



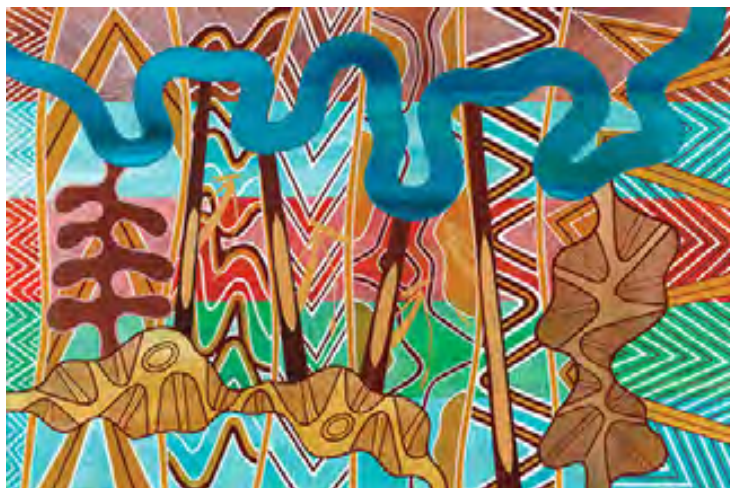
Victorian Regional Forest Agreements

Major Event Review of the 2019–20 bushfires

March 2022

Acknowledgement

The Independent Panels for the Major Event Review of the 2019–20 bushfires acknowledge and respects Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it. The Panel respects Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices and acknowledges the harm Country experienced during the 2019-20 bushfire event.



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This report has been prepared in accordance with the scope outlined in the Scoping Agreement for the Major Event Review to assess the impacts of the 2019-20 bushfires signed by the Commonwealth of Australia and the State of Victoria in November 2020.

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Abbreviations

AANP	Australian Alps National Parks
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ACHRIS	Aboriginal Cultural Heritage Register and Information System
AHC Act	Australian Heritage Commission Act
AIIMS	Australasian Inter-service Incident Management System
BAC	Bangerang Aboriginal Corporation
BBRR	Bushfire Biodiversity Response and Recovery
BRP	Bushfire Response Plan
BRV	Bushfire Recovery Victoria
CAR	Comprehensive, adequate and representative
CCR	Chief Conservation Regulator
CES	Commissioner for Environmental Sustainability, Victoria
CFA	Country Fire Authority
CHDs	Critical Habitat Determinations
CRAs	Comprehensive Regional Assessments
CRC	Cooperative Research Centre
DAWE	Department of Agriculture, Water and Environment
DDAC	Duduroa Dhargal Aboriginal Corporation
DELWP	Department of Environment, Land, Water and Planning
DEPI	Department of Environment and Primary Industries
DJPR	Department of Jobs, Precincts and Regions
DWMAC	Dalka Warra Mittung Aboriginal Corporation
DWNAC	Dhuduroa Waywurru Nations Aboriginal Corporation
EMAC	Eastern Maar Aboriginal Corporation
EPBC Act	Environment Protection and Biodiversity Conservation Act
ESFM	Ecologically Sustainable Forest Management
EVC	Ecological Vegetation Class
FAME	Fire Analysis Module for Ecological Values
FFG Act	Flora and Fauna Guarantee Act
FFMVic	Forest Fire Management Victoria
FVTOC	Federation of Victorian Traditional Owner Corporations
GIS	Geographic Information System
GMTOAC	Guditj Mirring Traditional Owner Aboriginal Corporation
GLaWAC	Gunaikurnai Land and Waters Aboriginal Corporation

GMZ.....	General Management Zone
GMA.....	Geometric Mean Abundance
HCO.....	Habitat Conservation Orders
HVP	Hancock Victorian Plantations
ICC	Incident Control Centre
IGEM	Inspector-General of Emergency Management
IMT	Incident Management Team
IPAs	Immediate Protection Areas
IUCN.....	International Union for Conservation of Nature
JFMP	Joint Fuel Management Program
LiDAR	Light detection and ranging
MER.....	Major Event Review
MNES	Matters of National Environmental Significance
MOG	Modelled Old Growth
NGA.....	National Greenhouse Accounts
OCR.....	Office of the Conservation Regulator
PLM25	Public Land Management dataset
RFAs.....	Regional Forest Agreements
RRAT	Rapid Risk Assessment Team
RAP	Registered Aboriginal Parties
SCRM	Snowy Cann River Mob
SEMP	State Emergency Management Plan
SI	Spectral Indices
SMP.....	Strategic Management Prospects
SMZ.....	Special Management Zone
SPZ.....	Special Protection Zone
TFI	Tolerable Fire Interval
TLaWC	Taungurung Land and Waters Council
TRP	Timber Release Plan
TSCRA.....	Threatened Species and Communities Risk Assessments
TSSC	Threatened Species Scientific Committee
VAA.....	Victorian Apiarists Association
VAGO	Victorian Auditor-General's Office
VBA.....	Victorian Biodiversity Atlas
VEAC.....	Victorian Environmental Assessment Council
VFP.....	Victorian Forestry Plan

Figures

Figure 1. Overview of management responsibilities for forested public land	19
Figure 2. Victoria's policy, planning and regulatory framework for forest management	20
Figure 3. Map of the fire extent and severity within the East Gippsland RFA.....	25
Figure 4. Map of the fire extent and severity within the Gippsland RFA.....	26
Figure 5. Map of the fire extent and severity within the North East RFA.....	27
Figure 6. Map of the fire extent and severity in the West RFA	27
Figure 7. Map of the fire extent and severity in the Central Highlands RFA.....	28
Figure 8. Immediate Protection Areas (indicative).....	38
Figure 9. Area of public land across all RFAs burnt while below minimum TFI, Victoria, 1980–2021	60
Figure 10. TFI status of vegetation on public land, East Gippsland RFA, 1980-2021	61
Figure 11. Map of Australian Alps National Parks and reserves.....	67
Figure 12. Map of Alpine National Park and areas impacted by high-severity fires (Class 5 and Class 6).....	71
Figure 13. Victoria's threatened plants Threatened Species Index	80
Figure 14. Victoria's threatened birds Threatened Species Index.....	80
Figure 15. Victoria's threatened mammals Threatened Species Index	81
Figure 16. Alpine bogs with respect to 2019–20 fire extent (pink), by broad region, with burnt bogs (red) and unburnt bogs (blue)	90
Figure 17. Spatial distribution of interim protection areas for Warm Temperate Forest, Orbost Spiny Crayfish, Giant Burrowing Frog, Greater Glider and East Gippsland Galaxias in East Gippsland RFA region	116
Figure 18. Spatial distribution of interim protection areas for Warm Temperate Forest, Tapered Galaxias, West Gippsland Galaxias, Giant Burrowing Frog and Dargo Galaxias in Gippsland RFA region	116
Figure 19. Old growth areas per RFA region across time.....	152
Figure 20. Difference in total evapotranspiration before and after fire for mixed species eucalypt forests in response to varying fire severity and tree mortality	175
Figure 21. Modelled streamflow based on evapotranspiration measurements for <i>Eucalyptus regnans</i> (red line) and <i>Acacia dealbata</i> (blue and dash lines)	176
Figure 22. Central Highlands RFA region regeneration performance	260
Figure 23. East Gippsland RFA region regeneration performance.....	260
Figure 24. Gippsland RFA region regeneration performance	261
Figure 25. North East RFA region regeneration performance	261
Figure 26. Forests of far eastern Victoria burnt one to 4 times by major bushfires since 2000.....	273
Figure 27. Location of areas in eastern Victoria burnt at high severity by multiple bushfires since 2000	275

Tables

Table 1. CAR type and tenure by RFA region (ha) recorded in 2018	37
Table 2. Impacts on the CAR reserve system and related components, by type of protection	40
Table 3. Area and percentage of tenure within 2019–20 bushfire extent	41
Table 4. Area and percentage* of tenure in 2019–20 bushfire extent burnt at high severity	41
Table 5. Listed species and communities impacted by the 2019–20 bushfires in East Gippsland RFA region	43
Table 6. Listed species and communities impacted by the 2019–20 bushfires in Gippsland RFA region	46
Table 7. Listed species and communities impacted by the 2019–20 bushfires in North East RFA region	48
Table 8. Listed species and communities impacted by the 2019–20 bushfires in West Victoria RFA region	50
Table 9. Impact of 2019–20 bushfires on forested EVCs in East Gippsland RFA region, by fire extent and severity	52
Table 10. Impact of 2019–20 bushfires on non-forested EVCs in East Gippsland RFA region, by fire extent and severity	53
Table 11. Impact of 2019–20 bushfires on forested EVCs in Gippsland RFA region, by fire extent and severity	53
Table 12. Impact of 2019–20 bushfires on non-forested EVCs in Gippsland RFA region, by fire extent and severity	54
Table 13. Impact of 2019–20 bushfires on forested EVCs in North East RFA region, by fire extent and severity	54
Table 14. Impact of 2019–20 bushfires on non-forested EVCs in North East RFA region, by fire extent and severity	55
Table 15. Representative conservation (% reservation status) of EVCs in CAR reserve system in 2019–20 bushfire-affected RFAs with <60% reserve status and >50% of extent impacted by fire	59
Table 16. Extent of Australian Alps National Parks by RFA	66
Table 17. Impact of the 2019–20 bushfires on Australian Alpine National Parks, by fire extent and high severity	71
Table 18. Impact of 2019–20 bushfires on southern heaths species with modelled habitat distribution within Australian Alps National Parks in Victoria	73
Table 19. Impact of 2019–20 bushfires on orchid species with modelled habitat distribution within Australian Alps National Parks in Victoria	74
Table 20. Impact of 2019–20 bushfires on pimeleas species with modelled habitat distribution within Australian Alps National Parks in Victoria	74
Table 21. Impact of 2019–20 bushfires on cold-climate adapted and endemic fauna species with modelled habitat distribution within Australian Alps National Parks in Victoria	75
Table 23. Species that have more than 50% of extent within AANP impacted by fire and have more than 50% of extent within AANP compared to overall extent across Victoria state	78
Table 24. Numbers of recorded native and introduced species per taxon group in the Victorian Biodiversity Atlas .	82
Table 25. Overall bushfire impact (extent and severity) of FFG Act listed species on modelled habitat in their current extent, by taxon group	85
Table 26. FFG Act listed communities impacted by 2019–20 bushfires, by fire extent and high severity with modelled extent	86

Table 27. EPBC Act listed threatened species known or likely to occur in Victorian RFA regions, and species only listed under the EPBC Act.....	87
Table 28. EPBC Act listed species impacted by the 2019–20 bushfires, by extent and high severity, out of 206 species.....	88
Table 29. EPBC Act listed communities impacted by the 2019–20 bushfires	89
Table 30. Areas of alpine bog within the extent of the 2019–20 fires, by broad region	90
Table 31. Condition and threat information for alpine bogs within the 2019–20 fire extent	91
Table 32. FFG Act and EPBC Act listed species impacted by fire and high fire severity across more than 10% of habitat in East Gippsland RFA region.....	92
Table 33. FFG Act and EPBC Act listed communities impacted by the 2019–20 bushfires (extent, severity and multiple high-severity impact) in East Gippsland RFA region	93
Table 34. FFG Act and EPBC Act listed species impacted by fire and high fire severity across more than 10% of habitat in North East RFA region	94
Table 35. FFG Act and EPBC Act listed communities impacted by 2019–20 bushfires (extent, severity and multiple high-severity impact) in North East RFA region	95
Table 36. FFG Act and EPBC Act listed species impacted by fire and high fire severity across more than 10% of habitat in Gippsland RFA region.....	96
Table 37. FFG Act and EPBC Act listed communities impacted by 2019–20 bushfires (extent, severity and multiple high-severity impact) in Gippsland RFA region	97
Table 38. Potential response actions across Phases 1, 2 and 3 time frames	103
Table 39. List of 70 species and nine communities identified in risk assessment, with associated listing status.....	111
Table 40. Hazards, their impacts, and the number of species at risk	113
Table 41. Hazards and the number of terrestrial species in each taxon at risk	114
Table 42. Summary table of interim protection and management actions recommended after threatened species and communities risk assessment	115
Table 43. Impact of 2019–20 bushfire on 70 listed species across RFA regions in Victoria.....	120
Table 44. Impact of 2019–20 bushfires on Listed Communities across RFA regions in Victoria	121
Table 45. Listed species impacted by the 2019–20 bushfires in East Gippsland region.....	122
Table 46. Listed communities impacted by the 2019–20 bushfires in East Gippsland RFA region	123
Table 47. Listed species impacted by the 2019–20 bushfires in Gippsland RFA region	124
Table 48. Listed communities impacted by the 2019–20 bushfires in Gippsland RFA region	125
Table 49. Listed species impacted by the 2019–20 bushfires in North East RFA region	125
Table 50. Listed community impacted by the 2019–20 bushfires in North East RFA region	126
Table 51. Listed species and communities impacted by the 2019–20 bushfires in West Victoria RFA region	126
Table 52. Source of bushfire impact (by fire extent and high fire severity) assessment for FFG Act listed species	127
Table 53. FFG Threatened List species, with conservation status, that were identified as having no bushfire impact assessment.....	128
Table 54. Species listed as Critically Endangered that were found to have no records of bushfire impact assessment in DELWP's system	130

Table 55. Modelled old growth forest distribution, by RFA.....	141
Table 56. Protection status of modelled old growth forest by formal and informal reserves prior to 2019–20 bushfires.....	141
Table 57. Potential impacts on old growth forests within categories of the CAR Reserve System (Dedicated reserve and Special Protection Zone) by RFA region	142
Table 58. Severity categories of 2019–20 bushfires in modelled old growth forest areas in East Gippsland RFA region	143
Table 59. Impact of Class 5 and Class 6 fire severity on old growth EVCs in East Gippsland RFA region.....	144
Table 60. Severity categories of 2019–20 bushfires in modelled old growth forest areas in Gippsland RFA region.....	145
Table 61. Impact of Class 5 and Class 6 fire severity on old growth EVCs in Gippsland RFA region	147
Table 62. Severity categories of 2019–20 bushfires in modelled old growth forest areas in North East RFA region	148
Table 63. Impact of Class 5 and Class 6 fire severity on EVCs in North East RFA region.....	149
Table 64. Modelled old growth forest extent burnt by high-severity fires and exposed to potential timber harvesting, by RFA region and EVC	154
Table 65. Number of Victorian Heritage Register sites impacted by 2019–20 bushfires (extent and severity)	158
Table 66. Victorian Heritage Register sites within 2019–20 bushfire extent and impacted by Class 5 and Class 6 fire severity.....	159
Table 67. Number of Victorian Heritage Inventory sites impacted by bushfire (extent and severity).....	159
Table 68. Victorian Heritage Inventory sites within 2019–20 bushfire extent and impacted by Class 5 and Class 6 fire severity.....	160
Table 69. Number of State Forest Historic Places sites impacted by bushfire (extent and severity)	162
Table 70. State Forest Historic Places sites within 2019–20 bushfire extent and impacted by Class 5 and Class 6 fire severity	163
Table 71. Examples of rehabilitation and rebuilding activities that are part of the response to the 2019–20 bushfires	169
Table 72. Estimated sawlog losses within the fire-affected RFA regions.....	181
Table 73. Remaining available D+ sawlog volumes in eastern Victoria	183
Table 74. Areas (ha) of state forest zoned as General Management Zone, by RFA region	187
Table 75. Impacts of 2019–20 bushfires on VicForests Timber Release Plan areas, by RFA region.....	190
Table 76. D+ sawlog volumes salvaged from fire-affected RFA regions	193
Table 77. Pulp log volumes salvaged from fire-affected RFA regions	193
Table 78. Area of Victorian plantations, by type and RFA region, in 2015	208
Table 79. Plantation losses from the 2019–20 bushfires	209
Table 80. Number of public land apiary sites in each RFA region	216
Table 81. Number of apiary sites impacted by the 2019–20 bushfires, by RFA region	216
Table 82. Economic impacts in bushfire-affected local government areas (LGAs), by category.....	225
Table 83. Impacts on Aboriginal heritage sites, by RFA area	236

Table 84. Aboriginal historic references effected in the bushfire-affected RFA areas.....	237
Table 85. Fire-affected Aboriginal heritage sites in Central Highlands RFA region	238
Table 86. Fire-affected Aboriginal heritage sites in East Gippsland RFA region.....	239
Table 87. Fire-affected Aboriginal heritage sites in Gippsland RFA region.....	240
Table 88. Fire-affected Aboriginal heritage sites in North East RFA region	241
Table 89. Fire-affected Aboriginal heritage sites in West Victoria RFA region	242
Table 90. Burnt young ash forests resown and unsown, by RFA area	259
Table 91. Areas that have been harvested and regenerated in eastern Victoria between 2004-05 and 2019–20 ..	261
Table 92. Changes in Victoria's ecosystem resilience after the 2019–20 bushfires	268
Table 93. Areas of public land in each RFA region that have been burnt by 2 to 4 major bushfires since 2000	274
Table 94. Total area within the 2019–20 fire extent, impacted by high-severity fires and proportional distribution of high-severity fire (Class 5 and 6) by RFA	274
Table 95. Areas and locations of major forest bushfires since 2000	280

Contents

1. Panel foreword	1
2. Executive summary	3
2.1. Background	3
2.2. Independent Panel and scope of review	4
2.3. Stakeholder consultation	4
2.4. The long-term stability of forests	5
2.5. Active, adaptive and accountable forest management	6
2.6. Recommendations	7
2.7. Traditional Owner engagement	7
2.8. Knowledge gaps	8
3. Key recommendations	9
3.1. CAR reserve system	9
3.2. Matters of National Environmental Significance	9
3.2.1. World Heritage places	9
3.2.2. National Heritage places	9
3.2.3. Listed species and communities	9
3.3. Other environment and heritage values	10
3.3.1. Old growth forests	10
3.3.2. Wilderness area	10
3.3.3. Historic heritage values	10
3.3.4. Ecosystem services	10
3.4. Forest industries	11
3.4.1. Harvest level	11
3.4.2. Commercial native forestry	11
3.4.3. Plantations	11
3.4.4. Apiculture	11
3.4.5. Tourism and recreation	11
3.5. Other values	12
3.5.1. Economic impacts	12
3.5.2. Social impacts	12
3.6. Traditional Owners	12
3.7. Ecologically sustainable forest management	13
3.7.1. Impacts on the implementation of ecologically sustainable forest management	13

3.7.2. Forest management system.....	13
3.7.3. Previously regenerated forests.....	13
3.7.4. Long-term stability of forests	13
3.7.5. Integrated forest and fire management	14
3.8. Operation of Regional Forest Agreements	14
4. Background.....	15
4.1. Victorian Regional Forest Agreements	15
4.1.1. Development of Regional Forest Agreements.....	15
4.2. Modernisation of the Regional Forest Agreements	17
4.3. Forest management and governance	19
4.3.1. Victoria's forest management system	19
4.4. Enhancing Traditional Owner rights and partnerships on public forested lands.....	21
4.5. Arrangements for managing fire in RFA regions.....	22
4.6. Major event.....	25
4.7. Major Event Review	29
4.7.1. Major Event Review process.....	29
4.7.2. Scope of the Review	29
4.7.3. Independent Panel	29
4.8. Stakeholder and community consultation.....	31
4.8.1. Consultation and engagement	31
4.8.2. Engage Victoria process	32
4.8.3. Community and stakeholder consultations.....	32
4.8.4. Engagement with Traditional Owners.....	34
5. CAR reserve system.....	36
5.1. Background	36
5.2. Immediate Protection Areas	38
5.3. Impact of the 2019–2020 bushfires	39
5.3.1. Overall impact	39
5.3.2. Impacts on listed species and communities	42
5.3.3. Conservation status of forested and non-forested ecological vegetation classes (EVCs)	51
5.4. Government support and actions following the bushfires.....	55
5.5. Panel analysis of issues raised	56
5.5.1. Overall impacts on the CAR reserve system.....	56
5.5.2. Comprehensive analysis of the benefit of the CAR reserve system for the protection of listed species and communities.....	57
5.5.3. Conservation of forested and non-forested EVCs.....	58

5.5.4. Government response to ecosystem resilience management	59
5.6. Findings	62
5.7. Recommendations	63
6. Matters of National Environmental Significance and other Environment and Heritage values.....	64
6.1. World Heritage places	64
6.1.1. Impacts on Budj Bim Cultural Landscape	64
6.1.2. Findings	65
6.2. National Heritage places	65
6.2.1. Background	65
6.2.2. Impact on the Australian Alps National Park	69
6.2.3. Impact on National Heritage values of National Heritage places	72
6.2.4. Government actions and support following the bushfires	76
6.2.5. Key information and issues raised during consultation	76
6.2.6. Panel analysis of data and issues raised	76
6.2.7. Findings	79
6.2.8. Recommendation	79
6.3. Listed species and communities	79
6.3.1. Background	79
6.3.2. Impact of 2019–20 bushfires on listed species and communities	83
6.3.3. Species and communities impacts within RFA regions	91
6.3.4. Government actions and support following the bushfires	97
6.3.5. Bushfire Biodiversity Response and Recovery program	105
6.3.6. Listed species and ecological communities – risk assessment.....	108
6.3.7. Implementation of interim protections	115
6.3.8. Future plans	118
6.3.9. Overall impact of 2019–20 bushfires on 79 listed species and communities	119
6.3.10. Impact on listed species and communities within RFA regions	122
6.3.11. Panel analysis of issues raised	127
6.3.12. Findings	133
6.3.13. Recommendations	134
6.4. Old growth forests	134
6.4.1. Background	134
6.4.2. Key information and issues raised during consultation	135
6.4.3. Panel analysis	135
6.4.4. Discussion	149
6.4.5. Findings	154

6.4.6. Recommendations	155
6.5. Wilderness area	156
6.6. Historic heritage	157
6.6.1. Background	157
6.6.2. Impact of the 2019–20 bushfires	157
6.6.3. Government actions and support following the bushfires	168
6.6.4. Key information and issues raised during consultation	169
6.6.5. Findings	169
6.6.6. Recommendations	170
6.7. Ecosystem services	170
6.7.1. Background	170
6.7.2. Impact of the 2019–20 bushfires	170
6.7.3. Key information and issues raised during consultation	173
6.7.4. Panel analysis of issues raised	173
6.7.5. Findings	178
6.7.6. Recommendation	178
7. Forest industries	179
7.1. Harvest level	179
7.1.1. Background	179
7.1.2. Impacts of the 2019–20 bushfires	181
7.1.3. Key information and issues raised during consultation	182
7.1.4. Panel analysis of issues raised	183
7.1.5. Findings	184
7.1.6. Recommendations	184
7.2. Commercial native forestry	184
7.2.1. Policy and legislative background	184
7.2.2. Victoria's native forest timber industry	186
7.2.3. Areas of state forest where timber harvesting is permitted	186
7.2.4. Timber harvesting operations conducted in RFA regions	187
7.2.5. Impacts of the 2019–20 bushfires	189
7.2.6. Government actions and support following the bushfires	191
7.2.7. Key information and issues raised during consultation	195
7.2.8. Panel analysis of issues raised	199
7.2.9. Findings	205
7.2.10. Recommendations	207
7.3. Plantations	207

7.3.1. Background	207
7.3.2. Impacts of the 2019–20 bushfires	209
7.3.3. Government support following the bushfires	212
7.3.4. Key information and issues raised during consultation	212
7.3.5. Panel analysis of data and issues raised	213
7.3.6. Findings	214
7.3.7. Recommendations	215
7.4. Apiculture	215
7.4.1. Background	215
7.4.2. Impacts of the 2019–20 bushfires	216
7.4.3. Government support following the bushfires	217
7.4.4. Key information and issues raised during consultation	217
7.4.5. Panel analysis of data and issues raised	218
7.4.6. Findings	219
7.4.7. Recommendation	219
7.5. Tourism and recreation	220
7.5.1. Background	220
7.5.2. Impacts of the 2019–20 bushfires	220
7.5.3. Government support following the bushfires	222
7.5.4. Key information and issues raised during consultation	222
7.5.5. Panel analysis of issues raised	222
7.5.6. Findings	223
7.5.7. Recommendations	223
8. Economic and social values	224
8.1. Economic values	224
8.1.1. Background	224
8.1.2. Impacts of the 2019–20 bushfires	225
8.1.3. Government actions and support following the bushfires	225
8.1.4. Key information and issues raised during consultation	226
8.1.5. Panel analysis of issues raised	227
8.1.6. Findings	228
8.1.7. Recommendation	228
8.2. Social values	229
8.2.1. Background	229
8.2.2. Impacts of the 2019–20 bushfires	229
8.2.3. Government actions and support following the bushfires	230

8.2.4. Key information and issues raised during consultation	231
8.2.5. Panel analysis of issues raised	232
8.2.6. Findings.....	232
8.2.7. Recommendation	232
9. Indigenous heritage and Traditional Owner rights and partnership, including research and Traditional Owner knowledge	233
9.1. Background	233
9.1.1. Past and future management of Aboriginal cultural heritage	234
9.2. Impacts of the 2019–20 bushfires	235
9.3. Government response following the bushfires	243
9.4. Key information and issues raised during consultation	244
9.5. Panel analysis of issues raised	247
9.6. Findings.....	249
9.7. Recommendations	250
10. Ecologically sustainable forest management.....	252
10.1. Background	252
10.2. Forest management system.....	253
10.2.1. Background	253
10.2.2. Impacts of the 2019–20 bushfires	253
10.2.3. Government actions and support following the bushfires	254
10.2.4. Key information and issues raised during consultation	254
10.2.5. Panel analysis of issues raised	254
10.2.6. Findings.....	256
10.2.7. Recommendation	256
10.3. Previously regenerated forests.....	256
10.3.1. Background	256
10.3.2. Impacts of the 2019–20 bushfires	258
10.3.3. Government support following the bushfires	258
10.3.4. Key information and issues raised during consultation	259
10.3.5. Panel analysis of issues raised	259
10.3.6. Findings.....	264
10.3.7. Recommendations	265
10.4. Long-term stability of forests	266
10.4.1. Background	266
10.4.2. Impacts of the 2019–20 bushfires	268
10.4.3. Government actions and support following the bushfires	270

10.4.4. Key information and issues raised during consultation	270
10.4.5. Panel analysis of issues raised	271
10.4.6. Findings	277
10.4.7. Recommendations	278
10.5. Integrated forest and fire management	278
10.5.1. Background	278
10.5.2. Impacts of the 2019–20 bushfires	281
10.5.3. Government actions and support following the bushfires	282
10.5.4. Key information and issues raised during consultation	283
10.5.5. Panel analysis of issues raised	286
10.5.6. Findings	291
10.5.7. Recommendations	292
11. Operation of Regional Forest Agreements	293
11.1. Background	293
11.2. Impacts of the 2019–20 bushfires	294
11.3. Government support following the bushfires	294
11.4. Key information and issues raised during consultation	294
11.5. Panel analysis of issues raised	295
11.5.1. Implementation of the Major Event Review	295
11.5.2. Major Event Review Summary Report	296
11.5.3. Transparent engagement of stakeholders in decision-making processes	296
11.5.4. Harvest Level Review	297
11.5.5. CAR reserve system review	298
11.5.6. Consideration of impacts on listed species and communities	298
11.6. Impacts of bushfires on other aspects of RFA operation	298
11.6.1. RFA provisions on Traditional Owner rights and partnerships	298
11.6.2. Growing threat of bushfires to the operation of RFAs	299
11.7. Findings	299
11.8. Recommendations	300
Appendices	301



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1. Panel foreword

We are pleased to present the report of the inaugural Major Event Review conducted under the modernised Regional Forest Agreements (RFAs) for Victoria that examined the impacts of the 2019–20 bushfires on the RFAs.

We acknowledge the many Traditional Owner nations of the land that the RFAs cover, we recognise their continuing connection to Country and we pay our respects to their elders past and present. We pay our respects to Country and acknowledge the harm Country experienced during the time of the 2019–20 bushfire event.

We also pay our respects to the families and communities of Fred Becker, Mat Kavanagh, David Moresi, Mick Roberts and Bill Slade, who lost their lives in the fires.

At every level of Victorian life, the impacts of the 2019–20 bushfires continue to be felt across Victoria's RFA regions and elsewhere across the state. This Major Event Review is an important process to gather information about how the fires have impacted approximately 1.3 million hectares of public native forest and their communities.

This independent review has been commissioned jointly by the Victorian and Australian governments, as Parties to the RFAs. It is the first time that the Parties have implemented a Major Event Review under Victoria's modernised RFAs. The review report includes a detailed analysis of the available information and data on RFA matters as well as a wide range of community and stakeholder views and makes a series of recommendations for the Victorian and Australian governments to consider.

The panellists have approached the review with an understanding that the RFAs have multi-uses and multi-users. The Panel findings and 37 recommendations take into consideration the interactions and linkages between forest management and fire management and the interdependence of Victoria's social, economic, cultural and environmental assets and values. The findings aim to promote better forest outcomes and co-existence of different forest industries. They also recognise that the long-term stability of forests is being compromised by repeated short-interval, severe bushfires.

The recommendations, based on consideration of the available science, are designed to support better decision-making, enhance Ecologically Sustainable Forest Management (ESFM) and support the continued effective operation of the RFAs. They take into account multiple forest-related outcomes and interdependencies, support active, adaptive and accountable forest management in the face of climate change and highlight the critical importance of Traditional Owners caring for Country within RFA regions.

Hence, the Panel consulted with and gave voice to Traditional Owners – registered and non-registered Traditional Owner groups – with the goal of further activating the Traditional Owner clauses in the modernised RFAs.

These recommendations also complement and acknowledge the significant work of the Bushfires Royal Commission into National Natural Disaster Management and inquiries on the impact of the Black Summer bushfires conducted by New South Wales, the Australian Senate and the Victorian Parliament, as well as the comprehensive investigation by Victoria's Inspector-General of Emergency Management and an audit by the Victorian Auditor-General. The 2021 report into Harvest Level in Victorian RFA regions was not received in time for its findings to be considered in this review.

The Panel sincerely thanks each and every contributor for their input and cooperation with this review – for each and every submission, insight and time shared with Panel members during the COVID-19 lockdowns of 2021. It has been an enormous task, undertaken in challenging conditions, and we consider it a great privilege to be able to share this inaugural Major Event Review with you and trust that our recommendations will advance ESFM in Victoria.

Dr Gillian Sparkes AM

Katherine Mullett

Dr Tony Bartlett AFSM



Photo credit: © T. Bartlett



Photo credit: Burnt Ironbark and stringybark Mottle Range Mar 22 © T.Bartlett

2. Executive summary

This independent panel's report examines the impacts of the 2019–20 bushfires on a wide range of forest-related values covered by the Victorian Regional Forest Agreements (RFAs). It includes findings and a series of recommendations for consideration by both the Victorian and Australian governments.

2.1. Background

In accordance with the requirements of the Victorian RFAs, the Australian and Victorian governments commissioned a Major Event Review to assess the impacts of the 2019–20 bushfires on RFA matters, acknowledging the significant impacts the bushfires had on forests, biodiversity, forest industries and regional communities.¹ This report reviews the substantive impacts of the 2019–20 bushfires across Victoria's five RFA regions – East Gippsland, Gippsland, North East, West Victoria and Central Highlands.

Victoria's Black Summer bushfires commenced on 21 November 2019 with an estimated 60 fires across the state. The last major fire complex in East Gippsland was declared contained three months later on 27 February 2020, with more than 1.5 million ha burnt, including nearly 1.39 million ha of native forest or 18 per cent of Victoria's public native forests. The fires had a devastating impact on Victorian communities, infrastructure and environmental services, the economy, environment, cultural heritage and community assets. Tragically, these bushfires resulted in five deaths in Victoria.

1. The Commonwealth of Australia and the State of Victoria (September 2020) [Scoping Agreement for the Major Event Review to assess the impacts of the 2019–20 bushfires](#), the Commonwealth of Australia and the State of Victoria, accessed 2 February 2021.

During the season, every Victorian RFA region was impacted by bushfires to varying extents. The most impacted by the bushfires was the East Gippsland RFA region (Figure 3), where over 67 per cent of the total area and 70 per cent of the forests were burnt. The East Gippsland fires² (covering East Gippsland and Gippsland RFAs) impacted many communities within the RFA regions – in particular, Mallacoota, Genoa, Cann River, Orbost, Goongerah, Wairewa, Sarsfield, Bruthen, Tambo Crossing, Swifts Creek, Omeo and Buchan. In all, more than 60,000 people were estimated to have evacuated from the East Gippsland and Hume regions.

The North East fires burnt more than 270,000 hectares of native forest and impacted on many communities in the Upper Murray and Ovens regions.

2.2. Independent Panel and scope of review

This Major Event Review was undertaken by an independent Panel between March 2021 and March 2022. The Panel comprises:

Dr Gillian Sparkes AM, Victorian Commissioner for Environmental Sustainability; Dr Tony Bartlett AFSM, independent forestry consultant; and Victorian Traditional Owner Katherine Mullett.

The Panel was tasked with investigating the impact of the 2019–20 bushfires, gathering and analysing a wide range of information and scientific data on the fires and their impacts as well as undertaking a comprehensive program of community and stakeholder consultation.

As required according to Victoria's RFAs and described in the Scoping Agreement,³ this Major Event Review considers:

- the operation of the five RFAs
- ecologically sustainable forest management
- the Comprehensive, Adequate and Representative (CAR) reserve system
- the effective management and protection of Matters of National Environmental Significance (MNES)
- harvest level
- the long-term stability of Victorian forests and forest industries.

2.3. Stakeholder consultation

Despite the challenges of COVID-19 restrictions, this report includes input and commentary from a wide range of stakeholders from local communities, Traditional Owners, environmental NGOs, industry and professional associations, academics, plantation owners, apiarists and local government. Traditional owner groups agreed to meet with the Panel and gave valuable feedback and depth to the report.

The Panel offered and held a series of open online consultation sessions for communities that were most impacted by the bushfires, including the regions of Mallacoota, Bairnsdale, Orbost, Omeo, Corryong, Myrtleford and East Gippsland. The public consultation process also involved written submissions, online surveys and 47 face-to-face engagement events. This information is included in the Appendices of this report.

2. DAWE and the State Government of Victoria (2021) [Victorian Regional Forest Agreement Major Event Review of the 2019–20 bushfires: Summary report: information and data to inform public consultation](#), DAWE and the State Government of Victoria, accessed 1 March 2022.

3. The Commonwealth of Australia and the State of Victoria (September 2020) [Scoping Agreement for the Major Event Review to assess the impacts of the 2019–20 bushfires](#), the Commonwealth of Australia and the State of Victoria, accessed 2 February 2021.

The views and information provided were independently analysed and the key findings summarised and reported under six themes:

- regulations and role of the government
- local economies and communities
- protect, conserve and restore native forests
- destruction and loss of natural environment and biodiversity
- timber harvesting
- future of ecosystem services.

The Panel had briefings from affected local governments, Bushfire Recovery Victoria, Regional Development Victoria, Office of the Conservation Regulator, Hancock Victorian Plantations and VicForests. It also had briefings from the Country Fire Authority (CFA), Forest Fire Management Victoria (FFMVic) and some of DELWP's regional staff on both fire management planning and the management of bushfire suppression operations.

The Major Event Review takes into consideration a full spectrum of values and beliefs about forest management related to Victoria's RFAs. This report recognises the differing and often polarised views about ecologically sustainable forest management held across the diverse range of stakeholders that participated in the review process.

2.4. The long-term stability of forests

Victoria is one of the most fire-prone and fire-adapted regions of the world.⁴ Over millennia, fire has influenced the richness, composition and distribution of Victoria's ecosystems.

Around 1.39 million ha of state forests, parks and reserves were burnt in the 2019–20 bushfires across the East Gippsland, Gippsland and North East RFA regions.⁵ Importantly, a total of 683,555 ha or 45 per cent of the total fire extent across these three RFA regions was burnt at high severity. The bushfires impacted significantly on 78 per cent of Victoria's warm temperate rainforests and burnt about 88,000 ha of ash forests, of which about half was killed by these fires. The 2019–20 bushfires potentially have had a very significant impact on the extent of old growth forests in Eastern Victoria, with an estimation that there may have been a loss of 62,126 ha of the modelled old growth. This represents an additional 15 per cent decrease in Victoria's remaining old growth forests, which means that about 60 per cent of Victoria's old growth forests have been lost, predominantly as a result of severe bushfires, since 2000.

Victoria's privately-owned softwood and hardwood plantations were also significantly impacted by the 2019–20 bushfires, with a total of 8,354 ha worth an estimated \$75 million destroyed in the North East, East Gippsland and Western Victoria RFA regions. The increasing occurrence of bushfires impacting on plantations and the ongoing cumulative loss of plantation timber resources presents an escalating threat to the stability of wood processing industries in Victoria.

4. Department of Environment, Land, Water and Planning (DELWP) (December 2019) Victoria, [Overview of Victoria's forest management system, DELWP](#), accessed 24 February 2022.

5. DAWE and the State Government of Victoria (2021) [Victorian Regional Forest Agreement Major Event Review of the 2019–20 bushfires: Summary report: information and data to inform public consultation](#), DAWE and the State Government of Victoria, accessed 1 March 2022.

The report's analysis also shows that over the past 20 years more than five per cent of Victoria's public land has been burnt multiple times by large bushfires, and all of this is in eastern Victoria. About 276,000 ha (6.3 per cent) of the public land in eastern Victoria has been burnt multiple times within 20 years.

Given the reported research on the impacts of major bushfires on forest stability in Victoria and the increasing proportion of the public forests that have been impacted multiple times by major bushfires within 20 years, the Panel considers that it is likely that the 2019–20 bushfires have resulted in a decline in the long-term stability of some forests within the East Gippsland, Gippsland and North East RFA regions. With climate change, the extent, frequency and intensity of bushfires is increasing. This has implications for the stability of Victoria's forests, most notably the ash forests, rainforests, alpine forests and a number of ecological vegetation classes that have limited natural distribution.

The long-term debate about the value and appropriateness of timber harvesting operations within Victoria's state forests continued to play out during this Major Event Review. The Scoping Agreement for the Major Event Review is very clear that the Major Event Review process will not open the Victorian RFAs up to renegotiation and that the Parties (i.e. the Victorian and Australian governments) are committed to ensuring that the obligations and commitments contained in the RFAs are delivered to ensure effective conservation, forest management and forest industry outcomes.

2.5. Active, adaptive and accountable forest management

Victoria's forest management system⁶ comprises a complex suite of legislation, policy, regulatory instruments, plans, management standards, programs and monitoring arrangements that regulate and support ecologically sustainable forest management and the protection and management of environmental and heritage values.

The Major Event Review Panel assessed the bushfire impacts on various RFA values and uses as they related to the Scoping Agreement categories, drawing on the available data and stakeholder feedback. The frequent exposure to intense bushfires is presenting a major and increasing threat to the effective operation of Victoria's RFAs, to the stability of the forests and the achievement of ecologically sustainable forest management. There is ongoing loss of old growth forests and ongoing decline of forest-dependent threatened species and communities. These bushfires had significant impacts on four different sectors (i.e. native timber industries, plantation industries, apiculture and tourism-recreation) within the forest industries, the ongoing provision of ecosystem services as well as on Aboriginal and non-Aboriginal heritage sites.

Victoria demonstrated its capacity to implement active and adaptive actions following the 2019–20 bushfires. These actions included the application of the precautionary principle in relation to timber harvesting in bushfire-affected areas, the implementation of enhanced immediate protection measures for threatened species and the ash forest restoration program, that treated 11,587 ha of fire-affected young ash forests within state forests and national parks. Each of these are good examples of strategies implemented to reduce the impacts from major bushfires.

6. Department of Environment, Land, Water and Planning (DELWP) (December 2019) Victoria, [Overview of Victoria's forest management system, DELWP](#), accessed 24 February 2022.

These bushfires have highlighted the need for greater adoption of active and adaptive forest management practices. Almost all forest and park management plans covering the fire-affected forests were prepared in the 1990s or early 2000s and they do not adequately address the impacts from repeated severe bushfires. There is a strong case to be made for further refinement and better integration of Victoria's forest and fire management planning strategies in a way that puts into practice the intent of the RFAs to promote active and adaptive management of forests, address the decline in forest resilience, improve the protection of rural and regional communities and ensure that both Traditional Owner matters and environmental values are adequately managed and conserved.

2.6. Recommendations

This Panel has prepared a suite of 37 recommendations, identifying remedial actions for the Victorian and Australian governments to address the impacts of the bushfires on RFA regions. The recommendations cover many RFA matters including old growth forests, listed species and communities, commercial native forestry, plantations, apiculture, forest and fire management and Traditional Owner matters. The recommendations are designed to work within the provisions of the existing RFAs and to support other important initiatives.

2.7. Traditional Owner engagement

This Major Event Review included an extensive program of engagement with representatives of Traditional Owner groups from across Victoria. Eight Traditional Owner groups with legal recognition and eight groups that do not currently have legal recognition met with the Panel and gave valuable feedback and depth to the review process and content of the report. The Panel also engaged with relevant Victorian Traditional Owner co-governance groups/forums (e.g. Federation of Victorian Traditional Owner Corporations) and Victorian Aboriginal Community Controlled Health Organisations. During the engagement process a total of 21 online meetings and one face-to-face meeting were held. A comprehensive report on the Traditional Owner engagement process is included in the Appendices of this report.

This major event brought up years of trauma for the Traditional Owners. Aboriginal Victorians have deep spiritual connection and cultural obligation to care for Country and hold thousands of years of intimate knowledge for Country.

During the engagement process, Traditional Owners spoke to the Panel about nine main areas of concern:

- engagement process
- Aboriginal Cultural Heritage Management
- economic impacts
- access to Country
- healing of Country and culture
- implementation of Traditional Owner clauses
- cultural burning
- current condition of Country
- timber harvesting.

The Major Event Review consultation process found that many Traditional Owner groups feel very strongly that the current system for considering Aboriginal cultural heritage values during bushfire suppression operations needs to be improved and that there are significant disparities among Incident Control Centres on whether and how Traditional Owners are included in conversations, planning and operational decision-making. They also indicated that the impacts from the bushfires were exacerbated as they were not supported to access Country to heal or to heal Country, immediately post-fire.

There was support from stakeholders across a broad spectrum of sectors, communities and interests that the Panel engaged with for increased Traditional Owner involvement in caring for Country and the management of Victorian forests. The Panel considers that Victoria has the policy frameworks, architecture, strategies and authenticity to give life to the ambitions of the RFAs for Traditional Owner rights and partnership in forest management.

2.8. Knowledge gaps

The Panel was provided with data from DELWP and the Commonwealth Department of Agriculture, Water and Environment (DAWE) that had been compiled for the Assessment of matters pertaining to the extension of the Victorian RFAs, from regular reporting functions of the Parties and through surveys conducted following the bushfires. The Panel used this data to consider the environmental aspects of the Scoping Agreement. The Panel also received qualitative data from community members about the environmental impacts of the fires and logging operations. Unfortunately, due to COVID-19 restrictions, the Panel was unable to conduct field trips and personally verify data provided. In addition to quantitative data supplied by the Parties, the Panel received data from other agencies, academics, industry bodies and businesses that was used in the Panel's deliberations.

There were two components of the Major Event Review scope for which the Panel did not have access to sufficient data to fully assess the impacts of the bushfires: Harvest Level and CAR reserve system.

The Panel notes the outcome of Victoria's Harvest Level Review, which implies that the 2019–20 bushfires will not have impacted on Victoria's ability to continue to supply the levels of ash and mixed species sawlogs committed to under the Victorian Forestry Plan. The Panel did not participate in Victoria's Harvest Level Review.

The Panel made a partial assessment of the bushfire impacts on the CAR reserve system, but this was limited by the availability of data on the impact of the bushfires on important CAR reserve values such as old growth forests. The Panel acknowledges that a full analysis of the current status of old growth forest following the 2019–20 bushfires with field verifications has not been completed.

A key outcome of the Major Event Review is the importance of developing new perspectives on the gathering of science and data – moving away from 'issues-based' and 'reactive' data gathering towards a 'forest systems' approach. The RFAs are centred on forest systems and the whole forest ecosystem, so system-level data is required to get the full picture of the health and sustainability of Victorian RFA regions.

The Panel would like to acknowledge and thank all contributors to this report. Thank you to Parties from DAWE, DELWP, the Victorian Department of Jobs, Precincts and Regions (DJPR), VicForests, staff from the office of the Victorian Commissioner for Environmental Sustainability and to all the institutions and agencies that provided briefings and supplied the Panel with a wide range of information and scientific data.

3. Key recommendations

The Panel makes the following recommendations.

3.1 CAR reserve system

- 1 That the Parties validate the efficacy of the current CAR reserve system for listed species and communities in the next scheduled five-yearly review using information from the completed threatened species and communities risk assessments (scheduled for completion in 2023).
- 2 That the Victorian Government develop an action plan to expand protection areas for the seven ecological vegetation classes identified in this report as being under 60 per cent reserve status and having more than 50 per cent of their extent impacted by fire.
- 3 That the Victorian Government apply the outcomes of the research on Geometric Mean Abundance or more suitable alternative measure as an indicator of ecosystem resilience based on the Fire Analysis Module for Ecological values (FAME) currently being used by the Department of Environment, Land, Water and Planning. This indicator would provide a foundation for determining resilience of ecological vegetation classes under the CAR reserve system and inform fire management strategies and interventions that enhance resilience.

3.2 Matters of National Environmental Significance

3.2.1 World Heritage places

No recommendations were made.

3.2.2 National Heritage places

- 4 That the Parties research the impact of more frequent and repeated bushfires on threatened species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and the *Flora and Fauna Guarantee Act 1988* (Vic) that have limited habitat distribution within the Australian Alps National Parks and reserves in Victoria.

3.2.3 Listed species and communities

- 5 That the Parties address knowledge and data gaps relating to threatened species listed under either the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) or the *Flora and Fauna Guarantee Act 1988* (Vic) for species that are identified as 'data deficient'. Effort should be focused on (a) species known to exist within fire-affected areas and (b) the 21 species that are listed as Critically Endangered in the FFG Act.
- 6 That the Victorian Government produce an outcomes report to review the effectiveness of the interim protection measures and the zoning system changes for listed species and communities.

- 7 That the Victorian Government prioritise completion of outstanding threatened species and communities risk assessments for the five Regional Forest Agreement regions and activate existing legislative tools (e.g. Critical Habitat Determinations) under the *Flora and Fauna Guarantee Act 1988* (Vic), and that the Victorian Government make public the rationale for choosing specific legislative tools to protect listed species and communities.

3.3 Other environment and heritage values

3.3.1 Old growth forests

- 8 That the Victorian Government implement strategies to inform and enhance the protection of remnant old growth forest from the impact of bushfires. These strategies should include:
- researching the impact (spatial and temporal) of more frequent high-severity bushfires on remaining old growth forests
 - publicly releasing field verification results for the modelled old growth forest extent that has been impacted by high-severity fires in mixed species forests and potentially exposed to timber harvesting
 - implementing a mix of existing and innovative fire management practices that specifically focus on reducing bushfire risks to priority areas of old growth within each Regional Forest Agreement region.

- 9 That DELWP improves the resolution of the field identification assessment tool for forest patches to better identify remnant patches of old growth forest.

3.3.2. Wilderness area

No recommendations are made.

3.3.3. Historic heritage values

- 10 That, for future Regional Forest Agreement (RFA) reviews, the Parties develop baseline information for historic heritage values by RFA region and provide future review panels with information on impacts and rehabilitation plans.

3.3.4. Ecosystem services

- 11 That the Parties report on post-fire productivity and carbon-stock recovery of fire-tolerant forests after high-severity fires. The report should:
- consider the impact of changing fire regimes and future climate predictions
 - include analysis of short-interval high-severity fires
 - test current assumptions of forest carbon neutrality after bushfires in the National Greenhouse Accounts.

3.4. Forest industries

3.4.1. Harvest level

No recommendations are made.

3.4.2. Commercial native forestry

12

That the Parties examine the progress of expanding forest industries (e.g. clause 53A in the East Gippsland Regional Forest Agreement) and supporting communities to transition away from native timber harvesting, as per the Regional Forest Agreements (RFA), at the next scheduled five-yearly review of the RFAs in 2025.

13

That the Victorian Government identifies the strategies it will implement to maintain or enhance the sequestration and storage of carbon in forests and further investigate the mechanical thinning of dense regrowth forests, as a strategy to restore forest landscapes to a more open forest structure in order to enhance the resilience of forests to more frequent occurrence of severe bushfires.

