Prepared by Sutton from larger A2 map (see entry at 1528 hrs). Distributed within the IECC by Siljeovic, ⁸² including to Paterson (CFA State Duty Officer) See Attachment O and P	FBAN Unit map Map distributed
59	1630	BOM updated wind change chart, predicting change in greater Melbourne area between 5.00-6.30 pm, ⁸³ and Kilmore before 8pm. ⁸⁴					BOM forecast received

⁶⁹ Rees, ex 3; annexure 31: WIT.004.001.0542.
⁷⁰ See EXP.003.001.0023; M Williams (BOM), T741
⁷¹ Rees, ex 3; annexure 31: WIT.004.001.0543.
⁷² Cowan, ex 115, [23]
⁷³ Keating, ex 98, log: VPO.001.002.0237_004_R; Keating, T3231; Munns, T1364
⁷⁴ Barca, T3477
⁷⁵ Barca, T3477
⁷⁶ WIT.004.002.0332
⁷⁷ Rees, ex 3, annexure 31: WIT.004.001.0546.
⁷⁸ WIT.004.002.1042
⁷⁹ Murphy, T1273; WIT.3004.001.0031.
⁸⁰ Hunter sent it by email to Caughey in the Seymour RECC: Caughey, ex 52, [36]; Hunter, ex 55, [18]. See entries at 1635 and 1639 hrs below.
⁸¹ WIT.004.002.0305-308
⁸² Sutton, ex 122, [71]; T4070
⁸³ WIT.013.001.0231

No	Time	Event	Mapped observations	Origin	Title of map and reference	Comments	IECC receipt	
60	1635	Urgent threat message for the Humevale, Nutfield and Arthurs Creek district. ⁸⁵						Message published
61	1635	Caughey emails to IECC (and faxes shortly thereafter) urgent threat message No 6, approved by Lawrence at 1610 ⁸⁶						Urgent threat message No 6 emailed
62	1635	Sutton told by S Williams (BoM in IECC) of wind change advanced to 1900–2000 hrs ⁸⁷						Weather update
63	1636	Kangaroo Ground ICC (led by Lawrence) becomes divisional command for the Kilmore fire, but not the control ICC, yet declines to issue "urgent threat message" regarding the Kilmore Fire. ⁸⁸						
64	1639	Haynes (CFA) on ABC radio says that Kinglake and other communities "may be directly impacted on the fire in the coming timeframe" ⁸⁹						Haynes
65	1642	Waller, Slijepovic and Sutton discuss Sutton's hand drawn 1615 hrs map ⁹⁰						Discussion of Sutton's map
66	1644	Kangaroo Ground ICC prepares "fire information release" at the request of DSE which did not go out. ⁹¹						
67	1645	Kangaroo Ground divisional command meeting ⁹²						
68	1650	Sutton told by S Williams (BoM in IECC) of wind change advanced to 1830 hrs, and Sutton briefed others in the IECC ⁹³						Weather update
69	1650	Fire spread prediction report ⁹⁴ produced in the IECC by Sutton with input from Tolhurst. ⁹⁵ The report notes the wind change time had been updated by BoM to 1830: p2. ⁹⁶ It attaches Sutton's hand drawn fire prediction map, however the projections on the hand-drawn map did not reflect the change because it would take too long, and so the wind change was merely put in as an assumption rather than re-drawing the map. ⁹⁷ The report notes a fire impact zone map will be prepared if requested – one was not produced until 1804 (see below).						Report
70	1655	The 1615 hand drawn Kilmore fire prediction map prepared at the IECC ⁹⁸ is faxed to Kim Morris in Kangaroo Ground ICC (9712 0145) ⁹⁹ and the SERCC (9247 6549). ¹⁰⁰						

⁸⁴ M Williams, T765

⁸⁵ Rees, ex 3, annexure 31: WIT.00.001.0554.

⁸⁶ EXH.100.0003; also faxed at 1638: Caughey, ex 52, [36]; Seymour RECC fax log, ex 53; Caughey, T1712

⁸⁷ Sutton, ex 122, [69]

⁸⁸ Munns, T1366

⁸⁹ ABC radio transcript, ex 7: SUMM.001.002.0319.

⁹⁰ Sutton, T4070

⁹¹ Munns, T1365

⁹² Barca, T3481

⁹³ Sutton, T4081, 4089

⁹⁴ DSE.0108.0911.0002

⁹⁵ Stated as being prepared at 1600 hrs, but Sutton, ex 122, [72] puts it at "around this time" *ie* 1642 hrs, and see following text noting timing of update on wind change; Tolhurst puts it at around 1630: T1109, 1778, 1784

⁹⁶ Consistent with Sutton and Tolhurst's evidence of awareness: as to Sutton, see entries at 1635 and 1650 above; as to Tolhurst, see T1779-1780

⁹⁷ Tolhurst, T1779-80

⁹⁸ WIT.004.002.0410.