3.4.3. Plantations

14

That the Parties commission an independent analysis of the impacts of the 2019–20 bushfires on wood flows to the plantation-based industries in Victoria, as well as the feasibility of and impediments to more domestic use of existing plantation timber, to enable these matters to be further considered in the next five-yearly review of the Victorian Regional Forest Agreements.

15

That the Victorian Government, in consultation with plantation businesses, improve the integration of forest industry brigades in bushfire suppression operations; identify options for reducing the risk to plantation assets from bushfires that originate on public land; and, where necessary, update the zoning system in the bushfire management strategies.

3.4.4. Apiculture

16

That the Victorian Government urgently review the current arrangements for consulting the apiculture industry regarding planned timber harvesting operations and give active consideration to amending the silvicultural prescriptions that apply to timber harvesting of mixed species forests within the ranges of licensed apiary sites, in order to improve the floral reproductive capacity of the logged forests.

3.4.5. Tourism and recreation

No recommendations are made.

3.5. Other values

3.5.1. Economic impacts

- 17 That the Parties invest in the preparation of data on the current and expected changes by 2030 to social and economic benefits derived from forests, for consideration at the next five-yearly review.

3.5.2. Social impacts

- 18 That the Parties strengthen activities with all Traditional Owners within each Regional Forest Agreement (RFA) region to identify culturally significant species and cultural landscapes, as a component of Matters of Traditional Owner Significance, and have these included within RFA monitoring and reporting systems and considered in each five-yearly review of the RFAs.

3.6. Traditional Owners

- 19 That the Victorian Government enhance the implementation of the Traditional Owner Cultural Landscapes Strategy (Victorian Traditional Owners, 2021) as a principal means of bridging Regional Forest Agreement commitments on Indigenous (Aboriginal) heritage, Traditional Owner rights and partnerships with the application of traditional knowledge and practices, such as cultural burning and forest gardening, in healing and managing Country.

- 20 That the Victorian Government review the forest management system and the existing fire management instructions and standard operating procedures to improve the management and protection of Traditional Owner identified living natural and biocultural values and uses. In future, all Traditional Owners, including Traditional Owner Groups without formal recognition, should be actively involved in site management decisions before, during and after fire-suppression operations, both in the field and in incident management teams. This includes ensuring that all Traditional Owners are notified of all bushfires on Country (in real time), to ensure awareness and ability to provide active input.

- 21 That the Victorian Government urgently implement, as a remedial action, a program of on-ground condition assessment with Traditional Owners for all known cultural sites impacted by the 2019–20 Black Summer fires. Future management advice and protection measures need to be put in place with consultation with Traditional Owners to protect, conserve and prevent future harm to these sites where possible.

- 22 That the Australian Government revitalise the 2005 National Indigenous Forestry Strategy to provide joint-funded programs that support Traditional Owners to manage Country, develop economic and employment opportunities from Regional Forest Agreement forests and partner with forest industry businesses that support self-determination of economic development opportunities.

- 23 That the Victorian Government establish an appropriate level of base funding to be provided to all Traditional Owner groups, including Traditional Owner Groups without formal recognition, to enable them to engage more effectively in the implementation of the Traditional Owner provisions under the modernised Regional Forest Agreements and support their ability to participate in consultation processes under Victoria's forest management system.

24

That the Victorian Government at a regional level, in partnership with each Traditional Owner group and Parks Victoria, develop Regional Forest Agreement implementation plans for each Traditional Owner group, to ensure regular and planned engagement with Traditional Owners to:

- i. ensure oversight of the implementation of the relevant (Traditional Owner) clauses in the RFA
- ii. monitor the implementation of the government-accepted Major Event Review recommendations.

3.7. Ecologically sustainable forest management

3.7.1. Impacts on the implementation of ecologically sustainable forest management

No recommendations are made.

3.7.2. Forest management system

25

That the Victorian Government improve the integration of zoning systems within the forest management plans, national park management plans and bushfire management strategies. This process should include coordinated revisions and an improved articulation of the nature of active management strategies required for each zone, to reduce bushfire risk and support improved resilience and recovery of forests and their associated ecological values.

3.7.3. Previously regenerated forests

26

That the Parties undertake a study of the impacts of the 2019–20 bushfires on the regenerating mixed species trials within the former Silvicultural Systems Project at Cabbage Tree Creek, to improve knowledge about how the different silvicultural systems respond to severe bushfires.

27

That the Victorian Government identify any finalised coupes where subsequently regeneration has failed and implement remediation to restore the coupes to their natural floristic composition. The progress should be assessed by the Parties at the next five-yearly review in 2025.

28

That the Victorian Government assess the regeneration status of mixed species forests that have been regenerated in the past 20 years and were subject to high-severity fire during the 2019–20 bushfires. This assessment should consider both the condition of the burnt regrowth and the implications for the requirement to maintain natural floristic composition on these sites. The outcomes from this assessment, together with any remedial programs that are implemented, should be reviewed by the Parties in the next five-yearly review in 2025.

3.7.4. Long-term stability of forests

29

That the Parties commit to a comprehensive, long-term research and monitoring program to develop a better understanding of the impacts of repeated short-interval severe bushfires on the long-term stability of forest ecosystems.

30

That the Victorian Government maintain and potentially expand its capacity to implement remedial regeneration strategies in sensitive forest ecosystems across all public land tenures. This requires processes to quickly and accurately determine the extent of impacts following major events such as bushfires, as well as maintaining the required technical knowledge, operational capacity and sufficient seed stocks of appropriate species and provenance.

3.7.5. Integrated forest and fire management

- 31** That the Parties develop an ongoing joint funding program to provide resources and capacity for active forest management in the Regional Forest Agreement regions, reflecting the legislative responsibilities of the Parties to protect and manage forest values under a changing climate.
- 32** That the Victorian Government enhance its support for the implementation of the Traditional Owner Cultural Fire Strategy by working closely with all Traditional Owner groups to empower them to reintroduce cultural burning practices, and provide increased resources to Traditional Owner groups to integrate knowledge of how fire knowledge holders traditionally managed Country and build capacity and capability for improved implementation of cultural burning and cultural practices.
- 33** That the Victorian Government increase the number of jobs available for Traditional Owners within forest land management agencies, to allow more Traditional Owners to live and work on Country and have active roles in the management of native forests.
- 34** That the Victorian Government expand an active and adaptive management approach to scale up the implementation of ecological burning in public forests. Further research and development should be undertaken on how to better model reductions in risks to key environmental assets from the implementation of fuel management and ecological burning activities.
- 35** That the Victorian Government develop appropriate metrics for identifying landscape-level trends in biodiversity as part of its monitoring and reporting of ecosystem resilience and also include data on maintenance of strategic access to forests in its annual Managing Victoria's Bushfire Risk: Fuel Management Report.

3.8. Operation of Regional Forest Agreements

- That, to benefit the operation of future Regional Forest Agreement (RFA) Major Event Reviews, the Parties:
- 36**
- i. Commence each review within six months of a major event, preceded by a detailed program of surveys and assembly of information relevant to all the matters to be assessed by the panel
 - ii. Ensure that the summary report and the detailed datasets used to produce that report are available at the time the independent Panel commences its work
 - iii. Ensure that the scoping agreement clearly defines the panel's role in assessing each of the matters to be assessed as listed in the RFA provisions
 - iv. Have access to appropriate data on impacts on CAR reserve values and Aboriginal and non-Aboriginal heritage values
 - v. Consider the impacts of the major event on listed species and communities across all land tenures regardless of the potential impact from forestry operations
 - vi. Determine how the independent Major Event Review Panel fulfills the RFA requirement that it assesses the impacts of the major event at harvest level.
- 37** That, in considering the findings and recommendations from the Major Event Review, the Parties consider how the package of Regional Forest Agreement (RFA) provisions and the components of Victoria's forest management system can be improved to provide enhanced resilience for the wide range of RFA forest values that are being severely impacted by repeated severe bushfires.



Photo credit © Katherine Mullett

4. Background

4.1 Victorian Regional Forest Agreements

4.1.1 Development of Regional Forest Agreements

Regional Forest Agreements (RFAs) are long-term bilateral agreements for the sustainable management and conservation of Australia's native and plantation forests. They were an outcome of the 1992 National Forest Policy Statement. The *Regional Forest Agreements Act 2002* (Cth) defines an RFA as an agreement between the Commonwealth and a State that satisfies all the following conditions:

- a. the agreement was entered into having regard to assessments of the following matters that are relevant to the region or regions:
 - i. environmental values, including old growth, wilderness, endangered species, national estate values and World Heritage values;
 - ii. indigenous heritage values;
 - iii. economic values of forested areas and forest industries;
 - iv. social values (including community needs);
 - v. principles of ecologically sustainable management;
- b. the agreement provides for a comprehensive, adequate and representative reserve system;
- c. the agreement provides for the ecologically sustainable management and use of forested areas in the region or regions;

- d. the agreement is expressed to be for the purpose of providing long-term stability of forests and forest industries;
- e. the agreement is expressed to be a Regional Forest Agreement.

Between 1997 and 2000, the State of Victoria and the Commonwealth of Australia entered into five RFAs covering the East Gippsland (1997), Central Highlands (1998), North East (1999), Gippsland (2000) and West (2000) regions. At the time, Victoria decided not to negotiate an RFA for the North West region, because there were comparably fewer listed National Estate values and the products from the small amount of timber harvesting that was occurring in these forests did not require export approval by the Commonwealth.

Each RFA was developed using a process agreed to between the Victorian and Australian governments. The process commenced with a comprehensive regional assessment of the various forest values listed above in the region that the RFA covers. During the development of RFAs, stakeholders – including representatives from conservation groups, industry, unions, local government, regional economic development organisations, Aboriginal Land Councils and members of the community were given opportunities to put forward their views about future forest management. The information from the comprehensive regional assessment and the stakeholder consultation process was used to delineate multiple-use public forests available for timber harvesting and a comprehensive, adequate and representative (CAR) reserve system in each RFA region.

The CAR reserve system is made up of dedicated reserves, informal reserves and areas within production forests where values are protected by prescription. The CAR reserve system is based on three principles:

- including the full range of vegetation communities (comprehensive)
- ensuring the reservation is large enough to maintain species diversity (adequate)
- conserving the diversity within each vegetation community, including genetic diversity (representative).

The identification of areas to be included within CAR reserve followed the nationally agreed JANIS criteria, which established the following targets for the conservation of ecosystems:

- 15 per cent of the pre-1750 distribution of each forest type
- 60 per cent of the existing distribution of each forest type if vulnerable
- 60 per cent of the existing old growth forest
- 90 per cent, or more, of high-quality wilderness forests
- all remaining occurrences of rare and endangered forest ecosystems including rare old growth.

Dedicated or formal reserves are set aside for conservation in areas such as national parks. The boundaries of the dedicated reserves, and for specific values such as wilderness, were influenced by the outcomes of various investigations conducted by the then Land Conservation Council, under the provisions of the *Land Conservation Act 1970* (Vic). Informal reserves are areas set aside for conservation purposes in forests that are otherwise production forests, such as Special Protection Zones in state forests. Areas where values are protected by prescription within production forests are those that cannot be practically protected by formal or informal reservation, for example riparian vegetation or rare and dispersed values.

As part of the RFA development process, Victoria prepared a forest management plan for each RFA region. The development of each of these plans was guided by a local forest management area advisory committee, comprising representatives of all stakeholder groups and the community. These plans map all forests into zones and establish objectives for conservation, timber harvesting and other land uses.

The Forest Management Zoning Scheme within state forests has three categories:

- **Special Protection Zones (SPZs)** are managed specifically for conservation values, including smaller occurrences of listed species and communities, and timber harvesting is not permitted
- **Special Management Zones (SMZs)** are managed to conserve specific features, but may permit timber harvesting under special conditions specified in SMZ plans
- **General Management Zones (GMZs)** are managed for multiple uses and values, with timber harvesting having a high priority.

4.2 Modernisation of the Regional Forest Agreements

The original Victorian RFAs were due to expire in March 2020. In 2019, the Victorian and Australian governments undertook a process to modernise the RFAs to reflect changes that have occurred since they were developed and to include improvements to enhance their performance. The process used to modernise the RFAs was designed to ensure that:

- the overarching purpose and objectives of the RFAs remain unchanged
- the amended RFAs continue to maintain their existing spatial boundaries
- forest management is adaptive and underpinned by a strong scientific evidence base, while also addressing community needs.

This process included the preparation of an independent consultation paper,⁷ authored by Dr William Jackson, and an extensive public consultation process conducted jointly by the Victorian and Australian governments. The independent consultation report assessed the state of Victoria's forests and forest management against the objectives of the RFAs, drawing on published information, and identified potential improvements to the RFAs. It identified that there is ongoing decline of forest-dependent threatened species, that long-term stability of supply for the timber industry has not been achieved and that invasive species, fire and climate change present serious challenges for the health of forests in Victoria.

It recommended improvements under three themes:

- ecologically sustainable forest management
- long-term stability of forests and forest industries
- governance and management of Victoria's forests.

The public consultation process involved written submissions, online surveys and 47 face-to-face engagement events. The views and information provided were independently analysed and the key findings summarised and reported under six themes:

- regulations and role of the government
- local economies and communities
- protect, conserve and restore native forests
- destruction and loss of natural environment and biodiversity
- timber harvesting
- future of ecosystem services.

7. Jackson W (May 2019) Independent Consultation Paper – [Modernisation of the Victorian Regional Forest Agreements](#), accessed 3 September 2021.

When considering what changes to make to the RFAs, the Victorian and Australian governments considered various inputs. These included the outcomes of the public consultation process; an updated assessment of the matters⁸ required under the *Regional Forest Agreements Act 2002* (Cth); the report from an independent scientific advisory panel established by Victoria;⁹ and independent advice from the Regional Forest Agreements Reference Group.¹⁰

On 30 March 2020, 10-year extensions were formalised for the five Victorian RFAs covering the Central Highlands, East Gippsland, Gippsland, North East and West Victoria regions. As part of this process, each RFA document was amended, incorporating a range of new clauses and the deletion of previous clauses that were no longer relevant.

The modernised RFAs:¹¹

- provide stronger protections for Victoria's unique forest biodiversity and threatened species; specifically protections for Victoria's unique forest biodiversity and threatened species through more timely interventions
- recognise the unique ability of Traditional Owners to care for Country and have new commitments to work with Traditional Owners to protect Country
- support the transition out of native timber harvesting to plantation timber by 2030 by continuing to provide streamlined regulatory processes for the timber industry during this time.

Other key improvements and commitments in the modernised RFAs include:

- strengthened checks and balances through:
 - outcome-based five-yearly reviews
 - the ability to initiate a Major Event Review to assess the impacts of major events, such as significant natural disturbance events like bushfire, flood and disease
 - new audit provisions that enable the performance of the RFAs to be evaluated and remedial actions identified
- support for diverse forest-based industries including recreation, tourism and carbon markets
- recognising the existing protections provided to all Victorian rainforest within native forests on public land from timber harvesting, as well as the Victorian Government's commitment to protect all old growth on public land from timber harvesting announced as part of the Victorian Forestry Plan
- a new process for determining timber harvest levels according to resource availability, while continuing to provide for ecologically sustainable forest management
- acknowledgement of Traditional Owners' living relationships with forests, their rights and aspirations, including recognising the unique ability of Victoria's Traditional Owners to care for Country and support forest management
- greater ability for Victoria to terminate an RFA should it no longer be fit for purpose.

8. DELWP (1 April 2020) Community Consultation on RFAs, Victorian Government, accessed 2 February 2022.

9. Regional Forest Agreements Scientific Advisory Panel (SAP), [Scientific advice to support Regional Forest Agreement Negotiations](#), 20 November 2019, accessed 8 September 2021

10. DELWP, Regional Forest Agreements Reference Group (September 2019) [Report of Advice](#), Victorian Government, accessed 2 March 2022.

11. DELWP (24 November 2020) [What we're doing. Victorian Regional Forest Agreements](#), DELWP, accessed 21 March 2021.

4.3 Forest management and governance

4.3.1 Victoria's forest management system

A key component of RFAs is the accreditation of Victoria's forest management system as the means of ensuring appropriate management, use and protection of the multiple values covered by RFAs. Victoria's forest management system¹² comprises a complex suite of legislation, policy, regulatory instruments, plans, management standards, programs and monitoring arrangements that regulate and support ecologically sustainable forest management and the protection and management of environmental and heritage values.

Both the forest management system and ecologically sustainable forest management are adaptive and ongoing processes that have been, and will continue to be, incrementally amended to achieve better outcomes for the forest ecosystems, Traditional Owners and the Victorian community. For example, to strengthen the forest governance arrangements, the Office of the Conservation Regulator (OCR) was established in 2019 within DELWP. The OCR now has oversight of DELWP's regulatory functions in areas including the natural environment, timber harvesting, public land use, fire prevention, wildlife and biodiversity. Each year, the OCR conducts an independent environmental audit to assess VicForests' timber harvesting operations against the requirements of the *Code of Practice for Timber Production 2014*. It also conducts proactive inspections of current timber harvesting operations, investigates allegations of non-compliance and implements a forest protection survey program.

	Minister for Energy, Environment & Climate Change		Minister for Water	Minister for Agriculture	
Agency / Authority	DELWP	Parks Victoria	DELWP / Melbourne Water / CMAs	DJPR	VicForests
Key legislation	Forests Act 1958 Land Act 1958 Crown Land (Reserves) Act 1978 Conservation Forests and Lands Act 1987 Flora and Fauna Guarantee Act 1988 Sustainable Forests (Timber) Act 2004 Wildlife Act 1975	National Parks Act 1975 Crown Land (Reserves) Act 1978 Parks Victoria Act 2018 Wildlife Act 1975	Water Act 1989	Sustainable Forests (Timber) Act 2004	Sustainable Forests (Timber) Act 2004
Key forest management responsibilities	<ul style="list-style-type: none"> Establish Forest Management Plans Administer Forest Zoning Scheme in State Forests RFA implementation Regulate timber harvesting Action Statements for threatened species Forest fire management Prepare State of the Forest Reports 	<ul style="list-style-type: none"> Manage parks and reserves and ensure they are healthy and resilient for current and future generations Contribute to forest fire management in proximity to parks 	<ul style="list-style-type: none"> Manage water resources within Melbourne's designated water catchments Contribute to forest fire management in proximity to catchments 	<ul style="list-style-type: none"> Advice to Government on forest policy settings Approve Allocation Order to VicForests Oversee VicForests' development of Timber Release Plans 	<ul style="list-style-type: none"> Harvest, regrowing and commercial sale of timber from public native forests Manage operations in accordance with Allocation Order under Sustainable Forests (Timber) Act 2004 Develop Timber Release Plans for stakeholder review Develop Timber Utilisation Plans for areas outside Allocation Order

Figure 1. Overview of management responsibilities for forested public land

12. DELWP (December 2019), [Overview of Victoria's forest management system](#), DELWP, accessed 6 December 2022.

Components of Victoria's forest management system are administered by a number of state government agencies as well as by local government, but the system applies to both public and private land, albeit in slightly different ways. The key agencies, the legislation they administer and their responsibilities relating to the implementation of the forest management system on public land as at 2019 are shown in Figure 1.

Figure 2 presents a partial representation of the policy, planning and regulatory aspects of Victoria's forest management system as it existed in 2019. In addition to the regulatory oversight now provided by the Office of the Conservation Regulator (OCR), the Commissioner for Environmental Sustainability (CES) also provides independent and objective scientific reporting to policymakers, scientists and the Victorian community on Victoria's natural environment. The CES's responsibilities include the preparation of a five-yearly State of the Environment report which is tabled in the Victorian Parliament. Since 2015, the CES is also responsible for the preparation of performance reporting on environmental matters such as biodiversity targets which aim to stop the decline of native plants and animals.

The State of the Forests report is a five-yearly statutory obligation delivered by DELWP as required by the *Sustainable Forests (Timber) Act 2004* (Vic). The Minister approved DELWP's request for CES to prepare the State of the Forests 2018 Report. It was issued by CES in March 2019 but not tabled in Parliament. The State of the Forests 2018 Report included an assessment of the health of Victoria's public forests against 52 sustainability indicators, which were used to monitor progress on ecologically sustainable forest management as required under the RFAs. Under the modernised RFAs, the CES is a member of the panels that will conduct five-yearly reviews of the RFAs and the major event reviews when a major bushfire, flood or disease occurs.

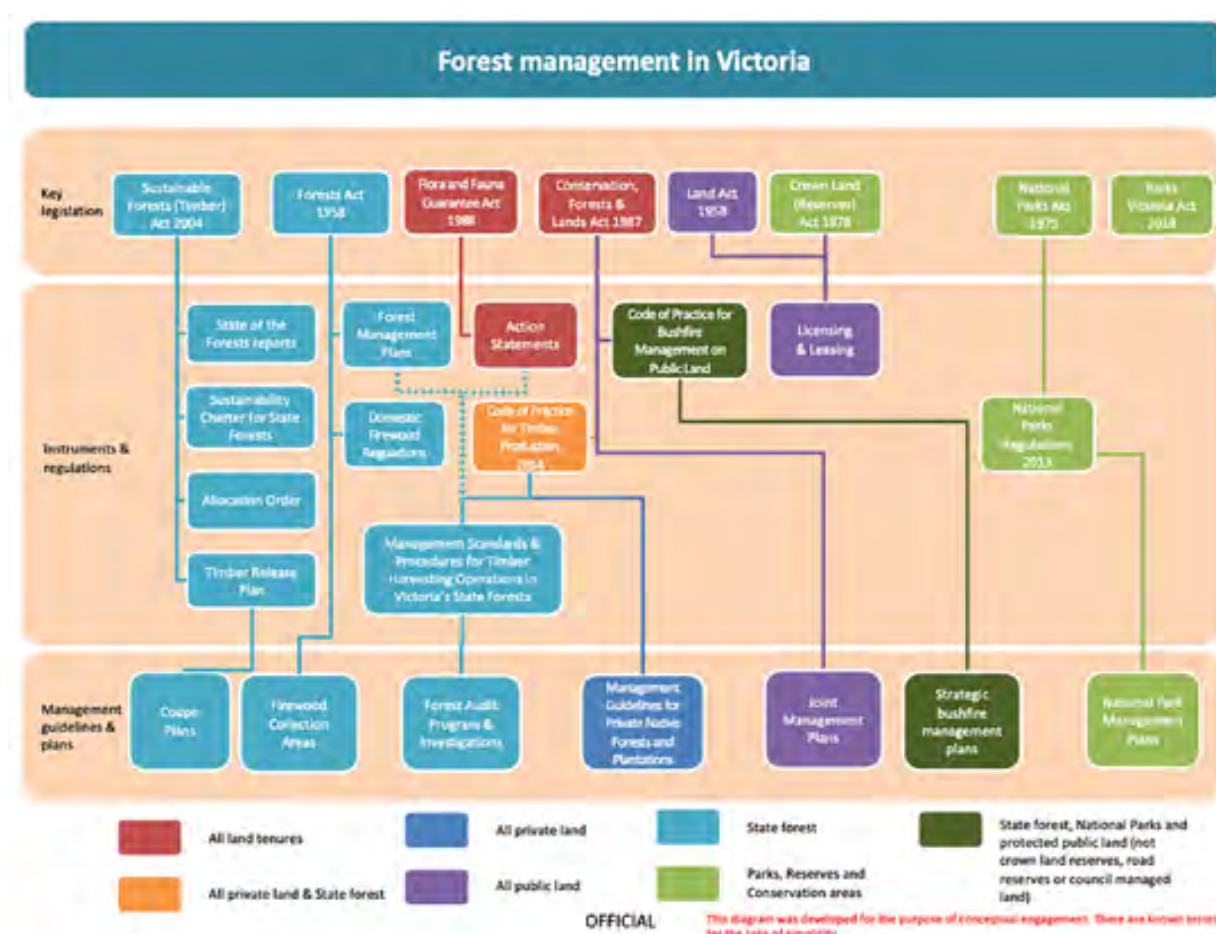


Figure 2. Victoria's policy, planning and regulatory framework for forest management

4.4 Enhancing Traditional Owner rights and partnerships on public forested lands

Victoria's Traditional Owners have intrinsic cultural and spiritual connection to land, water and other resources through their associations and relationship with Country. The Victorian Government recognises Traditional Owners and their rights through specific legislation and policies. Victoria's Traditional Owners can have legal recognition as Registered Aboriginal Parties under the *Aboriginal Heritage Act 2006* (Vic), with responsibility for managing and protecting Aboriginal cultural heritage within their appointed area. The *Traditional Owner Settlement Act 2010* (Vic) provides for the recognition of Traditional Owners and for conferring certain rights in public land and natural resource management by entering into a Recognition and Settlement Agreement.

The 2020 modernised RFAs include many new provisions,¹³ developed in collaboration with Traditional Owners, aimed at enhancing the opportunities for and partnerships with Traditional Owners for the management of public forests and seeking to support forest management that advances self-determination and partnership.

Through the modernised RFAs, both the Commonwealth and Victorian governments now recognise Matters of Traditional Owner Significance as matters of high importance to Traditional Owners. They also acknowledge the cultural obligations and responsibilities of Traditional Owners; the legal rights of Victorian Traditional Owners to partner in land, cultural heritage, natural resources and ecological management on Country; and the rights of Traditional Owners to practise cultural activities and generate economic, environmental, cultural and social benefits from the management and use of Country. They have agreed to assess and evaluate the extent to which Traditional Owner knowledge and its application to forest management has been advanced in the five-yearly reviews of the RFAs.

In addition, the Victorian Government has committed to:

- broadening the forest management system to provide for the management and protection of living natural and biocultural values and uses identified by Traditional Owners
- ensuring that Traditional Owners are empowered to have an active role in decision-making and the management of forests on public land
- developing and implementing a Traditional Owner cultural landscape strategy
- empowering Traditional Owners to lead the development, application and monitoring of Traditional Owner knowledge in land management practices and innovations
- developing a sustainable funding model to enable Traditional Owners to meaningfully partner in land, water, fire and environmental management
- developing and implementing the Victorian Traditional Owner Cultural Fire Strategy
- facilitating, where possible, the use of Country for traditional cultural practices such as cultural burning and healing by Traditional Owners
- empowering Traditional Owners to identify economic and employment opportunities from forests
- supporting data sovereignty for all Traditional Owners.

13. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clauses 54A, 54B, 54C, 55A, 55B, 55C and 55D, accessed 2 August 2021.

The 2021 Victorian Traditional Owner Cultural Landscapes Strategy,¹⁴ authored by Victorian Traditional Owners, sets out a framework and pathways to lead the planning and management of Country in line with Traditional Owners' cultural obligations to care for Country. It provides core principles, tangible actions and a common language to underpin the approach to be used in future forest and parks management decisions by DELWP and Parks Victoria, including on policy and legislative reform.

The Victorian Traditional Owner Cultural Fire Strategy¹⁵ articulates the aspirations of Traditional Owners to practise cultural burning and ensure knowledge about fire is sustained through generations. The strategy will help provide policy direction and a framework across Victoria's fire and land management agencies to support Traditional Owners to undertake cultural burning for the range of cultural values entailed in caring for Country. The strategy builds on local partnerships developed in the past five years between Traditional Owners and fire and land management agencies. In 2018, FFMVic enabled Traditional Owners to plan and lead cultural burns on public land across Victoria, and more are planned. DELWP provides operational and planning support to Traditional Owners to use cultural fire on Country, to help achieve the Culture & Country goals in the Victorian Aboriginal Affairs Framework 2018–2023.¹⁶ Traditional Owners will lead the implementation of the strategy, with support from DELWP, Parks Victoria and the CFA.

4.5 Arrangements for managing fire in RFA regions

Victoria has long been recognised as one of the most bushfire-prone areas in the world, due to its terrain, its naturally flammable vegetation and a Mediterranean climate with frequent exposure to periods of hot, dry, windy weather. Lightning is the most common cause of bushfires in Victoria, igniting the highest number of bushfires, which subsequently account for nearly half of the area burnt by bushfires in the state. Other major causes are human influences including arson, use of machinery, escapes from planned burns or campfires and faulty electricity supply lines. Bushfires are a regular feature of Victoria's natural environment, and fire plays a key role in many of its ecosystems. However, changes to the frequency and intensity of fire can threaten ecosystem health. The frequency, extent and intensity of bushfires in Victoria is increasing as a result of climate change and, to a lesser extent, population growth leading to more human sources of ignition.

The modernised Victorian RFAs cover some aspects related to bushfires and management of fire on public land. The key elements of Victoria's public land fire management system are included as part of Victoria's forest management system, which provides for the protection and management of Matters of National Environmental Significance and the management of the CAR reserve system. Both inappropriate fire regimes and climate change are identified as threatening processes for listed species and communities,¹⁷ along with the need to provide for active management in native forests to build their resilience and diversity.¹⁸

14. Federation of Victorian Traditional Owner Corporations (27 August 2021), [Cultural Landscapes Strategy](#), accessed 7 December 2022.

15. Forest Fire Management Victoria (23 December 2020) The Victorian Traditional Owner Fire Strategy, accessed 2 March 2022.

16. First Peoples – State Relations (June 2018) Victorian Aboriginal Affairs Framework (2018–2023), State Government of Victoria, accessed 2 March 2022.

17. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 15D, accessed 2 August 2021.

18. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 15G (d), accessed 2 August 2021.

For species and communities that are considered to be climate-change vulnerable, there are requirements¹⁹ to apply additional measures, such as more active management to address threatening processes as well as to use best endeavours to improve their climate change resilience and future viability. For the CAR reserve system, the RFAs include a requirement to identify opportunities to reduce the extent and severity of threatening processes, limit the impacts of bushfires and planned burning and their associated operational activities and adapt to the impacts of natural disturbances, such as bushfires.²⁰ When reviewing any forest management plan, Victoria will have regard to the need for active management to reduce bushfire risk and support the recovery of forests, and the communities that depend on them, after bushfire.²¹

In Victoria, DELWP is responsible for the prevention and suppression of fires on Crown land, including the areas of public land covered by RFAs. This includes state forests, national parks and protected public land, which collectively cover some 7.7 million ha of Victoria. The Country Fire Authority (CFA) is responsible for the suppression of fires on private lands defined as being part of the country area of Victoria.

Since the 2009 Victorian Black Saturday bushfires, significant reforms have been made to Victoria's emergency management system, including strengthening the way the responsible agencies work in an integrated manner during bushfires. Since 2014, Emergency Management Victoria supports the Emergency Management Commissioner to lead and coordinate emergency preparedness, response and recovery across Victoria's emergency management sector in conjunction with communities, government, agencies and business. In 2015, the Victorian Government released its Victoria Safer Together policy, bringing the responsible agencies together to improve bushfire preparedness and reduce risks across private and public lands. The staff of the Victorian public land management agencies DELWP, Parks Victoria, Melbourne Water and VicForests, work together under Forest Fire Management Victoria to manage bushfires and bushfire risks on public land.

Victoria's *Code of Practice for Bushfire Management on Public Land 2012*²² sets out the standards and guidelines that apply to the management of fire on public land, including planned burning for both fuel management and ecological management. With respect to planned burning, the code provides guidance that the department will seek to use fire in the landscape to maintain or improve the resilience of natural ecosystems and their ability to deliver services such as biodiversity, water, carbon storage and forest products. With respect to bushfires, the code provides guidance that upon the detection of a bushfire, an incident action plan will be developed and that the department will implement tactics to bring the bushfire under control, with the protection of human life as the highest priority, while seeking to minimise environmental damage.

The code identifies that Victoria has two primary objectives for bushfire management on public land:

- to minimise the impact of major bushfires on human life, communities, essential and community infrastructure, industries, the economy and the environment. Human life will be afforded priority over all other considerations
- to maintain or improve the resilience of natural ecosystems and their ability to deliver services such as biodiversity, water, carbon storage and forest products.

19. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clauses 57A and 52F, accessed 2 August 2021.

20. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 49C (a), (c), (f), accessed 2 August 2021.

21. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 51A (g) accessed 2 August 2021.

22. Department of Sustainability and Environment (DSE) (2012), [Code of Practice for Bushfire Management on Public Land](#), DSE, accessed 9 November 2021.

DELWP prepares strategic bushfire management plans,²³ which are developed in collaboration with public and private land managers, the community and interested stakeholders. These plans establish strategies at a regional and landscape scale to achieve these two objectives. They take fire history into account, assess the multiple values to be protected and use long-term projections and bushfire modelling to identify the appropriate bushfire management strategies and fuel management zoning system. The key values considered are:

- human life, residential properties and livelihood assets, and maintaining community wellbeing
- critical infrastructure
- areas of cultural significance
- drivers of the economy
- the environment.

Biodiversity values (a subset of environmental values) are assessed based on high-value ecological areas, the areas most susceptible to fire due to habitat loss and waterway impacts.

Bushfire risk to any given location changes over time, based on the combined factors of bushfire history and the implementation of fuel management activities. The system that DELWP uses to measure landscape-level bushfire risk is based on simulating a set of severe bushfires across the landscape using the PHOENIX RapidFire computer modelling tool. In 2016, Victoria adopted a statewide residual risk target of 70 per cent to guide fuel management on public land. Planned burn scenarios are compared against a hypothetical scenario where all vegetation has grown to its maximum risk level of 100 per cent. DELWP then establishes residual risk targets within each region based on modelling and the ability to deliver planned burns in that region. DELWP and the CFA jointly document their planned fuel management activities in each region in a three-year joint fuel management plan.

The suppression of each bushfire is managed in accordance with the principles of the Australasian Inter-service Incident Management System (AIIMS), with an appointed incident controller being responsible for the management of all necessary suppression activities.

During a bushfire, the incident controller needs to determine the potential impacts and consequences of the incident, including those to response personnel, vulnerable people, the rest of the community, critical infrastructure and built assets, industry, agriculture and environmental and cultural assets. The incident controller must then prioritise the risks to the different assets and values in accordance with the state strategic control priorities. Within the AIIMS incident management structure, the intelligence function may include technical specialists to provide advice to the incident management team on biodiversity and other environmental matters, as well as on cultural heritage sites.

23. For example: State Government of Victoria (2020) [Gippsland Bushfire Management Strategy](#), State Government of Victoria, accessed 3 March 2022.

4.6 Major event

The 2019–20 Victorian bushfire season began on 21 November 2019 when 60 fires ignited across the state. The ferocity and severity of the 2019–20 season was influenced by the extended dry period that preceded the bushfires and the prevailing weather conditions during the bushfires. By 27 February 2020, when all significant bushfires were contained, over 1.5 million ha had burnt, including nearly 1.39 million ha of native forest or 18 per cent of Victoria's public native forests.²⁴ The fires claimed five lives, destroyed 372 residences and significant public infrastructure, devastated the environment and severely affected local economies.

During the season, every Victorian RFA region was impacted by bushfires, but to varying extents. The fires in East Gippsland directly impacted most communities within the East Gippsland and Gippsland RFA regions. In particular the townships of Mallacoota, Genoa, Cann River, Orbost, Goongerah, Wairewa, Sarsfield, Bruthen, Tambo Crossing, Swifts Creek, Omeo and Buchan were significantly impacted. In all, more than 60,000 people were estimated to have evacuated from the East Gippsland and Hume regions.

The East Gippsland RFA region (Figure 3) was most impacted by the 2019–20 bushfires, extending from the western to eastern areas and through much of the forests within the southern areas. Lightning ignited multiple bushfires in forests north of Bruthen in November 2019 and additional bushfires started in mid-December, all of which resulted in two major bushfire complexes. The situation was exacerbated when a new bushfire started in forests west of Cann River on 29 December 2019, subsequently burning into Mallacoota and Genoa and then into southern NSW. Within the East Gippsland RFA region, over 67 per cent of the total area and 70 per cent of the forests were burnt.

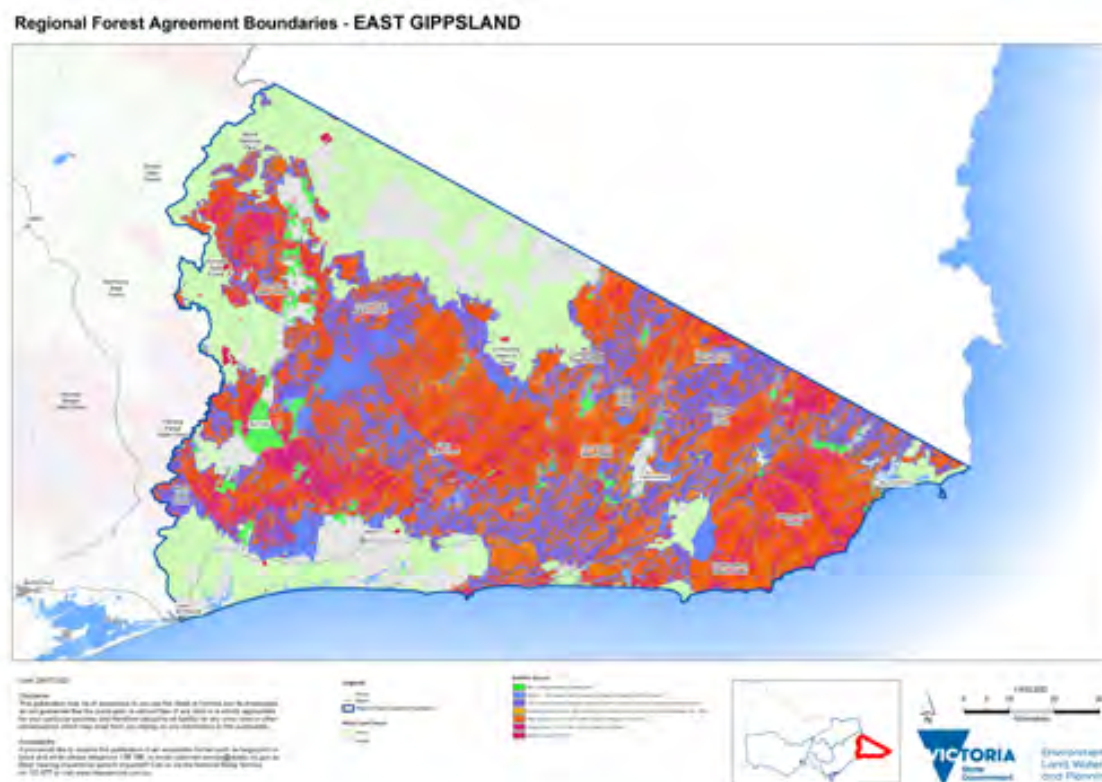


Figure 3. Map of the fire extent and severity within the East Gippsland RFA

24. Australian Government, National Recovery and Resilience Agency, Australian Disaster Resilience Knowledge Hub (n.d.) Bushfires – Black Summer, Australian Government, accessed 2 December 2021. Further information on the development of and impacts from the 2019–20 bushfires in Victoria can be found on the Australian Institute for Disaster Resilience's Knowledge Hub.

Bushfires impacted the northern and eastern areas of the Gippsland RFA region. Lightning ignited several bushfires in forests north of Bruthen in November 2019 and additional bushfires started in mid-December, which together resulted in two major bushfire complexes. One of the major bushfire complexes, the Tambo 39 W Tree-Yalmy bushfire, covered areas in both the Gippsland and East Gippsland RFA regions. The northern end of the Gippsland RFA region was also impacted by bushfires that burnt out of the North East RFA region. In the Gippsland RFA region, 12 per cent of the area and 19 per cent of the forest was impacted by the bushfires (Figure 4).

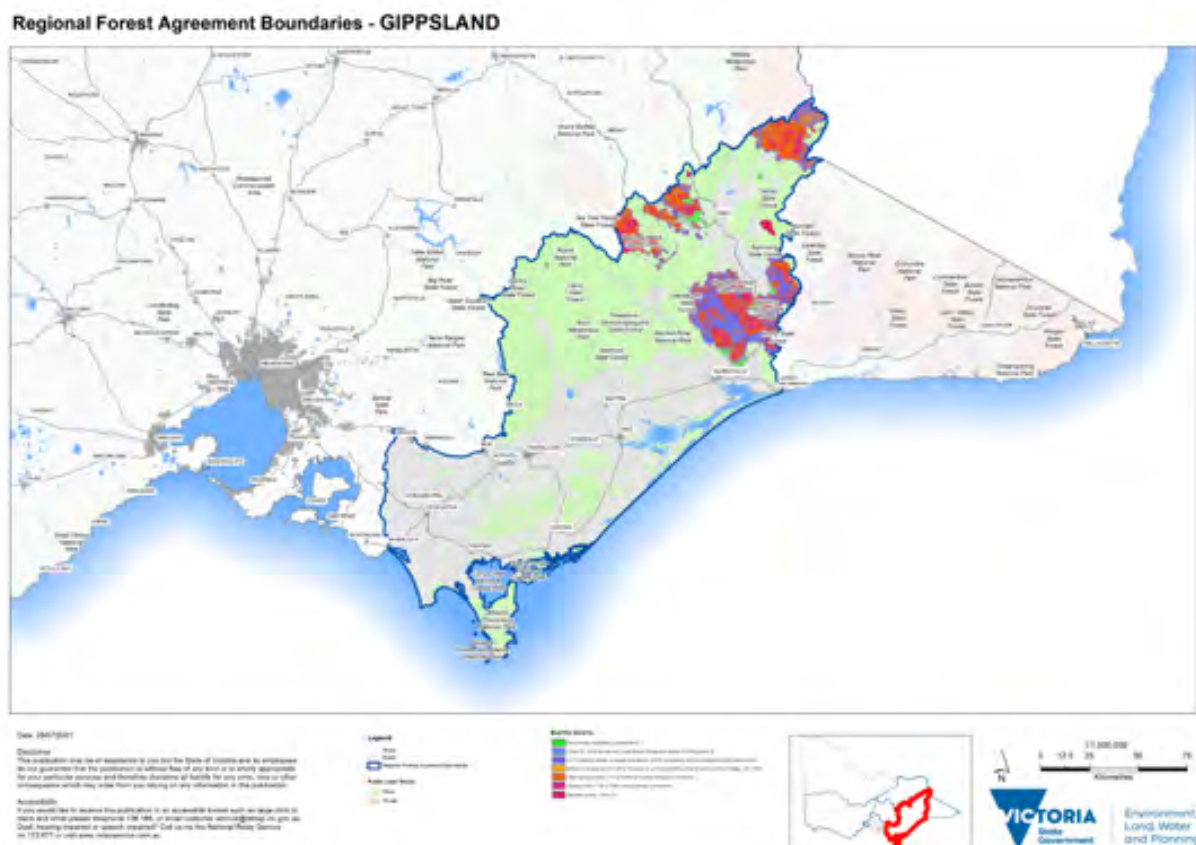


Figure 4. Map of the fire extent and severity within the Gippsland RFA

The North East RFA region was impacted by two major bushfire complexes (Figure 5). The first bushfire complex originated from lightning strikes in the Abbeyard area and in the Alpine National Park and ultimately extended into the Gippsland RFA region around the Mt Hotham village, threatening the township of Omeo. The second bushfire complex originated from a fire in NSW which grew in size as further lightning strikes occurred in forests to the south of Corryong, and it eventually extended into the northern end of the Gippsland RFA region. In total, 15 per cent of the North East RFA region was impacted by bushfires and 22 per cent of the forests were burnt.

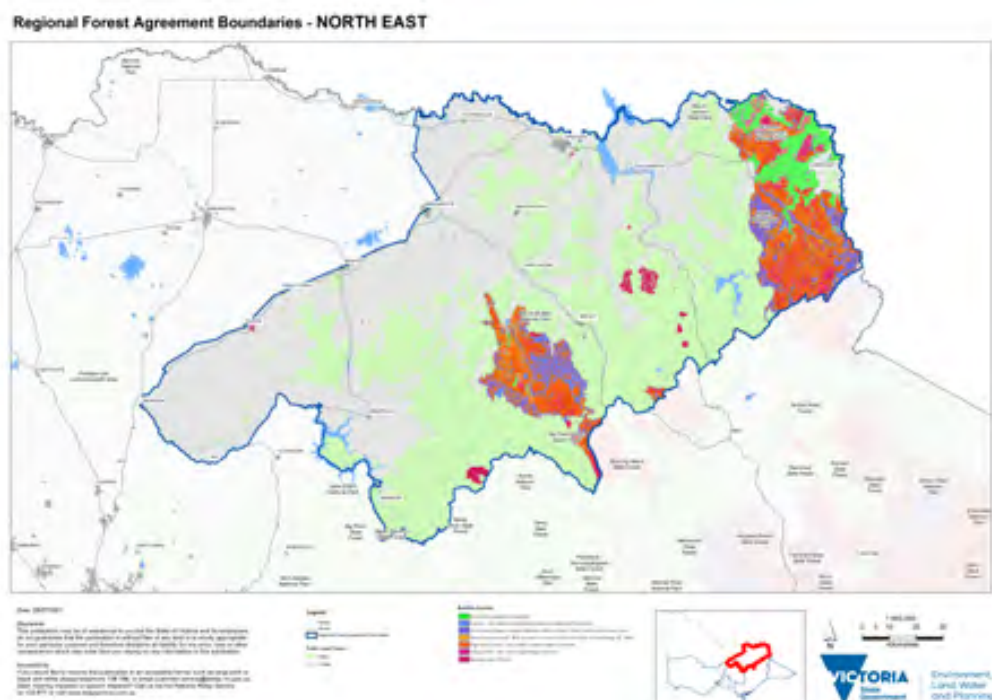


Figure 5. Map of the fire extent and severity within the North East RFA

The West Victoria and Central Highland RFA regions were not as badly impacted by the 2019–20 bushfires. In the West Victoria RFA region, about 12,500 ha was burnt. Critically, the bushfires burnt within the Budj Bim National Park and impacted the UNESCO World Heritage listed Budj Bim Cultural Landscape (Figure 6). In the Central Highlands RFA region, a bushfire in the Plenty Gorge Parklands near Melbourne burnt 53 ha (Figure 7).

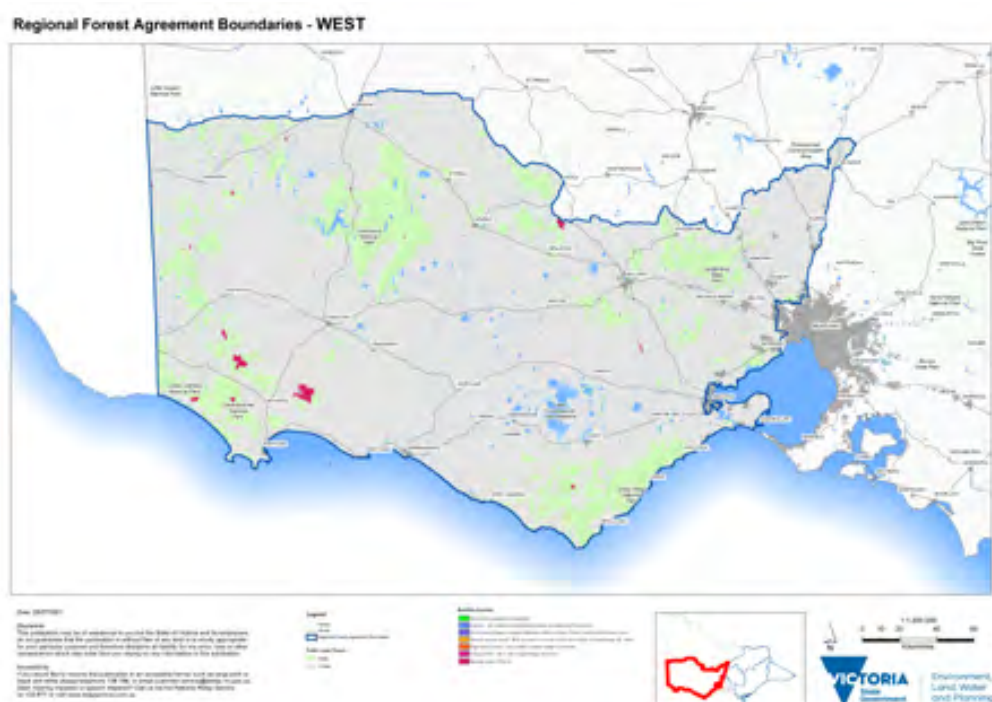


Figure 6. Map of the fire extent and severity in the West RFA

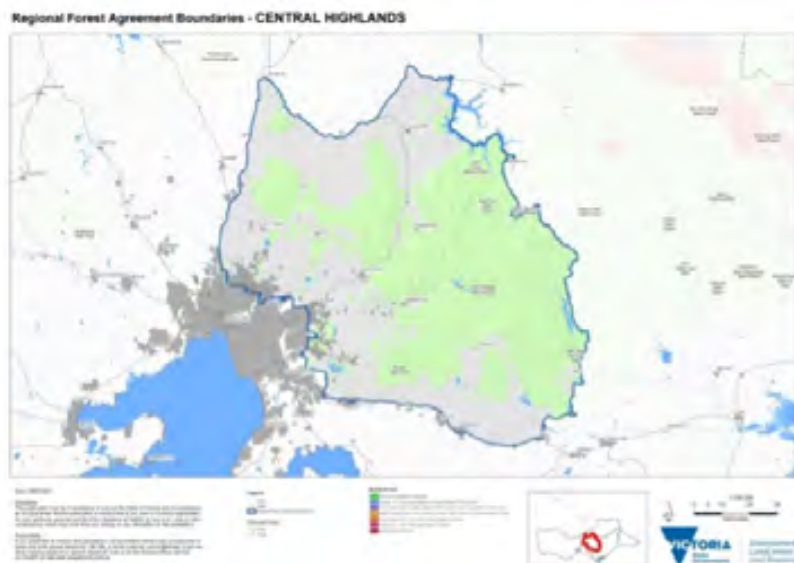


Figure 7. Map of the fire extent and severity in the Central Highlands RFA

With nearly 1.39 million ha of native forests burnt, it is unsurprising that there was a large impact on the flora, fauna and ecological communities that exist in these forests. However, these bushfires also had major impacts on many other forest values covered by Victoria's RFAs, including listed and unlisted Aboriginal cultural heritage sites, non-Indigenous heritage sites, timber resources, apiculture, tourism and recreation sites and ecosystem services. All of these impacts are examined in the body of this report.

The Panel considers that the very considerable efforts of the firefighters involved during the prolonged bushfire season, across multiple bushfire fronts and in incredibly challenging and dangerous conditions, was outstanding. The combined efforts of Forest Fire Management Victoria, the Country Fire Authority, Forest Industry Brigades, Metropolitan Fire Brigade and the countless other volunteers prevented further loss of life. While the RFAs do address aspects of fire management, analysis of the response of fire management authorities to the 2019–20 bushfire season is outside the scope of the Major Event Review. The Victorian Inspector-General for Emergency Management (IGEM) conducted an inquiry into the 2019–20 Victorian fire season. The reports²⁵ from that inquiry can be found on the IGEM website (www.igem.vic.gov.au).

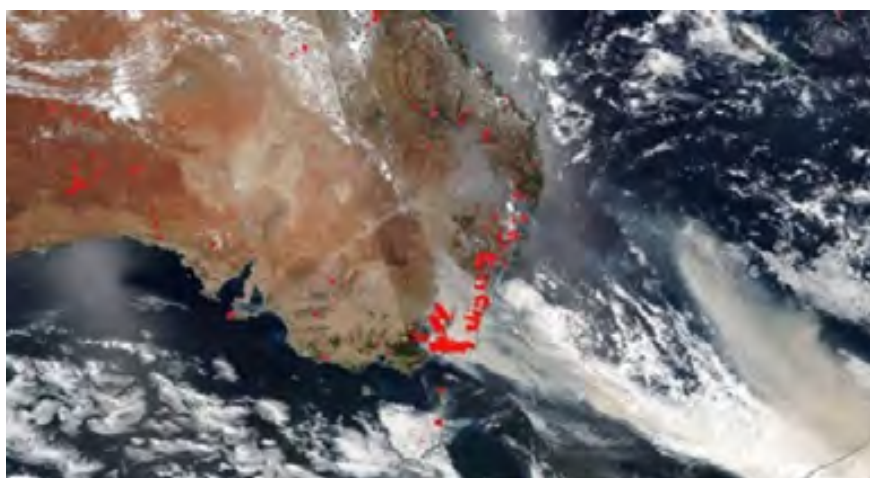


IMAGE: NOAA-NASA's Suomi NPP satellite, 1 January 2020.

25. Inspector-General for Emergency Management (IGEM) (31 July 2020) [Inquiry into the 2019–20 Victorian fire season Phase 1 report](#), IGEM, accessed 25 July 2021.

4.7 Major Event Review

4.7.1 Major Event Review process

The ability to undertake a Major Event Review was a new addition to the modernised Victorian RFAs. In accordance with the modernised RFAs,²⁶ a major event can be any event that occurs within a RFA area that has the potential to significantly impact on the objects and operation of the RFA, the CAR Reserve System, ecologically sustainable forest management, one or more Matters of National Environmental Significance or the stability of forests and forest industries. Under the modernised RFAs, within six months of the occurrence of a major event, the Parties to the RFAs may jointly agree to conduct a Major Event Review by a Panel under the terms prescribed in the RFAs.²⁷ Given the extent of the 2019–20 bushfires, the Victorian Minister for Energy, Environment and Climate Change, the Hon Minister Lily D'Ambrosio and the Commonwealth Assistant Minister for Forestry and Fisheries, the Hon Jonathon Duniam agreed that the first Major Event Review should examine the impacts of the 2019–20 bushfires and be undertaken for all Victorian RFAs.

4.7.2 Scope of the Review

The scope of this Major Event Review was agreed by the Parties in September 2020, prior to the Panel being established. The Major Event Review Scoping Agreement²⁸ specifies both the scope of the Major Event Review and the process for conducting the Major Event Review. The Major Event Review will assess the impacts of the 2019–20 bushfires on:

- a. operation of the RFAs
- b. ESFM
- c. the CAR reserve system
- d. the effective management and protection of MNES
- e. Harvest Level
- f. the long-term stability of Forests and Forest Industries.

The Major Event Review will include public consultation and an assessment of the impacts of the 2019–20 bushfires on Environment and Heritage Values, Listed Species and Communities, Ecosystem Services, Economic and Social Values.

The Review will consider and make recommendations on what, if any, remedial action needs to be undertaken to address the impacts of the 2019–20 bushfires.

4.7.3 Independent Panel

The modernised RFAs specify that a Major Event Review is to be conducted by an independent Panel.²⁹ The Panel must comprise the Victorian Commissioner for Environmental Sustainability, a Panel member selected by the Commonwealth and agreed to by Victoria, and it can include other members, including a Traditional Owner member, as agreed by the Parties.

26. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 2, accessed 2 August 2021.

27. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clauses 31D, 31E, and 32A, 32B, 32C, 32D, 32E, accessed 2 August 2021.

28. The Commonwealth of Australia and the State of Victoria (September 2020) [Major Event Review Scoping Agreement](#) to assess the impacts of the 2019–20 bushfires, The Commonwealth of Australia and the State of Victoria, accessed 8 March 2021.

29. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 32B (b), accessed 2 August 2021.

In her role as Commissioner for Environmental Sustainability, Dr Gillian Sparkes was appointed to the Panel. Dr Tony Bartlett was appointed to the Panel as the Commonwealth nominated member and agreed to by Victoria. Dr Bartlett was nominated given his extensive experience in both forestry and fire management and his specific knowledge of the Victorian RFAs. The Parties agreed to appoint a Traditional Owner Panel member. Ms Katherine Mullett was appointed as the Traditional Owner member following an expression of interest process run by the Victorian Department of Environment, Land, Water and Planning. Ms Mullett is a Gurnaikurnai and Monero Ngarigo Woman working on Country. Ms Mullett has a strong background in cultural heritage management and land management and experience in on ground fire management, as well as information gathering and analysis.

In early March 2021, the Panel received an induction from the Parties on the history of RFAs and key aspects of forest management in Victoria, impacts of the 2019–20 bushfires including on biodiversity and ecological communities, forest harvesting, and operations and assets managed by Parks Victoria, as well as on the Panel's functions and the governance of the Major Event Review. The Panel received further briefings in June 2021 that focused on the forest management system and included presentations from the Office of the Conservation Regulator, VicForests and members of DELWP's Biodiversity team presenting on old growth forests and threatened species management. In September, the Panel received additional briefings from Forest Fire Management Victoria, the Department of Jobs, Precincts and Regions, the Department of Regional Development Victoria, Bushfire Recovery Victoria, the Country Fire Authority and scientists from the University of Melbourne.

The Panel was provided with data from DELWP and DAWE that had been compiled for the *Assessment of matters pertaining to the extension of the Victorian RFAs*, from regular reporting functions of the Parties and through surveys conducted following the bushfires. During the Major Event Review process, the Panel also made over 250 requests to the Parties for additional information and data on a wide range of topics related to the scope of the MER. In addition to quantitative data supplied by the Parties, the Panel received data and information from other government agencies, industry bodies, businesses involved in apiculture, plantation forestry and timber processing, as well as from a range of community members and non-government organisations about the environmental impacts of the bushfires and timber harvesting operations. Unfortunately, due to COVID-19 restrictions, the Panel members were unable to personally verify the acquired data via field trips to the fire-affected areas.

The Panel considered all of these data and information during its consideration of the impacts of the 2019–20 bushfires on the matters specified by the Scoping Agreement. For many of the RFA values, completing the assessments as required by the Scoping Agreement required consideration of extensive amounts of quantitative and qualitative data. These data were analysed by the Office of the Commissioner for Environmental Sustainability. Further details on specific analysis methods are provided in the relevant chapters.

This report has been prepared by the Major Event Review Panel members. When writing the report the Panel drew on the wealth of data and information provided to it by the Parties as well through briefings and the consultation and engagement processes.

In considering how to structure its report, the Panel needed to consider how best it could cover all the matters specified by the Scoping Agreement while recognising that some of the topics in the specified list were being undertaken by Victoria and some topics specified in the subsidiary paragraph, such as Environment and Heritage Values and Listed Species and Communities, were related to topics in the specified list. The Panel considered how best to cover the breadth of issues arising from its engagement with Traditional Owners and decided that most should be covered in one chapter except where they were highly relevant to another chapter. The Panel also felt that the topic 'Long-term Stability of Forests' should

be separated from the topic 'Long-term Stability of Forest Industries' as it covered both the conservation of environmental values and the maintenance of the productive capacity of forests. The Panel agreed that it would structure the assessment part its report around the following eight chapters:

- CAR Reserve System
- Matters of National Environmental Significance
- Other Environment and Heritage and Values
- Forest Industries
- Economic and Social Impacts
- Traditional Owners
- Ecologically Sustainable Forest Management
- Operation of Regional Forest Agreements.

Within this structure, the Panel has covered some specified topics as stand-alone sections, including the effective management and protection of Matters of National Environmental Significance (Chapter 6), and ecologically sustainable forest management (Chapter 10) and the impacts on the operation of the RFAs (Chapter 11). It has considered the impacts on other topics as follows: Listed Species and Communities (Chapters 5.3.2 and 6.3), Environment and Heritage Values (Chapter 6), Ecosystem Services (Chapter 6.7), and Economic and Social values (Chapter 8). The impacts on the long-term stability of the forests are covered in Chapter 10.4 while the impacts on the long-term stability of forest industries are covered in Chapter 7.

During the MER, Victoria was conducting reviews of the CAR reserve system and Harvest Level in parallel with the Major Event Review process. The Parties provided briefings on these two review processes but were unable to share their data with the Panel. The outcomes of these reviews were not available in time to be included as part of the Panel's deliberations. The panel was able to make its own assessment of the impacts the bushfires on the CAR reserve system (Chapter 5) from available data. However, the Panel only had access to limited information through presentations by VicForests' about its wood flow modelling process and estimates of fire-impacted log volumes. The Panel was not briefed about the methodology used in Victoria's review of Harvest Level and could not conduct its own assessment of the impacts of the bushfires on Harvest Level. A brief description of this specified topic is included in Section 7.1.

4.8 Stakeholder and community consultation

4.8.1 Consultation and engagement

Under the Major Event Review Scoping Agreement, the Panel was required to develop a plan for consultation and engagement with Traditional Owners, stakeholders and communities. The Panel discussed this issue as part of its strategic planning process at the beginning of the MER. It recognised that in order to do this task effectively it would need to be supported by specialised consultants. The Parties agreed to support this work through the engagement of two consultancies: Where To Research, who supported the stakeholder and community consultation; and Ty Caling and Associates, who supported the Traditional Owner engagement. The consultation and engagement process included three components:

- Engage Victoria comment process
- Consultation with communities and stakeholders
- Engagement with Traditional Owners.

4.8.2 Engage Victoria process

Prior to the Panel beginning its consultation and engagement process, the Parties developed and released the Major Event Review Summary Report³⁰ for use in the public consultation and feedback process. The Summary Report was provided for public comment via the Engage Victoria website from 11 June to 31 August 2021. The Parties invited interested stakeholders to provide both written submissions and/or to complete a survey, reflecting on the Summary Report.

In total, 79 survey responses and 134 written submissions were received. Most of the submissions focused on environmental concerns, including the impacts of the bushfires and more generally about the RFAs and forestry. However, a smaller number of submissions from the forestry industry provided in-depth information on the impacts on the industry.

The Panel was then provided with the submissions and a summary of outcomes of the Engage Victoria process.³¹ Importantly, the Summary Report and the report on the outcomes of the Engage Victoria consultation (see Appendix C) are products of the Parties. The Panel was able to use the information provided in its deliberations.

4.8.3 Community and stakeholder consultations

The Panel undertook extensive public and stakeholder consultations from August to September 2021. The Panel conducted a total of 28 open community consultation sessions and targeted consultations with specific businesses or non-government organisations. This allowed the Panel to meet with as many different stakeholders and community members as possible. The Panel intended to conduct in-person consultations, but all consultations sessions were held online due to COVID-19 travel restrictions.

The Panel wanted to ensure that stakeholders from impacted communities were able to participate in the consultation process. To facilitate this, the Panel arranged open consultation sessions for communities that were most impacted by the bushfires, including:

- The Mallacoota region
- Bairnsdale region
- Orbost and Omeo regions
- Corryong region
- Myrtleford region
- East Gippsland region.

These sessions were advertised through the Parties' websites, Twitter accounts and DELWP Regional Offices. Interested community members participated in each consultation session except the one planned for the Corryong and Myrtleford regions. The Panel is aware that some community and industry groups encouraged their members to participate in the Major Event Review either by attending the sessions or making a submission through Engage Victoria.

30. DAWE and the State Government of Victoria (2021) [Victorian Regional Forest Agreement Major Event Review of the 2019–20 bushfires: Summary report: information and data to inform public consultation](#), DAWE and the State Government of Victoria, accessed 1 March 2022.

31. See Appendix C.

In addition to these open community sessions, the Panel undertook consultation with stakeholders that had expressed an interest in being involved in the Major Event Review process during the RFA modernisation process. The Panel received an initial list of stakeholders who were involved in the RFA process and drawing on their own networks, identified additional contacts who the Panel wished to meet with. The stakeholder categories included:

- Forest industry peak bodies (national and state)
- Environmental peak and community groups
- Recreational peak and community groups
- Tourism groups and businesses
- Local businesses
- Forest ecologists and researchers
- State agencies and local governments.

The Panel wrote to the identified stakeholders and invited them to attend themed consultation sessions. These themed sessions included environmental groups and government stakeholders; forest industries; recreational and community groups; tourism and other businesses. Additionally, the Panel invited specific groups to meet individually. These sessions tended to be focused on a deep dive with the stakeholders on the impact of the bushfire from their perspective, the effectiveness of the RFAs and any recommendations they may have.

A number of key themes were raised regularly during the consultations including:

- The RFAs are not serving the purpose of protecting native forests and are not representing the interests of all forest users;
- That there is a need for greater evidence, and a scientific and data-driven approach to determine appropriate protections;
- The inclusion of Traditional Owners and practices in the management of forests are key to the future of forests;
- That current fire management practices, in particular fuel load reduction, are problematic; and
- There is a need for greater leadership and focus on transitioning forestry industries out of native forest logging.

A report of the Panel's stakeholder and community consultation process was prepared by Where To Research and provided to the Panel. This report is included as Appendix B.

During the Major Event Review process, the Panel met with a wide range of stakeholders to ensure it understood the breadth of perspectives about the impacts of the bushfires on forest values covered by Victoria's RFAs. Discussions were held with representatives from environmental NGOs including: the Victorian National Parks Association, the Wilderness Society, Victorian Field Naturalists, the East Gippsland Conservation Management Network, Birdlife East Gippsland, Metung Science Forum and the Goongerah Environment Centre.

The Panel met with a diverse range of forest industries, including the Victorian Forest Products Association, Australian Forest Products Association, Forest and Wood Communities Australia, the Forest Contractors Association and a major wood processor – Australian Sustainable Hardwoods. Discussions were held also with representatives from three private plantation owners: Hancock Victorian Plantations, Southern Cross Forests and Pentarch Forestry Services. Discussions were held with representatives of the Victorian Apiarists Association, the Sporting Shooters of Australia and the Australian Camps Association.

To improve its understanding of scientific aspects of forest and fire management, the Panel received presentations from academics from the University of Melbourne's School of Ecosystem and Forest Sciences and Australian National University's Fenner School of Environment and Society, as well as from forest science members of the Institute of Foresters Australia-Australian Forest Growers. The Panel also heard from representatives from Australia's two independent forest certification schemes: the Forest Stewardship Council; and Responsible Wood.

The Panel also had briefings from affected local Governments, Timber Towns, Bushfire Recovery Victoria, Regional Development Victoria, Department of Jobs, Precincts and Regions, the Office of the Conservation Regulator and VicForests. In relation to bushfire management the Panel received briefings from the Country Fire Authority (CFA), Forest Fire Management Victoria (FFMVic) and some of DELWP's regional staff involved in both fire management planning and the management of bushfire suppression operations.

4.8.4 Engagement with Traditional Owners

Simultaneous to the community consultation, the Panel implemented an extensive consultation and engagement process with Traditional Owner groups from across Victoria. The Panel was committed to holistic and genuine engagement with Traditional Owners and for the engagement to be informed by Traditional Owner preferences. This approach was acknowledged by several of the Traditional Owner groups. The Panel had a preference to spend time with Traditional Owners on Country but were unable to do so due to COVID travel restrictions and considerations. The consultant Ty Caling greatly assisted the Panel to make contact with each Traditional Owner group and then worked with Katherine Mullett to develop an appropriate engagement strategy and program.

The Panel utilised a tiered approach to Traditional Owner engagement based on degree of impact by the 2019–20 bushfires, legal recognition status and how the group wished to engage in the Major Event Review. The Panel wrote to all Victorian Traditional Owner groups that were registered with the Office of the Registrar of Indigenous Corporations about the Major Event Review process. The Panel identified 29 Traditional Owner groups and organisations that it wished to meet with due to impacts of the 2019–20 bushfires on their Country. Of these 29, eight Traditional Owner groups with legal recognition and eight groups that do not currently have legal recognition agreed to meet with the Panel. The consultant facilitated each engagement discussion and when requested provided a record of the discussions to the Traditional Owner group. The Panel also met with the Victorian Federation of Traditional Owner Corporations (FVTOC). Between August and November 2021, a total of 22 meetings were held with Traditional Owner groups, with some groups requesting multiple meetings with the Panel.

Due to the Panel's desire for the engagement to be led by Traditional Owners, the discussions were often quite broad. There were, however, themes that were raised regularly including:

- Concerns about the impact and management of Aboriginal Cultural Heritage;
- Access to Country, in particular following the 2019–20 bushfires, not being supported to allow Traditional Owners to heal and to be involved in the healing of Country;
- Concerns around operationalising the clauses related to Traditional Owners in the modernised RFAs;
- The ability of Traditional Owners to conduct cultural burning or cool burns on Country;
- A desire to be actively involved in the management of forests to provide a more holistic view and management of Country.

A key issue that was clear to the Panel during the engagement process is the contrast that exists between Traditional Owner groups with and without legal recognition in terms of their ability to participate in such processes. Many Traditional Owner groups raised this as an issue and that the inequitable consultation and engagement with Traditional Owner groups across Victoria exacerbates many of the issues of concern to them. The Panel was encouraged to hear that some government organisations are trying to improve engagement with all Traditional Owners and, in general, recommends that all agencies adopt a holistic engagement approach.



Photo credit: Cultural marker tree, carved, by Traditional owners after the 2004 fires. © Katherine Mullett



Photo credit © State of Victoria, DELWP.

5. CAR reserve system

5.1 Background

Victoria's modernised Regional Forest Agreements (RFAs) commit to the establishment and maintenance of a comprehensive, adequate and representative (CAR) reserve system.

The CAR reserve system is a key mechanism within each RFA region for protection of multiple forest values including: biodiversity, old growth forests and wilderness values and for the conservation and protection of vulnerable, rare or endangered ecological vegetation class (EVC) communities. The CAR reserve system makes a key contribution to delivering on the objective of ecologically sustainable forest management set out in the RFAs.

Each Victorian RFA commits Victoria to maintain a CAR reserve system in the RFA region 'that satisfies the JANIS Reserve Criteria ... and contributes towards the National Reserve System in respect of forest communities'. (Central Highlands RFA, clause 62A)

The RFAs set out that this is to be achieved through provision of each of the constituent elements of the system (Central Highlands RFA, clause 61A), which are:

- Dedicated reserves. This comprises reserves established through legislation for conservation purposes, such as national parks, state parks and flora and fauna reserves
- Informal reserves. This comprises elements of the Special Protection Zone (SPZ) in state forests and other areas of public land

- Values protected by prescription. This comprises elements of the General Management Zone (GMZ) or the Special Management Zone (SMZ) protected by regional prescriptions, including stream buffers and rainforest
- Private land mechanisms which ensure protection, such as covenants on freehold land.

The overall extent of CAR reserve is demonstrated in Table 1 by type, tenure and RFA region.

Table 1. CAR type and tenure by RFA region (ha) recorded in 2018³²

RFA region	Dedicated	SPZ	Covenant	Prescription	GMZ/SMZ	Other public land/private	Total
Central Highlands	183,556	94,727	330	84,319	179,709	558,976	1,101,617
East Gippsland	465,746	109,785	33	87,833	318,217	173,920	1,155,534
Gippsland	549,743	252,276	28,933	211,080	325,882	1,278,592	2,646,506
North East	434,099	172,566	294	233,890	238,395	1,197,092	2,276,336
West	542,109	130,134	6,380	6,514	159,809	4,915,032	5,759,978
Total	2,175,253	759,488	35,970	623,636	1,222,012	8,123,612	12,939,971

Source: Commonwealth of Australia and Victorian Government 2019

During the process of modernising the RFAs, Dr William Jackson provided a consultation report to inform RFA modernisation.

In relation to the CAR reserve system, Jackson (2019)³³ recommended:

To conserve forest biodiversity and maintain ecosystem health, the modernised RFAs should include a range of conservation strategies, including changes to the formal and informal CAR reserve system, restoration of EVCs, improving connectivity between fragmented EVCs, and working with private landholders to conserve under-represented EVCs.

The RFA Scientific Advisory Panel³⁴ also made recommendations on the CAR reserve system, including:

- Review the Nationally Agreed Criteria for the Establishment of a Comprehensive, Adequate and Representative Reserve System for Forests in Australia (JANIS criteria). This would be timely given advances in forest conservation science over the past 20 years;
- Review the spatial extent and configuration of the CAR reserve system;
- Assess the representation, adequacy and comprehensiveness of the areal representation of habitats and vegetation communities, based on the JANIS criteria;
- Evaluate the utility of other spatial measures of the entire forest estate including the CAR reserve system such as levels of forest fragmentation, and the extent of edge effects and other spatial metrics of disturbance by human activities and wildfire;

32. Commonwealth of Australia and Victorian Government (2019) [Victoria's Regional Forest Agreements: assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements](#), Commonwealth of Australia and Victorian Government, accessed 2 February 2022.

33. Jackson W (May 2019) [Independent Consultation Paper – Modernisation of the Victorian Regional Forest Agreements](#), accessed 3 December 2021.

34. DELWP (2019) [Regional Forest Agreements Scientific Advisory Panel. Scientific advice to support regional forest agreement negotiations](#), DELWP, accessed 3 December 2022.

- Require the development and implementation of new management plans for the CAR reserve system in each RFA region;
- Undertake sensitivity analyses of the adequacy of the CAR reserve system and management plans under a range of climate change scenarios.

With the release of the Victorian Forestry Plan (VFP) in 2019, the Victorian Government announced that '90,000 ha of Victoria's remaining rare and precious old growth forest – aged up to 600 years old – will be protected immediately'.³⁵ The Forestry Plan also placed 96,000 ha of forest in Immediate Protection Areas (IPAs) protected from timber harvesting. These 186,000 ha are not considered part of the national reserve system because they are not given formal legislative protection.

5.2 Immediate Protection Areas

The VFP included the immediate protection of more than 96,000 ha of high conservation value state forest from timber harvesting in IPAs. The creation of these IPAs – in the Strathbogie Ranges, the Central Highlands, Mirboo North and East Gippsland – is the first step in phasing out timber harvesting in all native forests on public land by 2030. The IPAs include existing areas of SPZ within their boundaries and, when combined with protections for old growth forests, amount to approximately 150,000 ha.

The IPAs respond to a new conservation measure described in the Flora and Fauna Guarantee (FFG) Greater Glider Action Statement.³⁶ The Greater Glider Action Statement was updated and approved by the DELWP Secretary in December 2019, prior to the 2019–20 wildfires impacting eastern Victoria. This version contained the finalised IPA boundaries.

The IPAs are entirely within the Central Highlands, East Gippsland, Gippsland and North East RFA areas (Figure 8).

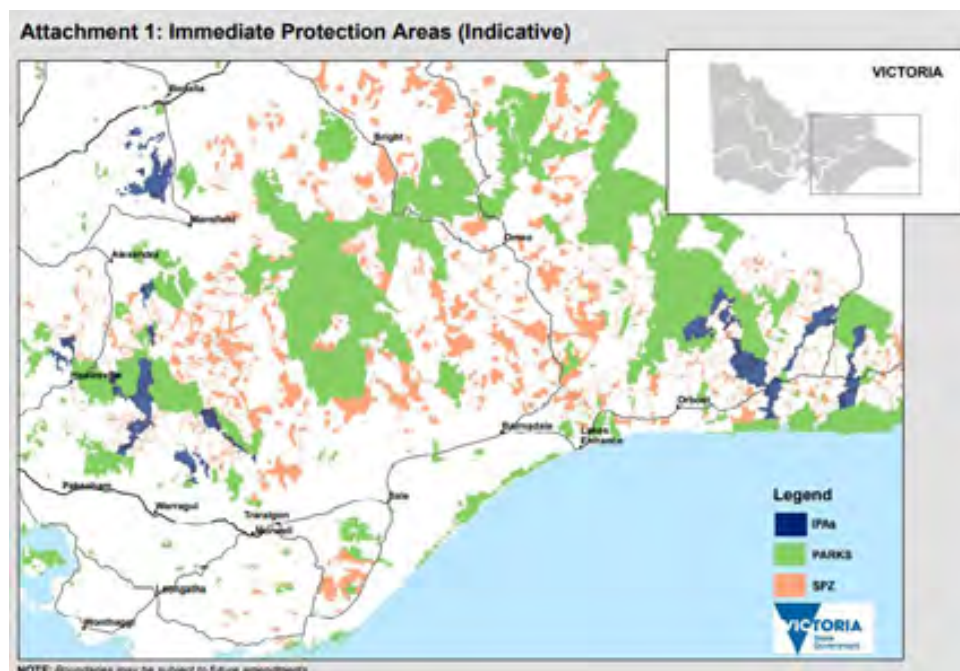


Figure 8. Immediate Protection Areas (indicative)³⁷ Source: DELWP 2019

35. State Government of Victoria (2019) [Victorian Forestry Plan](#), State Government of Victoria, accessed 2 December 2021.

36. DELWP (2019) [Greater glider \(*Petauroides Volans subsp Volans*\), Action Statement No 267](#), DELWP, accessed 6 February 2022.

37. DELWP (2019) [Greater glider \(*Petauroides Volans subsp Volans*\), Action Statement No 267](#), DELWP, accessed 6 February 2022.

The IPAs support the protection of critical habitat for more than 35 forest-dependent species, including Greater Glider and Leadbeater's Possum. They also support areas of significant community importance and the delivery of the Sea to Summit Trail election commitment.

- In developing the IPAs, the following were also considered:
- benefits to other flora and fauna species
- presence of old growth forest
- connectivity to existing parks and reserves
- mitigating the impact of bushfire by protecting habitat across the range of the Greater Glider
- water supply catchments
- timber supply requirements during the next 10 years.

The final IPA boundaries are included as an attachment to the Greater Glider Action Statement and are publicly available via the DELWP website and on DataVic.³⁸ In August 2021, the Victorian Government announced a community engagement and scientific assessment process to determine the permanent reservation status of the IPAs and the future use and management of State forests in eastern Victoria. This process will be led by people within the community and informed by the best available science. The Victorian Environmental Assessment Council will undertake a scientific assessment of forest values that will inform a consultation process led by the Eminent Panel for Community Engagement Impact of the 2019–20 bushfires.

5.3 Impact of the 2019–2020 bushfires

5.3.1 Overall impact

Table 2 presents data on the coverage of the protection components in Victoria's five RFAs, and the spatial impact of the 2019–20 bushfires. Large areas (around 760,000 ha) of the CAR reserve system were affected by the 2019–20 bushfires. Around 12 per cent of dedicated reserve (national parks and nature conservation reserves) was within the fire extent and more than half of these burnt areas were impacted by high-severity fire. More than a fourth of the area of informal reserves (SPZ) were also within the fire extent, with 17 per cent of those areas impacted by high-severity fire. Only an estimated 49 ha of private land protected by various programs, including covenants, was impacted by high-severity fire.

About half of the IPA area was within the fire extent and high-severity fires impacted a third of the IPAs, mainly in East Gippsland. In August 2020, DELWP published analysis of fire extent as of 20 April 2020, including impacts on the IPA network, in *Victoria's bushfire emergency: biodiversity response and recovery*, version 2.³⁹ This analysis indicated that the 2019–20 fires affected 44,169 ha of IPAs, with 31,255 ha of high-severity fire impact. The majority of fire impact occurred in the East Gippsland IPAs (approximately 92 per cent of the IPA fire affected).

The East Gippsland IPAs are a focus for research, active management and regeneration to support continued significant benefits for threatened species such as Greater Glider. The process to determine the permanent reservation status of the IPAs will consider the 2019–20 fire impacts through a scientific assessment of forest values.

38. DataVic (2019) [Immediate Protection Areas IPA](#) [data set], DataVic, accessed 2 February 2022.

39. Ibid.

Table 2.⁴⁰ Impacts on the CAR reserve system and related components, by type of protection⁴¹

Type of protection	Included in CAR reserve or a related protected area	Total area across the state (ha)	Area in fire extent (ha)	Area in fire extent burnt by high-severity fire (ha)
National parks and nature conservation reserves	CAR reserve	3,900,480	482,094	285,462
Permanent protection on private land	CAR reserve	49,025	404	130
Special Protection Zone (SPZ) areas	CAR reserve	765,900	203,758	127,966
Prescriptions (modelled exclusions and rainforest, per management standards and procedures for timber harvesting operations in Victoria's state forests)	CAR reserve	629,120	193,375	123,598
Immediate Protection Areas (additional new protected areas, as identified in the Greater Glider Action Statement No. 267) ⁴³	Related protected area, not part of CAR reserve	95,107	44,169	31,255

Source: DELWP 2020

For 25 of Victoria's national parks and nature conservation reserves (dedicated reserves), 90-100 per cent of their land is within the current fire extent. Five reserves have 81-90 per cent, four reserves have 61-80 per cent and three reserves have 40-60 per cent within the current fire extent.⁴³ Key affected national parks in the current fire extent are:

- Alfred National Park: 100 per cent (3,021 ha of 3,021 ha)
- Burrowa-Pine Mountain National Park: 100 per cent (18,867 ha of 18,963 ha)
- Lind National Park: 100 per cent (1,359 ha of 1,359 ha)
- Mt Mitta Mitta Regional Park: 100 per cent (3,927 ha of 3,929 ha)
- Tara Range Park: 99 per cent (7,540 ha of 7,618 ha)
- Mt Elizabeth Nature Conservation Reserve: 99 per cent (5,169 ha of 5,231 ha)
- Croajingolong National Park: 87 per cent (76,952 ha of 88,512 ha)
- Snowy River National Park: 76 per cent (87,003 ha of 114,674 ha)
- Errinundra National Park: 66 per cent (26,426 ha of 40,089 ha)
- Crawford River Regional Park: 58 per cent (1,394 ha of 2,421 ha).

A more detailed breakdown of the impact of the 2019–20 bushfires on the CAR reserve system and other forest land tenure categories is provided in Table 3.⁴⁴ The area of the CAR reserve system and other forest land tenure categories that was burnt by high-severity fire is outlined in Table 4.⁴⁵

40. 'Prescriptions' in this table relates to the modelled exclusion and rainforest prescriptions outlined in Department of Environment Primary Industries, Victoria, [Management standards and procedures for timber harvesting operations in Victoria's state forests](#), Victorian Government, 2014. The Immediate Protection Area figures refer only to the new, additional areas identified in Department of Environment, Land, Water and Planning, Victoria, [Greater glider \(Petauroides Volans subsp Volans\), Action Statement No 267](#), Victorian Government, 2019. Immediate Protection Areas are not part of the CAR reserve system, but they are considered related components for the purposes of this report only.

41. DELWP (2020) [Victoria's bushfire emergency: biodiversity response and recovery, version 2](#), DELWP, accessed 2 February 2022.

42. DELWP (2019) [Greater glider \(Petauroides Volans subsp Volans\), Action Statement No 267](#), DELWP, accessed 6 February 2022.

43. DELWP (2020) [Victoria's bushfire emergency: biodiversity response and recovery, version 2](#), DELWP, accessed 6 February 2022.

44. DAWE and the State Government of Victoria (2021) [Victorian Regional Forest Agreement Major Event Review of the 2019–20 bushfires: Summary report: information and data to inform public consultation](#), DAWE and the State Government of Victoria, accessed 6 February 2022.

45. Ibid.

Those tables indicate that the 2019–20 bushfires impacted heavily across all the CAR reserves within the fire extent, particularly in the East Gippsland RFA region. For the East Gippsland RFA region, excluding private land area, around 70 per cent of each CAR reserve category was within the fire extent (dedicated reserves, SPZ and prescription in Table 3) and a third of each CAR reserve was impacted by high-severity fires in East Gippsland RFA. High-severity fire includes classes 4 and 5: high canopy scorch (>80 per cent canopy scorch) and canopy burnt.

Table 3. Area and percentage of tenure within 2019–20 bushfire extent⁴⁷

RFA region	Dedicated		Special Protection Zone (SPZ)		Covenant		Prescription		Other public land		General Management Zone (GMZ)		Special Management Zone (SMZ)		Private		Total	
	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%
Central Highlands	0	0	3	0	0	0	0	0	59	0	0	0	0	0	7	0	69	0
East Gippsland	297,073	64	86,329	78	84,012	83			4,502	33	254,010	81	37,499	72	51,996	32	815,419	67
Gippsland	73,762	13	73,114	29	53,300	25	276	1	2,2341	2	95,429	29	1,564	20	22,653	2	322,338	12
North East	105,780	24	43,253	25	67,503	28	0	0	8,022	6	52,844	20	977	7	73,532	7	351,910	15
West	7,009	1	2,117	2	19	0	108	2	533	0	1,605	1	77	0	5,272	0	16,739	0
Non-RFA	3,044	0	0	0	0	0	0	0	45	0	713	0	0	0	2,462	0	6,264	0
Total	486,667		204,815		204,833		384		15,402		404,601		40,116		155,921		1,512,739	

Source: DELWP 2021

Table 4. Area and percentage of tenure in 2019–20 bushfire extent burnt at high severity⁴⁸

RFA region	Dedicated		SPZ		Covenant		Prescription		Other public land		GMZ		SMZ		Private		Grand Total	
	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%
East Gippsland	163,099	35	47,917	43	47,514	47	0	0	2,058	15	145,649	46	19,311	37	16,250	10	441,798	36
Gippsland	46,884	9	37,778	15	28,516	13	60	0	1,244	1	52,063	16	646	8	6,171	1	173,363	7
North East	55,868	13	24,904	14	41,784	17	0	0	4,305	3	33,830	13	574	4	18,149	2	179,414	8
Total	265,851		110,599		117,815		60		7,607		231,542		20,531		40,570		794,575	

Source: DELWP 2021

46. This table is an updated version of Table 3 in the [Summary Report](#) for Major Event Review of the 2019–20 bushfires and differs due to processing variations and updated datasets used in the analysis.

47. This table is an updated version of Table 4 in the [Summary Report](#) for Major Event Review of the 2019–20 bushfires and differs due to processing variations and updated datasets used in the analysis.

5.3.2 Impacts on listed species and communities

The RFAs state that “... the primary function of the CAR Reserve System is to ensure the long-term conservation and protection of Environment and Heritage Values, Listed Species and Communities and Ecosystem Services.” (Clause 47 in East Gippsland RFA). Listed Species and Communities is one of the values that CAR Reserve System should protect and conserve.

The modernised Victoria RFAs use the new terminology ‘listed species and communities’. This is defined as a species, taxon or community listed under Part 13 of the EPBC Act or Part 3 of the FFG Act that is, or has the potential to be, impacted by forestry operations. The Victorian Government’s first step to protect listed species and communities was to select listed species and communities that are relevant to the definition in RFAs. More information on the Victorian Government’s process to do the selection process can be found under Section 6.3.6. Listed species and ecological communities – risk assessment section.

In this section, 79 species and communities that are listed under the first tranche of threatened species and communities risk assessments (TSCRAs) will be discussed, with respect to their protection status under the CAR reserve system. More information on the TSCRAs prepared by DELWP is described in Section 6.3.2 Impact of 2019–20 bushfires on Listed Species and Communities. Information for each RFA region is based on a number of sources. Table 26 under the Listed Species and Communities section indicates the source of bushfire impact assessment for FFG listed species.

East Gippsland

The East Gippsland RFA region has 38 listed species and communities identified under the TSCRA. The East Gippsland RFA region had the greatest impact by size and severity, with the 2019–20 bushfires impacting 37 of the 38 listed species and communities. Almost all species across all taxon groups had more than half of their CAR reserve protected area impacted by the 2019–20 bushfires. As shown in Table 5, most of the listed aquatic species had more than 80 per cent of their CAR reserve protected area burnt by the 2019–20 bushfires. East Gippsland Galaxias and Roundsnout Galaxias are of concern as 85 per cent of their extent was impacted by high-severity fires. In addition, their known extent is confined only to this RFA region, meaning that their entire Victorian populations may be impacted.⁴⁸ McDowall’s Galaxias is also a genetic risk concern, as there is no connectivity between sub-populations due to trout in intervening waters. For many aquatic species, particularly the galaxiids, most exist as a single, small global population in a short headwater reach of a river system. Consequently normal extinction risk can be very high, particularly following a major disturbance such as fire, and extreme if the vegetation across the entire population has been impacted and there is the potential for debris flow/instream sedimentation.⁴⁹ A large area of modelled habitat for many species and communities has been impacted by high-severity bushfires more than twice since 2000. This heavy impact from bushfire poses a significant concern in relation to species survival and recovery.

Interim protections for 23 different species and three communities have been introduced in the East Gippsland RFA region, which will be active until April 2022. In addition, permanent protections will be considered for all species and communities listed under the TSCRA across all RFA regions until April 2022. This provides various mitigation measures to protect species and communities including warm temperate forest communities, Orbost Spiny Crayfish, Giant Burrowing Frog, Greater Glider and East Gippsland Galaxias. In addition, the Bushfire Biodiversity Response and Recovery program has delivered immediate reconnaissance of critical fauna, flora and habitat, including translocations for species that are unable to repopulate naturally.

Most species and communities were protected under the CAR reserve system in 50 per cent to 100 per cent of their modelled habitat.

48. DELWP (2020) [Victoria's bushfire emergency: biodiversity response and recovery, version 2](#), DELWP, accessed 6 February 2022.

49. DELWP (unpublished) Bushfire response and recovery impacts on species: supplementary report, 2021, accessed 6 February 2022.

Table 5. Listed species and communities impacted by the 2019–20 bushfires in East Gippsland RFA region⁵⁰

Common/scientific name	Proportion of extent in this RFA compared to overall extent (%)	Proportion protected by CAR reserve (%)	Proportion of area burnt in CAR reserve (%)	Proportion impacted by high-severity bushfire (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)	Genetic risk/species of concern ⁵²
Amphibians						
Giant Burrowing Frog/ <i>Heleioporus australiacus</i>	74	56	79	42	45	Very high/ Yes
Large Brown Tree Frog/ <i>Litoria littlejohni</i>	100	60	87	48	50	Very high/ Yes
Martin's Toadlet/ <i>Uperoleia martini</i>	52	57	68	34	35	Very high/ Yes
Aquatics						
Alpine Spiny Crayfish/ <i>Euastacus crassus</i>	36	92	44	7	4	Very high/ Yes
East Gippsland Galaxias/ <i>Galaxias aequipinnis</i>	100	45	100	84	1	Very high/ Yes
Mallacoota Burrowing Crayfish/ <i>Engaeus mallacoota</i>	100	70	98	66	0	Very high/ Yes
McDowalls Galaxias/ <i>Galaxias mcdowalli</i>	100	100	94	34	14	Very high/ Yes
Orbost Spiny Crayfish/ <i>Euastacus diversus</i>	100	67	83	51	13	Very high/ Yes
Roundsnout Galaxias/ <i>Galaxias terenasus</i>	100	100	100	85	0	Very high/ Yes
Birds						
Glossy Black-Cockatoo/ <i>Calyptorhynchus lathami</i>	83	47	70	34	36	Very high/ Yes
Masked Owl/ <i>Tyto novaehollandiae</i>	52	51	84	45	46	Very high/ Yes
Powerful Owl/ <i>Ninox strenua</i>	22	53	82	43	45	Very high/ Yes
Sooty Owl/ <i>Tyto tenebricosa</i>	46	55	83	45	46	Very high/ Yes
Mammals						
Broad-toothed Rat/ <i>Mastacomys fuscus mordicus</i>	8	77	51	30	49	Very high/ Yes
Grey-headed Flying-fox/ <i>Pteropus poliocephalus</i>	32	58	77	35	0	Very high/ Yes
Long-footed Potoroo/ <i>Potorous longipes</i>	75	59	86	47	48	Very high/ Yes
Long-nosed Potoroo/ <i>Potorous tridactylus trisulcatus</i>	45	54	82	44	45	Very high/ Yes
Smoky Mouse/ <i>Pseudomys fumeus</i>	9	71	71	40	49	Very high/ Yes
Southern Brown Bandicoot/ <i>Isodon obesulus</i>	26	50	84	45	45	Very high/ Yes
Southern Greater Glider/ <i>Petauroides volans</i>	24	57	75	41	46	Very high/ Yes
Spot-tailed Quoll/ <i>Dasyurus maculatus</i>	27	58	69	38	44	Very high/ Yes
White-footed Dunnart/ <i>Sminthopsis leucopus</i>	31	55	79	42	44	Very high/ Yes

50. This table was created based on the spatial analysis of 2019–20 bushfire impact on species listed on [Flora and Fauna Guarantee Act 1988](#) conducted by DELWP for the Panel members.

51. Genetic risk and species of concern information is from DELWP, [Victoria's bushfire emergency: biodiversity response and recovery, version 2](#), 2020, accessed 25 January 2022.

Common/scientific name	Proportion of extent in this RFA compared to overall extent (%)	Proportion protected by CAR reserve (%)	Proportion of area burnt in CAR reserve (%)	Proportion impacted by high-severity bushfire (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)	Genetic risk/species of concern ^{*10}
Plants						
Betka Bottlebrush/ <i>Callistemon kenmorisonii</i>	100	64	91	66	0	Very high/ Yes
Blue-tongue Greenhood/ <i>Pterostylis oreophila</i>	34	79	78	36	21	Very high/ Yes
Colquhoun Grevillea/ <i>Grevillea celata</i>	66	25	47	27	0	Very high/ Yes
Leafy Nematolepis/ <i>Nematolepis frondosa</i>	7	48	29	15	0	Very high/ Yes
Rough Eyebright/ <i>Euphrasia scabra</i>	49	51	53	23	8	Very high/Yes
Rufous Pomaderris/ <i>Pomaderris brunnea</i>	100	78	85	39	22	Very high/ Yes
Slender Tree-fern/ <i>Cyathea cunninghamii</i>	26	70	94	62	2	
Reptiles						
Alpine Bog Skink/ <i>Pseudemoia cryodroma</i>	5%	100	13	3	32	Very high/Yes
Diamond Python/ <i>Morelia spilota</i>	100	62	86	48	50	Very high/Yes
Eastern She-oak Skink/ <i>Cyclodomorphus michaeli</i>	100	60	79	51	0	Very high/Yes
Swamp Skink/ <i>Lissolepis coventryi</i>	21	53	75	36	38	Very high/Yes
Communities						
Alpine Sphagnum Bogs and Associated Fens	7	95	27	14	13	N/A
Cool Temperate Rainforest	25	99	39	17	0	N/A
Warm Temperate Rainforest (East Gippsland Alluvial Terraces)	96	93	89	43	0	N/A
Warm Temperate Rainforest (Far East Gippsland)	100	98	97	52	0	N/A

* Species of concern and genetic risk information is from DELWP's impact assessment report released in August 2020.⁵²
Source: DELWP 2021

52. DELWP (2020) [Victoria's bushfire emergency: biodiversity response and recovery, version 2](#), DELWP, accessed 6 February 2022.

Gippsland

The Gippsland RFA region has 38 listed species and communities identified under the TSCRA. Of these, 21 out of 34 species were assessed to have genetic risk and as species of concern in DELWP's emergency response and recovery report (Table 6). The 2019–20 bushfires impacted 24 of the 38 listed species and communities. Two species that had more than half of their distribution protected under the CAR reserve system were impacted by bushfire: Colquhoun Grevillea (*Grevillea celata*) and Leafy Nematolepis (*Nematolepis frondose*). Although the bushfire impact was less severe compared to in the East Gippsland RFA, there are still species that require immediate recovery responses. As a result, zoning amendments⁵³ are active until April 2022 to protect warm temperate forest, Tapered Galaxias, West Gippsland Galaxias, Giant Burrowing Frog and Dargo Galaxias. Most species are also identified as having genetic risks and as species of concern by DELWP.



Photo credit © Katherine Mullett

53. More information on Victorian Government's use of zoning amendments to protect habitat or a known population of a high-risk species or community can be found at: DELWP (2021) Threatened Species and Communities Risk Assessment reports, 4 May 2021, accessed 25 February 2022.

Table 6. Listed species and communities impacted by the 2019–20 bushfires in Gippsland RFA region⁵⁴

Common/scientific name	Proportion of extent in this RFA compared to overall extent (%)	Proportion protected by CAR reserve (%)	Proportion of area burnt in CAR reserve (%)	Proportion impacted by high-severity bushfire (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)	Genetic risk/species of concern
Amphibians						
Giant Burrowing Frog/ <i>Heleioporus australiacus</i>	26	59	43	21	35	Very high/Yes
Martin's Toadlet/ <i>Uperoleia martini</i>	48	33	1	0	6	Very high/Yes
Aquatics						
Dargo Galaxias/ <i>Galaxias mungadhan</i>	100	85	21	11	10	High/Yes
Birds						
Glossy Black-Cockatoo/ <i>Calyptorhynchus lathami</i>	17	39	28	10	10	Moderate/Yes
Masked Owl/ <i>Tyto novaehollandiae</i>	17	39	28	9	16	High/Yes
Powerful Owl/ <i>Ninox strenua</i>	19	45	24	9	20	Moderate/Yes
Sooty Owl/ <i>Tyto tenebricosa</i>	14	53	44	20	36	High/Yes
Mammals						
Broad-toothed Rat/ <i>Mastacomys fuscus mordicus</i>	39	63	24	15	35	Very high (mainland)/Yes
Grey-headed Flying-fox/ <i>Pteropus poliocephalus</i>	28	27	15	4	1	Low/Yes
Long-nosed Potoroo/ <i>Potorous tridactylus trisulcatus</i>	23	41	12	4	6	Very high/Yes
Smoky Mouse/ <i>Pseudomys fumeus</i>	30	75	21	14	43	High/Yes
Southern Brown Bandicoot/ <i>Isodon obesulus</i>	24	29	10	3	9	High/Yes
Southern Greater Glider/ <i>Petauroides volans</i>	29	59	23	12	34	High/Yes
Spot-Tailed Quoll/ <i>Dasyurus maculatus</i>	30	63	24	13	39	Very high/Yes
White-footed Dunnart/ <i>Sminthopsis leucopus</i>	32	51	19	8	24	High/Yes

54. This table was created based on the spatial analysis of 2019–20 bushfire impact on species listed on [Flora and Fauna Guarantee Act 1988](#) conducted by DELWP for the Panel members.