⁹⁹ Lawrence, T1629; Munns, T1379.

¹⁰⁰ Collins, T2179, 2219.

No	Time	Event	Mapped observations	Origin	Title of map and reference	Comments	IECC receipt	
71	1705	Map generated	Fire spread prediction	Cowan	"Lower Yarra Catchment" WIT.3004.009.0024	Prediction lines prepared by Cowan ¹⁰¹ See attachment Q (same as Attachment N at item 51 above)		
72	1705	Parkyn (BoM in IECC) called Kilmore ICC re wind change coming faster at 1830 ¹⁰²						
73	1711	Kilmore ICC reports that wind change is coming through faster than expected and should hit the western flank at 1830 ¹⁰³						IMS entry
74	1720	Kilmore ICC (Kreltszheim) authorised Urgent Threat Message No 7 for Kinglake to Flowerdale. ¹⁰⁴ A message in those terms did not appear on the CFA website until 1755 hrs. ¹⁰⁵						
75	1720	Kangaroo Ground ICC prepared Urgent Threat Message for communities of Wandon, Wallan, Wallan East, Eden Park, Whittlesea, Humevale, Bruces Creek, Upper Plenty, Kinglake West, Pheasant Creek, Smiths Gully, Kinglake, Flowerdale, Glenburn, Hurstbridge, indicating that they may be impacted by the fire. ¹⁰⁶ This was sent out because the communications were down at the Kilmore ICC. ¹⁰⁷ A message in those terms did not appear on the CFA website until 1845 hrs. ¹⁰⁸						
76	1731	Email distribution of joint CFA/DSE fire situation report for 1600 hrs ¹⁰⁹						
77	1737	Kilmore spot fire weather forecast (requested at 5pm) predicts wind change at 6.30–7pm, noting acceleration into Central Victoria ¹¹⁰						
78	1743	Red flag warning of wind change ¹¹¹ called by Kangaroo Ground fire spotting tower						
79	1743	Map generated	1400 & 1530 field observations	GDA Model ArcGIS software used ¹¹²	"Kilmore Predicted Fire Spread 1400hrs 7 Feb to 2100hrs 7 Feb 2009" WIT.004.002.0399	This map is the "digitalised" version of the hand-drawn map at 1600 hrs, containing essentially identical information (with outer boundaries of potential spotting), but still did not take into account updated wind change timing from 2100 to 1830. See Attachment R		
80	1746	Heavy spotting reported by Kangaroo Ground Fire Tower at multiple locations including St Andrews, Bowden Spur, Bald Spur, Kinglake. ¹¹³						
81	1748	Kangaroo Ground ICC first urgent message threat sent out to Kilmore ICC, IECC, and other locations. ¹¹⁴						Message published
82	1755	Urgent threat message issued for areas including Kinglake to Flowerdale ¹¹⁵						

¹⁰¹ Cowan, ex 115, [23]; T3739-40

¹⁰² M Williams (BoM), ex 22: WIT.013.001.0074.

¹⁰³ IMS entry, ex 2: WIT.004.002.1467

¹⁰⁴ Kreltszheim, ex 42, [32].

¹⁰⁵ Rees, ex 3, annexure 31: WIT.004.001.0577

¹⁰⁶ Munns, T1367

¹⁰⁷ Munns, T1367; Munns, ex 44, [40]; WIT.3004.001.0116

¹⁰⁸ Rees, ex 3, annexure 31: WIT.004.001.0592

¹⁰⁹ WIT.004.002.0330

¹¹⁰ WIT.013.001.0240

¹¹¹ Cooper, ex 99, WIT.04.001.0004; T3261; Keating log, VPO.001.002.0237_005_R; Keating, T3238 (log at VPO.001.002.0237_005_R records the red flag warning at around 1842 but evidence, Keating confirmed that the warning was issued just after the wind change at the Tower, which occurred between 1745-1755: State of Victoria put to Keating, T3247

¹¹² The fire behaviour analysts who produced this map in the IECC used ArcGIS software, being a geographical information system: Tolhurst, T1754

¹¹³ Keating, ex 98, log: VPO.001.002.0237_004_R; Keating, T3235

¹¹⁴ Munns, T1367-8

¹¹⁵ Rees, ex 3, annexure 31: WIT.004.001.0577.