Table 6. Listed species and communities impacted by the 2019–20 bushfires in Gippsland RFA region (cont'd)

Common/scientific name	Proportion of extent in this RFA compared to overall extent (%)	Proportion protected by CAR reserve (%)	Proportion of area burnt in CAR reserve (%)	Proportion impacted by high-severity bushfire (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)	Genetic risk/species of concern
Plants						
Aniseed Boronia/ <i>Boronia galbraithiae</i>	100	62	13	4	2	
Blue-tongue Greenhood/ <i>Pterostylis oreophila</i>	62	49	45	23	11	Very high/Yes
Colquhoun Grevillea/ <i>Grevillea celata</i>	34	46	71	21	3	Very high/Yes
Leafy Nematolepis/ <i>Nematolepis frondosa</i>	93	55	51	25	7	Uncertain/Yes
Rough Eyebright/ <i>Euphrasia scabra</i>	26	57	28	13	6	Currently unknown/Yes
Reptiles						
Alpine Bog Skink/ <i>Pseudemoia cryodroma</i>	45	84	26	19	42	Very high/Yes
Swamp Skink/ <i>Lissolepis coventryi</i>	26	25	5	1	3	High/Yes
Communities						
Alpine Sphagnum Bogs and Associated Fens	42	86	18	11	11	N/A
Cool Temperate Rainforest	22	80	4	1	0	N/A

*Species of concern and genetic risk information is from DELWP's impact assessment report released in August 2020.⁵⁵
Source: DELWP 2021

North East

The North East RFA region has 21 listed species and communities identified under the TSCRA. Of these, 15 were impacted by the 2019–20 bushfires (Table 7). Out of 20 species, 13 were assessed to have genetic risk and as species of concern in DELWP's emergency response and recovery report. There are no zoning amendments applied to Listed Species and Communities but some interim measures related to pest plants and animal control is underway. In North East RFA region, although some species have less than 20 per cent protection by the CAR reserve system, half of the species are protected in more than 60 per cent of their modelled habitat. For example, the powerful owl only has 11 per cent of its distribution in the North East RFA, and 38 per cent of that 11 per cent is protected in the reserve system.

55. DELWP (2020) [Victoria's bushfire emergency: biodiversity response and recovery, version 2](#), DELWP, accessed 6 February 2022.

Table 7. Listed species and communities impacted by the 2019–20 bushfires in North East RFA region⁵⁶

Common/scientific name	Proportion of extent in this RFA compared to overall extent (%)	Proportion protected by CAR reserve (%)	Proportion of area burnt in CAR reserve (%)	Proportion impacted by high-severity bushfire (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)	Genetic risk/species of concern*
Amphibians						
Booroolong Tree Frog/ <i>Litoria booroolongensis</i>	100	28	39	16	16	Very high/Yes
Spotted Tree Frog/ <i>Litoria spenceri</i>	63	79	29	15	36	Very high/Yes
Birds						
Powerful Owl/ <i>Ninox strenua</i>	11	38	14	6	18	Moderate/Yes
Regent Honeyeater/ <i>Anthochaera phrygia</i>	44	8	4	1	3	
Sooty Owl/ <i>Tyto tenebricosa</i>	8	46	11	3	19	High/Yes
Mammals						
Broad-toothed Rat/ <i>Mastacomys fuscus mordicus</i>	30	72	26	16	37	Very high (mainland)/Yes
Brush-tailed Phascogale/ <i>Phascogale tapoatafa</i>	38	20	11	3	2	
Long-footed Potoroo/ <i>Potorous longipes</i>	21	87	39	17	38	Very high/Yes
Smoky Mouse/ <i>Pseudomys fumeus</i>	30	71	32	16	35	High/Yes
Southern Greater Glider/ <i>Petauroides volans</i>	27	60	28	13	31	High/Yes
Plants						
Blue-tongue Greenhood/ <i>Pterostylis oreophila</i>	4	75	77	58	33	Very high/Yes
Maidenhair Spleenwort/ <i>Asplenium hookerianum</i>	13	93	4	3	4	
Reptiles						
Alpine Bog Skink/ <i>Pseudemoia cryodroma</i>	45	88	11	6	50	Very high/Yes
Communities						
Alpine Sphagnum Bogs and Associated Fens	35	96	9	5	10	

*Species of concern and genetic risk information is from DELWP's impact assessment report released in August 2020.⁵⁷
Source: DELWP 2021

56. This table was created based on the spatial analysis of 2019–20 bushfire impact on species listed on [Flora and Fauna Guarantee Act 1988](#) conducted by DELWP for the Panel members.

57. DELWP (2020) [Victoria's bushfire emergency: biodiversity response and recovery, version 2](#), DELWP, accessed 6 February 2022.

West Victoria

The West Victoria RFA region has 27 listed species and communities identified under the TSCRA (Table 8). Of these, 13 were impacted by the 2019–20 bushfires and none of were exposed to high-severity fires. Out of 25 species, nine were assessed to have genetic risk and as species of concern in DELWP's emergency response and recovery report⁵⁸. Although there is unlikely to be a significant impact on these 13 listed species, there is significant value in protecting the distribution of the 27 listed species and communities in this region and a legislative requirement for their protection. Most species and communities are protected by the CAR reserve system in 15 per cent to 50 per cent of their modelled habitat. Cool temperate rainforest has the highest proportion (96 per cent) protected by the reserve system.



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58. Ibid.

Table 8. Listed species and communities impacted by the 2019–20 bushfires in West Victoria RFA region⁵⁹

Common/scientific name	Proportion of extent in this RFA compared to overall extent (%)	Proportion protected by CAR reserve (%)	Proportion of area burnt in CAR reserve (%)	Proportion impacted by high-severity bushfire (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)	Genetic risk/species of concern*
Aquatics						
Glenelg Spiny Freshwater Crayfish/ <i>Euastacus bispinosus</i>	84	37	4	0		Very high/Yes
Birds						
Masked Owl/ <i>Tyto novaehollandiae</i>	14	47	1	0	High/Yes	Moderate/Yes
Powerful Owl/ <i>Ninox strenua</i>	22	43	1	0	Moderate/Yes	
Red-tailed Black-Cockatoo (south-eastern)/ <i>Calyptrorhynchus banksii graptogyne</i>	95	34	1	0		High/Yes
Regent Honeyeater/ <i>Anthochaera phrygia</i>	11	12	1	0		
Mammals						
Long-nosed Potoroo/ <i>Potorous tridactylus trisulcatus</i>	31	40	1	0	Very high/Yes	Very high (mainland)/Yes
Southern Brown Bandicoot/ <i>Isodon obesulus</i>	30	33	3	0	High/Yes	
Plants						
Ben Major Grevillea/ <i>Grevillea floripendula</i>	94	18	7	0		Very high/Yes
Elegant Spider-orchid/ <i>Caladenia formosa</i>	99	20	1	0		
Gorae Leek-orchid/ <i>Prasophyllum diversiflorum</i>	100	2	7	0		
Mount Cole Grevillea/ <i>Grevillea montis-cole subsp. montis-cole</i>	100	18	5	0		
Reptiles						
Swamp Skink/ <i>Lissolepis coventryi</i>	36	25	5	0	High/Yes	Very high/Yes
Communities						
Western Basalt Plains (River Red Gum) Grassy Woodland (55-04)	88	4	1	0	N/A	

* Species of concern and genetic risk information is from DELWP's impact assessment report released in August 2020.⁶⁰
Source: DELWP 2021

59. This table was created based on the spatial analysis of 2019–20 bushfire impact on species listed on [Flora and Fauna Guarantee Act 1988](#) conducted by DELWP for the Panel members.

60. DELWP (2020) [Victoria's bushfire emergency: biodiversity response and recovery, version 2](#), DELWP, accessed 6 February 2022.

Central Highlands

The Central Highlands RFA region has 24 Listed Species and Communities. There is negligible bushfire impact (4 ha of SPZ burnt by the 2019–20 fires) in this RFA region. However, it is important to understand that there could be flow-on impacts arising if there was to be a substantial increase in timber harvesting due to a reduction of scheduled coupes in the other RFA regions, and an increase in genetic risks to remaining populations. The magnitude of the potential flow-on impacts could also vary from year to year depending on the productivity of the scheduled coupes.

Amphibians and communities have the highest proportion of their modelled habitat protected by the CAR reserve system. Many mammal and plant species have between 30 per cent and 50 per cent of their modelled habitat protected. As there was no material impact from the 2019–20 bushfires, a list of the impacts on listed species and communities was not presented in this report but can be found in Table 1 of Appendix 3 from TSCRA report that was released in October 2020.⁶¹

5.3.3 Conservation status of forested and non-forested ecological vegetation classes (EVCs)

For this section, fire extent and high-severity fire extent have been overlaid with ecological vegetation classes. There are 32 EVCs that have over 50 per cent of their modelled area located within the fire extent across all RFA regions⁶². For four of these EVCs, more than 95 per cent of their extent in the relevant RFA region burned: Herb-rich Foothill Forest (13 ha of current extent in East Gippsland RFA), Montane Grassy Shrubland (85 ha of current extent in Gippsland RFA), Gallery Rainforest and Gallery Rainforest – niche (306 ha and 540 ha of current extent in East Gippsland RFA respectively).

Among the 32 EVCs whose modelled area was over 50 per cent burnt, 23 are protected under the CAR reserve system. Those whose current extent has below 60 per cent representation in the CAR Reserve System⁶³ status within the current CAR reserve system are:

- East Gippsland RFA: Damp Forest, Riparian Forest, Cut-tail Forest, Clay Heathland, Lowland Forest and Valley Grassy Forest
- North East RFA: Montane Wet Forest
- Gippsland: Sub-alpine Wet Heathland/Sub-alpine Grassland Mosaic⁶⁴ and Montane Grassy Shrubland.

EVCs in the East Gippsland RFA region were most affected by the 2019–20 bushfires. More forested EVCs than non-forested EVCs were impacted by the fires. There was minimal impact on the West Victoria RFA region: around 14 per cent of the mapped extent of a single forested EVC (Stony Rises Woodland) burned (current extent in West Victoria RFA: 43,713 ha). The Central Highlands RFA was not included in this impact assessment as it had no EVC impacted by the 2019–20 bushfires.

61. DELWP (2020) '[Threatened Species and Communities Risk Assessment: Victoria's Regional Forest Agreements](#)', DELWP, accessed 6 February 2022.

62. Some EVCs are complexes, mosaics, aggregates and niches. These are mapping units and not assigned a conservation status. EVCs are determined onsite and the relevant conservation status for the field verified EVC would apply.

63. The JANIS Criteria specify that forest ecosystems that are recognised as vulnerable be reserved for at least 60% of their remaining extent.

64. Some EVCs are complexes, mosaics, aggregates and niches. These are mapping units and not assigned a conservation status. EVCs are determined onsite and the relevant conservation status for the field verified EVC would apply.

A more detailed summary of bushfire impact on EVCs by RFA region is provided in tables 9 to 14. These tables were created based on the spatial analysis of 2019–20 bushfire impact on Ecological Vegetation Classes conducted by DELWP for the Panel. This analysis was done by overlaying modelled distribution of EVC with the data on fire extent and extent of high fire severity. Overlayed extent of EVC with fire impact was then calculated to identify a proportion of EVC extent impacted by fire by comparing with overall extent of EVC and grouped the proportional impact for EVCs into 10–30 per cent, 30–50 per cent, 50–80 per cent, 80–95 per cent and over 95 per cent range for forested and non-forested EVCs in each RFA region.

East Gippsland

The 2019–20 bushfires impacted the largest number of EVCs in the East Gippsland RFA region. At least 10 per cent of the modelled extent of 32 out of 36 forested EVCs and 16 out of 25 non-forested EVCs was burnt (Table 11 and Table 12). About half of those EVCs had more than 50 per cent of their extent within the fire extent. More importantly, six EVCs had more than half of their current extent in this region severely burnt:

- Foothill Box Ironbark Forest EVC: 584 ha of current extent with Endangered conservation status
- Gallery Rainforest EVC: 306 ha of current extent with Vulnerable conservation status
- Gallery Rainforest niche EVC⁶⁵: 540 ha of current extent with no conservation status
- Banksia Woodland EVC: 39,395 ha of current extent with Vulnerable conservation status
- Coastal Sand Heathland EVC: 656 ha of current extent with Rare conservation status
- Wet Heathland EVC: 9,778 ha of current extent with no conservation status.

Three EVCs have been burnt by high-severity fires more than twice since 2000 across over 20 per cent of their modelled distribution:

- Foothill Box Ironbark Forest EVC: 39 per cent of current extent (584 ha)
- Heathy Dry Forest EVC: 28 per cent of current extent (1,925 ha)
- Sub-alpine Woodland EVC: 20 per cent of current extent (8,672 ha).

Table 9. Impact of 2019–20 bushfires on forested EVCs in East Gippsland RFA region, by fire extent and severity⁶⁶

Proportion range	Number of modelled EVCs in the current fire extent	Number of modelled EVCs impacted by high-severity fire
Over 95%	3	0
80% to 95%	6	0
50% to 80%	9	4
30% to 50%	9	14
10% to 30%	5	15

65. Some EVCs are complexes, mosaics, aggregates and niches. These are mapping units and not assigned a conservation status. EVCs are determined onsite and the relevant conservation status for the field verified EVC would apply.

66. This table was created based on the spatial analysis of 2019–20 bushfire impact on Ecological Vegetation Classes conducted by DELWP for the Panel members. Some EVCs are complexes, mosaics, aggregates and niches. These are mapping units and not assigned a conservation status. EVCs are determined onsite and the relevant conservation status for the field verified EVC would apply.

Table 10. Impact of 2019–20 bushfires on non-forested EVCs in East Gippsland RFA region, by fire extent and severity⁶⁷

Proportion range	Number of modelled EVCs in the current fire extent	Number of modelled EVCs impacted by high-severity fire
Over 95%	0	0
80% to 95%	2	0
50% to 80%	5	2
30% to 50%	1	4
10% to 30%	8	8

Source: DELWP 2021

Gippsland

The Gippsland RFA region was also affected by the 2019–20 bushfires. At least 10 per cent of the modelled extent of 28 out of 64 forested EVCs and 10 out of 73 non-forested EVCs was burnt (Table 11 and Table 12). Five of those EVCs had more than 50 per cent of their extent within the fire extent:

- Valley Heathy Forest EVC: 1,228 ha of current extent with no conservation status
- Montane Wet Forest EVC: 11,691 ha of current extent with Vulnerable conservation status
- Montane Grassy Shrubland EVC: 85 ha of current extent with Vulnerable conservation status
- Sub-alpine Wet Heathland/Sub-alpine Grassland Mosaic EVC: 158 ha of current extent with no conservation status (in accordance with the JANIS criteria, complexes, mosaics, aggregates and niches are mapping units and not assigned a conservation status)
- Blackthorn Scrub EVC: 7,359 ha of current extent with Vulnerable conservation status.

Among these five EVCs, Montane Grassy Shrubland was burnt severely across more than half of its extent in this region, and all of its 85 ha extent was burnt. This EVC has also been burnt by high-severity fires more than twice across 26 per cent of its extent since 2000. Two more non-forested EVCs have been severely burnt (over 20 per cent) multiple times over the last two decades: Sub-alpine Wet Heathland/Sub-alpine Grassland Mosaic EVC, and Sub-alpine Wet Heathland/Alpine Valley Peatland Mosaic EVC.

Table 11. Impact of 2019–20 bushfires on forested EVCs in Gippsland RFA region, by fire extent and severity⁶⁸

Proportion range	Number of modelled EVCs in the current fire extent	Number of modelled EVCs impacted by high-severity fire
Over 95%	0	0
80% to 95%	0	0
50% to 80%	2	0
30% to 50%	4	1
10% to 30%	22	14

Source: DELWP 2021

67. This table was created based on the spatial analysis of 2019–20 bushfire impact on Ecological Vegetation Classes conducted by DELWP for the Panel members. Some EVCs are complexes, mosaics, aggregates and niches. These are mapping units and not assigned a conservation status. EVCs are determined onsite and the relevant conservation status for the field verified EVC would apply.

68. This table was created based on the spatial analysis of 2019–20 bushfire impact on Ecological Vegetation Classes conducted by DELWP for the Panel members. Some EVCs are complexes, mosaics, aggregates and niches. These are mapping units and not assigned a conservation status. EVCs are determined onsite and the relevant conservation status for the field verified EVC would apply.

Table 12. Impact of 2019–20 bushfires on non-forested EVCs in Gippsland RFA region, by fire extent and severity⁶⁹

Proportion range	Number of modelled EVCs in the current fire extent	Number of modelled EVCs impacted by high-severity fire
Over 95%	1	0
80% to 95%	1	0
50% to 80%	1	1
30% to 50%	1	2
10% to 30%	6	5

Source: DELWP 2021

North East

In the North East RFA, at least 10 per cent of the modelled extent of 14 out of 63 forested EVCs and eight out of 30 non-forested EVCs was burnt (Table 13 and 14). Two of those EVCs, with small natural distributions, had more than 50 per cent of their extent within the fire extent:

- Montane Wet Forest EVC: 20 ha of current extent with Endangered conservation status
- Alpine Fen EVC: 6 ha of current extent with Endangered conservation status.

These two EVCs have been burnt by high-severity fires more than twice since 2000. Two more EVCs have been severely burnt (more than 20 per cent) by multiple fires: Sub-alpine Woodland (45,280 ha of current extent, Vulnerable status) and Alpine Crag Complex (522 ha of current extent).

Table 13. Impact of 2019–20 bushfires on forested EVCs in North East RFA region, by fire extent and severity⁷⁰

Proportion range	Number of modelled EVCs in the current fire extent	Number of modelled EVCs impacted by high-severity fire
Over 95%	0	0
80% to 95%	0	0
50% to 80%	1	0
30% to 50%	4	2
10% to 30%	9	8

Source: DELWP 2021

69. This table was created based on the spatial analysis of 2019–20 bushfire impact on Ecological Vegetation Classes conducted by DELWP for the Panel members. Some EVCs are complexes, mosaics, aggregates and niches. These are mapping units and not assigned a conservation status. EVCs are determined onsite and the relevant conservation status for the field verified EVC would apply.

70. This table was created based on the spatial analysis of 2019–20 bushfire impact on Ecological Vegetation Classes conducted by DELWP for the Panel members. Some EVCs are complexes, mosaics, aggregates and niches. These are mapping units and not assigned a conservation status. EVCs are determined onsite and the relevant conservation status for the field verified EVC would apply.

Table 14. Impact of 2019–20 bushfires on non-forested EVCs in North East RFA region, by fire extent and severity⁷¹

Proportion range	Number of modelled EVCs in the current fire extent	Number of modelled EVCs impacted by high-severity fire
Over 95%	0	0
80% to 95%	0	0
50% to 80%	1	1
30% to 50%	1	1
10% to 30%	6	2

Source: DELWP 2021

West Victoria

EVCs in the West Victoria RFA region experienced minimal impact from the 2019–20 bushfires. Only one forested EVC was burnt across more than 10 per cent of its extent: Stony Rises Woodland EVC (43,713 ha, Vulnerable conservation status).

5.4 Government support and actions following the bushfires

To date, it is unclear whether the Victorian Government has done any impact assessment of 2019–20 bushfires on CAR Reserve System holistically, such as the role of the CAR Reserve System to protect various values including conserving Listed Species and Communities and EVCs post 2019–20 bushfires. In August 2021, the Panel was briefed on the scope and process for Victoria’s review of the CAR reserve system and was advised that the review process was intended to be completed by December 2021.

In addition, the Panel was advised that: “Responses to the bushfires to date have not considered management adjustments to the CAR boundaries noting that the conservation status of EVCs affected by bushfire do not necessarily change due to the impacts of bushfire. EVCs are defined by mapped native vegetation extent and their conservation status within a CAR Reserve system will continue after bushfires, allowing for their recovery.”

The relevant subclause (65I(b) in the North East RFA) states:

[Victoria] will review the comprehensiveness, adequacy and representativeness of the CAR Reserve System by December 2021, having regard to current and forecast impacts of Climate Change using the best available science, and thereafter as part of each Five-yearly Review.

The review of the CAR reserve system will meet commitments under all five of Victoria’s RFAs to review the comprehensiveness, adequacy and representativeness of the CAR reserve system, having regard to current and forecast impacts of climate change using the best available science. The Panel understands that DELWP undertook a review of the CAR Reserve System in late 2021, and that a report is due for completion in early 2022.

71. This table was created based on the spatial analysis of 2019–20 bushfire impact on Ecological Vegetation Classes conducted by DELWP for the Panel members. Some EVCs are complexes, mosaics, aggregates and niches. These are mapping units and not assigned a conservation status. EVCs are determined onsite and the relevant conservation status for the field verified EVC would apply.

5.5 Panel analysis of issues raised

Despite the matter of ‘the CAR reserve system’ being listed as one of the six items for which the Major Event Review had to assess the impacts of the 2019–20 bushfires, the Panel was not in a position to conduct a holistic review of the impacts on each of the multiple values that the CAR reserve system protects. The Victorian government conducted the CAR reserve system review, as required by the RFAs after a Major Event, in parallel with the Major Event Review process, but without the Panel’s involvement. The following sections will discuss the Panel’s findings on various aspects of the CAR reserve system that could be strengthened.

5.5.1 Overall impacts on the CAR reserve system

The Panel conducted an analysis of the spatial impacts of the 2019–20 bushfires on the CAR reserve system. The overall fire impact analysis should be the sum of the fire impact on each of the categories of the CAR reserve system: Dedicated reserve, Special Protection Zone, Covenant and areas protected by prescriptions. The Major Event Review Summary Report⁷² indicates that there is around 2.9 million ha of the reserve system within the RFA regions, which was calculated using a spatial layer⁷³. The Panel also accessed this publicly available dataset to validate the dataset and found that this layer only contains the Dedicated Reserves and Special Protection Zone components. Therefore, calculating the proportional impact of 2019–20 bushfires on each reserve type by RFA region is only possible for those two categories (Dedicated Reserves and Special Protection Zones) of reserves.

Overlaying the publicly available datasets, the CAR reserve dataset,⁷⁴ 2019–20 bushfire extent⁷⁵ and fire severity map⁷⁶ shows that the impact of the 2019–20 bushfires on the CAR reserve system was significant. The fires burned 868,058 ha of native forest in the CAR reserve system. This means that around 30 per cent of the CAR reserve system within the four fire-affected RFA regions was impacted by the fire footprint.⁷⁷ About 18 per cent of the CAR reserve system (494,324 ha) in the fire-affected RFA regions was burnt at high severity.

The impacts on the CAR reserve system differed across the four RFA regions impacted by the 2019–20 bushfires. Analysing the available data for Dedicated Reserves and Special Protection Zone reserve categories indicates that in total, 23 per cent (667,062 of 2,935,197 ha) was within the fire extent. The East Gippsland RFA region was most significantly impacted with around 66 per cent (381,561 of 575,674 ha) within the fire extent and 38 per cent burnt at high severity. The North East RFA region had 25 per cent (149,023 of 606,809 ha) within the fire extent and 17 per cent burnt at high severity. The Gippsland RFA region had 25 per cent (149,023 of 606,809 ha) within the fire extent and 12 per cent burned at high severity, while the West Victoria RFA region had only one per cent (9,121 of 672,291 ha) within the fire extent.

72. DAWE and the State Government of Victoria (2021) [Victorian Regional Forest Agreement Major Event Review of the 2019–20 bushfires: Summary report: information and data to inform public consultation](#), DAWE and the State Government of Victoria, accessed 6 February 2022.

73. Forest area derived from the National Forest Inventory Forests of Australia (2018) spatial dataset; DELWP, (2020) [Comprehensive, Adequate and Representative \(CAR\) Reserve for the Regional Forest Agreements \(CAR_RESERVE_2020\) \[data set\]](#), DELWP, accessed 6 February 2022.

74. DELWP (2022), [Comprehensive, Adequate and Representative \(CAR\) Reserve for the Regional Forest Agreements](#), DELWP, accessed 2 February 2022.

75. Fire history overlay of most recent fires: This layer, derived from DataVic (2022) Fire History overlay of most recent fires (2022) [FIRE_HISTORY data](#), DataVic, accessed 2 February 2022 represents the spatial extent of the last fires recorded, primarily on public land. It stores details of the last time an area was known to be burnt by wildfire or prescribed burning and represents a consecutive overlay of all FIRE_HISTORY layers, from older fire seasons to the most recent fire seasons. The Panel was advised to use the fire extent polygons for areas that were burnt between 1 July 2019 and 30 July 2020 to use for fire extent for the 2019–20 bushfires.

76. DELWP (2021) [Bushfire response and recovery - spatial data coordination](#), DELWP, accessed 2 February 2022.

77. This calculation is based on the tables 3 and 4 of the Summary Report and overall extent of CAR Reserve in the RFA regions (2.9 million has). DAWE and the State Government of Victoria (2021) [Victorian Regional Forest Agreement Major Event Review of the 2019–20 bushfires: Summary report: information and data to inform public consultation](#), DAWE and the State Government of Victoria, accessed 2 February 2022

5.5.2 Comprehensive analysis of the benefit of the CAR reserve system for the protection of listed species and communities

Given the significant impacts of these fires on about one-third of the CAR reserve system in the fire-affected RFA regions, the Panel considers that the benefits of the CAR reserve system for the protection of listed species and communities are unclear, because ground assessments have not been conducted for all the listed species and communities identified as 'at risk' in the TSCRA process. The Panel was advised that Victoria has been implementing a range of biodiversity response and recovery programs that are delivering field outputs including pest management, zoning amendments and surveys. However, the Panel understands that those programs have different jurisdictions under different funding arrangements. Additionally the output/outcome reports for each program tend to focus only on its own achievements, neglecting the collective progress made towards species protection.

Prior to the 2019–20 fires, the Victorian Regional Forest Agreements Scientific Advisory Panel, appointed to provide science-based advice to inform the modernised Victorian RFAs, advised the Victorian Government that the reserve system was not adequate (Page 7 of the report).⁷⁸ As the adequacy of existing strategies for listed species and communities protection was not assessed during RFA renewal, it is difficult to know whether the current CAR reserve system provides adequate protection for listed species and communities, taking account of the likely impacts resulting from these significant bushfires. Meanwhile, declines in species have continued.⁷⁹

DELWP has completed the first tranche of TSCRA, using FFG and EPBC listed species and communities, and is expected to complete the second tranche, using more than 1,300 newly listed species and communities, selected through Common Status Assessment. The modernised RFAs require a risk assessment to be conducted within six months of a new or updated species listing.⁸⁰ The Panel was not able to conduct an assessment of the listed species and communities as the full list was not ready.

During public consultation, numerous stakeholders recommended an expansion of CAR reserves to better protect threatened species and communities. However, the Panel was not able to find scientific evidence from the Parties to the RFAs in relation to the extent of protection for listed species and communities under the current CAR reserve system in Victoria. Such evidence would be valuable in the consideration of different options for further improvements. Currently the tables presented in the impact assessment section for listed species and communities do not provide sufficient insight as to how the CAR reserve system is supporting each species and community to protect and recover from disturbances such as the 2019–20 bushfires. One example that the Panel could consider for future reviews of the effectiveness of CAR Reserve System for Listed Species and Communities is actual evidence through field surveys that the reserve system is protecting enough populations to repopulate after disturbances including the 2019–20 bushfires, and whether current extent of reserves is providing enough support to conserve those species and communities. The Panel acknowledges that there are numerous programs running field survey programs for many threatened species and communities, which will resolve the issue in the future.

78. Regional Forest Agreements Scientific Advisory Panel (November 2019) [Scientific Advice to Support Regional Forest Agreement Negotiations](#), Regional Forest Agreements Scientific Advisory, accessed 1 March 2022.

79. Victorian Auditor-General's Office (2021) [Protecting Victoria's biodiversity: independent assurance report to parliament, 2021-22:07](#), accessed 1 March 2022.

80. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clauses 15k, accessed 2 August 2021.

The CAR reserve review process, which was intended to be completed by December 2021, is expected to cover this. However, it will not deliver revision of reserve boundaries, zoning amendments or a revised CAR reserve system spatial data layer.

5.5.3 Conservation of forested and non-forested EVCs

The Panel analysed an updated list of priority forested and non-forested EVCs using information provided by DELWP for each RFA region except the Central Highlands (Appendix D.1 to Appendix D.8⁸¹). The RFAs indicate:

In line with JANIS 1997 reservation objectives, all remaining occurrences of rare and endangered EVCs should be reserved or protected by other means as far as is practicable, and at least 60 per cent of the remaining extent of vulnerable EVCs should be reserved ...

Victoria will use best endeavours to further reserve priority EVCs (indicated in Table 1a and 1b) and make changes to its CAR reserve system as a result of changes in knowledge and changes in biota (e.g. through Climate Change).

In the fire-affected RFA regions there are seven EVCs that have been classified as having Vulnerable or Endangered status (including Montane Wet Forest (Endangered) in the North East) that have less than 60 per cent reserve of their extent within CAR reserves and which were heavily impacted (>50 per cent of their extent impacted by fire) by the 2019–20 bushfires (Table 14). The JANIS criteria specify that forest ecosystems that are recognised as vulnerable should be reserved for at least 60 per cent of their remaining extent. The EVC that has the lowest protection under the CAR reserve system and was significantly impacted by high-severity fire is the Montane Grassy Shrubland EVC (Gippsland RFA), which had no protection under the CAR reserve system and 56 per cent of its extent impacted by severe fire (Class 5 and Class 6⁸²). These seven EVCs require a realistic plan to conserve and protect more areas after severe impact from the 2019–20 bushfires.

There are ways to achieve a higher protection area for these seven EVCs area under the CAR reserve system. Note that the Panel did not have sufficient information and capacity to conduct practicality assessments in addressing these options:

First, the Valley Grassy Forest, Riparian Forest and Montane Grassy Shrubland EVCs have a large proportion of their area covered by private land tenure. This means that a combination of conservation private land covenants and public land area can be considered for inclusion under the CAR reserve system.

Second, the Lowland Forest, Cut-tail Forest, Damp Forest and Montane Wet Forest EVCs have minimal extent within private land areas. This means that public land tenures should be targeted to protect more of the extent of these EVCs. Inclusion of more areas of these EVCs under the CAR reserve system must be carefully considered.

81. When an EVC has been burnt that does not mean it is no longer that EVC, and that the JANIS criteria are objectives and allow for consideration of social and economic impacts.

82. This fire severity classes are based on the classification system that DELWP uses. Please see Table 1 in DAWE and the State Government of Victoria (2021) [Victorian Regional Forest Agreement Major Event Review of the 2019–20 bushfires: Summary report: information and data to inform public consultation](#), DAWE and the State Government of Victoria, accessed 1 March 2022.

Table 15. Representative conservation (% reservation status) of EVCs in CAR reserve system in 2019–20 bushfire-affected RFAs with <60% reserve status and >50% of extent impacted by fire⁸³

RFA region	EVCs	Pre-1750 extent (ha)	Current extent (ha)	% remaining	% of pre-1750 extent in CAR reserve system	% of current extent in CAR reserve system					% of current extent on private land	% burnt by 2019–20 fires	% burnt by high-severity fires	% burnt by multiple severe fires since 2000
						Dedicated	Informal	Prescription	Private land covenants	Total				
East Gippsland	Valley Grassy Forest	21,754	17,634	81	29	16	13	6	0	35.70	39	73	36	1
East Gippsland	Lowland Forest	274,549	261,564	95	41	25	12	7	0	42.80	7	77	40	0
East Gippsland	Cut-tail Forest	46,015	46,015	100	53	31	11	11	0	52.90	1	74	43	0
East Gippsland	Damp Forest	232,132	230,636	99	56	34	10	12	0	56	3	87	48	8
East Gippsland	Riparian Forest	27,446	17,668	64	37	23	32	2	0	56.80	28	73	31	1
Gippsland	Montane Grassy Shrubland	88	85	96	0	0	0	0	0	0	52	100	56	26
North East	Montane Wet Forest	20	20	100	57	0	16	41	0	57	0	58	36	28

Source: DELWP 2021

5.5.4 Government response to ecosystem resilience management

Many EVCs have experienced multiple severe fires since 2000. This could impact species regeneration capability when the next series of severe fires occurs below tolerable fire interval (TFI), reducing the ability of EVCs to survive after fire.

DELWP's fuel management program considers how best to meet objectives specified in the Code of Practice for Bushfire Management on Public Land 2012 and recognises the need to manage these objectives over different temporal and geographic scales. This is achieved through managing fuels and conducting burns to protect, maintain and/or improve ecosystem values and to build ecosystem resilience.

To understand the effects of both natural and fuel management fires on the environment, DELWP measures and monitors the timing and number of fires in different types of vegetation, using their TFIs. DELWP also measures and monitors the ages of different types of vegetation using their growth stage structure (GSS), but the Panel was not in a position to analyse this information and this is not included in this report.

Figure 9 shows the area of public land in Victoria burnt by bushfires and planned burning below minimum TFI since 1980. It shows that in 2019–20, 758,056 ha, or around 10 per cent of vegetation was burnt below minimum TFI across all RFA regions, mainly due to bushfires. This is by far the greatest extent burnt while the ecosystem was below minimum TFI. This means that a much greater vegetation area is at ecological risk in the landscape in terms of its tolerance to survive through fires. It also indicates that fire interval is becoming shorter. Considering future climate change scenarios, this trend is expected to intensify. Vegetation areas are likely to experience more frequent large fires below the minimum TFI. This needs to be monitored and researched to develop management strategies and incorporate findings into CAR reserve system management.

83. This table was created based on the spatial analysis of 2019–20 bushfire impact on Ecological Vegetation Classes conducted by DELWP for the Panel members. EVCs are determined onsite and the relevant conservation status for the field verified EVC would apply.

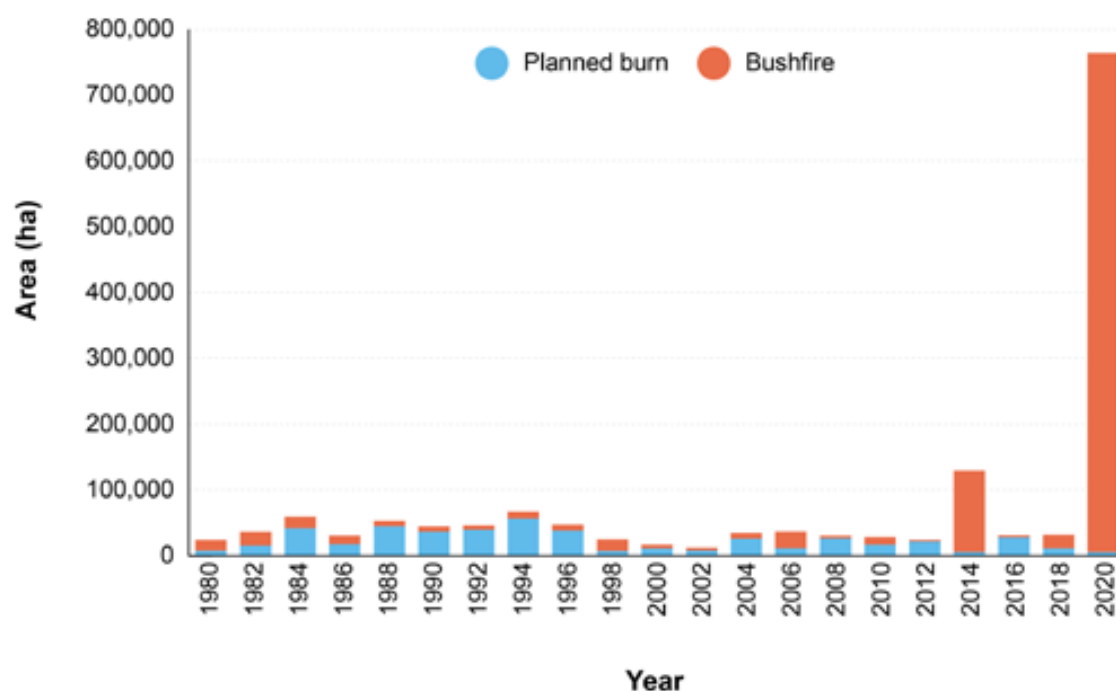


Figure 9. Area of public land across all RFAs burnt while below minimum TFI, Victoria, 1980-2021⁸⁴ Source: DELWP 2021

As a result of the 2019–20 bushfires, the TFI status of many forest ecosystems in some Victorian RFAs is now at an alarming level that could put vegetation at critical risk. One RFA region is at its worst TFI status for three decades. Figure 10 shows the TFI status of vegetation on public land in the East Gippsland RFA region since 1980. It shows that in 2020-21:

- about 87 per cent of the vegetation was below minimum TFI, a figure maintained from the previous year
- the proportion of vegetation within TFI was maintained at 9 per cent
- <1 per cent (<1,700 ha) of the vegetation remained above maximum TFI
- the proportion with no recorded fire history was maintained at 4 per cent.

Having close to 90 per cent of vegetation below the desired minimum TFI potentially puts East Gippsland RFA at a beyond-critical status. There has been a 35 per cent increase in vegetation below minimum TFI as a result of the 2019–20 bushfires. However, it is unclear exactly what this means for the survival and resilience of ecosystems, as this is an aggregated version of the status of multiple ecosystems that have different characteristics in response to fire. In addition, TFI information does not take account of the actual differences experienced in the severity of fire at different sites within a single forest ecosystem. This makes it difficult to interpret and understand the implications of this situation on the overall resilience of the different forest ecosystems within the RFA region.

84. DELWP (unpublished) 'Ecosystem resilience by RFA analysis and narrative', Unpublished report for the Major Event Review Panel, accessed 2 December 2021.

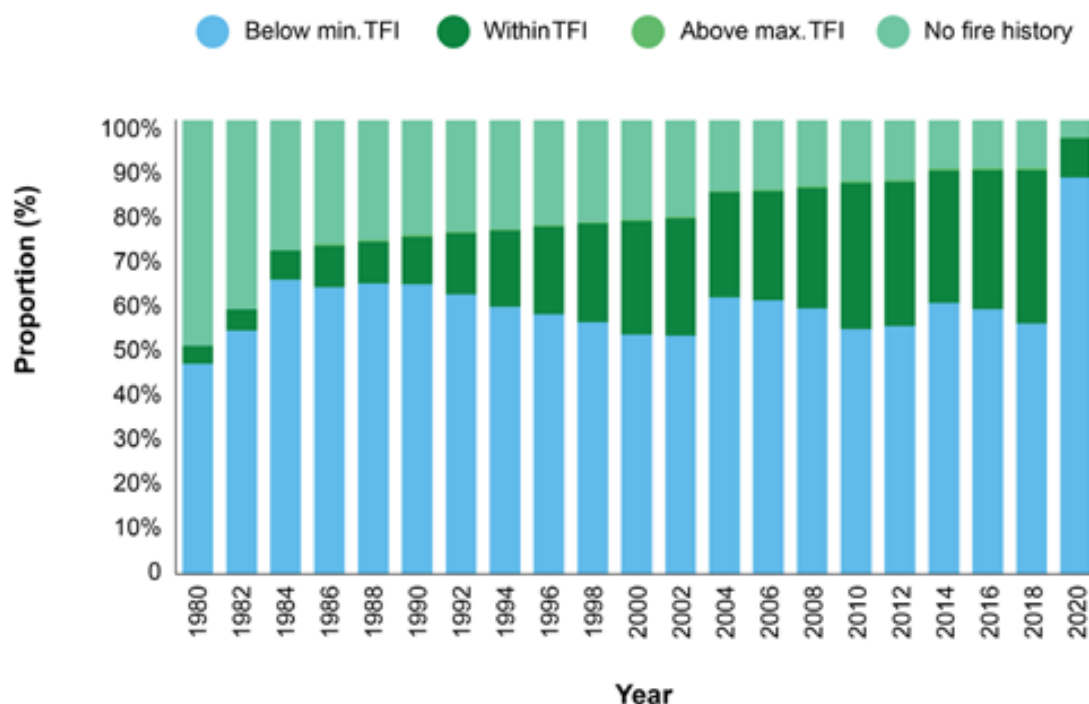


Figure 10. TFI status of vegetation on public land, East Gippsland RFA, 1980-2021⁸⁵ Source: DELWP 2021

The 2020 Victorian Auditor-General's Office (VAGO) audit on reducing bushfire risks also covered DELWP's use of TFI and GSS. The VAGO commented that these metrics do not report the results or outcomes that these assessments demonstrate and do not compare the status of those metrics with the set thresholds that show desired states. This makes it difficult to understand whether the reported mix of vegetation represents a high or a low level of ecosystem resilience.⁸⁶ The VAGO defined geometric mean abundance as 'the relative abundance of all known species within an ecosystem' and noted that this could be a measure of an ecosystem's biodiversity, 'which is a good indicator of resilience'.⁸⁷ The audit then noted:

Despite having committed to doing so, DELWP also does not publicly report on geometric mean abundance (GMA), which is an indicator of ecosystem resilience. DELWP advised that it has recently developed additional tools within its Fire Analysis Module for Ecological Values (FAME), that will enable them to report on GMA and better understand the specific effects of its activities on ecological values.⁸⁸

The most recent report of the Victorian Commissioner for Environmental Sustainability on biodiversity after the 2019–20 fires noted that DELWP-funded research in 2021 'aims to better address ecosystem resilience in Victoria by developing evidence-based approaches to inform resilience targets that include Tolerable Fire Intervals and Geometric Mean Abundance'. The outcome of this research should be a foundation for determining the resilience of EVCs under the CAR reserve system. If the outcomes indicate that there is more suitable alternative measure for ecosystem resilience at landscape scale, this should replace the current approach. This current information does not provide sufficient key insights for the Panel to assess the current status of the impacts of the 2019–20 bushfires on ecosystem resilience.

85. DELWP (unpublished) 'Ecosystem resilience by RFA analysis and narrative', Unpublished report for the Major Event Review Panel, accessed 2 December 2021.

86. Victorian Auditor-General's Office (VAGO) (14 October 2020) [Reducing bushfire risk: independent assurance report to parliament](#), 2020-21:4, VAGO, accessed 3 December 2021.

87. Victorian Auditor-General's Office (VAGO) (14 October 2020) [Reducing bushfire risk: independent assurance report to parliament](#), 2020-21:4, VAGO, accessed 3 December 2021.

88. Victorian Auditor-General's Office (VAGO) [Reducing bushfire risk: independent assurance report to parliament](#), 2020-21:4, VAGO, accessed 3 December 2021.



Photo credit: Recovering stringybark and ironbark forest Mottle Range, March 22 © T. Bartlett

5.6 Findings

The Panel's analysis found that the 2019–20 bushfires impacted significantly on the CAR Reserve System, with a total of 872,565 ha being within the extent of the fires. The East Gippsland RFA region's CAR reserve system was the most impacted with 465,793 ha located within the fire extent. The impacts on the CAR reserve system in the other three RFA regions were as follows: 216,598 ha was located in the North East RFA region, 180,982 ha was located in the Gippsland RFA region and 9,246 ha was located in the West Victoria RFA region.

Importantly, the Panel found that 48 per cent (420,870 ha) of the CAR reserve system that was within the 2019–20 fire extent was impacted by high-severity fire, of which 220,977 ha was in the East Gippsland RFA region, 105,756 ha was within the North East RFA region and 94,137 ha was within the Gippsland RFA region.

In the East Gippsland RFA region, 37 listed species and communities were impacted by the 2019–20 bushfires, with all of them having more than half of their occurrence with CAR reserve protected areas impacted. In the North East RFA region, 15 listed species and communities were impacted, with all but one having less than half of their CAR reserve occurrence impacted. In the Gippsland RFA region there were 24 listed species and communities impacted, with two species having more than half of their CAR reserve occurrence impacted. In the West Victoria RFA region, there were 13 listed species and communities impacted but for all of these less than 10 per cent of their CAR reserve occurrence was impacted.

The primary function of the CAR reserve system is to ensure the long-term conservation and protection of many important forest values including Listed Species and Communities. Under the RFAs, Victoria has committed to use its best endeavours to protect important occurrences of species and communities in the CAR reserve system and maintain or restore ecological management regimes to ensure their viability. Despite analysing the fire extent and intensity impacts, the Panel was unable to assess the efficacy of the CAR Reserve System for the protection of Listed Species and Communities. This was due to the lack of specific impact data for listed species and communities and the fact that the current environmental response and recovery programs only report their own achievements, neglecting the collective progress made towards species protection.

The Panel found that within the fire-affected RFA regions there are seven Vulnerable or Endangered ecological vegetation classes (EVCs) which were heavily impacted (>50 per cent of their extent impacted) by the 2019–20 bushfires which currently have less than 60 per cent of their extent within CAR reserves. Five of these EVCs are located within the East Gippsland RFA region and one each located in the North-East and Gippsland RFA regions. The Panel considers that the current review of the CAR reserve system being undertaken by DELWP needs to develop a realistic plan to conserve and protect more areas after severe impact from the 2019–20 bushfires.

Victoria's Tolerable Fire Interval (TFI) data shows that vegetation on public land is beyond critical status for some areas, especially in the East Gippsland RFA region, which now has close to 90 per cent of vegetation below minimum TFI. This is a 35 per cent increase of below minimum TFI status as a result of the 2019–20 bushfires. However, this TFI index does not capture current status of ecosystem resilience at the landscape scale as this does not incorporate differences in severity of fire impact or integrity of vegetation patches. The Panel considers that the current application of tolerable fire interval for managing ecosystem resilience at landscape scale should incorporate geometric mean abundance or a more suitable alternative measure to better understand ecosystem resilience.

5.7 Recommendations

The Panel recommends:

Recommendation 1

That the Parties validate the efficacy of the current CAR reserve system for listed species and communities in the next scheduled five-yearly review using information from the completed threatened species and communities risk assessments (scheduled for completion in 2023).

Recommendation 2

That the Victorian Government develop an action plan to expand protection areas for the seven ecological vegetation classes identified in this report as being under 60 per cent reserve status and having more than 50 per cent of their extent impacted by fire.

Recommendation 3

That the Victorian Government apply the outcomes of the research on Geometric Mean Abundance or a more suitable alternative measure as an indicator of ecosystem resilience based on the Fire Analysis Module for Ecological values (FAME)⁸⁹ currently being used by the Department of Environment, Land, Water and Planning. This indicator would provide a foundation for determining resilience of ecological vegetation classes under the CAR reserve system and inform fire management strategies and interventions that enhance resilience.

89. FAME is a tool to predict potential impact of bushfires and fuel management activities on environment including ecosystem resilience. This supports fire planners to do a decision-making process under various fire management scenarios considering not only human life and property but also biodiversity. More information can be found at <https://www.ari.vic.gov.au/research/fire/fire-analysis-module-for-ecological-values-fame> and <https://www.ffm.vic.gov.au/fuel-management-report-2018-19/topics-of-interest/fame>, accessed 15 March 2022



Photo credit © Tyson Lovett-Murray and Gunditj Mirring Traditional Owners Aboriginal Corporation

6. Matters of National Environmental Significance and other Environment and Heritage values

6.1 World Heritage places

6.1.1 Impacts on Budj Bim Cultural Landscape

Within Victoria's RFA regions there is only one World Heritage listed site: the Budj Bim Cultural Landscape located within the West Victoria RFA region. The Panel was advised that two bushfires impacted on the World Heritage place. The fires impacted over 60 per cent of the northern component of the Cultural Landscape in the vicinity of Tae Rak (Lake Condah) and Budj Bim (Mt Eccles). The Condah-Millards Track fire burnt 793 ha within the Lake Condah Indigenous Protected Area. The Bessiebelle-Budj Bim fire burnt about 7,000 ha over seven days, including private land and land within the Budj Bim National Park, joining with the Condah-Millards Track fire area.

The Panel was advised that these two bushfires burnt a total of 5,179 ha of the Budj Bim Cultural Landscape, which is 64 per cent of the area of the World Heritage listing. The fires threatened multiple Aboriginal cultural heritage places, including over 80 per cent of the Lake Condah Indigenous Protected Area. The Budj Bim Cultural Landscape includes an elaborate series of stone-lined channels and pools set up by the Gunditjmara people to harvest eels and some parts of the landscape also features evidence of

stone dwellings that have been dated back 6,600 years. The Gunditj Mirring Traditional Owner Aboriginal Corporation advised the Panel that they had reasonable engagement with DELWP during the management of the Budj Bim fire, but were concerned that some earthmoving contractors did not respect the Traditional Owners' views when working on the stone country. The Panel was not provided with any evidence that the stone aquaculture systems were damaged during the fire. The Traditional Owners explained that the fire had uncovered another small aquaculture system, including a 25-metre-long channel, that had not been recorded previously.

6.1.2 Findings

While about two-thirds of the Budj Bim Cultural Landscape was burnt during the 2019-20 bushfires, the Panel was not presented with any evidence of long-term damage caused to the World Heritage place as a result of these fires. The Traditional Owners advised the Panel that they were involved in the management of these bushfires and that at least one previously unknown cultural heritage site was subsequently identified in the burnt forest landscape.

6.2 National Heritage places

6.2.1 Background

Australia's national heritage includes exceptional natural and cultural places that contribute to Australia's national identity:

National heritage defines the critical moments in our development as a nation and reflects achievements, joys and sorrows in the lives of Australians. It also encompasses those places that reveal the richness of Australia's extraordinarily diverse natural heritage.⁹⁰

At the inception of the Victorian RFAs in the late 1990s, key areas of natural, historical and Indigenous significance were managed and protected through the Register of the National Estate under the since-repealed *Australian Heritage Commission Act 1975* (Cth) (AHC Act).

The RFAs contained a number of commitments from the Parties as to how National Estate values and the Register of the National Estate would be managed and protected, recognising that many of the National Estate values were well reserved in the CAR reserve system and that elements of the forest management system provided for the conservation of many other National Estate values.

Due to a number of iterative legislative changes, including the repeal and replacement of the AHC Act, the National Estate Register was frozen in 2007.

This closure was in recognition of the fact that these values were now being managed through a mixture of revised State and Commonwealth legislation.

The former Register of the National Estate, containing some 13,000 entries from throughout Australia, is archived in perpetuity on the Australian Heritage Database.

Many of the matters formerly managed under the National Estate, including Aboriginal cultural heritage, Western cultural heritage and Matters of National Environmental Significance (MNES), are now managed

90. DAWE (3 October 2021), [National heritage](#), *About National Heritage*, DAWE, accessed 3 December 2021.

under a combination of the National Heritage List, the Commonwealth Heritage List, the Victorian Heritage Register and the heritage codes of local planning schemes. The transition to a new national heritage system has not diminished protections for National Estate values. The National Heritage List identifies places of outstanding heritage value to the nation, and the Commonwealth Heritage List identifies heritage places owned or controlled by the Commonwealth.

The Australian Heritage Council assesses the values of nominated places against set criteria and makes listing recommendations to the Commonwealth Minister for the Environment.

As defined in the Victorian modernised RFAs, a 'Major Event' is a substantial change in circumstances that has the potential to significantly impact upon various values that Victorian forest provides, including MNES. National Heritage values of National Heritage places are part of MNES, meaning that this Major Event Review should assess the impact of the 2019–20 bushfires on those values.

In Victoria there are 27 National Heritage places. Of these, two places within RFA boundaries were impacted by the 2019–20 bushfires: the Australian Alps National Parks (AANP) and Grampians National Park (Gariwerd). Grampians National Park, located in the West Victoria RFA region, had minimal impact from fire (11,336 ha) and no areas severely impacted. Therefore, this report will focus on the AANP, as severe fires occurred in large parts of this region. The AANP extends over 1.6 million ha of public land contained in 11 national parks and nature reserves across Victoria, New South Wales and the Australian Capital Territory⁹¹ (Figure 11). Around 857,048 ha of the AANP is in Victoria.⁹² Relevant parks and reserves in Victoria that form part of the AANP are:

- Alpine National Park
- Avon Wilderness Park
- Baw Baw National Park
- Mount Buffalo National Park
- Snowy River National Park.

The Gippsland RFA region accounts for about 40 per cent (353,294 ha) of the AANP, which is the largest Victorian extent (Table 16). Approximately a third of the extent (264,964 ha) is in the North East RFA region and a quarter of the extent (226,124 ha) is within the East Gippsland RFA region. The Central Highlands RFA contains minimal extent (1 per cent, 12,665 ha) in Baw Baw National Park.

Table 16. Extent of Australian Alps National Parks by RFA⁹³

RFA	Alpine National Park	Avon Wilderness Park	Baw Baw National Park	Mount Buffalo National Park	Snowy River National Park	Total
Central Highlands	-	-	12,665	-	-	12,665
East Gippsland	111,391	-	-	-	114,734	226,124
Gippsland	313,610	39,566	118	-	-	353,294
North East	237,481	-	-	27,483	-	264,964
Total	662,482	39,566	12,784	27,483	114,734	857,048

Source: DataVic, Public land management (PLM25)

91. DAWE (3 October 2021), [National Heritage Places – Australian Alps national parks and reserves](#), DAWE, accessed 2 December 2021.

92. This was calculated based on publicly available spatial data. DataVic, [Public Land Management \(PLM25\)](#), accessed 25 December 2022.

93. The areas of the parks forming part of the Australian Alps National Parks are based on the current extent of the parks. The area of some of the parks has changed slightly since the parks were included in the National Heritage List.

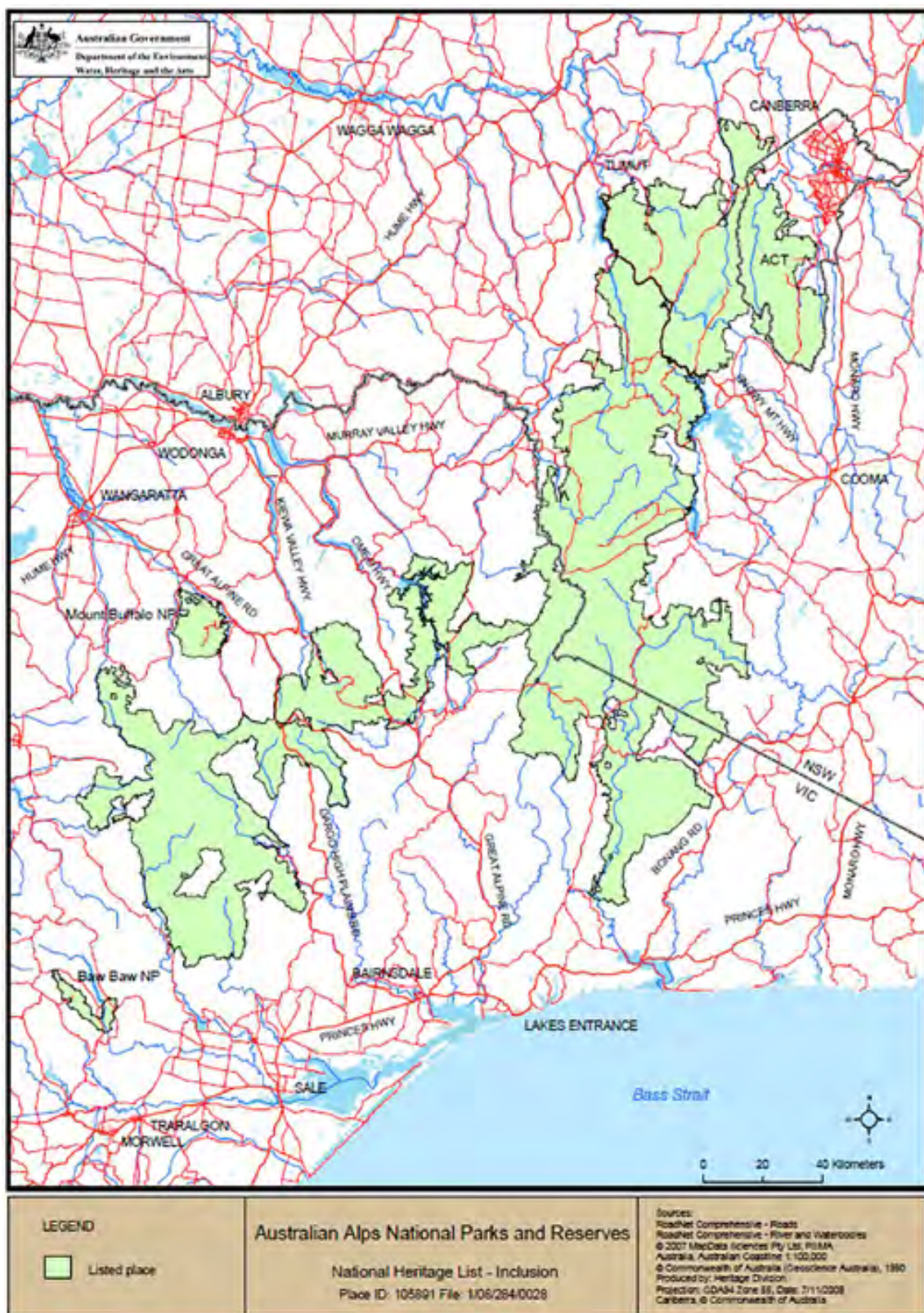


Figure 11. Map of Australian Alps National Parks and reserves⁹⁴ Source: DAWE 2021

94. DAWE (3 October 2021), [National Heritage Places - Australian Alps national parks and reserves](#), DAWE, accessed 6 December 2021.

When a place with outstanding heritage values is nominated for inclusion on the National Heritage List, the Australian Heritage Council assesses the heritage value of that place against nine criteria and significance thresholds. Based on the *Commonwealth of Australia Gazette*⁹⁵ for the AANP, six criteria are relevant:

- a. the place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history.
- b. the place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history.
- c. the place has outstanding heritage value to the nation because of the place's importance in demonstrating the principal characteristics of: (i) a class of Australia's natural or cultural places; or (ii) a class of Australia's natural or cultural environments.
- d. the place has outstanding heritage value to the nation because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group.
- e. the place has outstanding heritage value to the nation because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.
- f. the place has outstanding heritage value to the nation because of the place's special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history.

The Panel requested information on the impact of the 2019–20 bushfires on the following seven values relevant to those criteria:

- Glacial and periglacial features
- Mt Howitt fish fossil site
- Biological heritage: threatened fauna and flora species that are dependent on alpine national parks and reserves
- Moth feasting sites in the Snowy River valley, where around 280 sites have been identified
- Transhumant grazing heritage values: evidence of transhumant grazing such as huts, the former grazing landscapes, stock yards and stock routes
- Recreation: heritage value for snow sports. Snow sports sites include the Mount Buffalo Chalet in Victoria
- Water harvesting: historical major pondages along with numerous tunnels, aqueducts, power stations, huts, roads, former settlements, and town and work camp sites.

95. Garrett P, Minister for the Environment, Heritage and the Arts, '[Inclusion of a place in the National Heritage List](#)', *Commonwealth of Australia Gazette*, No S237, 7 20 May 2008, accessed 21 January 2022.

6.2.2 Impact on the Australian Alps National Park

Method

As the Panel did not receive the impact assessment by extent and severity in the AANP, it conducted internal analysis to assess the impact. The Parties provided information on 26 national parks and nature conservation reserves that have more than 90 per cent of their land within the 2019–20 bushfire extent but this did not serve the Panel's intention to present in this section. To do the internal analysis, the Panel used publicly available spatial data layers:

- Public Land Management (PLM25):⁹⁶ This dataset describes public land management for the State of Victoria. Public land is defined as land held by, vested in or owned by DELWP and by other government departments, public authorities, the Commonwealth government, and municipalities. The Panel used the 'Name' column from an attribute table that matches with park names for Australian Alpine National Parks.
- Fire history overlay of most recent fires:⁹⁷ This layer, derived from FIRE_HISTORY data⁹⁸, represents the spatial extent of the last fires recorded, primarily on public land. It stores details of the last time an area was known to be burnt by wildfire or prescribed burning and represents a consecutive overlay of all FIRE_HISTORY layers, from older fire seasons to the most recent fire seasons. The Panel was advised to use the fire extent polygons for areas that were burnt between 1 July 2019 and 30 July 2020 to use for fire extent for the 2019–20 bushfires.
- Fire severity:⁹⁹ This layer is fire severity information on bushfires that occurred between November 2019 and March 2020. Fire severity mapping was derived using machine learning classification (random forests) of eight spectral indices (SIs) from pre-fire and post-fire Sentinel satellite imagery. The fire severity classification model was trained using high-resolution (<35 cm) post-fire near-infrared aerial imagery from 12 bushfires that occurred during the 2018-19 fire season across areas of central and eastern Victoria. A detailed description of the classification methodology can be found in Collins et al. (2018).¹⁰⁰ The classification covers woody vegetation landcover types (including native and non-native forest, woodland and shrubland).

The fire severity classes used in this analysis were:

- Class 6 – Canopy Burnt: >20% of canopy foliage is consumed
- Class 5 – High Canopy Scorch: >80% of canopy foliage is scorched
- Class 4 – Medium Canopy Scorch: canopy is a mosaic of both unburnt and scorched foliage, 20%-80%
- Class 3 – Low Canopy Scorch: canopy foliage is largely unaffected (<20% scorched) but the understorey has been burnt
- Class 2 – Unburnt: canopy and understorey foliage are largely (>90%) unburnt
- Class 1 – Non-woody vegetation (unclassified)
- Class 0 – No data: e.g. due to obscuration by cloud, cloud-shadow, smoke and haze.

96. DataVic, [Public land management \(PLM25\)](#) [data set], accessed 25 February 2022.

97. DataVic, [Fire history overlay of most recent fires](#) [data set], accessed 25 February 2022.

98. Fire_History data is a spatial layer that represents the spatial extent of fires recorded since 1903 primarily on public land. Accessed 25 February 2022. Source: DataVic, [Fire History Records of Fires Primarily on Public Land](#) [data set], accessed 25 February 2022.

99. DELWP (2021) Bushfire response and recovery - spatial data coordination, DELWP, accessed 25 February 2022. Bushfire Spatial Datamart Victoria (14 July 2021) [BUSHFIRE SEVERITY EAST AND NORTHEAST VICTORIA 2019–20](#) dataset, Bushfire Spatial Datamart Victoria, accessed 25 February 2022.

100. Collins L, Griffioen P, Newell G and Mellor A (2018) 'The utility of Random Forests for wildfire severity mapping', *Remote Sensing of Environment*, 2018, 216:374-384.

- In this analysis, those areas mapped as being Class 6 and Class 5 were regarded as having been burnt by high severity fire.
- An independent cross-validation of the classification model was used to estimate global and per-class model accuracy. Overall accuracy is estimated to be 85% (0.81 Kappa), with producer per-class accuracy of 97% Canopy Burnt, 91% High Canopy Scorch, 88% Unburnt Canopy, 75% Low Canopy Scorch and 61% Medium Canopy Scorch. A ground-based validation of the classification has not been undertaken.
- RFA boundaries:¹⁰¹ RFA25 is the key layer, at 1:25 000, for all departmental RFA planning and reporting. This layer is used to provide the basic spatial framework within which cartographic products for RFA reports are derived.

The Panel overlaid the AANP extent layer with RFA boundaries, fire severity and fire extent spatial layers to understand the impact of the 2019–20 bushfires.

Result

Across the whole Australian Alpine National Park in New South Wales, Victoria and the ACT, 573,000 ha was burnt, with 60 per cent of that area rated as burnt by high-severity fire. In Victoria, about 225,630 ha (26 per cent) of the AANP was burnt during the 2019–20 bushfires, of which approximately 104,805 ha (12 per cent) was impacted by high-severity fires (Figure 12). The Avon Wilderness Park and Baw Baw National Park components of the AANP were not impacted.

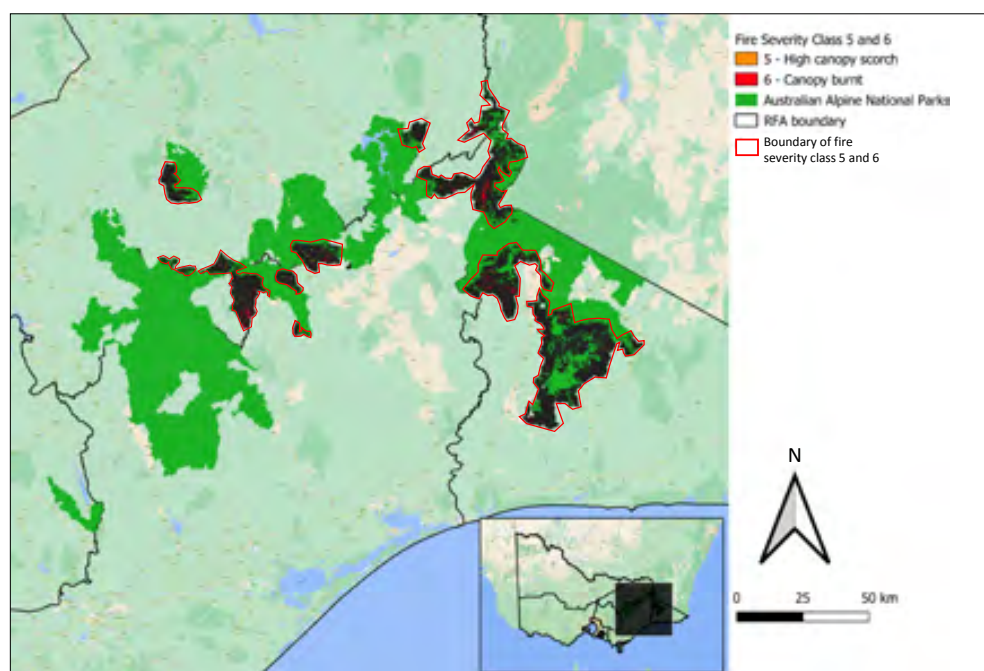
The greatest impact, by extent, was recorded in the East Gippsland RFA region. More than half of the AANP extent (117,233 ha) in this RFA region was impacted by fire. Around 40 per cent of this fire-affected area was severely impacted, mostly concentrated in/around Snowy River National Park. A fifth of the overall AANP extent within the Gippsland RFA region was impacted by fire, and more than half of the fire-affected area was burnt by high-severity fires (38,319 ha).

Figure 12 shows a number of large areas that were impacted by high-severity fire. The largest areas within Victoria's component of the AANP that were impacted by high-severity fires are located in a large part of Snowy River National Park, areas west of Gelantipy, the north and north-western part of Cobberas, areas around Davies Plain, the eastern side of Lake Dartmouth, near Mount Pinnibar, most of the Bundara region, Mount Tabletop, Mount Selwyn, north of Wongungarra, the west of Mount Buffalo National Park, and east of Abbeyard.

101. DataVic (2022) [Regional Forest Agreement boundaries](#) [data set], DataVic, accessed 2 February 2022.

Table 17. Impact of the 2019–20 bushfires on Australian Alpine National Parks, by fire extent and high severity

Australian Alpine National Parks		Central Highlands RFA	East Gippsland RFA	Gippsland RFA	North East RFA	Total
Alpine National Park	High fire severity	-	16,484	38,319	15,630	70,433
	Fire extent	-	29,287	67,349	32,538	129,174
	Overall extent	-	111,391	313,610	237,481	662,482
Avon Wilderness Park	High fire severity	-	-	-	-	-
	Fire extent	-	-	-	-	-
	Overall extent	-	-	39,566	-	39,566
Baw Baw National Park	High fire severity	-	-	-	-	-
	Fire extent	-	-	-	-	-
	Overall extent	12,665	-	118	-	12,784
Mount Buffalo National Park	High fire severity	-	-	-	3,759	3,759
	Fire extent	-	-	-	8,509	8,509
	Overall extent	-	-	-	27,483	27,483
Snowy River National Park	High fire severity	-	30,613	-	-	30,613
	Fire extent	-	87,947	-	-	87,947
	Overall extent	-	114,734	-	-	114,734
Total	High fire severity	-	47,098	38,319	19,389	104,805
	Fire extent	-	117,234	67,349	41,047	225,629
	Overall extent	12,665	226,124	353,294	264,964	857,048

Figure 12. Map of Alpine National Park and areas impacted by high-severity fires (Class 5 and Class 6)¹⁰²

(Source: DataVic 2021)

102. This is Panel's own analysis using a number of spatial layers that are publicly available. More information on the spatial layers can be found in the section 6.4.3.

6.2.3 Impact on National Heritage values of National Heritage places

This section focuses on the formally listed National Heritage values of the AANP.

Glacial and periglacial features

The fire footprint includes periglacial block streams of national significance on the western slopes of Mt Cobberas No. 2. However, Parks Victoria is not aware of any assessments of fire impact on these features.

Mt Howitt fish fossil site

This site is located outside of the 2019–20 bushfire extent.

Moth feasting sites in the Snowy River valley

Parks Victoria is not aware of any assessments of fire impact on these features.

Transhumant grazing heritage values

No huts or other grazing heritage values were lost or otherwise impacted by the 2019–20 bushfires in the AANP.

Recreation – heritage value for snow sports

There were minimal impacts, including damage to some minor cross-country ski infrastructure (signs and crossings) at Mt Buffalo.

Water harvesting – historical major pondages, tunnels, aqueducts etc.

There are no assessments of any impacts on these values.

Biological heritage: threatened fauna and flora species dependent on alpine national parks and reserves

Currently there is no formal list of threatened fauna and flora species that are dependent on the AANP. Instead, DELWP provided a list of species that have a modelled habitat extent overlap with the AANP boundary. This was undertaken using DELWP's Habitat Distribution Models, a component of Strategic Management Prospects (SMP) decision support tool. Out of 4,174 species in the SMP database, 2,857 have their modelled habitat within the AANP boundary. Providing a summary of bushfire impact on the 2,857 species would not be an ideal way to assess the impact on biological heritage values. Therefore, the Panel decided to use taxon groups from the SMP database that are mentioned in the *Gazette*:¹⁰³

Outstandingly rich flora taxa in the AANP include the daisies (Asteraceae), willow-herbs (Onagraceae), starworts and cushion-plants (Caryophyllaceae), southern heaths (Epacris), bottlebrushes (Callistemon), orchids (Pterostylis, Prasophyllum and Dipodium) and pimeleas (Thymaelaeaceae). Cold-climate adapted and endemic fauna species include the mountain pygmy-possum (*Burramys parvus*), the alpine she-oak skink (*Cyclodomorphus praealtus*), Snowy Mountains rock skink (*Egernia guthega*), Baw Baw frog (*Philoria frosti*), southern corroboree frog (*Pseudophryne corroboree*) and the northern corroboree frog (*P. pengilleyi*).

103. Garrett P, Minister for the Environment, Heritage and the Arts, '[Inclusion of a place in the National Heritage List](#)', *Commonwealth of Australia Gazette*, No S237, 7 20 May 2008, accessed 21 January 2022.

Species of a great many invertebrate taxa are endemic to the Alps. These include stoneflies, caddisflies, mayflies, grasshoppers and earthworms. Many display cold-climate adaptations, such as the mountain grasshopper (*Acripeza reticulata*), mountain spotted grasshopper (*Monistria concinna*) and alpine thermocolour grasshopper (*Kosciuscola tristis*). The Bogong moth undertakes regular migration in Australia and an essential part of its lifecycle occurs within the AANP.

Daisies (Asteraceae)

No impact assessment was found.

Willow-herbs (Onagraceae)

No impact assessment was found.

Starworts and cushion-plants (Caryophyllaceae)

No impact assessment was found.

Southern heaths (Epacris)

Table 18 shows the assessed impact on southern heaths in the region.

Table 18. Impact of 2019–20 bushfires on southern heaths species with modelled habitat distribution within Australian Alps National Parks in Victoria¹⁰⁴

Common name	Scientific name	Overall extent (ha)	Extent within AANP (ha)	Proportion within fire extent (%)	Proportion impacted by high-severity fire (%)
Drumstick Heath	<i>Epacris breviflora</i>	1,701,905	444,541	26	16
Cryptic Heath	<i>Epacris celata</i>	101,928	78,897	21	14
Reddish Bog-heath	<i>Epacris glacialis</i>	25,596	22,389	7	3
Ace of Spades	<i>Epacris gunnii</i>	886,343	168,623	25	15
Common Heath	<i>Epacris impressa</i>	11,222,975	710,388	28	14
Common Heath	<i>Epacris impressa</i> var. <i>impressa</i>	476,391	71	7	2
Woolly-style Heath	<i>Epacris lanuginosa</i>	1,016,429	1,235	0	0
Coral Heath	<i>Epacris microphylla</i> s.l.	1,474,575	381,491	29	17
Coast Coral Heath	<i>Epacris microphylla</i> s.s.	85,207	20,520	52	27
Blunt-leaf Heath	<i>Epacris obtusifolia</i>	1,599,811	4,319	25	10
Swamp Heath	<i>Epacris paludosa</i>	1,404,594	398,009	23	14
Snow Heath	<i>Epacris petrophila</i>	79,952	65,881	8	5
Mountain Coral Heath	<i>Epacris rhombifolia</i>	152,715	70,000	1	1

Source: DELWP 2021

Bottlebrushes (Callistemon)

There are impact assessments, but no Callistemon taxon groups had an extent within the AANP.

Orchids

Table 19 shows the assessed impact on orchids in the region.

104. This table was created using DELWP's Habitat Distribution Models, a component of Strategic Management Prospects (SMP) decision support tool. DELWP provided a list of species that have modelled distribution within AANP boundary and impact of 2019–20 bushfires on those species.

Table 19. Impact of 2019–20 bushfires on orchid species with modelled habitat distribution within Australian Alps National Parks in Victoria¹⁰⁵

Common name	Scientific name	Extent within AANP (ha)	Proportion within fire extent	Proportion impacted by high-severity fire
Mauve Leek-orchid	<i>Prasophyllum alpestre</i>	118,479	18%	11%
Alpine Leek-orchid	<i>Prasophyllum alpinum s.l.</i>	84,118	17%	11%
Austral Leek-orchid	<i>Prasophyllum australe</i>	7	75%	75%
Short-lip Leek-orchid	<i>Prasophyllum brevilabre</i>	15,845	27%	12%
Tall Leek-orchid	<i>Prasophyllum elatum</i>	73	14%	6%
Yellow Leek-orchid	<i>Prasophyllum flavum</i>	67,197	18%	10%
Scented Leek-orchid	<i>Prasophyllum odoratum s.l.</i>	10,512	54%	23%
Yellow Hyacinth-orchid	<i>Dipodium interaneum</i>	118,479	18%	11%

Source: DELWP 2021

Pimeleas (Thymaelaeaceae)

Table 20 shows the assessed impact on orchids in the region.

Table 20. Impact of 2019–20 bushfires on pimeleas species with modelled habitat distribution within Australian Alps National Parks in Victoria¹⁰⁶

Common name	Scientific name	Overall extent (ha)	Extent within AANP (ha)	Proportion within fire extent (%)	Proportion impacted by high-severity fire (%)
Alpine Rice-flower	<i>Pimelea alpina</i>	258,542	166,375	20	13
Bootlace Bush	<i>Pimelea axiflora</i>	6,591,270	848,919	26	14
Alpine Bootlace Bush	<i>Pimelea axiflora subsp. alpina</i>	53,804	42,746	21	15
Matted Rice-flower	<i>Pimelea biflora</i>	131,331	101,970	25	17
Curved Rice-flower	<i>Pimelea curviflora s.l.</i>	11,435,084	535,649	28	15
Curved Rice-flower	<i>Pimelea curviflora s.s.</i>	4,070,204	207,147	20	11
Curved Rice-flower	<i>Pimelea curviflora subsp. fusiformis</i>	1,822,758	126,192	11	5
Curved Rice-flower	<i>Pimelea curviflora subsp. gracilis/sericea subsp. agg.</i>	196,359	49,202	15	9
Curved Rice-flower	<i>Pimelea curviflora subsp. sericea</i>	785,260	139,602	28	15
Yellow Rice-flower	<i>Pimelea flava</i>	1,404,616	119,696	23	13
Yellow Rice-flower	<i>Pimelea flava subsp. flava</i>	368,089	2,699	1	0
Smooth Rice-flower	<i>Pimelea glauca</i>	2,096,712	135,600	24	14
Common Rice-flower	<i>Pimelea humilis</i>	13,462,986	411,765	25	13
Tall Rice-flower	<i>Pimelea ligustrina</i>	1,804,761	420,017	29	15
Fringed Rice-flower	<i>Pimelea ligustrina subsp. ciliata</i>	158,876	118,621	24	15
Tall Rice-flower	<i>Pimelea ligustrina subsp. ligustrina</i>	185,080	30,440	42	21
Slender Rice-flower	<i>Pimelea linifolia</i>	12,282,654	798,816	25	14
Slender Rice-flower	<i>Pimelea linifolia subsp. caesia</i>	93,504	58,214	26	17

105. This table was created using DELWP's Habitat Distribution Models, a component of Strategic Management Prospects (SMP) decision support tool. DELWP provided a list of species that have modelled distribution within AANP boundary and impact of 2019–20 bushfires on those species.

106. This table was created using DELWP's Habitat Distribution Models, a component of Strategic Management Prospects (SMP) decision support tool. DELWP provided a list of species that have modelled distribution within AANP boundary and impact of 2019–20 bushfires on those species.

Table 20. Impact of 2019–20 bushfires on pimeleas species with modelled habitat distribution within Australian Alps National Parks in Victoria (cont'd)

Common name	Scientific name	Overall extent (ha)	Extent within AANP (ha)	Proportion within fire extent (%)	Proportion impacted by high-severity fire (%)
Slender Rice-flower	<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	6,114,550	570,392	19	11
Silky Rice-flower	<i>Pimelea micrantha</i>	1,067,226	8,985	10	9
Mallee Rice-flower	<i>Pimelea microcephala</i> subsp. <i>microcephala</i>	2,370,485	1,164	0	0
Woolly Rice-flower	<i>Pimelea octophylla</i>	2,064,962	529	2	0
Poison Rice-flower	<i>Pimelea pauciflora</i>	366,247	118,115	38	21
Heath Rice-flower	<i>Pimelea phylloides</i>	886,181	35	0	0
Thyme Rice-flower	<i>Pimelea serpyllifolia</i> subsp. <i>serpyllifolia</i>	800,504	59	2	0
Gaunt Rice-flower	<i>Pimelea stricta</i>	562,459	39	0	0
Grey Rice-flower	<i>Pimelea treyvaudii</i>	644,299	91,258	16	7

Source: DELWP 2021

Cold-climate adapted and endemic fauna species

Table 21 shows the assessed impact on these species in the region.

Table 21. Impact of 2019–20 bushfires on cold-climate adapted and endemic fauna species with modelled habitat distribution within Australian Alps National Parks in Victoria¹⁰⁷

Common name	Scientific name	Overall extent (ha)	Extent within AANP (ha)	Proportion within fire extent (%)	Proportion impacted by high-severity fire (%)
Mountain Pygmy-possum	<i>Burramys parvus</i>	37,225	32,604	7%	4%
Alpine She-oak Skink	<i>Cyclodomorphus praealtus</i>	37,457	33,797	6%	4%
Baw Frog	<i>Philoria frosti</i>	13,957	7,481	0%	0%

Source: DELWP 2021

Stoneflies, caddisflies, mayflies, grasshoppers and earthworms

No impact assessment was found.

107. This table was created using DELWP's Habitat Distribution Models, a component of Strategic Management Prospects (SMP) decision support tool. DELWP provided a list of species that have modelled distribution within AANP boundary and impact of 2019–20 bushfires on those species.

6.2.4 Government actions and support following the bushfires

Parks Victoria, in partnership with DELWP, has been leading recovery works to recover damaged assets in the AANP. They have been delivering a number of programs including pest control, monitoring, repairing damaged roads and tracks and debris flow management. In addition, they are working with Traditional Owners to undertake cultural heritage assessments. The Panel did not receive information on specific works to recover damage to National Heritage values as a result of the 2019–20 bushfires and is not aware of any reports that specifically cover the damage assessments and recovery works.

For biological values, both the Victorian and Commonwealth governments delivered environmental activities with delivery partners including academics and regional agencies. There were no specific reports that demonstrated government responses to the impact on the National Heritage values in the AANP.

The Commonwealth government has invested \$200 million in bushfire recovery for wildlife and their habitat across seven bushfire affected regions of south-east Australia in response to the 2019–20 bushfires. This has two phases:

1. emergency response
2. resilience and recovery.

Out of the \$200 million, around \$7.7 million was invested in the alpine environment in Victoria through projects delivered by various institutions including Zoos Victoria, North East Catchment Management Authority, DELWP, La Trobe University and the East Gippsland Catchment Management Authority. The Panel requested reports produced on the delivery of funded projects if finalised. The Panel was provided quarterly reports summarising the activities undertaken and outcomes achieved through this funding. Separate progress reports for each project were not available, nor were reports specifically relating to funding for the AANP.

DELWP shared its internal documents that outline the progress and outcomes of its Bushfire Biodiversity Response and Recovery program. This program has a number of sub-programs that cover alpine environments, but full activity reporting was incomplete at the time of reporting; therefore, quantifying coverage for this specific geographic location was not achievable. The Commonwealth Government pointed out that the quarterly summaries of funded programs can be found on their webpage¹⁰⁸.

6.2.5 Key information and issues raised during consultation

No key information or issues were raised regarding the National Heritage values of the AANP. Generally responses from stakeholders were concentrated on better protection of the alpine environment, especially the north-east alpine region. As the AANP is fully protected under the CAR reserve system, it is not considered in this section.

6.2.6 Panel analysis of data and issues raised

The Parties did not provide bushfire impact assessments containing specific information on exactly which areas were exposed to fires, and how severely. The Parties did provide specific information on the impact of fire on biological heritage values and names of parks that impacted more than 90 per cent of their extent but these analyses are insufficient to understand the magnitude of bushfire impact on various values within AANP area. The bushfire impact assessment at park scale was also not included in the Major Event Review Summary Report, which only stated that 26 per cent of the AANP extent was impacted by fire. The Panel had to conduct its own analysis to identify potential fire impacts at the RFA and park scales in order to be able to understand them.

108. DAWE (2021) [Bushfire Recovery for Wildlife and Habitat](#), Quarterly Summary Report, February 2021, accessed 2 December 2021.

Parks Victoria and the Commonwealth Government advised that heritage values in Grampians National Park was not severely impacted by the 2019–20 bushfires. On the other hand, the AANP was severely impacted by the 2019–20 bushfires. The Panel found that Parks Victoria was not aware of information or assessments of impacts on some values such as water harvesting and moth feasting sites within AANP regions, when related information was requested.

The Panel needs detailed foundational information to determine the extent to which the bushfires caused substantial damages to listed National Heritage values. While the parties conducted high level analysis of the heritage values of the AANP, the Parties have not completed an assessment of all of the listed species that are dependent on the AANP. The Panel requested potential subdivision of the impact assessment of biological values for AANP that was completed by the Commonwealth Government.¹⁰⁹ The Commonwealth Government advised that the taxon groups specified in the gazetted document for this National Heritage place are a range of examples of various taxon groups that together contribute to the AANP's outstanding value in terms of Australia's biological heritage. While important, the AANP's contribution to Australia's biological heritage is only one of a wide range of values for which the area was inscribed on the National Heritage List. Accordingly, there is no separate list of the species that are of biological heritage value, beyond what is described in the gazetted document.

As an alternative approach, the Panel used Habitat Distribution Models, a component of Strategic Management Prospects (SMP), which DELWP uses as a decision support tool that helps biodiversity managers identify and prioritise management options.

SMP has a number of embedded models to do this. One of these is the Habitat Distribution Model. In the SMP database there are 4,174 species. Of these, 2,855 species have their modelled habitat within the AANP boundary (> 1ha modelled habitat). Among the 2,855 species, the Panel found that 577 FFG Act listed species have habitat distributed within the AANP.

To select species that require particular attention, the Panel's criteria were:

- Fire extent in the Habitat Distribution Model within AANP region/species distribution within AANP region: over 50%
- Proportion of habitat within the AANP compared to overall Victorian extent: over 50%.

There are 269 species with more than 50 per cent of their Victorian habitat distribution within the AANP. Among these 269 species, there are 19 species (14 which are FFG Act listed) that had more than 50 per cent of its extent impacted by fire (Table 23).

109. DAWE (14 October 2021) [Alpine environment across ACT, NSW and Victoria](#), DAWE, accessed 2 December 2021.

Table 23. Species that have more than 50% of extent within AANP impacted by fire and have more than 50% of extent within AANP compared to overall extent across Victoria state¹¹⁰

Common name	Scientific name	Proportional distribution within AANP compared to overall modelled extent (%)	Bushfire extent within AANP region compared to overall extent in AANP (%)	High fire severity impact extent compared to overall extent in AANP (%)
Bantam Bush-pea	<i>Pultenaea parrisiae</i>	71	86	38
Bent Pomaderris	<i>Pomaderris sericea</i>	53	86	38
Rufous Pomaderris	<i>Pomaderris brunnea</i>	75	83	37
Rough Maidenhair	<i>Adiantum hispidulum</i> var. <i>hispidulum</i>	76	82	37
Snowy River Pomaderris	<i>Pomaderris oblongifolia</i>	77	82	38
Net-veined Wattle	<i>Acacia subtilinervis</i>	89	81	39
River Beard-heath	<i>Styphelia riparia</i>	56	79	40
Hairy Beard-heath	<i>Leucopogon microphyllus</i> var. <i>microphyllus</i>	66	77	38
Snowy River Westringia	<i>Westringia cremnophila</i>	90	71	34
Little Kooka Wattle	<i>Acacia nanopravissima</i>	51	68	35
Matted Parrot-pea	<i>Dillwynia prostrata</i>	53	68	42
Lemon-scented Zieria	<i>Zieria citriodora</i>	57	66	32
Summer Spider-orchid	<i>Caladenia aestiva</i>	69	64	34
Slender Pomaderris	<i>Pomaderris phyllicifolia</i> subsp. <i>phyllicifolia</i>	71	58	25
Thick-leaf Star-hair	<i>Astrotricha</i> sp. 4	78	57	26
Soft Crane's-bill	<i>Geranium potentilloides</i> var. 1	63	55	24
Buchan River Grevillea	<i>Grevillea pachylostyla</i>	68	53	28
Kydra Dampiera	<i>Dampiera fusca</i>	57	52	37
Scarlet Greenhood	<i>Pterostylis coccinea</i>	78	51	25

Source: DELWP 2021

These species require more attention towards conservation and recovery from 2019–20 bushfires and better understanding. One example is Kydra Dampiera (*Dampiera fusca*). This vascular plant has a threatened status of Critically Endangered under the FFG Act. Also, 37 per cent of its habitat within the AANP was exposed to high-severity fires.

Kydra Dampiera is a perennial subshrub to 30 cm high. It has been observed in a single population in the ACT (Namadgi National Park), populations in far south-eastern New South Wales (Wadbilliga National Park, Tinderry and Coolumbooka nature reserves) and a multipart population in the AANP.¹¹¹ In its first post-fire season, this species germinates en masse, flowers and sets seed. It then continues to do so until larger shrubs outcompete. Kydra Dampiera can survive relatively long fire intervals, as was observed at the Namadgi site after at least 30 years without fire.¹¹² Little is known about the impact of very frequent fires, which could be a direct threat to its survival. This should be researched to protect this species, as it has limited habitat areas across the state jurisdictions. It is a standout example of species with limited distribution and confined within the AANP boundary that require further research in relation to the potential impact of more frequent fires.

110. This table was created using DELWP's Habitat Distribution Models, a component of Strategic Management Prospects (SMP) decision support tool. DELWP provided a list of species that have modelled distribution within AANP boundary and impact of 2019–20 bushfires on those species.

111. Douglas S, 'Species profile and monitoring of *Dampiera fusca*', *Australasian Plant Conservation*, 2009, 17(3):18-19.

112. Douglas S, 'Species profile and monitoring of *Dampiera fusca*', *Australasian Plant Conservation*, 2009, 17(3):18-19.

6.2.7 Findings

The Panel's analysis found that about 220,630 ha (25 per cent) of the Victorian component of the Australian Alpine National Park was burnt during the 2019–20 bushfires, of which approximately 104,805 ha was impacted by high-severity fires. About half of the burnt area was in the East Gippsland RFA region, 30 per cent was in the Gippsland RFA region and the balance in the North East RFA region.

The Panel found that there are major knowledge gaps to be filled before a complete assessment of the impact of the 2019–20 bushfires on the National Heritage values of National Heritage places can be achieved. In particular, there is no understanding of the impacts of repeated exposure to frequent severe bushfires on the biological heritage values within National Heritage places.

6.2.8 Recommendation

The Panel recommends:

Recommendation 4

That the Parties research the impact of more frequent and repeated bushfires on threatened species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and the *Flora and Fauna Guarantee Act 1988* (Vic) that have limited habitat distribution within the Australian Alps National Parks and reserves in Victoria.

6.3 Listed species and communities

6.3.1 Background

Victoria's biodiversity has been declining, as more than half of the state's native vegetation has been cleared since European settlement. Many flora and fauna species have lost their habitat and are at risk from a range of threatening processes, including the impacts of climate change.

The Threatened Species Index (TSI) tracks changes in global vertebrate biodiversity through time. It follows the Living Planet Index approach, which compiles data from published scientific literature and accessible reports and web pages to track the population abundance of different taxon groups. The TSI brings together all of the monitoring data on threatened species in Australia through signed agreements for data sharing of datasets that have never been publicly accessible before in Australia¹¹³. The index for different taxon groups is calculated as a geometric mean over many single-species trends combining them into a composite index. The Threatened Species Index¹¹⁴ for mammals, birds and plants shows that significant decline has been occurring since 1995 in Victoria¹¹⁵ (figures 13, 14 and 15).

113. Threatened Species Index (TSX) [How is the index created?](#), TSX, accessed 28 February 2022.

114. TSX, The Australian Threatened Species Index 2020, TSX, accessed 8 March 2022.

115. Threatened Species Index (TSX) was established by the National Environmental Science Program's Threatened Species Recovery Hub, The University of Queensland and Birdlife Australia.

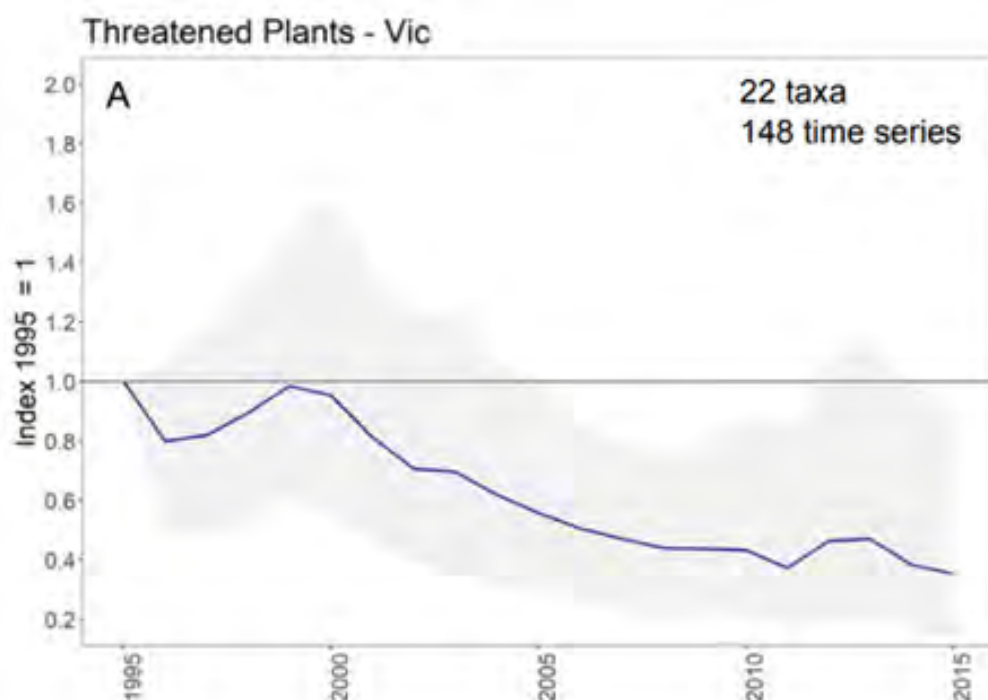


Figure 13. Victoria's threatened plants Threatened Species Index^{*116}

Source: Threatened Species Recovery Hub 2021

*Note that the base year, 1995, has an index score of 1. A score of 0.9 means that there is 10 per cent decline of threatened species compared to the 1995 average.

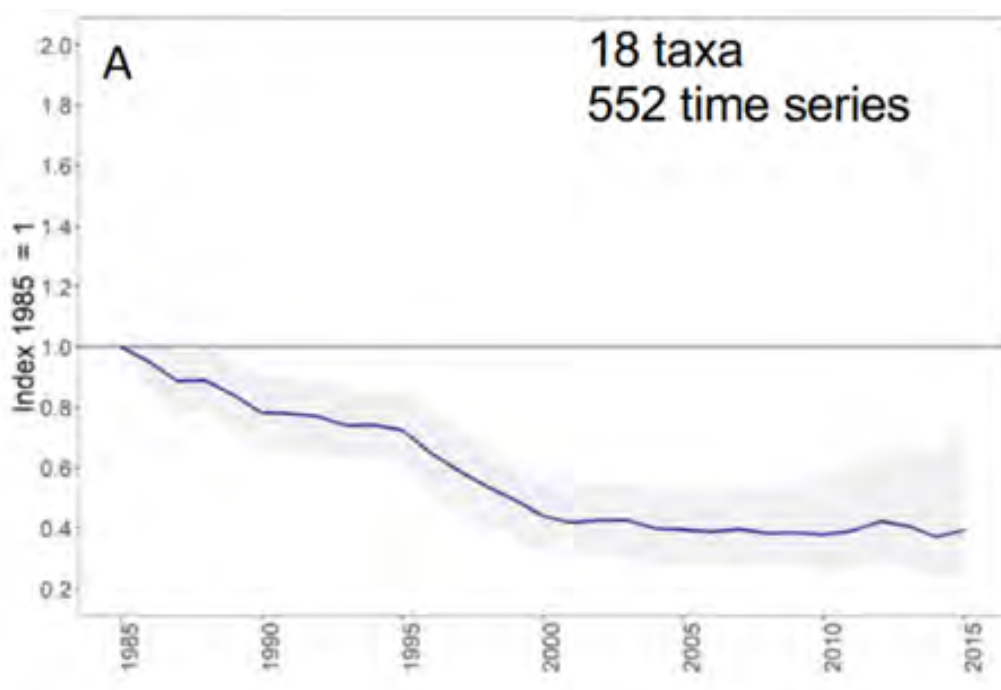


Figure 14. Victoria's threatened birds Threatened Species Index¹¹⁷

116. Threatened Species Recovery Hub, [Factsheet: a threatened plant index for Victoria](#), Science for Saving Species research findings factsheet project 3.1, National Environmental Science Program, accessed 3 December 2021.

117. Threatened Species Recovery Hub, [Factsheet: a threatened bird index for Victoria](#), Science for Saving Species research findings factsheet project 3.1, National Environmental Science Program, accessed 3 December 2021.

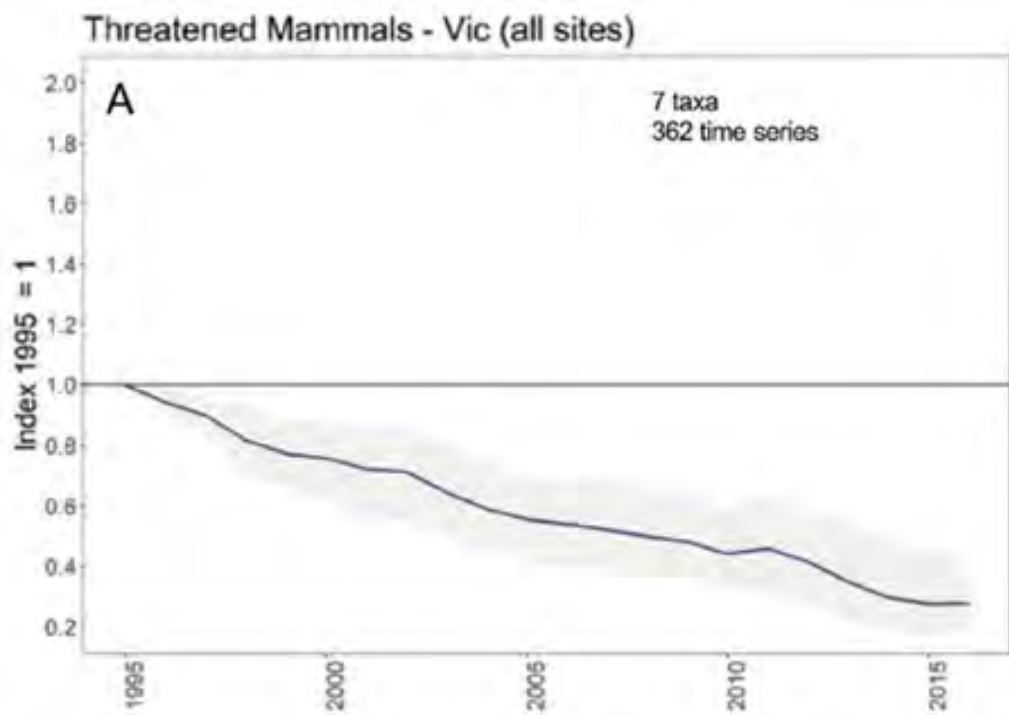


Figure 15. Victoria's threatened mammals Threatened Species Index¹¹⁸
Source: Threatened Species Recovery Hub 2021

Victoria's threatened species are part of a much longer list of animals and plants found in Victoria. Table 24 provides a summary, by taxon group, of the 28,397 entries in the Victorian Biodiversity Atlas species checklist,¹¹⁹ with both native and introduced species included. Most of the entries represent species but some are by genus only or unidentified. For example, amphibians have 62 entries but only 45 individual species are identified, while for 11 native species and eight introduced species there are doubts that they have established populations in Victoria. Even so, the number of entries indicates Victoria's diversity.