No	Time	Event	Mapped observations	Origin	Title of map and reference	Comments	IECC receipt
83	1800	Fire spread prediction report as at 1800 hrs (headed "Kilmore Saunders Road Fire", but described in evidence by Sutton as having been prepared for the Murrindindi Mill fire) ¹¹⁶					
84	1819	Map generated	Potential fire impact zone with information as at 1400	GDA Model	"Kilmore Potential Fire Impact Zone - From 1400hrs Feb 7 to 2100hrs Feb 7 2009" WIT.004.002.0406 SUMM.035.003.0046. DSE.HDD.0005.8329	Completed at 1819 hrs by Sutton's trainee, Bernadette Hoare. ¹¹⁷ This was the first map produced by the fire analysts within the IECC for the purposes of public warnings. Based on Sutton's hand drawn fire prediction map (1415 hrs). ¹¹⁸ See Attachment S	
85	1825	IMS entry notes wind change at 1815 hrs and pager message sent at request of Kilmore ICC. ¹¹⁹					IMS entry
86	1826	The Kangaroo Ground ICC urgent threat message (prepared at 1720 and faxed at 1748 (see above)), is also faxed to the RECC and again to the Kilmore IECC at 1826. ¹²⁰					
87	1830	Fire has reached Kinglake					
88	1839	Sutton sends to Situation Unit (IECC) his fire spread prediction report (1650 hrs), digitalised version of fire prediction map (1615 hrs) and a fire impact zone map (1819 hrs). ¹²¹					Report and digitalised maps distributed in IECC
89	1845	Urgent threat message to Kinglake West, Pheasant Creek and others timed 5.20 pm. ¹²²					Message published
90	1857	Email distribution ¹²³ of Sutton's digitalised version of fire prediction map (1615 hrs) and a fire impact zone map (1819 hrs) ¹²⁴					
91	2000	Map generated	Fire prediction map	GIS operators and Cowan in Kangaroo Ground ICC	"Kilmore Saunders Road 1:600,000" WIT.3004.009.0026	Shows confirmed edge of fire, spot fires and the effect of wind change See attachment T	
92	2028	Map generated	Burnt area with information as at 1800	GDA model	"Murrindindi potential fire impact zone – from 1745 hrs Feb 7 to 2300 hrs Feb 7 2009" WIT.004.002.0387	Shows burnt area re Kilmore East fire. See Attachment U	
93	2035	Urgent threat message for Kinglake to Flowerdale (again). ¹²⁵					Message published

¹¹⁶ Sutton, ex 122, annexure 21: DSE.HDD.0005.2968

¹¹⁷ Sutton, ex 122, [74]

¹¹⁸ Sutton, ex 122, [72]

¹¹⁹ IMS entry, ex 2: WIT.004.002.1467.

¹²⁰ Munns, T1368-9

¹²¹ Sutton, ex 122, [74]; cf Tolhurst said his enquiries showed this to have happened at 1817 hrs: Tolhurst, T1109, 1146.

¹²² Rees, ex 3, annexure 31: WIT.004.001.0592.

¹²³ Sutton, ex 122, [75]

¹²⁴ DSE.HDD.0005.8329

¹²⁵ Rees, ex 3, annexure 31: WIT.004.001.0616.

No	Time	Event	Mapped observations	Origin	Title of map and reference	Comments	IECC receipt	
94	2045	Map generated	1925 fire perimeter captured from ground observations	GDA Model	"Kilmore East – Saunders Road – Ground Observations 1925hrs 07/02/2009" WIT.004.002.0394	The linescan does not show the fire as having reached Kinglake even though by 1925 the fire had done so. See Attachment V		
95	2110	Urgent threat message for Kinglake to Flowerdale (again). ¹²⁸						Message published
96	2145	Linescan conducted						
97	2206	Urgent threat message for communities near Wandong. ¹²⁷						Message published
98	2308	Map generated	2244 & 2259 observations of active fire area	Generated on CFA's EIMS Mapper	"Kilmore East & Murrindindi Fires" WIT.004.002.0384	Shows burnt areas re Kilmore East and Murrindindi fires See Attachment W		
99	8/2/09 0030	Map generated	2145 linescan	GDA Model	"Kilmore East Fire Perimeter – Linescan 2145hrs 07/02/2009" WIT.004.002.0382	The linescan does not show the fire as having reached Kinglake even though by 2145 the fire had done so. There was evidence that the linescan may not pick up fire through clouds. ¹²⁸ See Attachment X		
100	8/2/09 0437	Map generated	Satellite hotspots and burnt area	GDA Model	"Yea-Murrindindi (Initial Incomplete Data)" WIT.004.002.0443	Shows part of Kilmore East fire having passed through Kinglake and spotting further south. See Attachment Y		

¹²⁶ Rees, ex 3, annexure 31: WIT.004.001.0628.
¹²⁷ Rees, ex 3, annexure 31: WIT.004.001.0636.
¹²⁸ Tolhurst, T11144; Griffiths, T829.