118. Threatened Species Recovery Hub, [Science for Saving Species. Research findings factsheet project 3.1](#), National Environmental Science Program, accessed 3 December 2021.

119. DELWP, Victorian Biodiversity Atlas, [Species Checklist](#), accessed 25 July 2021. [log in required to access CSV files].

Table 24. Numbers of recorded native and introduced species per taxon group in the Victorian Biodiversity Atlas¹²⁰

Taxon group	Native	Total
Vertebrates		
Amphibians	62	62
Bats	30	30
Birds: marine	87	87
Birds: other non-passerine birds	214	225
Birds: passerine	181	196
Birds: waders	78	78
Fish: aquatic	173	199
Fish: marine	1,045	1,046
Mammals: marine	41	41
Mammals: terrestrial	101	124
Reptiles: aquatic	4	4
Reptiles: marine	5	5
Reptiles: terrestrial	145	145
Invertebrates		
Invertebrates: aquatic	9,777	9,783
Invertebrates: marine	872	874
Invertebrates: terrestrial	4,540	4,540
Mussels, decapods and crustaceans: aquatic	102	104
Mussels, decapods and crustaceans: marine	207	207
Ascidians	29	29
Echinoderms	71	71
Sea fans/corals	51	51
Sponges	7	7
Vascular flora		
Conifers	10	43
Dicotyledons	3,638	5,272
Ferns and allies	183	194
Monocotyledons	1,568	2,120
Non-vascular flora		
Algae	792	793
Algae: marine	562	562
Fungi	505	506
Fungi: marine	12	12
Lichens	19	19
Liverworts	312	314
Mosses	605	616
Miscellaneous	38	38
Total	26,066	28,397

Source: DELWP

120. DELWP, Victorian Biodiversity Atlas, [Species Checklist](#), accessed 25 July 2021. [log in required to access CSV files].

Although Victoria's native flora and fauna are diverse, it is also Australia's most cleared state, with more than 50 per cent of native vegetation removed since European settlement.¹²¹ The only areas largely spared from clearing are in the far north-west, the Grampians, the Otway Ranges, Wilsons Promontory, the forests of the Great Dividing Range and the coast of eastern Victoria. As a result, Victoria has highly fragmented native vegetation, habitat loss and degradation and fractured connectivity.

There are a number of clauses (15D, 15G, 15Q, 15R and 15S in East Gippsland RFA) in the RFAs indicating that the Parties will protect and conserve Listed Species and Communities and use their best endeavours to actively manage threats to Listed Species and Communities. As a result of 2019–20 bushfires, many of these species and communities were adversely impacted and, although the actual impact on their conservation status has not yet been determined, it is possible that some of them may have potentially become extinct. It is important that the Major Event Review should review how the Parties have been actively managing Listed Species and Communities. This chapter will review actual impact of the bushfires on Listed Species and Communities, the Parties responses to conserve and protect them and key issues that need to be improved.

6.3.2 Impact of 2019–20 bushfires on listed species and communities

Overall impact on FFG Act listed species by fire extent and high-severity fire

Previously Victoria had multiple lists of threatened species – those listed under the FFG Act and non-statutory lists called the Victorian Threatened Species Advisory Lists. Recent amendments to the FFG Act have removed duplication by establishing a single 'legal or formal' comprehensive list of threatened flora and fauna species. This will continue to be known as the FFG Act Threatened List. With the new comprehensive list now in effect, the advisory lists have been revoked.¹²² As a result of the amendment and reassessment associated with the introduction of the comprehensive list, a significant number of taxa received a different listing status than previously. There are several reasons for this:

1. Most of the changes relate to flora, as the criteria for assessment have substantially changed. DELWP's Advisory List of Rare or Threatened Plants did not have a 'Critically Endangered' category and the FFG Threatened List does not have a 'Rare' category. Many species previously listed as Endangered, Vulnerable or Rare, were subsequently assessed as Critically Endangered. This does not mean that for many of these species that their status has worsened.
2. There is better information. While DELWP's Advisory List of Rare or Threatened Plants was updated in 2014, most of the information was based on 2005 data. Further data has been collected providing a better picture of the status of species and in many cases, conditions may have changed in the intervening years.
3. Consideration of climate effects was not properly considered in the older lists. Climate change-induced drying, warming and more frequent bushfires pose significant threats for many species.
4. The bushfires of 2019 and 2020 had serious impacts on the habitat of a number of species, and on the species themselves. The full impacts are still to be assessed in the field for many species, though for some species fire area and fire severity mapping indicated the likelihood of impacts. Species regarded as fire sensitive were reconsidered and some were upgraded to a higher status, based on increased past or predicted future decline.

121. Victorian Auditor-General's Office (VAGO) (2020) [Protecting critically endangered grasslands](#), VAGO, accessed 28 February 2022.

122. DELWP (2022) [Conserving threatened species: Flora and Fauna Guarantee Act Threatened List](#), DELWP, accessed 28 February 2022.

5. Under the IUCN criteria, past and future declines are based on three generations, so for very long-lived species, e.g. large eucalypts, consideration of decline can extend to pre-European settlement. These declines can place a species into a higher category than previously assessed.

This new formal list has resulted in a dramatic increase from around 687 formally listed species under the FFG Act to 1,995 species, following reassessments and increases in extinction threat. The most recent addition of species to the Threatened List was Tangle Orchid (*Plectorrhiza tridentata*) in October 2021, which is not included in the bushfire impact assessment.

Among the 1994 species under the FFG Act, the taxon group with the greatest number of species was vascular plants, with 1,556 species in total. About a third of species (531) were found to be impacted by the 2019–20 bushfires in Victoria (Table 25). Among those vascular plant species, 210 had more than half of their modelled extent within the fire extent and 26 had more than 95 per cent of their habitat impacted by fire. Across all taxon groups, 135 species had more than 80 per cent of their modelled habitat burnt. Among these 135 species, nine had more than 80 per cent of their modelled habitat burnt by high-severity fire. These species are shown in Table 25.



Photo credit: Burrow Pine © Katherine Mullett

Table 25. Overall bushfire impact (extent and severity) of FFG Act listed species on modelled habitat in their current extent, by taxon group¹²³

% of modelled habitat or occupancy in the current fire extent	Fire extent	High severity
Vascular plants (1,556 species in total)		
Over 95%	26	3
80% to 95%	88	2
50% to 80%	96	55
30% to 50%	118	123
10% to 30%	203	272
Non-vascular plants (60 species in total)		
Over 95%	2	0
80% to 95%	1	1
50% to 80%	3	2
30% to 50%	2	3
10% to 30%	3	2
Vertebrate animals (246 species in total)		
Over 95%	4	0
80% to 95%	5	2
50% to 80%	5	1
30% to 50%	12	2
10% to 30%	23	9
Invertebrate animals (124 species in total)		
Over 95%	5	0
80% to 95%	4	1
50% to 80%	2	4
30% to 50%	1	5
10% to 30%	1	2
Total	604 (31%)	489 (25%)

Source: DELWP 2021

Overall impacts on FFG listed communities

Seven FFG listed communities were impacted by the 2019–20 bushfires (Table 26). Rainforest communities, particularly those in East Gippsland, experienced the greatest impact. Rainforests are remnants of the oldest living ecosystems in Australia and provide significant benefits to the natural environment. Currently rainforests are protected by management prescriptions. They are sensitive to high-intensity fire and can be subsequently replaced by eucalypt forest. Many of Warm Temperate Rainforest areas where exposed to fires are exposed to a potential replacement event by eucalypt species in the future.

123. The number of species impacted by bushfire by taxon group does not match with table 6 of the DAWE and the State Government of Victoria (2021) [Victorian Regional Forest Agreement Major Event Review of the 2019–20 bushfires: Summary report: information and data to inform public consultation](#), DAWE and the State Government of Victoria, accessed 1 March 2022 and State Government of Victoria and DELWP (August 2020) [Victoria's bushfire emergency: biodiversity response and recovery reports](#), State Government of Victoria and DELWP, accessed 1 March 2022. Differences include: 1. Final fire extent layer August 2020, 2. Fire severity impacts, primarily high severity impacts, were assessed using a composite layer, created using published and unpublished available layers (DELWP and VicForests), 3. Changes to [Flora and Fauna Guarantee Act Threatened List](#), May 2021, 4. Updated Habitat Distribution Models for some fauna and 5. Victorian Biodiversity Atlas analysis conducted differently.

DELWP estimated that it requires only one mature eucalypt tree at the edge of the rainforest to act as a seed source, considering the predictions of increased fire frequency as a result of climate change.¹²⁴ DELWP is aware of this issue and working to mitigate this risk in partnership with the Arthur Rylah Institute.

As part of its Bushfire Biodiversity Response and Recovery (BBRR) program Theme 1 reconnaissance program, DELWP has done comprehensive floristic surveys at fire-affected sites. The report on this work identified a number of additional risks as a result of the 2019–20 bushfires: weeds, pathogens (Myrtle Wilt), gully erosion and eucalypt invasion. It states:

*However, the greatest long-term threat to remaining stands of rainforest is climate change, which may act directly through reduced rainfall, or indirectly through increases in the frequency and intensity of fire.*¹²⁵

A pre-existing risk before the fires was Sambar Deer (*Cervus unicolor*), and the post-fire survey in East Gippsland found only minor signs of deer activity.

The BBRR program also did an assessment of species to prioritise medium-term conservation actions.¹²⁶ The prioritisation was undertaken based on many conservation actions with potential benefits for targeted flora and fauna species. The conservation actions and benefits were assessed using a modelling program, Specific Needs, which is used by DELWP to assess species-specific conservation actions. It is currently unclear which conservation actions will be chosen for medium-term species persistence and recovery.

Specific conservation policies and actions for rainforest communities will be discussed in the following sections covering impacts within specific RFA regions.

Table 26. FFG Act listed communities impacted by 2019–20 bushfires, by fire extent and high severity with modelled extent¹²⁷

Community name	Modelled extent (ha)	% of community within current fire extent	% of community impacted by high-severity fire
Cool Temperate Rainforest	16,466	11	5
Warm Temperate Rainforest (East Gippsland Alluvial Terraces)	2,894	87	42
Warm Temperate Rainforest (Far East Gippsland)	957	96	52
Western Basalt Plains (River Red Gum) Grassy Woodland Floristic 55-04	167,092	0.1%	
Dry Rainforest (Limestone)	46	52%	16%
Warm Temperate Rainforest (Coastal East Gippsland)	20	14%	14%
Warm Temperate Rainforest (Cool Temperate Overlap, Howe Range)	171	49%	3%

Source: DELWP 2021

124. DELWP (unpublished) *Biodiversity bushfire response supplementary report: bushfire impacts on species in Victoria*, Unpublished draft report, DELWP, accessed 2 December 2021.

125. DELWP (unpublished) *Biodiversity bushfire response supplementary report: bushfire impacts on species in Victoria*, Unpublished draft report, DELWP, accessed 2 December 2021.

126. DELWP (unpublished) *Bushfire response and recovery planning for biodiversity: a specific needs assessment to prioritise medium term conservation actions*, Unpublished draft report, accessed 2 December 2021.

127. DELWP provided information on the impact of 2019–20 bushfires by fire extent and severity on FFG Act listed communities.

Overall impact on EPBC Act listed species by fire extent and high-severity fire

The report 'Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements'¹²⁸ states that as of July 2019, there are 228 EPBC Act listed species (128 flora, 68 fauna and 32 bird species) that are known or likely to occur in Victoria's five RFA regions¹²⁹ (Table 27). Among the 228 species, 49 are not also listed under the FFG Act. For 22 of these 49 species, no information was found on the impact of the 2019–20 bushfires that DELWP's database provided to the Panel. Therefore Table 28 shows bushfire impact by extent and high severity relating to 206 of the listed species.

There are 48 listed species whose modelled habitat or known occupied area was within the fire extent, which is around 23 per cent of the total number of listed species. Of these 48 species, 18 had at least half of their state-wide modelled habitat extent impacted by fire. For two of these 18 species, bushfire impact was assessed based on habitat identified from the Victorian Biodiversity Atlas. These are Southern Barred Frog (*Mixophyes balbus*) and Austral Toad-flax (*Thesium austral*).

There are 43 EPBC Act listed species that were impacted by severe fire over at least 10 per cent of their modelled extent. Only one species had more than half of its modelled habitat burnt by high-severity fire in 2019–20: Betka Bottlebrush (66 per cent). Twelve species were impacted by severe fire around 30–50 per cent of their modelled habitat.

Table 27. EPBC Act listed threatened species known or likely to occur in Victorian RFA regions, and species only listed under the EPBC Act¹³⁰

Taxon	Number of species	Only listed under EPBC Act
Bird	52	24
Crustacean	1	
Fish	10	
Frog	10	1
Insect	3	
Mammal	16	3
Other	2	
Plant	128	21
Reptile	6	
Total	228	49

Source: DELWP

128. Commonwealth of Australia and Victorian Government (2019) *Victoria's Regional Forest Agreements: Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements*, Commonwealth of Australia and Victorian Government, accessed 2 December 2021.

129. This is derived from Source: DAWE, *Environmental Resources Information Network Species Profile and Threats Database*, DAWE, accessed 31 July 2019.

130. The Panel created this table based on the Appendix 2 of report Commonwealth of Australia and Victorian Government (2019) *Victoria's Regional Forest Agreements: Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements*, Commonwealth of Australia and Victorian Government, accessed 2 December 2021 for 'Number of species' column and matching with *Flora and Fauna Guarantee Act Threatened List* for 'Only listed under EPBC Act' column.

Table 28. EPBC Act listed species impacted by the 2019–20 bushfires, by extent and high severity, out of 206 species¹³¹

% of modelled habitat or occupancy in the current fire extent	Fire extent	High severity
Vascular plants		
Over 95%		
80% to 95%	7	
50% to 80%	5	
30% to 50%	5	8
10% to 30%	10	13
Vertebrate animals		
Over 95%	1	
80% to 95%	1	
50% to 80%	4	1
30% to 50%	5	4
10% to 30%	10	17
Total	48 (23%)	43 (21%)

Source: DELWP 2021

Overall impacts on EPBC Act listed communities

The Panel received information on the impact of the 2019–20 bushfires for seven out of 14 EPBC Act listed vegetation communities that are known or likely to be in Victoria's RFA regions. There are five EPBC Act listed communities within the fire boundary (Table 29) and currently there has been limited impact on these communities by fire at a statewide scale but impacts may be more acute at an RFA region level. DEWLP's *Victoria's bushfire emergency: biodiversity response and recovery*, version 2 indicated that 'these areas are at high risk of the future indirect bushfire impacts such as from soil erosion, increased exposure and elevated levels of feral herbivore browsing'.

Alpine Sphagnum Bogs and Associated Fens had 13 per cent of their extent impacted by multiple high-severity fires. Tolsma (2020) reported on the impacts of the 2019–20 bushfires on alpine bogs.¹³² The fires potentially burnt 537 ha of Alpine Sphagnum Bogs and Associated Fens, or about 20 per cent of the total area of bogs in fire-affected north-eastern Victoria. Table 30 provides details on the area of bog potentially affected by the fires in eight locations (see Figure 16). Table 30 details the pre-fire condition of the bogs, the fire impact level, fire history and threats. Most of the bogs were in poor condition, had experienced frequent fires and were also under threat from invasive weeds and feral herbivores.

Tolsma (2020) concluded that 'Some bogs were burnt severely, and some have now been burnt twice or more in recent decades, and they will require long times without disturbance to recover'. The report also identified that after the fires, the greatest risks to the bogs and other alpine systems were from feral horses, deer, pigs, cattle and willows – threats that already existed but could have been exacerbated by the impacts of the fires. It concluded that unless the threats are addressed, the bogs will shrink or disappear, a process that would be exacerbated by climate change.

131. The Panel used 2019–20 bushfire impact assessment on species' modelled habitat that DELWP created and categorised a list of EPBC Act listed species that are likely to occur within Victorian RFA regions from Appendix 2 of [Further Assessment of Matters' Report](#).

132. Tolsma A (May 2020) Bushfire Biodiversity Response and Early Recovery Program, Arthur Rylah Institute, Heidelberg, Victoria, accessed 2 December 2021.

Table 29. EPBC Act listed communities impacted by the 2019–20 bushfires

Community name	Extent in Victoria [^]	Impact of fire [^]	EPBC Act listing	% of community within current fire extent [#]	% of community impacted by high-severity fire [#]	% of the estimated distribution within fire-affected areas (not limited to Victorian distribution)*
Alpine Sphagnum Bogs and Associated Fens	Less than 4,300 ha is extant in Victoria.	Direct and severe impacts on this community are likely given the protracted period of low rainfall leading up to the fires. In several places across the projected impact area, this community has been subject to repeat fires. Impacts included destruction associated with peat ignition, altered hydrology, and mass movement of soils and siltation. The community is at risk of the future indirect impacts of bushfire such as feral herbivore browsing, trampling and wallowing.	Endangered	12	8	10–30
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (likely to contain)	Significant areas of this community are extant in the rain-shadow areas of the middle reaches of the Snowy River Catchment (~32,000 ha).	This community was severely impacted by the 2003 fires. There is a risk of the ongoing loss of the fire-sensitive White Native Pine, a keystone species in this community.	Critically Endangered	3	1	<10
Silurian Limestone Pomaderris Shrubland of the South East Corner and Australian Alps bioregions	The only known population occurs at Marble Gully Nature Conservation Reserve, near Bindi in the Tambo valley north-east of Swifts Creek, East Gippsland.	This site was completely burnt in 2003 and is in recovery from this event. The impact of repeated burning is potentially a problem for many of the constituent species whose fire response is relatively poorly known.	Endangered	Adjacent to but not within current fire extent		10–30
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	The extent of this rainforest community in Victoria is limited – likely to be less than 100 ha – and comprising small fragmented remnants typically less than 1 ha in size.	The community is at risk of the future indirect impacts of bushfire such as soil erosion, exposure, weed encroachment and feral herbivore browsing.	Critically Endangered	15	7	<10
Natural Temperate Grassland of the South Eastern Highlands	Remnants in Victoria are very small in area, likely to be less than 10,000 ha and within the small extent of the Monaro Tablelands that extends into Victoria.	While the community is 'tolerant of fire', the impact of hot summer fire combined with drought is unknown.	Critically Endangered	Adjacent to but not within current fire extent		10–30

[^]Information on the current extent and overview of fire impact on each ecological community is directly from Table 11 in Victoria's Bushfire Emergency: Biodiversity Response and Recovery Report¹³³.

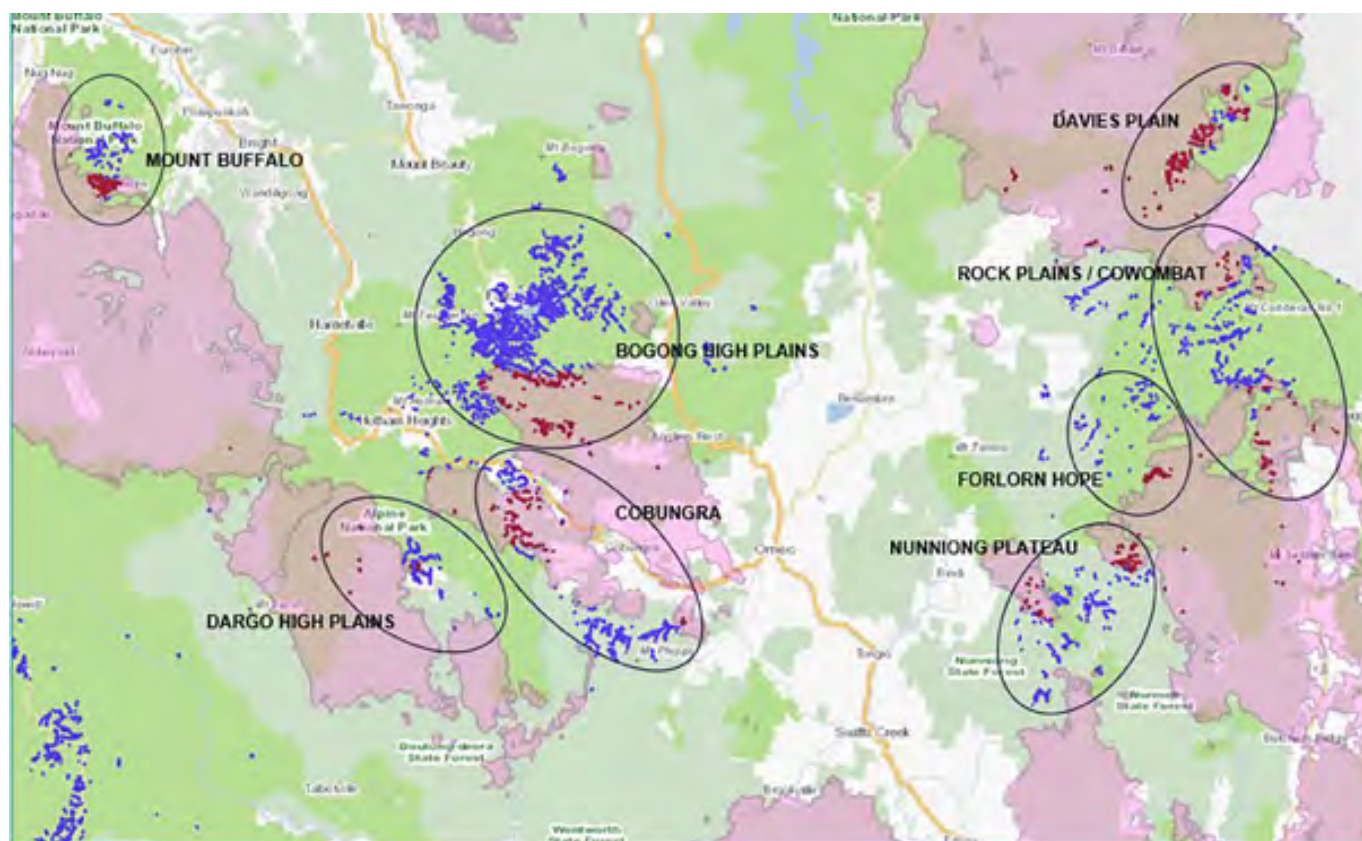
[#]DELWP provided bushfire impact on ecological communities using Habitat Distribution Model

*Data from "Threatened ecological communities that occur in areas affected by bushfires in southern and eastern Australia". The data is located at <https://www.awe.gov.au/environment/biodiversity/bushfire-recovery/bushfire-impacts/priority-tecs>

133. DELWP (August 2021) [Victoria's Bushfire Emergency: Biodiversity Response and Recovery](#), DELWP, accessed 28 February 2022.

Table 30. Areas of alpine bog within the extent of the 2019–20 fires, by broad region¹³⁴

Broad region containing burnt alpine bogs	Area of bog potentially burnt 2019–20 (ha)	Burnt bog as % of all bog area in region
Mount Buffalo	60	45
Dargo High Plains	13	8
Bogong High Plains	125	9
Cobungra	66	26
Nunniong Plateau	60	24
Forlorn Hope	35	32
Rocky Plains/Cowombat	48	16
Davies Plain	130	83

Figure 16. Alpine bogs with respect to 2019–20 fire extent (pink), by broad region, with burnt bogs (red) and unburnt bogs (blue)¹³⁵

134. Tolsma A (May 2020) Bushfire Biodiversity Response and Early Recovery Program, Arthur Rylah Institute, Heidelberg, Victoria, accessed 2 December 2021.

135. Ibid.

Table 31 Condition and threat information for alpine bogs within the 2019–20 fire extent¹³⁶

Broad region	Pre-2019–20 fire bog condition	2019–20 fire impact 1 (no impact) 5 (severe impact)	Fire history	Existing threats that pose a risk to recovery, ranked by potential impact	Potential threats that pose a risk to recovery
Mount Buffalo	Mostly good	N/A	1985, 2003, 2006–07	Deer, willows	
Dargo High Plains	Mostly good	N/A	2003	Deer	Cattle, willows
Bogong High Plains	Medium to poor	N/A	2003, some 2006–07	Feral horses, deer, willows	
Cobungra	Medium to poor	N/A	2003	Feral horses, cattle, deer	Willows
Nunniong Plateau	Mostly poor	N/A	Some 2003	Feral horses, cattle, deer, willows, blackberries	Pigs
Forlorn Hope	Poor	4	2003	Feral horses, deer	Pigs, willows
Rocky Plains/ Cowombat	Mostly poor	N/A	2003	Feral horses, pigs, deer	Willows
Davies Plain	Mostly poor	4	2003	Feral horses, deer	Pigs, willows

6.3.3 Species and communities impacts within RFA regions

This section outlines the impact of the 2019–20 bushfires on EPBC Act and FFG Act listed species and communities, broken down by RFA region. For EPBC Act listed species, 206 out of 228 species are used to indicate the bushfire impact, due to limited available data.

East Gippsland

There are 727 FFG and EPBC listed species that have their habitat in the East Gippsland RFA region. Table 32 shows that around 85 per cent of FFG Act listed species (621 species) were impacted by bushfire across more than 10 per cent of their habitat extent in this RFA region. Of these 621 species, 400 (64 per cent of the total number of FFG Act listed species in this region) had more than a half of their extent burnt by fire. More importantly, 109 species had more than half of their extent (modelled habitat within this RFA region) impacted by high-severity fires. This is about 18 per cent of the total, which is a significant proportion. EPBC Act listed species also had large numbers impacted by fire, but less significantly than those listed under the FFG Act. The seven species that had more than 95 per cent of their extent impacted by high-severity fire in this region are:

- Tussock Woodrush (*Luzula alpestris*) – 2.2% of modelled habitat within this region as a proportion of statewide (561 ha)
- Satinwood (*Nematolepis squamea* subsp. *squamea*) – 0.3% of modelled habitat within this region as a proportion of statewide (133,579 ha)
- Prickly Beauty (*Pultenaea juniperina* s.s.) – 3.3% of modelled habitat within this region as a proportion of statewide (390 ha)
- Hairy Kerrawang (*Commersonia brevisetia*) – 100% of modelled habitat within this region as a proportion of statewide (12 ha)

136. Ibid.

- Fine Fringe-moss (*Distichium capillaceum*) – 25.7% of modelled habitat within this region as a proportion of statewide (1,595 ha)
- Binung (*Christella dentata*) – 100% of modelled habitat within this region as a proportion of statewide (51 ha)
- Genoa River Bottlebrush (*Callistemon genofluvialis*) – 47.7% of modelled habitat within this region as a proportion of statewide (25 ha)
- Spotted Gum (*Corymbia maculata*) – 2.5% of modelled habitat within this region as a proportion of statewide (3,090 ha). The mature trees in the only natural occurrence of this species in Victoria, located in the Mottle Range Flora Reserve, were killed by the bushfire.

Except for Satinwood population, although these species listed above have a small modelled habitat within the region (may be located at the edge of its range and may predominate elsewhere), almost all of that extent was burnt.

Table 32. FFG Act and EPBC Act listed species impacted by fire and high fire severity across more than 10% of habitat in East Gippsland RFA region¹³⁷

East Gippsland	FFG Act listed species		EPBC Act listed species	
% of modelled habitat or occupancy in the current fire extent	Fire extent	High severity	Fire extent	High severity
Vascular plants				
Over 95%	31	6		
80% to 95%	147	3	9	
50% to 80%	152	86	11	2
30% to 50%	89	206	1	13
10% to 30%	87	185	3	5
Non-vascular plants				
Over 95%	4	1		
80% to 95%	1	2		
50% to 80%	3	3		
30% to 50%	3	3		
10% to 30%		1		
Vertebrate animals				
Over 95%	5		1	
80% to 95%	12	2	3	
50% to 80%	36	2	17	
30% to 50%	16	37	3	15
10% to 30%	24	41	16	22
Invertebrate animals				
Over 95%	3	0		
80% to 95%	4	1		
50% to 80%	2	3		
30% to 50%	1	5		
10% to 30%	1	1		
Total	621 (85%)	588 (81%)	64 (28%)	57 (25%)

Source: DELWP 2021

137. This table was created using DELWP's 2019–20 bushfire impact assessment on FFG Act and EPBC Act listed species by RFA based on Habitat Distribution Model

There are eight FFG Act and EPBC Act listed communities impacted by the 2019–20 bushfires (Table 32). It is apparent that the greatest impact by extent and severity was on the Warm Temperate Rainforest community. Although this community was not burnt at high severity multiple times over the last decades, the proportion of extent burnt by high-severity fires as a result of the 2019–20 bushfires is alarming. This high-severity fire impact will elevate the chance of seedling recruitment by eucalypts and has the potential to drive long-lasting changes in overstorey composition and structure. The BBRR report¹³⁸ indicated that there are additional risks driven by bushfire including weeds, pathogens, gully erosion and climate change. Some of those risk factors have been observed at fire-affected areas.

Table 33 FFG Act and EPBC Act listed communities impacted by the 2019–20 bushfires (extent, severity and multiple high-severity impact) in East Gippsland RFA region¹³⁹

Community	Listing	Extent in this RFA region (ha)	% burnt	High severity	Total impacted by 2 or more high-severity bushfires since 2000 (%)
Alpine Sphagnum Bogs and Associated Fens	EPBC Act listed	308	29	14	13
Cool Temperate Rainforest Community	FFG Act listed	4,188	39	17	0
Warm Temperate Rainforest (East Gippsland Alluvial Terraces) Community	FFG Act listed	2,789	89	43	0
Warm Temperate Rainforest (Far East Gippsland) Community	FFG Act listed	957	96	52	0
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (likely to contain)	EPBC Act listed	34,062	9	2	1
Dry Rainforest (Limestone) Community	FFG Act listed	25	87	29	0
Warm Temperate Rainforest (Coastal East Gippsland) Community	FFG Act listed	4	71	71	0
Warm Temperate Rainforest (Cool Temperate Overlap, Howe Range) Community	FFG Act listed	171	49	3	0

Source: DELWP 2021

North East

There are 648 FFG Act listed species that have their habitat within the North East RFA region boundary. Table 34 demonstrates that 41 per cent of FFG Act listed species (263 species) were impacted by bushfire across more than 10 per cent of their habitat extent in this region. A similar proportion of EPBC Act listed species were impacted by bushfire across more than 10 per cent of their habitat; 666 species had more than half of their extent within fire extent; and 28 species had half of their extent impacted by high-severity fire. Most of them were vascular plants. The three species that were impacted across more than 95 per cent of their modelled extent by high-severity fire in this region are:

- Little Tern (*Sternula albifrons*) – less than 0.1% of overall extent (887,370 ha) in this region
- Burrowa Grevillea (*Grevillea burrowa*) – 100% of overall extent (24 ha) in this region
- Baw Sally (*Eucalyptus pauciflora* subsp. *acerina*) – 5.1% of overall extent (7,133 ha) in this region.

138. DELWP (August 2021) Victoria's Bushfire Emergency [Biodiversity bushfire response supplementary report: bushfire impacts on species in Victoria](#), DELWP, accessed 2 December 2021.

139. This table was created using DELWP's 2019–20 bushfire impact assessment on FFG Act and EPBC Act listed communities

Table 34. FFG Act and EPBC Act listed species impacted by fire and high fire severity across more than 10% of habitat in North East RFA region¹⁴⁰

North East	FFG Act listed species		EPBC Act listed species	
% of modelled habitat or occupancy in the current fire extent	Fire extent	High severity	Fire extent	High severity
Vascular plants				
Over 95%	22	2		
80% to 95%	7	15	1	
50% to 80%	33	9	4	2
30% to 50%	48	41	2	1
10% to 30%	122	127	3	5
Non-vascular plants				
30% to 50%	1		-	-
10% to 30%	1		-	-
Vertebrate animals				
Over 95%	1	1		
30% to 50%	5	1	2	
10% to 30%	18	12	9	11
Invertebrate animals				
Over 95%	2			
50% to 80%	1	1		
30% to 50%	1	1		
10% to 30%	1	1		
Total	263 (41%)	211 (33%)	21 (36%)	19 (32%)

Source: DELWP 2021

Out of seven FFG Act and EPBC Act listed communities in this region, four were impacted by the 2019–20 bushfires (Table 35). The impact was broadly less severe than it was for Warm Temperate Rainforest in the East Gippsland RFA region. However, it is still important to note that the Alpine Sphagnum Bogs and Associated Fens community in this RFA region has also had around 10 per cent of its habitat exposed to multiple high-severity fires since 2000. Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains had around a third of its extent burnt, but its extent in this region accounts for less than 1 per cent of its total extent in Victoria (67,024 ha).

140. This table was created using DELWP's 2019–20 bushfire impact assessment on FFG Act and EPBC Act listed species by RFA based on Habitat Distribution Model

Table 35. FFG Act and EPBC Act listed communities impacted by 2019–20 bushfires (extent, severity and multiple high-severity impact) in North East RFA region¹⁴¹

North East RFA	Listing	Extent in this RFA region	% burnt	High severity	Total impacted by 2 or more high-severity bushfires since 2000 (%)
Alpine Sphagnum Bogs and Associated Fens	EPBC Act listed	1,517	8	5	11
Grey Box (<i>Eucalyptus microcarpa</i>) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	EPBC Act listed	37,828	1	0	0
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (likely to contain)	EPBC Act listed	109,236	7	2	0
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	EPBC Act listed	362	35	13	2

Source: DELWP 2021



Photo credit: Warm temperate rainforest McKenzie River Rainforest, March 22 © T. Bartlett

141. This table was created using DELWP's 2019–20 bushfire impact assessment on FFG Act and EPBC Act listed communities

Gippsland

There are 798 FFG Act listed species that have their habitat within the Gippsland RFA region boundary. Table 36 demonstrates that 40 per cent (318 species) of the FFG Act listed species were impacted by bushfire across more than 10 per cent of their habitat extent. The majority of those species had less than 30 per cent of their habitat impacted by fire; 45 species had more than half of their extent within fire extent; and six species had half of their extent impacted by high-severity fires, all of which were vascular plants. This is far less than the impact identified in the East Gippsland RFA region in terms of high fire-severity impact. Three species had more than 95 per cent of their extent in this region impacted by high fire severity: Fan Grevillea (*Grevillea ramosissima* subsp. *hypagyrea*), Cupped Bush-pea (*Pultenaea vrolandii*) and Elegant Cassinia (*Cassinia venusta*). However, the extent of these species in this region compared to overall extent is less than 0.1 per cent.

Table 36. FFG Act and EPBC Act listed species impacted by fire and high fire severity across more than 10% of habitat in Gippsland RFA region¹⁴²

Gippsland	FFG Act listed species		EPBC Act listed species	
% of modelled habitat or occupancy in the current fire extent	Fire extent	High severity	Fire extent	High severity
Vascular plants				
Over 95%	6	3		
80% to 95%	1			
50% to 80%	37	3	2	
30% to 50%	84	45	4	2
10% to 30%	162	164	6	6
Non-vascular plants				
There are no non-vascular plants impacted by more than 10% of modelled habitat or occupancy in the current fire extent.				
Vertebrate animals				
Over 95%				
80% to 95%				
50% to 80%	1		1	
30% to 50%	4	2	1	1
10% to 30%	23	13	11	9
Invertebrate animals				
Over 95%				
80% to 95%				
50% to 80%				
30% to 50%				
10% to 30%				
Total	318 (40%)	230 (12%)	25 (43%)	18 (31%)

Source: DELWP 2021

The 2019–20 bushfires impacted 11 FFG Act and EPBC Act listed communities in this RFA region. Of the 11 communities, five were impacted by fire (Table 37). Warm Temperate Rainforest had 20 per cent of its extent burnt by high-severity fires, but this only covers for 5 per cent of this EVC's overall extent in eastern Victoria. Overall, the impact on these communities was less severe than for those in the East Gippsland RFA region.

142. This table was created using DELWP's 2019–20 bushfire impact assessment on FFG Act and EPBC Act listed species by RFA based on Habitat Distribution Model

Table 37. FFG Act and EPBC Act listed communities impacted by 2019–20 bushfires (extent, severity and multiple high-severity impact) in Gippsland RFA region¹⁴³

Community	Listing	Extent in this RFA region	% burnt	High severity	Total impacted by 2 or more high-severity bushfires since 2000 (%)
Alpine Sphagnum Bogs and Associated Fens	EPBC Act listed	1,842	17%	11%	11%
Cool Temperate Rainforest Community	FFG Act listed	3,637	3%	1%	0%
Warm Temperate Rainforest (East Gippsland Alluvial Terraces) Community	FFG Act listed	105	26%	20%	0%
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (likely to contain)	EPBC Act listed	25,847	12%	4%	2%
Dry Rainforest (Limestone) Community	FFG Act listed	20	8%	0%	0%

Source: DELWP 2021

6.3.4 Government actions and support following the bushfires

This section presents a summary of Victorian and Commonwealth Government responses to the 2019–20 bushfires, with detailed information on the bushfire impact on listed species and communities, by RFA. As not all government responses to the 2019–20 bushfires are suitable for this review process to examine, this section will provide a summarised version of the overall government response and the targeted response to manage FFG Act and EPBC Act listed species and communities. Please note that the following sections cover bushfire response more generally and are not constrained to the Listed Species and Communities definition which will be discussed under the Section 6.3.

Overview of bushfire responses

The 2019–20 bushfires and their catastrophic and widely publicised environmental impacts led to a never-before-seen focus on biodiversity and its recovery, and a swift and collaborative response from governments, their agencies and community organisations.

Significant Commonwealth and State government funding was immediately allocated to targeted biodiversity response and recovery projects. A national Royal Commission and inquiries in New South Wales, the Australian Senate and the Victorian Parliament, as well as an investigation by Victoria's Inspector-General of Emergency Management (IGEM) and an audit by Victoria's Auditor-General, sought to understand the causes of the bushfires, identify their impacts and make recommendations on future bushfire response, readiness and recovery.

143. This table was created using DELWP's 2019–20 bushfire impact assessment on FFG Act and EPBC Act listed communities

National

In early January 2020, the Commonwealth Minister for the Environment convened the Wildlife and Threatened Species Bushfire Recovery Expert Panel.¹⁴⁴ This group of scientists was tasked with identifying priority threatened plant and animal species requiring urgent bushfire interventions and recovery actions. At the outset, the expert Panel established four objectives to guide its work:

- prevent extinction and limit decline of native species
- reduce the immediate suffering of native animals directly impacted by the fires
- maximise the chances for long-term recovery of native species and communities
- ensure learning and continual improvement is at the core of the response.

The expert Panel also identified five key priority actions:

- rapid on-ground assessment for species and communities of concern
- feral predator and herbivore control to reduce the pressure on native species where appropriate
- emergency salvage of plant and animal species for ex-situ conservation or wild-to-wild translocation
- supplementary shelter, food and water for animals where appropriate
- protecting unburnt areas within or adjacent to recently burnt ground that provide refugia.

The expert Panel provided advice on proposals for the recovery of bushfire-affected biodiversity and the allocation of federal funds. The open-tender Wildlife and Habitat Bushfire Recovery Program was allocated \$12 million to support the immediate survival and long-term recovery and resilience of wildlife and the cultural values of Indigenous Australians. A further \$150 million was later added for long-term recovery projects. Of this, \$110 million was for on-ground support of the most-impacted species, \$10 million for community projects to conserve and recover local species (a new Bushfire Recovery for Wildlife and Habitat Community Grants Program), and \$2 million to build knowledge on Indigenous fire and land management.

In September 2020, the expert Panel issued a final communiqué in which it summarised its priorities and achievements. During the preceding nine months, it had identified 801 priority species of animals, plants and ecological communities, which included 486 plant species, 17 birds, 20 mammals, 23 reptiles, 22 crayfish, 16 amphibians, 16 fish and 19 ecological communities.¹⁴⁵ Priority species that occurred in Victoria (with their current Victorian conservation status in brackets) included:

- 9 birds, such as the Eastern Bristlebird (Critically Endangered); and 13 mammals, including the Long-footed Potoroo (Endangered)
- 68 plant species, including the Genoa River Correa (Critically Endangered), Betka Bottlebrush (Critically Endangered), Gippsland Banksia (Critically Endangered) and Gippsland Stringybark (Vulnerable)
- 42 invertebrate species, including 2 freshwater mussels (e.g. Glenelg Freshwater Mussel – Critically Endangered), 6 land snails, 3 decapods (e.g. Mallacoota Burrowing Crayfish – Critically Endangered), 9 dragonflies and caddisflies, 2 copepods and isopods, 2 spiders, 2 mayflies and stoneflies (e.g. Alpine Stonefly – Endangered), 7 beetles, 8 butterflies and moths, and a native bee.¹⁴⁶

144. DAWE (January 2021) [Wildlife and Threatened Species Bushfire Recovery Expert Panel](#), DAWE, accessed 22 August 2021.

145. DAWE (2020) Wildlife and Threatened Species Bushfire Recovery Expert Panel, [Final communiqué](#), Wildlife and Threatened Species Bushfire Recovery Expert Panel, accessed 10 May 2021.

146. DAWE, Wildlife and Threatened Species Bushfire Recovery Expert Panel, [Revised provisional list of animals requiring urgent management intervention](#), DAWE, accessed 10 May 2021.

In March 2020, the Threatened Species Scientific Committee (TSSC), which reports to the Commonwealth Minister for the Environment, issued a 10-point Bushfire Response Plan with four key objectives and 10 actions to support bushfire recovery that aligned with recommendations of the Wildlife and Threatened Species Bushfire Recovery Expert Panel. The four objectives were:

- prevent extinction and limit decline of native species and ecosystems affected by the 2019–20 fires
- reduce impacts from future fires
- learning and continual improvement
- communicate the TSSC's role and activities in response to the fires.

In May 2021 the TSSC issued a 12-month review¹⁴⁷ of the 10-point plan, which reported that:

- 116 species and 7 ecological communities affected by the bushfires were included in the 2020 Finalised Priority Assessment List
- the impacts of the bushfires were included in assessments that were already underway for fire-affected species and ecological communities
- a priority tranche of species conservation advices, based on the level of fire impact, were under review, with approximately 90 drafted and 37 being assessed by the TSSC
- at the conclusion of the 2019–20 fire season, the list of threatened species and ecological communities comprised 1,890 species and 84 ecological communities. As of May 2021, the list comprised 1,917 species and 87 ecological communities. Listing decisions for 11 fire-affected species had been made and nominations for 2 species and 2 ecological communities prioritised for assessment based on public nominations.

Victoria

In early January 2020, DELWP convened a meeting of agency and non-government wildlife experts to identify priority species and ecological communities affected by the 2019–20 bushfires. By the end of January 2020, DELWP had released its initial analysis of the bushfire impacts on the state's biodiversity (later updated in August 2020¹⁴⁸). Coupled with the announcement of \$17.5 million by the Victorian Environment Minister to establish the Bushfire Biodiversity Response and Recovery program, the report guided Victoria's Bushfire Response and Recovery program, actions during which have included:

- identification and defence of refugia outside the fire extent but under threat as the 2019–20 bushfires continued
- emergency feeding of wildlife
- emergency extractions of threatened species such as Eastern Bristlebird and Macquarie Perch
- aerial shooting of deer, goats and pigs, with a focus on areas of high biodiversity
- mapping of fire severity using remote-sensing technology.

147. DAWE (15 May 2021) Threatened Species Scientific Committee, [10-point bushfire response plan: one year review](#), DAWE, accessed 22 August 2021.

148. DELWP (2020) '[Victoria's bushfire emergency: biodiversity response and recovery version 2](#)', DELWP, accessed 2 December 2021.

By March 2021, highlights of the response included:

- 14 at-risk species extracted from the fire impact area, cared for and returned
- 30 species of concern assessed in the field to enable more targeted actions
- 9 Traditional Owner groups participating in the Reading and Healing Country program
- more than 300,000 new invertebrate records added to the Victorian Biodiversity Atlas
- 450,000 ha of pest herbivore control and 120,000 ha of pest predator control delivered to support the recovery of native species
- more than 11,000 ha of ash forest reseeded by air
- \$64.3 million in funding (\$51.5 million from the Victorian Government and \$12.9 million from the Commonwealth Government)
- more than 25 project delivery partnerships.¹⁴⁹

To June 2021, the Victorian Government had invested \$54.5 million for BBRR, including:

- a \$17.5 million funding package to assist in recovery efforts as part of the initial BBRR
- a further \$5 million to protect rare and threatened species from pests and predators
- \$29 million in the 2020-21 state budget to help threatened plants and animals survive future fires and climate change
- \$3 million in the 2021-22 state budget as part of Department of Justice and Community Safety initiatives to fast-track Victoria's recovery from the 2019–20 bushfires, including \$1 million for activities that improve wildlife welfare outcomes during future emergencies and \$2 million provided to continue the Reading and Healing Country program.

The conservation status of the 228 EPBC Act listed species did not change as a result of the 2019–20 bushfires. However, the TSSC has been providing independent scientific advice to enable the statutory response to the 2019–20 bushfires. In March 2020, the committee published its 10-point Bushfire Response Plan, which sets out four key objectives and 10 actions to deliver an efficient and effective response that supports bushfire recovery.¹⁵⁰ This provides a summary of updates to the listing status for a number of EPBC species, 11 of which have already had their status altered as a result of the fires. Only nine of these occur in Victoria: Spot-tailed Quoll (*Dasyurus maculatus* (SE mainland population)) and Smoky Mouse (*Pseudomys fumeus*).

In its submission to the Senate inquiry into 'Lessons to be learned in relation to the Australian bushfire season 2019–20', the Ecological Society of Australia stated that many of the 'post-fire assessments of the likely impact of these mega-fires on biodiversity were based on 'best guesses' rather than empirical evidence, as most impacted species had never been monitored in relation to fire impacts'.¹⁵¹

149. DELWP (2020) 'Victoria's bushfire biodiversity response and recovery: progress update March 2021', infographic, DELWP, accessed 2 December 2021. [note. Infographic updated November 2021].

150. DAWE (15 May 2021) Threatened Species Scientific Committee, [10-point bushfire response plan: one year review](#), DAWE, accessed 22 August 2021.

151. Ecological Society of Australia (ESA) (22 May 2020) [Submission to the Senate Finance and Public Administration References Committee Inquiry into the Lessons to be learned in relation to the Australian bushfire season 2019–20, Submission 73](#), ESA, accessed 2 December 2021.

The Australian Academy of Science warned in its submission to the Senate inquiry:

*Many decisions soon after major disasters are made in a crisis management mode... and are not necessarily good, evidence-based decisions... An example is the rapid decision to conduct post-fire (salvage) logging in protected areas. This can have long-lasting negative impacts on ecosystem integrity and on biodiversity, including on species listed under the EPBC Act. A better model is for governments to plan for environmental decisions after natural disasters well before events take place. This is critical in the context of the EPBC Act, as some species and ecosystems can shift from low risk to high risk very quickly following large-scale natural disasters.*¹⁵²

DELWP's August 2020 report *Victoria's bushfire emergency: biodiversity response and recovery* touched on some of the issues raised by the academy's submission. This does not mean that the report was specifically designed to respond to submissions to the Senate Inquiry but it addressed issues around planning in different time frames and how the information needs and the types of decisions change over time. It also highlighted how DELWP decision-support tools can be applied and adapted in this context, such as the evidence-based update to Strategic Management Prospects to improve landscape decision-making:

*The overarching response considers that the current fires are exceptional in size and impact and recognises that under climate change we are entering a changing environment in terms of the scale and complexity of managing fire impacts on biodiversity. Multiple large-scale active fires and the increasing proportion of areas that have been burnt multiple times since 2000 has expanded the context in which mitigation needs to be framed. This means that for some species and actions mitigation will need to include options beyond the fire areas.*¹⁵³

The DELWP report identified several time frames in the response and recovery process that would follow the emergency response actions while a fire is still active:

- Phase 1: Immediate and short-term actions (up to 1 year)
- Phase 2: Medium-term actions (1 to 3 years)
- Phase 3: Longer term actions (beyond 3 years).

Table 38 summarises the potential response actions across these time frames.

152. Australian Academy of Science (ASA) (2 June 2020) [Submission to the Senate Finance and Public Administration References Committee inquiry into the lessons to be learned in relation to the Australian bushfire season 2019–20, Attachment 1](#), ASA, accessed 2 December 2021.

153. DELWP (2020) ['Victoria's bushfire emergency: biodiversity response and recovery version 2'](#), DELWP, accessed 2 December 2021.

Table 38. Potential response actions across Phases 1,2 and 3 time frames¹⁵⁴

Hazard	Actions	Phase 1: immediate and short-term response	Phase 2: medium term	Phase 3: long term
Immediate impact of fire on survival of critical species	Emergency extraction of critical flora and terrestrial fauna and temporary housing for ongoing conservation	•		
	Provide strategic advice on managing risks of biodiversity impacts from ongoing fire suppression activities	•		
	Improve biodiversity risk management during preparedness and suppression for next fire season, including better integration of local and statewide spatial information and more suitable spatial outputs for rapid application	•		
Loss of food source	Supplementary feeding of critical fauna populations	•		
Immediate impact of debris flow following fire on survival of critical species	Provide off-stream temporary ponds for amphibians	•		
	Monitor water quality	•		
	Emergency extraction of critical aquatic species and temporary housing for ongoing conservation	•		
Loss of critical habitat features	Identify and design protections for key unburnt areas and populations within the current fire extent	•		
	Reconnaissance of critical fauna and flora species to inform status and management following fire	•		
	Traditional Owner reading Country and reconnaissance of species of cultural significance (intangible heritage) to inform status and management following fire	•		
Increased predation pressure/effectiveness	Intensified and sustained pest predator control within the current fire extent and adjacent areas	•	•	•
Increased competition and grazing pressure from pest herbivores	Intensified and sustained pest herbivore (e.g. deer, pig, horse) control within the current fire extent and adjacent areas	•	•	•
	Fence local populations for protection from pest herbivore species	•	•	
Multiple bushfires within 20 years	Collection of seed and ex situ seed banking for key species	•	•	
	Reseeding of flora and vegetation communities in key locations	•	•	•

154. DELWP (2020) '[Victoria's bushfire emergency: biodiversity response and recovery version 2](#)', DELWP, accessed 2 December 2021.

Table 38. Potential response actions across Phases 1,2 and 3 time frames (cont'd)

Hazard	Actions	Phase 1: immediate and short-term response	Phase 2: medium term	Phase 3: long term
Increased competition from invasive plants	Intensified and sustained weed control within the current fire extent and adjacent areas	•	•	•
Impacts on Traditional Owner ability to connect and heal Country	Healing Country by Traditional Owners through traditional knowledge	•	•	•
Small population size effects (inbreeding depression, vulnerability to localised disturbances)	Population management – wild to wild translocation of critical fauna populations, sanctuaries, captive breeding to support population growth in priority wild populations	•	•	•
Disease	Hygiene control in emergency response actions	•	•	•
	Protection of key areas without disease	•	•	•
Change in importance of other populations	Protect and manage key populations of species outside the current fire extent	•	•	•
	Translocation of critical fauna populations		•	•
	Initial identification of ecological refuges and climate change considerations	•		
	Creation of safer haven/sanctuary network		•	•
Poorly chosen actions leading to lower outcomes for biodiversity	Strategic approach to learning about the fire impacts and benefits of on-ground response for targeted species and/or threats (including assessment of biodiversity response effectiveness monitoring options and targeted research to improve the most influential and uncertain actions (Biodiversity 2037 Knowledge Framework)		•	•

Source: DELWP 2020

In October 2020, the Victorian Auditor-General's Office (VAGO) released the report of its audit on bushfire risk,¹⁵⁵ which assessed 'whether responsible agencies are effectively working together to reduce Victoria's bushfire risk'. With regard to ecosystem resilience, one of the Auditor-General's recommendations was that DELWP:

12. conducts more effective ecosystem resilience monitoring by:

- setting a target for regions on the quantity of ecosystem resilience monitoring assessments that they should complete annually
- setting an outcomes-level target that defines desirable values for key ecosystem resilience metrics
- reporting publicly against all of the metrics in its Measuring Ecosystem Resilience in Strategic Bushfire Management Planning policy in its fuel management reports.

In October 2021, the VAGO released another audit report, on management of Victoria's biodiversity loss.¹⁵⁶ The audit was initiated due to the finding in the State of the Environment 2018 report that a third of all of Victoria's terrestrial plants, birds, reptiles, amphibians, mammals, invertebrates and ecological communities are threatened with extinction.

There are three main topics in the VAGO's recommendations:

- Effectiveness of DELWP's measuring and reporting on its actions to halt species decline
- DELWP's tools to protect threatened species
- Costing to halt the decline of threatened species.

DELWP accepted all recommendations.

In January 2020, DELWP released *Victoria's bushfire emergency: biodiversity response and recovery*, which provided an early list of species of concern. The report was updated in March 2020 and included an amended list of species of concern.

Royal Botanic Gardens Victoria is concerned that the survival of up to 30 species could be threatened because of the damage caused by the 2019–20 bushfires, and that some could become extinct.¹⁵⁷ The seeds of 57 plant species and the cuttings of 63 plant species were collected from within the fire extent, including Cobungra Wattle (*Acacia ureniae*), Mountain Celery (*Aciphylla glacialis*), Royal Bluebell (*Wahlenbergia gloriosa*), Carpet Sedge (*Carex jackiana*), Alpine Pepper (*Tasmannia xerophila* subsp. *xerophila*), Alpine Ash (*Eucalyptus delegatensis*) and Spinning Gum (*Eucalyptus perriniana*).¹⁵⁸

In May 2020, the Chief Conservation Regulator initiated a process with VicForests covering the requirements of the precautionary principle as specified in the Code of Practice for Timber Production 2014. The details of this process are covered in Section 7.2 of the Major Event Review report.

155. Victorian Auditor-General's Office (VAGO) [Reducing bushfire risk: independent assurance report to parliament](#), 2020-21:4, VAGO, accessed 3 December 2021.

156. Victorian Auditor-General's Office (VAGO) [Reducing bushfire risk: independent assurance report to parliament](#), 2020-21:4, VAGO, accessed 3 December 2021.

157. van Loon M (17 January 2020) '[Seed bank throws lifeline to fire-threatened species](#)', The Age, accessed 3 December 2021.

158. DELWP (2020) '[Victoria's bushfire emergency: biodiversity response and recovery version 2](#)', DELWP, accessed 2 December 2021.

6.3.5 Bushfire Biodiversity Response and Recovery program

As indicated above, the Victorian Government initially allocated a \$17.5 million funding package under the BBRR program in January 2020. The program is delivering across seven key themes to support impacted wildlife and biodiversity:

- Theme 1: Immediate reconnaissance of critical species and habitat
- Theme 2: Wildlife welfare
- Theme 3: Emergency extraction to prevent extinction and limit species decline
- Theme 4: Intensified management of threats
- Theme 5: Reading and healing Country, and maximising biodiversity resilience
- Theme 6: Knowledge, data, and preparedness
- Theme 7: Nature-led community recovery.

The key themes of the BBRR program have three implementation stages, from Phase 1 (as soon as it is possible to operate in the fire areas up to 1 year) to Phase 3 (beyond 3 years). In August 2020, DELWP produced an updated report *Victoria's bushfire emergency: biodiversity response and recovery* (Version 2) which provided a complete assessment after the 2019–20 bushfire event and looked towards future actions, particularly in Phase 2 and Phase 3. It identified the species (including EPBC Act and FFG Act listed species) that had habitat within the fire extent and were impacted by high-severity fires during the 2019–20 bushfire season. It also demonstrated the impact on different taxon groups, ecological communities and tenure boundaries. Tables 6 and 7 in that report present data on the percentage of each taxon group's modelled habitat distribution overlaid with 2019–20 fire extent and high-severity fires (>80 per cent canopy scorch).¹⁵⁹

The DELWP report also identified Victoria's threatened species¹⁶⁰ (fauna and flora) of most concern, except for invertebrates, that were impacted by the bushfires. The fauna most of concern due to the fires comprised:

- 8 of Victoria's 15 threatened amphibian species
- 6 of 104 bird species
- 5 of 37 fish species
- 12 of 50 mammal species
- 6 of 40 reptile species.

Among the flora species on the 'most of concern' list were:

- 100 of 1,086 dicotyledons
- 22 of 420 monocotyledons
- 8 of 50 ferns and allies.

159. DELWP (2020) '[Victoria's bushfire emergency: biodiversity response and recovery version 2](#)', DELWP, accessed 2 December 2021.

160. Based on the [Flora and Fauna Guarantee Act Threatened List](#) gazetted in August 2021.

Thirty-two FFG Act listed fauna and flora species that are listed as threatened species of most concern and also listed under the EPBC Act are known or likely to occur in Victorian RFA regions.¹⁶¹ Four EPBC Act listed species, that are of most concern but not listed under the FFG Act, are Green and Golden Bell Frog (*Litoria aurea*, frog), Long-nosed Potoroo (*Potorous tridactylus*, mammal), Rufous Pomaderris (*Pomaderris brunnea*, plant) and Lemon-scented Zieria (*Zieria citriodora*, plant).

Regarding invertebrates, the report estimated that ‘many narrow range endemic populations are likely affected within the current fire extent’. It noted: ‘The major limitation for determining invertebrate species of concern is the lack of data, particularly regarding species records, conservation status and vulnerability to fire’. To address this issue, an ‘Invertebrate Fire Response and Recovery meeting’ was held to understand the impact of the 2019–20 bushfires and to determine actions for recovery. Invertebrate species of concern identified in the report include 22 FFG Act listed species.

The 2019–20 bushfires had significant impacts on FFG Act listed vegetation communities, particularly rainforests.

The previous report demonstrates the impact of the 2019–20 bushfires and DELWP’s overarching strategic approach to biodiversity response and recovery comprehensively. This includes prioritisation method, strategies for delivering response and recovery plans, and funding arrangements. Currently various mid-term and long-term phase activities are progressing under the seven BBRR themes: 145 activities are underway with 19 delivery organisations and 25 delivery partnerships. As of September 2021, the progress update for the BBRR program was:

- 14 at-risk species extracted from fire impact, cared for and returned. Some key species extracted are Eastern Bristlebird, ‘Cann’ Galaxias, Yalmy Galaxias, Dargo Galaxias, Macquarie Perch, McDowall’s Galaxias and Roundsnout Galaxias
- 30 species of concern assessed in the field to enable more targeted actions
- 10 Traditional Owner groups participating in reading and healing Country
- More than 300,000 invertebrate records added to the Victorian Biodiversity Atlas
- 470,000 ha of pest herbivore control delivered to support the recovery of native species
- 130,000 ha of pest predator control delivered to support the recovery of native species
- over 11,000 ha of ash forest reseeded by air
- 14 wildlife organisations convened with DLEWP for a roundtable to improve wildlife response during fire.

The VAGO mentioned that this program takes an evidence-based approach, with outcomes achieved against KPIs at different stages, and that further work is required to prevent species extinction.¹⁶²

161. Commonwealth of Australia and Victorian Government (2019) [Victoria’s Regional Forest Agreements: Assessment of matters pertaining to the modernisation of Victoria’s Regional Forest Agreements](#), Commonwealth of Australia and Victorian Government, accessed 2 December 2021

162. Victorian Auditor-General’s Office (VAGO) [Reducing bushfire risk: independent assurance report to parliament](#), 2021-22:07, VAGO, accessed 3 December 2021.

In August 2020, the government provided a further \$25.5 million based on DELWP's efforts in protecting and recovering species and communities in fire-affected areas, which included evidence that further species were still at risk of decline. The VAGO noted that for the BBRR program:

DELWP provided evidence-based progress reports to the government on the significant work undertaken, the outcomes achieved, and the further work required to prevent further threatened species extinctions and decline.

Based on this, the government provided a further \$29 million in the 2021-22 Budget for DELWP to continue its work in fire-affected areas, including \$16 million to further protect rare and threatened species.¹⁶³

As of October 2021, the Panel received two separate reports related to Theme 1 and Theme 5: *Bushfire response and recovery impacts on species: supplementary report* and *Bushfire response and recovery planning for biodiversity: a specific needs assessment to prioritise medium term conservation actions* respectively.

The report related to Theme 1 summarises reconnaissance activities and findings completed from early 2020 to June 2021. It gives detailed information on selected species by taxon group, including survey methods, locations, results and threats to suitable habitat before and after the 2019–20 bushfires. Some of the key species and communities are Glossy Black-cockatoo, Broad-toothed Rat, Spot-tailed Quoll, Spotted Tree Frog, and rainforest communities. For each species and community, the reporting was written by subject-matter experts to provide evidence-based scientific advice for DELWP to consider in developing potential management actions.

The aim of these reconnaissance activities was to understand the immediate and short-term impacts of the bushfires. Prioritisation of any potential actions to manage identified risks supported by analysis using survey results was explained in *Bushfire response and recovery planning for biodiversity: a specific needs assessment to prioritise medium term conservation actions*, which contributes to Theme 5, maximising long-term resilience across the landscape through DELWP and other partners and organisations. DELWP explains:

Theme 5 aims to prioritise and deliver projects (using a range of approaches) for populations of key species, to increase the medium and long-term resilience (i.e. ability to recover) of these species and ecological communities across the state. In contrast to immediate actions within the current fire extent, Theme 5 specifically relates to the longer-term, state-wide recovery of species and populations, with a vision of ensuring that populations are healthy and thriving well into the future.

Using decision support tools including SMP and Specific Needs, DELWP assessed the benefit and cost-effectiveness of landscape scale and species-specific conservation actions respectively. The report provides critical information regarding options for key conservation actions for species recovery and the best combination of actions to get the most ideal conservation results.¹⁶⁴

163. Victorian Auditor-General's Office (VAGO) [Reducing bushfire risk: independent assurance report to parliament](#), 2021-22:07, VAGO, accessed 3 December 2021.

164. DELWP (unpublished) *Bushfire response and recovery planning for biodiversity: a specific needs assessment to prioritise medium term conservation actions*, Unpublished draft report, accessed 2 December 2021.

As of November 2021, BBRR program received \$77.2 million funding, \$62.2 million from Victorian Government and \$15 million from Commonwealth Government.

Most species and communities covered by these two outcome reports are listed under the EPBC Act and the FFG Act. DELWP will use the findings and management decisions regarding relevant EPBC Act and FFG Act listed species and communities to develop actions for managing RFA-related species and communities that align with the definition of listed species and communities. More details of the definition of listed species and communities will be discussed in the Section 6.3

6.3.6 Listed species and ecological communities – risk assessment

The modernised Victoria RFAs use the new terminology ‘listed species and communities’. This is defined as a species, taxon or community listed under Part 13 of the EPBC Act or Part 3 of the FFG Act that is, or has the potential to be, impacted by forestry operations. The Victorian Government should undertake a risk assessment for Listed Species and Communities to determine whether additional interim or permanent protections and management actions are necessary (e.g. East Gippsland Clause 15K).

The Victorian Government’s first step to conduct the risk assessment was to select listed species and communities that are relevant to the definition of RFA. As there is no definitive list of species or communities that are, or have the potential to be, impacted by forestry operations, the Victorian Government used a number of sources to determine the initial list of relevant species for the 2020 Risk Assessment:

- Conservation Values of State Forests (Victorian Environmental Assessment Council (VEAC) 2017) ‘focus’ species
- Integrated Biodiversity Values Model (DELWP 2019, unpublished)
- Review of threats identified in species assessments for DELWP’s Common Status Assessment project for forest dependent species
- Forest-dwelling threatened species and threatened forest ecological communities threat categories reported in *Australia’s state of the forests report 2018* (Australian Bureau of Agricultural and Resource Economics and Sciences)
- Additional expert opinion received for the purpose of the risk assessment in July 2020.
- DELWP’s Habitat Distribution Model was used to identify the likely occurrence of species and communities within an RFA region. DELWP’s advisory lists were not considered in this selection process as these are not formally listed. The selected species and communities are then assessed to identify major hazards and vulnerability within each RFA region. Control measures and their likely effectiveness to manage impacts are also identified with potential impact as a result of the interaction of hazards. Experts are then asked to determine the following risk assessment categories for each RFA region per listed species or community:
 - Consequence (what is the impact if the hazard occurs, based on the vulnerability of the species or community)
 - Likelihood (how likely is the hazard to occur at the relevant scale to cause the consequence)
 - Overall risk level (using risk matrix)
 - Confidence in assessment (lowest, low, moderate, high and highest)

Experts then identify possible mitigations for the hazards, which were used subsequently in defining any interim protections or management actions. As a part of risk assessment process, DELWP also includes a prioritisation process by assessing risk of serious or irreversible harm from hazards within RFA regions. The prioritisation process is performed based on spatial analysis and expert advice.

In 2020, DELWP conducted its first-tranche selection process as per the RFA definition, which identified 70 species and nine communities (Table 39). This was triggered by the commencement of the RFAs in April 2020. As prescribed in the RFAs (Clause 25K in North East RFA), those 79 species and communities were assessed to identify, analyse and evaluate the risks to the conservation and recovery of listed species and communities within each RFA region over a 20-year time frame. Table 40 lists the main hazards, their impacts, the number of species at risk and examples of those species, while Table 41 provides more detail on the numbers of each taxon impacted by each hazard. This risk assessment identified key hazards that could cause significant or high risks to those 79 species and communities and found that invasive species and inappropriate fire regimes posed significant or high risks to the highest number of species, (60 and 55 species respectively), followed by climate change (48 species) and forestry operations (24 species). Invasive species, inappropriate fire regimes and climate change threaten the most species, with the highest numbers in the aquatic and plant taxon groups. The risk assessments will be used to determine future recovery pathways and measures. They are a central part of Victoria's commitments to provide for the conservation and recovery of threatened species and communities under the modernised RFAs.



Photo credit: Wallaby © Katherine Mullett

Table 39. List of 70 species and nine communities identified in risk assessment, with associated listing status¹⁶⁵

Common name	Scientific name	EPBC status	FFG threat status
Alpine Bog Skink	<i>Pseudemoia cryodroma</i>		Endangered
Alpine Spiny Crayfish	<i>Euastacus crassus</i>	Endangered	Endangered
Aniseed Boronia	<i>Boronia galbraithiae</i>	Vulnerable	Critically Endangered
Barred Galaxias	<i>Galaxias fuscus</i>	Endangered	Critically Endangered
Baw Baw Frog	<i>Philoria frosti</i>	Endangered	Critically Endangered
Betka Bottlebrush	<i>Callistemon kenmorrisonii</i>	Vulnerable	Critically Endangered
Blue-tongue Greenhood	<i>Pterostylis oreophila</i>	Critically Endangered	
Booroolong Tree Frog	<i>Litoria booroolongensis</i>	Endangered	Critically Endangered
Brilliant Sun-orchid	<i>Thelymitra mackibbinii</i>	Vulnerable	Critically Endangered
Broad-toothed Rat	<i>Mastacomys fuscus mordicus</i>	Vulnerable	Vulnerable
Brush-tailed Phascogale	<i>Phascogale tapoatafa</i>		Vulnerable
Candy Spider-orchid	<i>Caladenia versicolor</i>	Vulnerable	Endangered
Colquhoun Grevillea	<i>Grevillea celata</i>	Vulnerable	Critically Endangered
Concave Pomaderris	<i>Pomaderris subplicata</i>	Vulnerable	Critically Endangered
Crimson Spider-orchid	<i>Caladenia concolor</i>	Vulnerable	Endangered
Curve Tail Burrowing Crayfish	<i>Engaeus curvisuturus</i>		Endangered
Dargo Galaxias	<i>Galaxias mungadhan</i>		Critically Endangered
Diamond Python	<i>Morelia spilota</i>		Critically Endangered
Don's Spider Orchid	<i>Caladenia cremna</i>	Critically Endangered	Critically Endangered
Drooping Grevillea, Ben Major Grevillea	<i>Grevillea floripendula</i>	Vulnerable	Critically Endangered
Dwarf Kerrawang	<i>Rulingia prostrata</i>	Endangered	Endangered
East Gippsland Galaxias	<i>Galaxias aequipinnis</i>		Critically Endangered
Eastern She-oak Skink	<i>Cyclodomorphus michaeli</i>		Critically Endangered
Elegant Spider-orchid	<i>Caladenia formosa</i>	Vulnerable	Critically Endangered
Giant Burrowing Frog	<i>Heleioporus australiacus</i>	Vulnerable	Critically Endangered
Glenelg Freshwater Mussel	<i>Hyridella glenelgensis</i>	Critically Endangered	Critically Endangered
Glenelg Spiny Freshwater Crayfish	<i>Euastacus bispinosus</i>	Endangered	Endangered
Glossy Black-Cockatoo	<i>Calyptorhynchus lathami</i>		Critically Endangered
Gorae Leek-orchid	<i>Prasophyllum diversiflorum</i>	Endangered	Critically Endangered
Grampians Bitter-pea	<i>Daviesia laevis</i>	Vulnerable	Critically Endangered
Southern Greater Glider	<i>Petauroides volans</i>	Vulnerable	Vulnerable
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	Vulnerable	Vulnerable
Gully Grevillea	<i>Grevillea barklyana</i>		Critically Endangered
Large Brown Tree Frog	<i>Litoria littlejohni</i>	Vulnerable	Critically Endangered
Leadbeater's Possum	<i>Gymnobelideus leadbeateri</i>	Critically Endangered	Critically Endangered
Leafy Nematolepis	<i>Nematolepis frondosa</i>	Vulnerable	Critically Endangered
Long-footed Potoroo	<i>Potorous longipes</i>	Endangered	Endangered

165. The list is from DELWP (2020) '[Threatened Species and Communities Risk Assessment: Victoria's Regional Forest Agreements](#)', DELWP, accessed 6 February 2022. Please note that FFG threat status has been modified to reflect the threat status in the updated threatened list in the FFG Act.

Common name	Scientific name	EPBC status	FFG threat status
Long-nosed Potoroo	<i>Potorous tridactylus</i> <i>Potorous tridactylus trisulcatus</i>	Vulnerable	Vulnerable
Maidenhair Spleenwort	<i>Asplenium hookerianum</i>	Vulnerable	Critically Endangered
Mallacoota Burrowing Crayfish	<i>Engaeus mallacoota</i>		Critically Endangered
Martin's Toadlet	<i>Uperoleia martini</i>		Critically Endangered
Masked Owl	<i>Tyto novaehollandiae</i>		Critically Endangered
McDowalls Galaxias	<i>Galaxias mcdowalli</i>		Critically Endangered
Mount Cole Grevillea	<i>Grevillea montis-cole</i> subsp. <i>montis-cole</i>		Critically Endangered
Narracan Burrowing Crayfish	<i>Engaeus phyllocercus</i>		Endangered
New Holland Mouse	<i>Pseudomys novaehollandiae</i>	Vulnerable	Endangered
Orbost Spiny Crayfish	<i>Euastacus diversus</i>		Endangered
Powerful Owl	<i>Ninox strenua</i>		Vulnerable
Red-tailed Black-Cockatoo (south-eastern)	<i>Calyptorhynchus banksii graptogyne</i>	Endangered	Endangered
Regent Honeyeater	<i>Anthochaera phrygia</i>	Critically Endangered	Critically Endangered
Rough Eyebright	<i>Euphrasia scabra</i>		Endangered
Round-leaf Pomaderris	<i>Pomaderris vacciniifolia</i>	Critically Endangered	Critically Endangered
Roundsnout Galaxias	<i>Galaxias terenusus</i>		Critically Endangered
Rufous Pomaderris	<i>Pomaderris brunnea</i>	Vulnerable	
Slender Tree-fern	<i>Cyathea cunninghamii</i>		Critically Endangered
Smoky Mouse	<i>Pseudomys fumeus</i>	Endangered	Endangered
Sooty Owl	<i>Tyto tenebricosa</i>		Endangered
South Gippsland Spiny Crayfish	<i>Euastacus neodiversus</i>		Endangered
Southern Brown Bandicoot	<i>Isodon obesulus</i>	Endangered	Endangered
Spot-tailed Quoll	<i>Dasyurus maculatus</i>	Endangered	Endangered
Spotted Tree Frog	<i>Litoria spenceri</i>	Endangered	Critically Endangered
Strzelecki Burrowing Crayfish	<i>Engaeus rostrigaleatus</i>		Endangered
Strzelecki Gum	<i>Eucalyptus strzeleckii</i>	Vulnerable	Critically Endangered
Swamp Skink	<i>Lissolepis coventryi</i>		Endangered
Swift Parrot	<i>Lathamus discolor</i>	Critically Endangered	Critically Endangered
Tall Astelia	<i>Astelia australiana</i>	Vulnerable	Endangered
Tapered Galaxias	<i>Galaxias lanceolatus</i>		Critically Endangered
Wellington Mintbush	<i>Prostanthera galbraithiae</i>	Vulnerable	Endangered
West Gippsland Galaxias	<i>Galaxias longifundus</i>		Critically Endangered
White-footed Dunnart	<i>Sminthopsis leucopus</i>		Vulnerable
Alpine Bog*			Threatened
Alpine Sphagnum Bogs and Associated Fens*		Endangered	
Cool Temperate Mixed Forest			Threatened

Common name	Scientific name	EPBC status	FFG threat status
Cool Temperate Rainforest			Threatened
Fen (Bog Pool)*			Threatened
Gippsland Red Gum (<i>Eucalyptus tereticornis</i> subsp. <i>mediana</i>) Grassy Woodland and Associated Native Grassland		Critically Endangered	
Grey Box (<i>Eucalyptus microcarpa</i>) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia		Endangered	
Strzeleckis Warm Temperate Rainforest			Threatened
Warm Temperate Rainforest (East Gippsland Alluvial Terraces)			Threatened
Warm Temperate Rainforest (Far East Gippsland)			Threatened
Western Basalt Plains (River Red Gum) Grassy Woodland (55-04)			Threatened

*Note: "Alpine Bog" and "Fen (Bog Pool)" and "Alpine Sphagnum Bogs and Associated Ferns" have been assessed as one community.
Source: DELWP 2020

Table 40. Hazards, their impacts, and the number of species at risk¹⁶⁶

Key hazard	Impacts	No. of species	Examples of species
Inappropriate fire regimes	Population decline; changed habitat structure; decline or loss of local plant species; competition with fire-adapted species; increased erosion and sedimentation; changed nutrient cycling, seed dispersal and seed establishment	55	Glossy Black-Cockatoo, Southern Greater Glider, Long-footed Potoroo, Tall Astelia, Diamond Python, Cool Temperate Rainforest
Bushfire management	Direct mortality; soil disturbance; altered hydrology; sedimentation and pollution (retardants) of streams; loss of unburnt remnants and hollow-bearing trees	10	Glossy Black-Cockatoo, Brush-tailed Phascogale, New Holland Mouse, Grampians Bitter-Pea, Diamond Python
Forestry	Direct mortality; habitat loss and fragmentation; soil disturbance and compaction; edge effects	24	Glossy Black-Cockatoo, Leadbeater's Possum, Diamond Python.
Invasive species	Direct mortality; reduced vegetation cover; competition for food and shelter; soil erosion and compaction; weed and pathogen spread	60	Broad-toothed Rat, Candy Spider-Orchid, Alpine Bog Skink, Strzelecki Warm Temperate Rainforest
Roading and strategic fuel breaks	Habitat loss and fragmentation; edge effects; soil disturbance; sedimentation of streams; weed and pathogen spread	10	Gorae Leek-Orchid, Whitfield Spider-Orchid
Climate change	Droughts, reduced streamflows, bushfires, heat, rising sea levels	48	Red-tailed Black-Cockatoo (South-Eastern), Grey-headed Flying-Fox, Ben Major Grevillea, Strzelecki Warm Temperate Rainforest
Others: dams, drought, pollution, land clearance, mining, recreation		40	Regent Honeyeater, White-footed Dunnart, Dwarf Kerrawang, Warm Temperate Rainforest (Far East Gippsland)

Source: DELWP 2020

166. DELWP (2020) 'Threatened Species and Communities Risk Assessment: Victoria's Regional Forest Agreements', DELWP, accessed 6 February 2022.

Table 41. Hazards and the number of terrestrial species in each taxon at risk¹⁶⁷

Hazards	Birds	Mammals	Plants	Reptiles	Communities
Pest plants and animals	2	9	18	4	9
Inappropriate fire regimes	5	11	13	3	6
Climate change	5	8	12	3	1
Forestry operations	4	5	1	1	0
Bushfire management	3	2	4	1	0
Roading and strategic fuel breaks	0	0	2	0	0
Other	4	4	16	3	5
Number of species and communities assessed (79)	7	12	25	4	9

In April 2021, DELWP's Biodiversity Division followed up the report with a set of interim protections and management actions across Victoria's five RFA regions.¹⁶⁸ Table 42 summarises the types and numbers of the protections and actions that are in place until April 2022. They focus on the East Gippsland and Gippsland regions, with pest control and research the dominant actions in both regions. DELWP stated:

The assessment undertaken by Biodiversity Division determined that the actions proposed are appropriate and proportionate management actions to mitigate the risk of serious or irreversible damage from timber harvesting over the next 12 months.

Detailed information on the approach taken for the assessment process can be found in threatened species and communities risk assessment reports.^{169, 170}

Table 42. Summary table of interim protection and management actions recommended after threatened species and communities risk assessment¹⁷¹

Protection or management actions	RFA region				
	East Gippsland	Gippsland	Central Highlands	North East	West Victoria
Active management (e.g. pest control)	19	8	1	2	1
Research (incl. important population mapping and feasibility studies)	17	8	1	1	1
Tailored adaptive responses (part of VicForests precautionary principle approach – see note below)	7	1	-	-	-
Targeted zoning amendments	6	4	-	-	-
Procedures and guidelines (incl. values checking)	6	3	-	-	-
Pre-harvest surveys	3	1	-	-	-

Source: DELWP 2021

167. DELWP (2020) [‘Threatened Species and Communities Risk Assessment: Victoria's Regional Forest Agreements’](#), DELWP, accessed 6 February 2022.

168. DELWP (April 2021) *Threatened Species and Communities Risk Assessment: Interim Protections and Management Actions*, DELWP, accessed 6 February 2022.

169. DELWP (April 2021) *Threatened Species and Communities Risk Assessment: Interim Protections and Management Actions*, DELWP, accessed 6 February 2022.

170. DELWP (April 2021) *Threatened Species and Communities Risk Assessment: Interim Protections and Management Actions*, DELWP, accessed 6 February 2022.

171. DELWP (April 2021) *Threatened Species and Communities Risk Assessment: Interim Protections and Management Actions*, DELWP, accessed 6 February 2022.

To mitigate identified risks to these priority listed species and communities, an action plan¹⁷² was released in April 2021. The action plan sets out a suite of interim risk mitigation measures by each RFA region, which will remain in place until April 2022 ‘when these species and communities are evaluated for permanent protections, and consideration is given to the cumulative impacts of multiple hazards in the context of past disturbance, recent events such as the 2019–20 bushfires and likely future disturbance’.¹⁷³ DELWP has undertaken a prioritisation process based on spatial analysis of risks, literature review, expert elicitation and updates from scientists conducting field reconnaissance following the 2019–20 bushfires. This process identified 32 species and communities to focus on in developing the interim protections. The action plans provide detailed information on mechanisms that will be applied to mitigate identified hazards. Mechanisms that are involved in delivering action plans are described in Table 41. As action plans are currently in progress, an outcomes report on each mitigation measure has not been developed.

Subsequently a second tranche of risk assessment was triggered by the listing under the FFG Act of Little Eagle and Platypus in January 2021. These species were identified as falling under the definition of listed species and communities and were added in July 2021. Risk assessments for these species have been completed and risks identified, however the report on the assessment results has not yet been published and the Panel did not receive any details on this. DELWP indicated that these risk assessments identified risks to the Little Eagle and Platypus associated with all hazards, not just those posed by forestry operations. The identified risks will be followed by the preparation of draft action statements as required under the FFG Act and, in the case of the Platypus, a draft management plan. The action statements will be prepared prior to January 2023 and will be based on a detailed assessment of the management actions necessary for the conservation of the Little Eagle and the Platypus.

6.3.7 Implementation of interim protections

Measures to mitigate risks for prioritised listed species and communities are currently being implemented through a range of planned or current programs, or existing legislative or regulatory arrangements. The major programs and management responses being implemented are described below.

Interim enforceable protections

Interim enforceable protections make up a central part of the measures to ensure that targeted species are protected from forestry operations. This is achieved by amending the forest management zoning scheme. DELWP proposed creating Special Management Zones for six species in East Gippsland and four species in Gippsland RFA. The spatial distribution of these interim protection areas is shown in Figure 17 and Figure 18. Management arrangements for areas in the Special Management Zone are determined based on the values present. For aquatic species, for which a high degree of protection from forestry operations is required, mapping of priority catchments has been completed to include increased watercourse buffers to mitigate risk from timber harvesting.

172. Ibid.

173. Ibid.

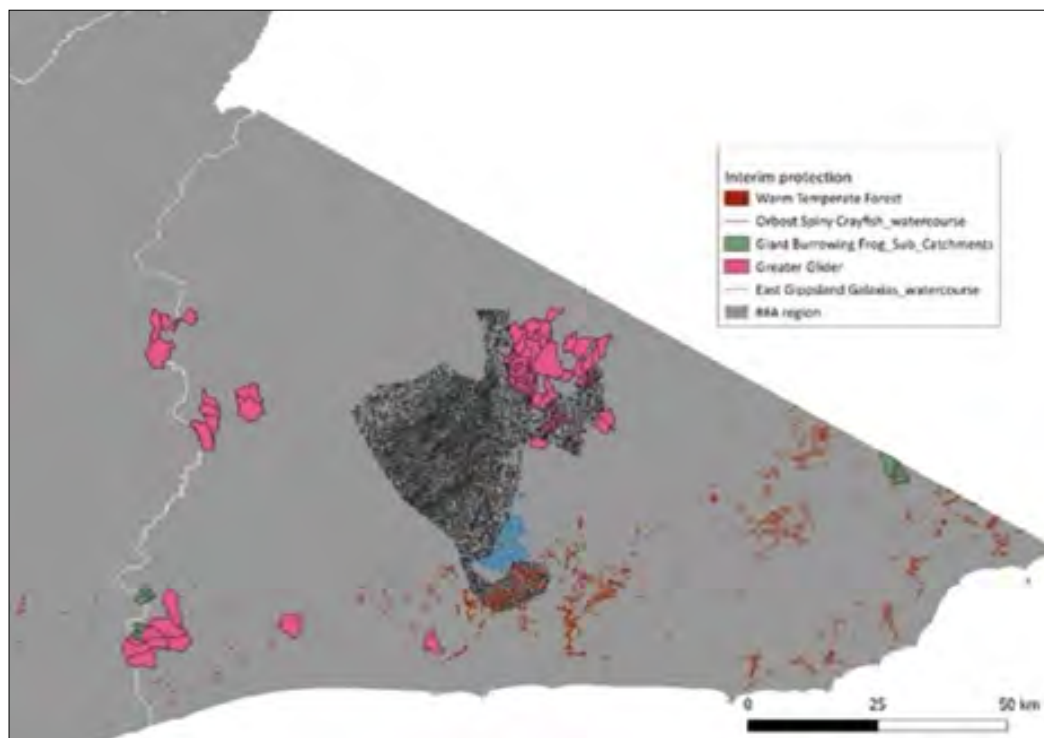


Figure 17. Spatial distribution of interim protection areas for Warm Temperate Forest, Orbost Spiny Crayfish, Giant Burrowing Frog, Greater Glider and East Gippsland Galaxias in East Gippsland RFA region¹⁷⁴

Source: DELWP 2021

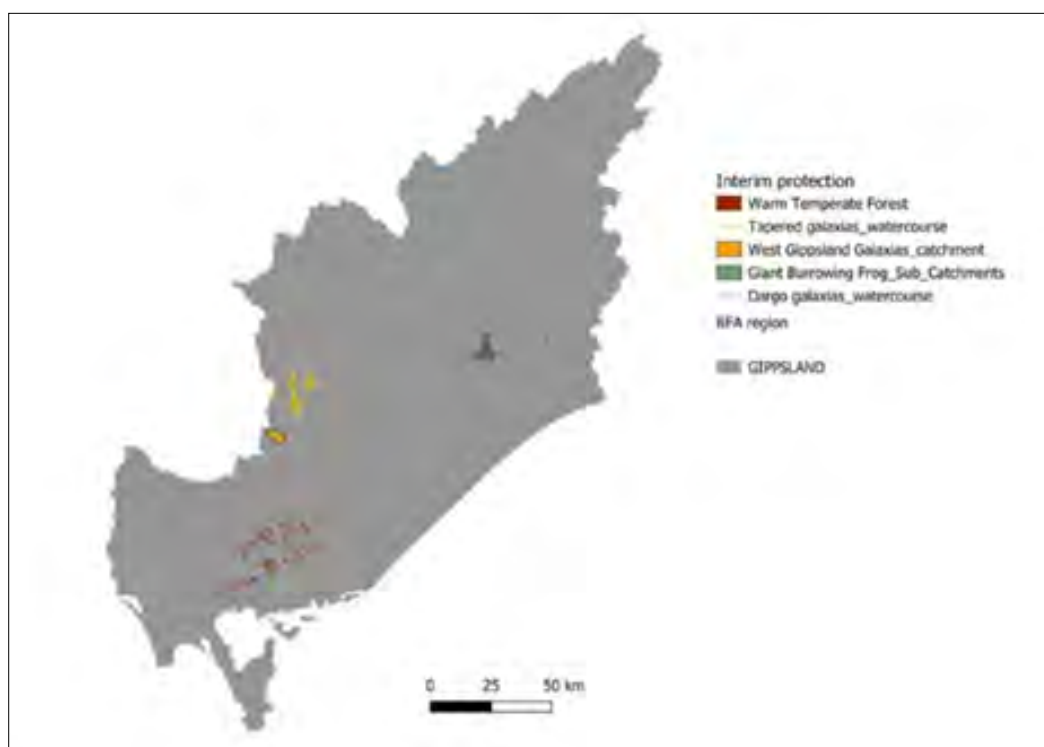


Figure 18. Spatial distribution of interim protection areas for Warm Temperate Forest, Tapered Galaxias, West Gippsland Galaxias, Giant Burrowing Frog and Dargo Galaxias in Gippsland RFA region¹⁷⁵

Source: DELWP 2021

174. DELWP provided spatial information on interim protections in East Gippsland RFA region. For aquatic species, whole watercourse where the species are known to exist was selected.

175. DELWP provided spatial information on interim protections in East Gippsland RFA region

Precautionary principle approach

In 2021 DELWP stated:

*VicForests is currently implementing a series of tailored adaptive responses that apply to forestry operations designed to mitigate the risk of serious or irreversible damage to species and communities impacted by the 2019–20 bushfires based on current scientific advice and factoring in relevant scientific uncertainty as part of its acquittal of the precautionary principle.*¹⁷⁶

One example of applying the precautionary principle is in relation to the Greater Glider interim protection areas. One of the restrictions in undertaking forestry operations is applying 40 per cent retention of coupe basal area, retaining undisturbed habitat patches, containing hollow-bearing trees and a variety of seed tree species within the harvestable area, and protecting patches from harvesting and regeneration activities. Species that will have a precautionary principle approach as a mechanism to mitigate risks are Large Brown Tree Frog, Glossy Black-Cockatoo, Masked Owl, Powerful Owl, Sooty Owl, Long-footed Potoroo, Greater Glider and Colquhoun Grevillea. VicForests' own risk assessment identified that exposure to timber harvesting is mostly relatively low for most species that are listed in the TSCRA report.¹⁷⁷

Management actions

DELWP has a priority management action that is an urgent, no-regrets undertaking that can address critical risks or prevent serious or irreversible harm. This includes targeted pest-control programs for relevant species and communities that require urgent management intervention to minimise disturbance impacts.

Bushfire Biodiversity Response and Recovery program

There are 72 interim management actions involved in action plans for 25 species and communities that are prioritised in the threatened species and communities risk assessment (TSCRA). Not all species the program covers are among the TSCRA prioritised species and communities. The actions implemented under this program include control of large herbivores and of predators, weed management and genetics and translocation studies. Currently it is unclear how this program contributes to achieving action plans specified under TSCRA for Listed Species and Communities. In addition, these funded projects are still being delivered, so there are no comprehensive outcomes reports on how the projects minimised significant or irreversible harm to a prioritised species or community.

Implementation of Victorian Deer Control Strategy 2020

The Victorian Deer Control Strategy¹⁷⁸ was released in 2020 with a vision to create a future where 'Deer are no longer significantly impacting on priority environmental, agricultural and Aboriginal cultural heritage values and public safety in Victoria'. Its three goals are:

- The impacts of deer on key environmental, agricultural and Aboriginal cultural heritage values and public safety are reduced
- Deer control is more effective through partnerships and community collaboration
- Awareness, understanding and capacity to control deer is increased.

176. DELWP (April 2021) *Threatened Species and Communities Risk Assessment: Interim Protections and Management Actions*, DELWP, accessed 6 February 2022.

177. DELWP (April 2021) *Threatened Species and Communities Risk Assessment: Interim Protections and Management Actions*, DELWP, accessed 6 February 2022.

178. DELWP (2020) [Victorian Deer Control Strategy](#), DELWP, accessed 6 February 2022.

The Victorian Deer Control Strategy identified deer as a threat to 13 threatened flora species and 12 threatened ecological communities. It also reported that more than 1,000 native flora and fauna species would benefit if deer were successfully controlled.¹⁷⁹ In addition, the TSCRA indicated that the BBRR program also has deer control works that will benefit a number of prioritised species and communities, including Baw Frog, Masked Owl, Sooty Owl, Eastern She-oak Skink, and Warm Temperate Rainforest (East Gippsland Alluvial Terraces and Far East Gippsland).

Values checking update program

“Values checking” is an informal term used to describe the process by which DELWP identifies potential negative impacts on values that may arise from forest or fuel management activities and determines mitigation actions to reduce the likelihood or consequence of these. In practice, DELWP manages values across a range of temporal and geographic scales through strategic, operational and tactical planning processes. Values checking is part of a broader values management process. The improved approach now:

- articulates the full spectrum of values management across all tiers of planning, because some legislative requirements are addressed through a combination of actions at the different planning tiers;
- identifies which values assessments are mandatory; and
- clearly documents and standardises the process and provides consistency across forest and fuel management.

The values checking update program is currently revising the standard mitigation measures used in forest and fuel management activities for hundreds of threatened species, including 15 identified through the RFA Threatened Species and Communities Risk Assessment process as requiring interim actions.

6.3.8 Future plans

As a part of the TSCRA, DELWP will conduct the following assessments.

Additional risk assessments

Little Eagle and Platypus will be considered for permanent protections if required by January 2023. DELWP is currently conducting Tranche 2 risk assessments of species and communities that were newly listed under the FFG Act (1,300+) in May 2021. DELWP advised that 62 species and communities will be considered for protection by introducing interim protections if required. Permanent protections for the 62 species and communities will be introduced by May 2023.

Permanent protections for Tranche 1 risk assessment

The current interim protections for the 79 species and communities that were selected during Tranche 1 risk assessment will remain in place until April 2022, when all 79 species and communities assessed in the 2020 risk assessment are evaluated for permanent protection. Currently not all have action statements, but these will be developed until permanent protections are implemented in 2022. This means that existing action statements will be revised if relevant species or communities are determined to require permanent protections.

179. DELWP (2020) [Victorian Deer Control Strategy](#), DELWP, accessed 6 February 2022.

In addition, DELWP will particularly consider any requirement for permanent protections to address forestry-related medium, significant or high risks, which have been identified for 45 species and 6 communities. Potential forms of permanent protection are:

- Changes to the Forest Management Zoning Scheme
- Changes to code of practice/management standards and procedures prescriptions
- FFG Act tools: Critical Habitat Determinations,¹⁸⁰ Public Authority Management Agreements¹⁸¹ and Protected Flora Controls.¹⁸²

Risk assessment beyond Tranche 2

As risk assessment is a rolling requirement whenever there is a new listed species, there will be a consideration of fulfilling requirement for newly listed EPBC and FFG Act species in the future.

Use of Critical Habitat Determinations

When the FFG Act was amended in 2019 to modernise a number of its provisions, one of the main changes was the inclusion of new guidelines for Critical Habitat Determinations (CHDs). If an area contributes significantly to the conservation of an FFG Act listed threatened species or community, DELWP can declare the area as critical habitat under the FFG Act. The determination of a critical habitat allows the use of Habitat Conservation Orders (HCOs). HCOs provide a ministerial power to order to conserve, protect or manage critical habitat. An HCO can prohibit damage to critical habitat or require remediation of previous damage. It can put in place protections against critical threats to threatened species habitats, such as wildfires, for up to 10 years. The amended FFG Act provides for a process that enables the Scientific Advisory Committee to make a recommendation to DELWP to make a CHD, and requires DELWP to make a decision and publish the reasons for it. CHDs and HCOs are optional tools with no obligation – no trigger that initiates consideration by the government. The Tranche 1 Risk Assessment did consider implementing CHDs under the FFG Act for protection of areas of high conservation significance. However, this was assessed as not feasible due to the process and timelines involved. DELWP indicated that it will consider this tool for future use where appropriate.¹⁸³

6.3.9 Overall impact of 2019–20 bushfires on 79 listed species and communities

Section 6.3.2 provides the summary of bushfire impact on all FFG Act listed species and communities and EPBC Act listed threatened flora and fauna species known or likely to occur in Victorian RFA regions. By applying the definition of Listed Species and Communities under RFA, DELWP selected 79 species and communities through first tranche of Threatened Species and Communities Risk Assessment process. The Panel received a list of the 79 species and communities with detailed information on the bushfire impact from DELWP. The information is presented as proportionally how much of their modelled distribution overlays with the fire extent, the extent of high-severity fire and the multiple fire extent. This information is presented first for the whole of the 2019–20 bushfire extent and then grouped by RFA region. More detailed information on the bushfire impact on the 79 species and communities by RFA is presented in Tables 5-8.

180. DELWP, [Flora and Fauna Guarantee Act 1988 Critical habitat and habitat conservation orders](#), factsheet, DELWP, accessed 2 February 2022.

181. DELWP, [Flora and Fauna Guarantee Act 1988 public authority duty](#), factsheet, DELWP, accessed 2 February 2022.

182. More information can be found at DELWP (28 September 2021) [Conserving threatened species: protected flora controls](#), DELWP, accessed 2 February 2022.

183. DELWP (April 2021) *Threatened Species and Communities Risk Assessment: Interim Protections and Management Actions*, DELWP, accessed 6 February 2022.

Impact on listed species

Forty-six species out of 70 listed species were within the fire extent (Table 43). Of these, 15 species had more than 50 per cent of their extent burnt and the following listed species were exposed to high-severity fires across more than 50 per cent of their overall extent: Roundsnout Galaxias, East Gippsland Galaxias, Betka Bottlebrush, Mallacoota Burrowing Crayfish, Orbost Spiny Crayfish and Eastern She-oak Skink. Another two listed species have had at least 50 per cent of their habitat impacted by multiple high-severity fires since 2000: Diamond Python and Large Brown Tree Frog.

Table 43. Impact of 2019–20 bushfire on 70 listed species across RFA regions in Victoria¹⁸⁴

Common name	Scientific name	Total extent burnt (%)	High-severity impact	Total impacted by 2 or more bushfires since 2000 (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)
East Gippsland Galaxias	<i>Galaxias aequipinnis</i>	100	84	3	1
Roundsnout Galaxias	<i>Galaxias terenasus</i>	100	85	3	0
Mallacoota Burrowing Crayfish	<i>Engaeus mallacoota</i>	94	66	2	0
McDowalls Galaxias	<i>Galaxias mcdowalli</i>	94	34	86	14
Betka Bottlebrush	<i>Callistemon kenmorisonii</i>	91	66	9	0
Large Brown Tree Frog	<i>Litoria littlejohni</i>	87	0	70	50
Eastern She-oak Skink	<i>Cyclodomorphus michaeli</i>	87	51	0	0
Diamond Python	<i>Morelia spilota spilota</i>	85	0	78	50
Rufous Pomaderris	<i>Pomaderris brunnea</i>	83	0	76	22
Orbost Spiny Crayfish	<i>Euastacus diversus</i>	81	51	48	13
Long-footed Potoroo	<i>Potorous longipes</i>	74	0	57	46
Giant Burrowing Frog	<i>Heleioporus australiacus</i>	69	0	57	42
Glossy Black-Cockatoo	<i>Calyptorhynchus lathami</i>	64	0	61	32
Colquhoun Grevillea	<i>Grevillea celata</i>	54	25	9	1
Blue-tongue Greenhood	<i>Pterostylis oreophila</i>	52	0	44	15
Masked Owl	<i>Tyto novaehollandiae</i>	46	0	47	28
Leafy Nematolepis	<i>Nematolepis frondosa</i>	45	25	23	6
Sooty Owl	<i>Tyto tenebrosa</i>	45	0	52	34
Long-nosed Potoroo	<i>Potorous tridactylus trisulcatus</i>	39	0	38	22
Booroolong Tree Frog	<i>Litoria booroolongensis</i>	38	0	39	16
Martin's Toadlet	<i>Uperoleia martini</i>	34	0	41	21
Alpine Spiny Crayfish	<i>Euastacus crassus</i>	33	11	34	5
Spot-tailed Quoll	<i>Dasyurus maculatus maculatus</i>	32	0	49	34
Southern Greater Glider	<i>Petauroides volans</i>	30	0	47	32
White-footed Dunnart	<i>Sminthopsis leucopus</i>	29	0	41	26
Rough Eyebright	<i>Euphrasia scabra</i>	28	16	25	8
Slender Tree-fern	<i>Cyathea cunninghamii</i>	25	16	3	0

184. Total extent burnt for some species in this table is different from State Government of Victoria, DELWP (August 2020) [Bushfire Emergency Biodiversity Response and Recovery](#) report. Reason of the differences include: 1. Final fire extent layer August 2020, 2. Fire severity impacts, primarily high severity impacts, were assessed using a composite layer, created using published and unpublished available layers (DELWP and VicForests), 3. Changes to FFG List (May 2021), 4. Updated Habitat Distribution Models for some fauna and 5. Victorian Biodiversity Atlas analysis conducted differently.

Common name	Scientific name	Total extent burnt (%)	High-severity impact	Total impacted by 2 or more bushfires since 2000 (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	24	12	4	0
Southern Brown Bandicoot	<i>Isodon obesulus obesulus</i>	23	0	29	15
Powerful Owl	<i>Ninox strenua</i>	23	0	34	19
Smoky Mouse	<i>Pseudomys fumeus</i>	22	0	43	31
Spotted Tree Frog	<i>Litoria spenceri</i>	22	0	53	36
Broad-toothed Rat	<i>Mastacomys fuscus mordicus</i>	21	0	47	31
Dargo Galaxias	<i>Galaxias mungadhan</i>	20	11	58	10
Aniseed Boronia	<i>Boronia galbraithiae</i>	19	4	9	2
Alpine Bog Skink	<i>Pseudemoia cryodroma</i>	17	0	55	44
Swamp Skink	<i>Lissolepis coventryi</i>	16	0	22	9
Drooping Grevillea, Ben Major Grevillea	<i>Grevillea floripendula</i>	3	0	0	0
Brush-tailed Phascogale	<i>Phascogale tapoatafa</i>	2	1	2	1
Glenelg Spiny Freshwater Crayfish	<i>Euastacus bispinosus</i>	2	0	6	0
Concave Pomaderris	<i>Pomaderris subplicata</i>	2	1	1	0
Don's Spider Orchid	<i>Caladenia cremna</i>	2	1	2	0
Regent Honeyeater	<i>Anthochaera phrygia</i>	1	0	7	2
Mount Cole Grevillea	<i>Grevillea montis-cole</i> subsp. <i>montis-cole</i>	1	0	0	0
Maidenhair Spleenwort	<i>Asplenium hookerianum</i>	1	0	34	3
Red-tailed Black-Cockatoo (south-eastern)	<i>Calyptorhynchus banksii</i> <i>graptogyne</i>	1	0	2	0

Source: DELWP 2021

Impact on listed communities

Four listed communities out of nine that meet the RFA definition were impacted by the 2019–20 bushfires. The Warm Temperate Rainforest community suffered the greatest impact, as shown in Table 44. The Alpine Sphagnum Bogs and Associated Fens community has had about one-quarter of its extent impacted by multiple fires since 2000, including the 2019–20 bushfires, and requires management intervention for some regions.

Table 44. Impact of 2019–20 bushfires on Listed Communities across RFA regions in Victoria

Community name	Total extent burnt (%)	High-severity impact	Total impacted by 2 or more bushfires since 2000 (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)
Warm Temperate Rainforest (Far East Gippsland)	96	52	1	0
Warm Temperate Rainforest (East Gippsland Alluvial Terraces)	86	42	9	0
Alpine Sphagnum Bogs and Associated Fens	12	8	24	9
Cool Temperate Rainforest	11	5	1	0

Source: DELWP 2021

6.3.10 Impact on listed species and communities within RFA regions

East Gippsland

There are 34 listed species identified in the East Gippsland RFA region (Table 45). Across all taxon groups, the 2019–20 bushfires heavily impacted those species except for Curve Tail Burrowing Crayfish (*Engaeus curvisuturus*).

Table 45. Listed species impacted by the 2019–20 bushfires in East Gippsland region

Common/scientific name	Burnt area/overall extent in this RFA (%)	Proportion impacted by high-severity bushfire (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)
Amphibians			
Giant Burrowing Frog/ <i>Heleioporus australiacus</i>	78	42	45
Large Brown Tree Frog/ <i>Litoria littlejohni</i>	87	48	50
Martin's Toadlet/ <i>Uperoleia martini</i>	65	34	35
Aquatics			
Alpine Spiny Crayfish/ <i>Euastacus crassus</i>	44	7	4
East Gippsland Galaxias/ <i>Galaxias aequipinnis</i>	100	84	1
Mallacoota Burrowing Crayfish/ <i>Engaeus mallacoota</i>	94	66	0
McDowalls Galaxias/ <i>Galaxias mcdowalli</i>	94	34	14
Orbost Spiny Crayfish/ <i>Euastacus diversus</i>	81	51	13
Roundsnout Galaxias/ <i>Galaxias terenasus</i>	100	85	0
Birds			
Glossy Black-Cockatoo/ <i>Calyptorhynchus lathami</i>	73	34	36
Masked Owl/ <i>Tyto novaehollandiae</i>	82	45	46
Powerful Owl/ <i>Ninox strenua</i>	79	43	45
Sooty Owl/ <i>Tyto tenebricosa</i>	82	45	46
Mammals			
Broad-toothed Rat/ <i>Mastacomys fuscus mordicus</i>	54	30	49
Grey-headed Flying-fox/ <i>Pteropus poliocephalus</i>	68	35	0
Long-footed Potoroo/ <i>Potorous longipes</i>	86	47	48
Long-nosed Potoroo/ <i>Potorous tridactylus trisulcatus</i>	80	44	45
Smoky Mouse/ <i>Pseudomys fumeus</i>	71	40	49
Southern Brown Bandicoot/ <i>Isodon obesulus obesulus</i>	81	45	45
Southern Greater Glider/ <i>Petauroides volans</i>	75	41	46
Spot-tailed Quoll/ <i>Dasyurus maculatus maculatus</i>	69	38	44
White-footed Dunnart/ <i>Sminthopsis leucopus</i>	76	42	44
Plants			
Betka Bottlebrush/ <i>Callistemon kenmorisonii</i>	91	66	0
Blue-tongue Greenhood/ <i>Pterostylis oreophila</i>	78	36	21
Colquhoun Grevillea/ <i>Grevillea celata</i>	53	27	0
Leafy Nematolepis/ <i>Nematolepis frondosa</i>	27	15	0

Common/scientific name	Burnt area/overall extent in this RFA (%)	Proportion impacted by high-severity bushfire (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)
Rough Eyebright/ <i>Euphrasia scabra</i>	40	23	8
Rufous Pomaderris/ <i>Pomaderris brunnea</i>	83	39	22
Slender Tree-fern/ <i>Cyathea cunninghamii</i>	95	62	2
Reptiles			
Alpine Bog Skink/ <i>Pseudemoia cryodroma</i>	13	3	32
Diamond Python/ <i>Morelia spilota spilota</i>	85	48	50
Eastern She-oak Skink/ <i>Cyclodomorphus michaeli</i>	87	51	0
Swamp Skink/ <i>Lissolepis coventryi</i>	71	36	38

Most of the distribution of Warm Temperate Rainforest (Far East Gippsland and East Gippsland Alluvial Terraces) within the East Gippsland RFA region was impacted by fire and about half of the extent was burnt by high-severity fires. Cool Temperate Rainforest and Alpine Sphagnum Bogs and Associated Fens each had approximately a third of their distribution within the fire extent (Table 46).

Table 46. Listed communities impacted by the 2019–20 bushfires in East Gippsland RFA region

Common/scientific name	Burnt area/overall extent in this RFA (%)	Proportion impacted by high-severity bushfire (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)
Alpine Sphagnum Bogs and Associated Fens	29	14	13
Cool Temperate Rainforest	39	17	0
Warm Temperate Rainforest (East Gippsland Alluvial Terraces)	89	43	0
Warm Temperate Rainforest (Far East Gippsland)	96	52	0



Photo credit: Regenerating spotted gum and stringybark Mottle Range, March 22 © T. Bartlett

Gippsland

There are 36 listed species identified in Gippsland RFA region. Of these, 22 species were impacted by the 2019–20 bushfires and four species had approximately half of their habitat in this RFA region burnt (Table 47). It is important to note that in the Gippsland RFA region there are seven listed species that have had 30–50 per cent of their habitat impacted by multiple high-severity fires since 2000. The majority of the listed species impacted by fire have habitat outside of this region. Around a third of their habitat is within this region.

Table 47. Listed species impacted by the 2019–20 bushfires in Gippsland RFA region

Common/scientific name	Burnt area/overall extent in this RFA (%)	Proportion impacted by high-severity bushfire (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)
Amphibians			
Giant Burrowing Frog/ <i>Heleioporus australiacus</i>	44	21	35
Aquatics			
Dargo Galaxias/ <i>Galaxias mungadhan</i>	20	11	10
Birds			
Glossy Black-Cockatoo/ <i>Calyptorhynchus lathami</i>	22	10	10
Masked Owl/ <i>Tyto novaehollandiae</i>	20	9	16
Powerful Owl/ <i>Ninox strenua</i>	19	9	20
Sooty Owl/ <i>Tyto tenebricosa</i>	42	20	36
Mammals			
Broad-toothed Rat/ <i>Mastacomys fuscus mordicus</i>	24	15	35
Grey-headed Flying-fox/ <i>Pteropus poliocephalus</i>	8	4	1
Long-nosed Potoroo/ <i>Potorous tridactylus trisulcatus</i>	10	4	6
Smoky Mouse/ <i>Pseudomys fumeus</i>	23	14	43
Southern Brown Bandicoot/ <i>Isodon obesulus obesulus</i>	6	3	9
Southern Greater Glider/ <i>Petauroides volans</i>	22	12	34
Spot-Tailed Quoll/ <i>Dasyurus maculatus maculatus</i>	24	13	39
White-footed Dunnart/ <i>Sminthopsis leucopus</i>	17	8	24
Plants			
Aniseed Boronia/ <i>Boronia galbraithiae</i>	19	4	2
Blue-tongue Greenhood/ <i>Pterostylis oreophila</i>	36	23	11
Colquhoun Grevillea/ <i>Grevillea celata</i>	57	21	3
Leafy Nematolepis/ <i>Nematolepis frondosa</i>	47	25	7
Rough Eyebright/ <i>Euphrasia scabra</i>	26	13	6
Reptiles			
Alpine Bog Skink/ <i>Pseudemoia cryodroma</i>	26	19	42
Swamp Skink/ <i>Lissolepis coventryi</i>	3	1	3

Source: DELWP 2021

Two listed communities out of four were impacted by the 2019–20 bushfires (Table 48). The Alpine Sphagnum Bogs and Associated Fens community had around 10 per cent of its extent burnt by high-severity fire, and the same proportion has also been impacted by multiple high-severity fires in this region. There was minimal impact on the Cool Temperate Rainforest community.

Table 48 Listed communities impacted by the 2019–20 bushfires in Gippsland RFA region

Common/scientific name	Burnt area/overall extent in this RFA (%)	Proportion impacted by high-severity bushfire (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)
Alpine Sphagnum Bogs and Associated Fens	17	11	11
Cool Temperate Rainforest	3	1	0

Source: DELWP 2021

North East

There are 24 listed species identified in the North East RFA region. Of these, 16 species were impacted by the 2019–20 bushfires. Blue-tongue Greenhood suffered the greatest impact, by both extent and severity. More than half of its extent was (58 per cent) burnt by high-severity fire (Table 49). Since 2000, multiple high-severity fires have impacted around a third of the habitat of eight species in this RFA region. These are Spotted Tree Frog, Broad-toothed Rat, Long-footed Potoroo, Smoky Mouse, Southern Greater Glider, White-footed Dunnart, Blue-tongue Greenhood and Alpine Bog Skink.

Table 49. Listed species impacted by the 2019–20 bushfires in North East RFA region

Common/scientific name	Burnt area/overall extent in this RFA (%)	Proportion impacted by high-severity bushfire (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)
Amphibians			
Booroolong Tree Frog/ <i>Litoria booroolongensis</i>	38	16	16
Spotted Tree Frog/ <i>Litoria spenceri</i>	26	15	36
Birds			
Masked Owl/ <i>Tyto novaehollandiae</i>	6	6	6
Powerful Owl/ <i>Ninox strenua</i>	11	6	18
Regent Honeyeater/ <i>Anthochaera phrygia</i>	2	1	3
Sooty Owl/ <i>Tyto tenebricosa</i>	8	3	19
Mammals			
Broad-toothed Rat/ <i>Mastacomys fuscus mordicus</i>	26	16	37
Brush-tailed Phascogale/ <i>Phascogale tapoatafa</i>	6	3	2
Long-footed Potoroo/ <i>Potorous longipes</i>	39	17	38
Smoky Mouse/ <i>Pseudomys fumeus</i>	29	16	35
Southern Greater Glider/ <i>Petauroides volans</i>	23	13	31
White-footed Dunnart/ <i>Sminthopsis leucopus</i>	1	0	35
Plants			
Blue-tongue Greenhood/ <i>Pterostylis oreophila</i>	79	58	33
Concave Pomaderris/ <i>Pomaderris subplicata</i>	2	1	0
Maidenhair Spleenwort/ <i>Asplenium hookerianum</i>	5	3	4
Whitfield Spider-orchid/ <i>Caladenia cremna</i>	2	1	0
Reptiles			
Alpine Bog Skink/ <i>Pseudemoia cryodroma</i>	10	6	50

Source: DELWP 2021

There is only one listed community in this RFA region. Less than 10 per cent of the Alpine Sphagnum Bogs and Associated Fens community was burnt by the fires, and 10 per cent has been impacted by multiple high-severity fires since 2000 (Table 50).

Table 50. Listed community impacted by the 2019–20 bushfires in North East RFA region

Common/scientific name	Burnt area/overall extent in this RFA (%)	Proportion impacted by high-severity bushfire (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)
Alpine Sphagnum Bogs and Associated Fens	8	5	10

West Victoria

The West Victoria RFA region experienced the least impact on listed species and communities. Among 29 listed species identified in this region, 10 species were impacted by the 2019–20 bushfires. However, the fires impacted less than 2 per cent of their habitat and there was no impact from high-severity fire (Table 51). Listed communities in the West Victoria RFA region had a similar pattern: one of the two listed communities was exposed to fire but the exposure was limited (0.1 per cent of its extent burnt).

Table 51. Listed species and communities impacted by the 2019–20 bushfires in West Victoria RFA region

Common/scientific name	Burnt area/overall extent in this RFA (%)	Total impacted by 2 or more high-severity bushfires since 2000 (%)
Aquatics		
Glenelg Spiny Freshwater Crayfish/ <i>Euastacus bispinosus</i>	2	0
Birds		
Masked Owl/ <i>Tyto novaehollandiae</i>	1	0
Powerful Owl/ <i>Ninox strenua</i>	1	0
Red-tailed Black-Cockatoo (south-eastern)/ <i>Calyptorhynchus banksii graptogyne</i>	1	0
Mammals		
Grey-headed Flying-fox/ <i>Pteropus poliocephalus</i>	1	0
Long-nosed Potoroo/ <i>Potorous tridactylus trisulcatus</i>	1	0
Southern Brown Bandicoot/ <i>Isodon obesulus obesulus</i>	1	0
Plants		
Ben Major Grevillea/ <i>Grevillea floripendula</i>	2	0
Mount Cole Grevillea/ <i>Grevillea montis-cole subsp. montis-cole</i>	1	0
Reptiles		
Swamp Skink/ <i>Lissolepis coventryi</i>	2	0
Community		
Western Basalt Plains (River Red Gum) Grassy Woodland (55-04)	0.1	0.0

Source: DELWP 2021

6.3.11 Panel analysis of issues raised

Knowledge gaps in bushfire impact assessment

To assess bushfire impact on the FFG Act listed species, one of the main data types to represent the distribution of species' habitat spatially is Habitat Distribution Model (HDM) which is embedded in its Strategic Management Prospects (SMP) program. HDM predicts where suitable habitat may exist for a species, based in part on verified observations of the species in their natural environments.

The models are mathematical relationships between confirmed species locations and sets of environmental predictors that provide detailed information on climate, terrain, local productivity, vegetation structure etc. Once the model has been formed and evaluated, it can then be expressed as a mapped 'habitat suitability' index across Victoria, and beyond'.¹⁸⁵

In the Panel's preparation for bushfire impact assessment of FFG Act listed species, it found that DELWP used SMP for evaluating bushfire impact on 1,421 species out of 1,994, which is around 71 per cent of all species on the FFG Act Threatened List (Table 52).

Table 52 shows that around a fifth of all FFG Threatened List species (431 out of 1,994) had a bushfire impact assessment (by fire extent and high fire severity) using existing post-1980 VBA records. This is because there is insufficient information on species records in the VBA to model the likelihood that the species may occur at particular locations. Therefore, DELWP used existing records and created a buffer for each recorded point with fire extent and severity GIS layers. This means that if those records are biased, outdated or inaccurate, the impact assessment could be an error. Review of these species needs to be undertaken to identify critical species that require further improvement in their records for use in various conservation planning activities. A limitation with the SMP inputs is that the tool is yet to determine modelled habitat for freshwater and marine species. Table 52 lists 18 species for which a source of species distribution is AquaWatch, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) national water quality monitoring system.¹⁸⁶

Table 52. Source of bushfire impact (by fire extent and high fire severity) assessment for FFG Act listed species

Source of information	Number of FFG species
AQUA_WATCH	18
Data deficient	51
Important populations	73
SMP	1,421
VBA	431
Total	1,994

Source: DELWP 2021

185. DELWP (23 June 2020) [Habitat distribution models](#), DELWP, accessed 2 December 2021.

186. CSIRO (n.d.) [Aquawatch Australia](#), CSIRO, accessed 2 December 2021.

The Panel found that for 51 of the 1,994 species listed under the *Flora and Fauna Guarantee Act 1988* (Vic), including 21 species listed as critically endangered, there is no information on bushfire impacts in DELWP's Strategic Management Prospects (SMP) decision support tool, the Victorian Biodiversity Atlas or AquaWatch), which makes it impossible to develop conservation actions to mitigate risks or enhance the recovery of those species that may have been impacted by the 2019–20 bushfires. One thing to note is that 16 out of 51 species are listed as 'Extinct', therefore effectively 35 species can be categorised as 'data deficient'. The Panel acknowledges that DELWP's work under the 2019 Biodiversity Knowledge Framework will assist with addressing these knowledge gaps. The Panel's analysis suggests that the distribution of seven of these critically endangered species potentially occur within the extent of the 2019–20 bushfires and would therefore benefit from early effort to update distribution information and assess any impacts from these bushfires. The species and conservation status of the 35 identified species are shown in Table 53.

Table 53. FFG Threatened List species, with conservation status, that were identified as having no bushfire impact assessment

Common name	Scientific name	Conservation status
Smooth Nealie	<i>Acacia cineramis</i>	Critically Endangered
Common Death Adder	<i>Acanthopis antarcticus</i>	Critically Endangered
Wallagaraugh Star-hair	<i>Astrotricha</i> sp. 5	Critically Endangered
Small Hook-sedge	<i>Carex austrosulcata</i>	Critically Endangered
Olive Featherwort	<i>Chiastocaulon biserialis</i>	Critically Endangered
Shining Coprosma x Snow Coprosma hybrid	<i>Coprosma</i> X <i>tadgellii</i>	Critically Endangered
Western Cryptandra	<i>Cryptandra myriantha</i>	Critically Endangered
Kallista Flightless Stonefly	<i>Leptoperla kallistae</i>	Critically Endangered
Rounded Rustwort	<i>Marsupella sparsifolia</i>	Critically Endangered
Bristly Pouchwort	<i>Marsupidium setulosum</i>	Critically Endangered
Lobed Veilwort	<i>Metzgeria saccata</i>	Critically Endangered
Michelea Species 5256	<i>Michelea microphylla</i>	Critically Endangered
Limestone Bristle-moss	<i>Orthotrichum cupulatum</i> var. <i>cupulatum</i>	Critically Endangered
Buloke Podolepis	<i>Podolepis laevigata</i>	Critically Endangered
Stalked Hydroid species	<i>Ralpharia coccinea</i>	Critically Endangered
Hoary Sun-orchid	<i>Thelymitra orientalis</i>	Critically Endangered
Variable Gondwanawort	<i>Triandrophyllum subtrifidum</i>	Critically Endangered
Woodland Woollywort	<i>Trichocolea rigida</i>	Critically Endangered
Threadwort	<i>Tricholepidozia pulcherrima</i> var. <i>mooreana</i>	Critically Endangered
Black-beard Lichen	<i>Usnea acromelana</i>	Critically Endangered
Mt Donna Buang Wingless Stonefly	<i>Riekoperla darlingtoni</i>	Critically Endangered
Wingan Star-hair	<i>Astrotricha</i> sp. 3	Endangered
Small Cowlwort	<i>Colura pulcherrima</i> var. <i>bartlettii</i>	Endangered
Torrumbarry Red-gum	<i>Eucalyptus</i> aff. <i>camaldulensis</i> (Torrumbarry)	Endangered
Mallacoota Gum	<i>Eucalyptus cypelloarpa</i> X <i>globulus</i> subsp. <i>pseudoglobulus</i>	Endangered
Furry Pincushion-moss	<i>Lepyrodon pseudolagurus</i>	Endangered
Thyme Moss	<i>Plagiomnium novae-zealandiae</i>	Endangered

Common name	Scientific name	Conservation status
Tussock Skink	<i>Pseudemoia pagenstecheri</i> (High Country)	Endangered
Granite x Dwarf Buttercup hybrid	<i>Ranunculus X ligulatus</i>	Endangered
Snowplain Fireweed	<i>Senecio niveoplanus</i>	Endangered
Eastern Quoll	<i>Dasyurus viverrinus</i>	Endangered (extinct in Victoria)
Matchstick Grasshopper	<i>Keyacris scurra</i>	Threatened
Caddisfly	<i>Ecnomus neboissi</i>	Vulnerable
Jewel Beetle	<i>Temognatha tricolorata</i>	Vulnerable
Agassiz's Glassfish	<i>Ambassis agassizii</i>	Extinct
Freshwater isopod	<i>Crenioicus mixtus</i>	Extinct
Stiff Flat-sedge	<i>Cyperus vaginatus</i>	Extinct
Swamp Bent-grass	<i>Deyeuxia mesathera</i>	Extinct
Gunn's Forest-gentian	<i>Gentianella gunniana</i>	Extinct
Elegant Ground-fern	<i>Hypolepis elegans subsp. elegans</i>	Extinct
Golden Bandicoot (mainland)	<i>Isodon auratus</i>	Extinct
Bridled Nailtail Wallaby	<i>Onychogalea fraenata</i>	Extinct
Small-scaled Snake	<i>Oxyuranus microlepidotus</i>	Extinct
South-eastern Striped Bandicoot	<i>Perameles notina</i>	Extinct
Red-tailed Phascogale	<i>Phascogale calura</i>	Extinct
Cottony Podolepis	<i>Podolepis arachnoidea</i>	Extinct
Long-eared Mouse	<i>Pseudomys auritus</i>	Extinct
Bolam's Mouse	<i>Pseudomys bolami</i>	Extinct
Desert Mouse	<i>Pseudomys desertor</i>	Extinct
Chirruping Wedgebill	<i>Psophodes cristatus</i>	Extinct
Scalloped Hammerhead	<i>Sphyrna lewini</i>	Conservation Dependent

Source: DELWP 2021

The Panel identified that seven species out of the 21 species that are listed as Critically Endangered under the FFG Act are potentially impacted by the 2019–20 bushfires (Table 54). However, this is based on the limited information the Panel could draw from the Atlas of Living Australia and Flora of Victoria databases. The Parties should undertake a further survey for these species to update their distribution and conduct impact assessment. The seven species are:

- Wallagaraugh Star-hair (*Astrotricha* sp. 5)
- Small Hook-sedge (*Carex austrosulcata*)
- Shining Coprosma x Snow Coprosma hybrid (*Coprosma X tadgellii*)
- Lobed Veilwort (*Metzgeria saccata*)
- Limestone Bristle-moss (*Orthotrichum cupulatum* var. *cupulatum*)
- Woodland Woollywort (*Trichocolea rigida*)
- Black-beard Lichen (*Usnea acromelana*).

Table 54. Species listed as Critically Endangered that were found to have no records of bushfire impact assessment in DELWP's system

Common name	Scientific name	Conservation status
Wallagaraugh Star-hair	<i>Astrotricha</i> sp. 5	Critically Endangered
Small Hook-sedge	<i>Carex austrosulcata</i>	Critically Endangered
Shining Coprosma x Snow Coprosma hybrid	<i>Coprosma</i> X <i>tadgellii</i>	Critically Endangered
Lobed Veilwort	<i>Metzgeria saccata</i>	Critically Endangered
Limestone Bristle-moss	<i>Orthotrichum cupulatum</i> var. <i>cupulatum</i>	Critically Endangered
Woodland Woollywort	<i>Trichocolea rigida</i>	Critically Endangered
Black-beard Lichen	<i>Usnea acromelana</i>	Critically Endangered

Source: DELWP 2021

One issue that is ubiquitous in most habitat models is prediction errors and uncertainties.¹⁸⁷ Habitat models typically rely on species records and occurrences. In Victoria, DELWP has the responsibility to maintain and curate a database of site records for species: the Victorian Biodiversity Atlas (VBA). Although this database provides comprehensive information and contains many records for numerous species, the information is provided in point form. This format does not provide an adequate view of distribution for management purposes.¹⁸⁸ To overcome this, using the point form of records with GIS data layers using statistical or machine learning algorithms, DELWP built HDM to predict the likelihood that the species may occur at particular locations across large landscapes. The Panel found that the extent of modelled habitat for many species is extremely large – sometimes the size of the whole East Gippsland RFA region. One example is Spotted Gum (*Corymbia maculata*), where DELWP's database indicates a distribution of 3,090 ha that is widely distributed across all RFA regions. However, there are references that show 120 ha of Mottle Range in East Gippsland RFA is the only known natural occurrence of spotted gum within Victoria^{189,190} This makes it very difficult to understand the true impact of the 2019–20 bushfires on actual habitat of the species. In addition, DELWP has information on 73 species from the Important Populations database that includes spatial data as to where important species locations exist, but it advised the Panel not to use the information for bushfire impact assessment as it is not published data, currently in development stage and not fit for purpose. This large extent of modelled habitat may stem from insufficient observation data from the VBA, including true absence records. In addition, the VAGO's audit on how well DELWP is acquitting its responsibilities to better protect threatened species¹⁹¹ found that 'much of the data used in the models is old and likely outdated, and has some critical gaps. This raises questions about the reliability of the modelled outputs and the decisions they support'. The report also acknowledged that there is a funding for updating HDMs that is currently in progress. It is also understandable that it is not possible to fill all knowledge gaps in habitat distribution models, but a potential approach is to target those species determined to be critical.

187. Barry S and Elith J (2006) 'Error and uncertainty in habitat models', Journal of Applied Ecology, 43(3):413–423.

188. Liu C, White M, Newell G and Griffioen P (12–16 December 2011), 'Species distribution modelling for conservation planning in Victoria of Australia' [conference presentation], 19th International Congress on Modelling and Simulation, Perth, Western Australia, accessed 2 December 2021.

189. Land Conservation Council (1986) *East Gippsland Area Review: Final Recommendations*, Land Conservation Council, accessed 1 March 2022.

190. Antos M (n.d.) *The spotted gums of Mottle Range – before and after the fires*, Parks Victoria, accessed 2 December 2021.

191. Victorian Auditor-General's Office (2021) *Protecting Victoria's biodiversity: independent assurance report to parliament, 2021–22:07*, accessed 1 March 2022.

To address these knowledge gaps, DELWP led the development in 2019 of the Biodiversity Knowledge Framework, which is to identify knowledge gaps for better investment in research, monitoring and data collection. DELWP has conducted two pilot projects in conjunction with the University of Melbourne to test the Environmental Evidence and Policy Analysis Centre:

DELWP intends this Centre, once running, to be responsible for improving the collection, collation and analysis of biodiversity data, including threatened species, and for developing evidence-based policy. DELWP has a joint agreement with the University of Melbourne to develop options for the operation of the centre and is finalising a request for quotes on options to finance the centre.¹⁹²

The VAGO stated that this is a significant step forward in filling critical gaps in data and knowledge for SMP inputs. DELWP stated that:

1. DELWP is looking to establish a collaborative Hub for Environmental Evidence and Policy Analysis (EEPA)
2. The intent is that EEPA is a collaborative, end-user-driven initiative that provides rigorous analysis of existing data, information, and knowledge to support environmental policy development, policy evaluation, and management decision-making
3. DELWP has recently completed a feasibility assessment into possible structural design options for an EEPA collaboration and investigated different financial and governance, design, and operational models.

Response to the 2019–20 bushfires

DELWP has completed its first tranche of risk assessment and development of action plans and is currently delivering those action plans for 79 species and communities, which were selected from around 687 formally FFG listed species prior to the number of formally listed species increasing to 1,994 as well as EPBC Act listed species. The first tranche covered species and communities from both Acts that were listed at the signing of the RFA in March 2020. The TSCRA identifies the potential for ‘targeted responses’ such as the protection of identified habitat or specific features through regulatory prohibitions. Three main options were considered for introducing enforceable interim protections:

- Application of the precautionary principle with respect to timber harvesting operations for various species
- Targeted zoning actions, including minor amendments to the Forest Management Zoning Scheme under s 22 of the *Forests Act 1958* (Vic) (e.g. creation of a Special Management Zone with management conditions), or amendments to fire management zoning under the Code of Practice for Bushfire Management on Public Land 2012
- Critical Habitat Determination under s 20 of the FFG Act, whereby the Secretary determines an area of critical habitat (ss 20A-20F and ss 26-42). Enforcement of protection of critical habitat is provided by a Habitat Conservation Order, which is an additional process.

¹⁹². Ibid.

The Panel was unable to assess the overall outcome of the TSCRA action plans, including interim protections, as relevant actions to mitigate risks for species and communities were in progress during the Major Event Review process. Noting that DELWP will assess the effectiveness of the interim protections and management actions considered that the current plans and processes demonstrated in DELWP's risk were constructive and appropriate. Additional impact assessment of cumulative risk to threatened species and communities will be undertaken to determine any additional necessary permanent protections that may be required by April 2022. The Panel considers that this will make the next risk assessments (Tranche 1.5, Tranche 2 and beyond) more comprehensive in reducing identified risks of serious or irreversible harm to listed species and communities.

Monitoring of specific species and communities where the precautionary principle has been applied is necessary, such as for Giant Burrowing Frog, Greater Glider, Glossy Black-Cockatoo, Leadbeater's Possum and Diamond Python. VicForests advised the Panel that post-harvest threatened species surveys are undertaken up to around five years. These survey results should be analysed to provide scientific evidence that the current precautionary principle approach in relation to timber harvesting does protect the threatened species or communities that were recorded before harvesting. VicForests has been changing its survey technique for detecting species after the application of variable retention systems.¹⁹³ Most surveys are undertaken by people: one person scanning with a thermal camera and a second person with a spotlight. Thermal detection method increases the likelihood of animals being detected and the operator then directs the second person where to photograph.

The Panel was advised that there is a growing demand by the public for more frequent use and consideration of legislative tools such as CHDs and HCOs to halt the decline of threatened species. One benefit of the CHD and HCO tools under the FFG Act is that they can provide legal protections against critical threats, such as those arising from bushfires, to threatened species habitats on private land for a maximum of 10 years, in an orderly way with legal force. The Panel understands that a CHD has been made only once under the FFG Act by the Victorian Government in three decades and it was withdrawn before it was implemented in 1996. The VAGO also indicated that DELWP continues to underuse legislative tools under the FFG Act. It found that 'flora and fauna management plans' and 'habitat conservation orders' have never been used.¹⁹⁴ One aspect of increasing the use of CHDs and HCOs that could be a challenge is the implementation cost. Using SMP, DELWP could create a transparent way to approach and release this in their response.

DELWP advised the Panel that CHD was not considered in the Tranche 1 Risk Assessment because it was not feasible due to the process and timelines involved, but that it will be considered for future use where appropriate.¹⁹⁵ DELWP has been progressing towards completion of the Tranche 2 Risk Assessment and development of action plans, including for the approximately 1,300 species recently added to the FFG Threatened List. DELWP should conduct an assessment of necessity in introducing this legal conservation tool where practically possible and publicly release the reasons for its conclusion regarding listed species and communities. DELWP is currently developing guidelines to implement this.

193. The system is a silvicultural system that focuses on retaining key elements of stand structure at the time of logging and is increasingly being used worldwide.

194. Victorian Auditor-General's Office (2021) [Protecting Victoria's biodiversity: independent assurance report to parliament, 2021-22:07](#), accessed 1 March 2022.

195. DELWP (April 2021) *Threatened Species and Communities Risk Assessment: Interim Protections and Management Actions*, DELWP, accessed 6 February 2022.

6.3.12 Findings

The Panel's analysis found that 15 species out of 70 listed species identified through Threatened Species and Communities Risk Assessment had more than 50 per cent of their extent burnt across RFA regions and the following listed species were exposed to high-severity fires across more than 50 per cent of their overall extent: Roundsnout Galaxias, East Gippsland Galaxias, Betka Bottlebrush, Mallacoota Burrowing Crayfish, Orbost Spiny Crayfish and Eastern She-oak Skink. Another two listed species have had at least 50 per cent of their habitat impacted by multiple high-severity fires since 2000: Diamond Python and Large Brown Tree Frog.

Among the nine listed communities, warm temperate rainforest community had the greatest impact by extent and severity. Although this community was not burnt by high severity multiple times over the last two decades, proportion of extent burnt by high severity fires as a result of 2019–20 bushfire is alarming. This high severity fire impact will elevate a chance of seedling recruitment by eucalypts and has the potential to drive long-lasting changes in overstorey composition and structure.

The Panel has identified that for 35 of the 1,994 FFG Act listed species, including 21 species listed as critically endangered, there is no data available within the biodiversity databases that would enable assessments to be undertaken to identify potential impacts associated with the 2019–20 bushfires. The Panel's analysis suggests that the distribution of seven of these critically endangered species potentially occur within the extent of the 2019–20 bushfires and would therefore benefit from early effort to update distribution information and assess any impacts from these bushfires.

The Panel commends the approach used by Victoria involving the Threatened Species and Communities Risk Assessment and its associated interim protections and management actions, as well as the Bushfire Biodiversity Responses and Recovery program as being effective mechanisms to assess and address the impacts from the bushfires on listed species and communities.

The Panel found that application of the precautionary principle and tailored adaptive responses, for the 23 species and communities that the Tranche 1 Risk Assessment identified as having high or significant risks from forestry operations, is a sound approach to mitigate the risk of serious or irreversible damage from timber harvesting until April 2022. Currently, it appears that that no long-term plan exists to systematically monitor threatened species populations in the vicinity of completed timber harvesting operations to test the effectiveness of the precautionary principle protection measures. The Panel considers that it will be important to include an assessment of outcomes of the action plans for the 32 prioritised species and communities to enable an evidence-based approach when DELWP develops rationales for introducing permanent protections for listed species and communities in April 2022.

The Panel considers that some important protection tools, such as Critical Habitat Determination and Habitat Conservation Order provided for under the *Flora and Fauna Guarantee Act 1988* (Vic) could be considered in some situations, such as for private land, to provide better protection for listed species and communities following major disturbances, such as severe bushfires.

6.3.13 Recommendations

The Panel recommends:

Recommendation 5

That the Parties address knowledge and data gaps relating to threatened species listed under either the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) or the *Flora and Fauna Guarantee Act 1988* (Vic) (FFG Act) for species that are identified as 'data deficient'. Effort should be focused on (a) species known to exist within fire-affected areas and (b) the 21 species that are listed as Critically Endangered in the FFG Act.

Recommendation 6

That the Victorian Government produce an outcomes report to review the effectiveness of the interim protection measures and the zoning system changes for listed species and communities.

Recommendation 7

That the Victorian Government prioritise completion of outstanding threatened species and communities risk assessments for the five Regional Forest Agreement regions and activate existing legislative tools (e.g. Critical Habitat Determinations) under the *Flora and Fauna Guarantee Act 1988* (Vic), and that the Victorian Government make public the rationale for choosing specific legislative tools to protect listed species and communities.

6.4 Old growth forests

6.4.1 Background

In the Regional Forest Agreements (RFAs) (clauses 52A and 52B in East Gippsland RFA, for example), old growth forest is identified for its 'environment and heritage values'. It is one of the criteria in the CAR reserve system (clause C, Major Event Review Scope).

The Comprehensive Regional Assessments (CRA), undertaken between 1996 and 1999, used a number of metrics including growth stage, disturbance and species as the primary assessment metrics to identify old growth forests.¹⁹⁶ At the commencement of RFAs, an old growth spatial data layer (OG100) was created between 1999 and 2003 as part of the Statewide Forest Resource Inventory (SFRI) process using the definition specified by Woodgate et al. (1994).¹⁹⁷ This data was prepared using aerial photographs for all forested public land in Victoria, and then these photographs were interpreted by trained GIS experts and overlaid with disturbance history data.

More recently, modelled old growth (MOG) was produced in 2018 using ecological vegetation class (EVC) and disturbance history (fire and timber harvesting). This spatial dataset is not reliable at scales less than 1:100,000 and limited field verification has been undertaken.¹⁹⁸ This modelled extent is a subtractive process using historical disturbances and does not inform recruitment of new old growth areas.

196. Woodgate PW, Peel WD, Ritman KT et al (1994) [A study of the old growth forests of east Gippsland](#), Department of Conservation and Natural Resources, accessed 2 December 2021.

197. Ibid.

198. Commonwealth of Australia and Victorian Government, [Victoria's Regional Forest Agreements: assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements](#), 2019. Accessed 2 December 2022.

Under the RFAs, old growth forests were recognised as one of the key environment and heritage values and in accordance with the JANIS criteria at least 60 per cent of existing old growth forests were to be protected within the CAR reserve system in each RFA region. Modelled data suggests that the area of old growth forest has reduced by more than half since 2000, predominantly as a result of the major bushfires in 2003, 2007, 2009 and 2013, with the largest losses occurring in the Gippsland and East Gippsland RFA regions.¹⁹⁹

6.4.2 Key information and issues raised during consultation

Protection of old growth forests is a vital issue. When old growth forests are burnt they are no longer considered to be old growth. This leaves the old growth forest estate vulnerable to exploitative timber harvesting following fire, even if the values on the ground remain and fire severity was less than modelling showed. (Victorian National Parks Association submission).

There is no mention of old growth forests in the summary report. Proper protections must be put in place to protect the approximately 90,000 ha of mapped old growth forest, understanding that most old growth forests are mixed species forests which will recover from the bushfires if given the chance. (Goongerah Environment Centre submission).

The rationale for delisting areas as Modelled Old Growth Forest needs to be made more explicit, as they are currently not transparent. (Mary Connor submission).

6.4.3 Panel analysis

Early in the Major Event Review process, the Panel identified that the impact of the fires on old growth forests was an issue it wanted to examine in detail and was cognisant of the fact that the Summary Report did not provide any information on this matter. The Panel requested a briefing on any work being undertaken to revise the modelled extent of Old Growth to take account of the impacts of the 2019–20 bushfires, including any preliminary results, such as anticipated impacts within and outside the CAR reserves, and the timelines for the completion of such work. In June 2021, DELWP briefed the Panel on the history of old growth modelling and advised the Panel that the analysis of the impacts of the 2019/20 bushfires on old growth will commence shortly as part of the CAR Reserve review, for delivery in 2021/22. The Panel acknowledges that DELWP intends to update modelled old growth datasets, and that is undertaking work to map high conservation forest values from updated LiDAR data, as part of an ongoing project with the University of Melbourne. This means that there is still an uncertainty when DELWP will conduct a full analysis of the current status of old growth forest following the 2019–20 bushfires.

Because of the importance of this issue to many stakeholders, the Panel has undertaken an independent surrogate analysis of potential impact of the 2019–20 bushfires on old growth forests using the publicly available modelled extent and fire severity data sets. The Panel acknowledges that this surrogate analysis is limited by uncertainty in the data informing the analysis, which carries known limitations as modelled-only data (more details are provided on the next page).

199. Commonwealth of Australia and Victorian Government (2019) [Victoria's Regional Forest Agreements: Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements](#), Commonwealth of Australia and Victorian Government, p 158, accessed 2 December 2021.

The Panel's analysis used the following spatial layers:

- Old growth forest:²⁰⁰ The MOG spatial dataset shows the modelled extent of the old growth forest in Victoria. This spatial layer is based on the published MOG2009 layer, with a reduced extent based on disturbances from fire and timber harvesting up to July 2018.
- Fire severity:²⁰¹ This layer is the same layer used for assessing the impact of 2019–20 bushfires on National Heritage places under the section 6.2.
- RFA boundaries:²⁰² This layer is the same layer used for assessing the impact of 2019–20 bushfires on National Heritage places under the section 6.2.
- Ecological vegetation classes:²⁰³ This is a derived dataset that delineates the current bioregional conservation status of EVCs within the modelled 1750 EVC dataset. The dataset is derived from a combination of both Victorian bioregions (VBIOREG100) and the modelled 1750 EVC dataset (NV1750_EVC), with an assigned conservation status on the basis of unique bioregion EVC units. The dataset underpins the implementation of Victoria's Native Vegetation Management Framework, and the preparation of regional vegetation plans, in addition to other biodiversity planning. The dataset requires upgrading when either of the two input datasets change.
- CAR reserve for the RFAs:²⁰⁴ This dataset is derived from the PLM25 and FMZ100 datasets that were extracted in December 2019 and represents the approximate location and extent of areas reserved in dedicated and informal reserves, current as at 31 March 2020. The dedicated reserve reflects the spatial extent of parks and reserves from PLM25. The informal reserve reflects the spatial extent of Special Protection Zone (SPZ) from the FMZ100 layer. Values protected by prescription, which form part of the informal reserve component of the CAR reserve, are not presented in the dataset as these values are subject to field verification.
- Timber Release Plan:²⁰⁵ This dataset is VicForests's changed Timber Release Plan (TRP), which was approved by the VicForests Board and gazetted on 15 September 2021. The schedule of coupes is used in conjunction with the spatial data to comprise the approved TRP. The TRP is a five-year rolling plan that identifies areas (coupes) that may be harvested for timber over the next two to five years. This is reviewed and amended on an annual basis unless an exceptional circumstance, such as a major bushfire, triggers an earlier review.

This analysis has several caveats:

This surrogate analysis is a modelled estimation of where old growth extent potentially is. It has not been based on a field verification process. The RFAs use the definition of old growth in the Code of Practice for Timber Production 2014 as it appears in the Management Standards and Procedures for timber harvesting in Victoria's State Forests.

The bushfire severity dataset has six classes. Each class has a different level of accuracy, from 61 per cent to 97 per cent. As this analysis is to look at areas where there is severe fire impact, the accuracy issue may be minimal. This is because Class 5 High Canopy Scorch and Class 6 Canopy Burnt have over 91 per cent accuracy.

200. DataVic (3 February 2022) [Modelled old growth forest](#) [data set], DataVic, accessed 3 February 2022.

201. DELWP (27 November 2021) [Bushfire Response and Recovery - Spatial Data Coordination](#), DELWP, accessed 3 February 2022.

202. DataVic (3 February 2022) [Regional Forest Agreement boundaries](#) [data set], DataVic, accessed 3 February 2022.

203. DataVic (3 February 2022) [Native vegetation - modelled 1750 ecological vegetation classes \(with bioregional conservation status\)](#) [data set], DataVic, accessed 3 February 2022.

204. DataVic (25 January 2022) [Comprehensive, Adequate and Representative \(CAR\) Reserve for the Regional Forest Agreements](#) [data set], DataVic, accessed 25 January 2022.

205. VicForests (25 January 2022) [Timber Release Plan](#) Spatial file [Data set], VicForests, accessed 25 January 2022.

This analysis only includes areas that are covered by the fire severity database. It does not cover 100 per cent of the areas impacted by the 2019–20 bushfires.

Analysis method

To conduct this analysis, six spatial layers were deployed on a GIS platform and used in a series of geoprocessing analyses.

The following steps were taken to complete all analyses:

All spatial layers were polygonised to conduct multiple geoprocessing analyses. The fire severity map was a raster version, so this was converted into a polygon layer.

1. The old growth layer (MOG) was intersected with the RFA boundary layer and the fire severity layer to identify areas impacted by Class 5 and Class 6 fires during the 2019–20 bushfires.
2. To find the protection status of the impacted areas, informal and formal protection areas were overlaid with the impacted areas.
3. EVC and TRP layers were then overlaid to identify potential areas impacted by high-severity bushfires that were scheduled to be harvested after being potentially delisted from modelled old growth extent.

This analysis is geographically confined to Victorian RFA areas, meaning that fire extent in other jurisdictions and non-RFA regions in Victoria was excluded. Again, the analysis was undertaken based on modelled extent, without field verifications. The Panel decided to use this analysis to indicate the potential effects of the 2019–20 bushfires, as no analysis that DELWP produced was approved for reproduction in the Panel's report. This means that the Panel analysis results may differ from the findings in the final DELWP report when it is released in the future.

Field assessment process for old growth forest

The Panel found that around 70 per cent to 75 per cent of remaining old growth extent is protected under the CAR reserve system. In addition, 25 per cent to 30 per cent of the other extent that is outside formal and informal reserves is also protected from timber harvesting. However, before an area is given protection from timber harvesting, a field assessment is needed to determine whether a planned harvesting area is old growth forest. To assist this process, in 2020 the Office of the Conservation Regulator (OCR) released a field assessment procedure.* The procedure determined that old growth 'must have a minimum area of one ha, and that regrowth trees must comprise less than 15 per cent, and senescent (old and declining) trees more than 10 per cent, of the upper stratum trees'. The assessment, if required, is carried out by VicForests or its contractors.

Grid size

The minimum size of 1 ha in the OCR's field assessment tool means that if a patch of old growth identified by desktop assessment (and subsequently confirmed by field assessment) is smaller than 1 ha, the area will be included for timber harvesting.** The OCR advised that 'such a patch may still be excluded if there are other values that trigger a prescription'. VicForests advised that it voluntarily conserves and protects individual senescent trees even if these trees do not align with the field assessment tool and has shared this information with DELWP.

* Conservation Regulator Victoria (July 2020) Old growth forest field identification feature - assessment tool, Conservation Regulator Victoria, accessed 22 February 2022.

** Ibid.

However, DELWP advised that individual senescent trees cannot be classified as old growth extent, and that individual senescent trees are categorised in VicForests survey results as part of the large trees database. Therefore, the Panel found that the current approach could leave small patches of remnant extent exposed to timber harvesting. The issue here is that the extent of old growth is not verified by evidence; rather the government relies on modelled extent, which makes it difficult to estimate the magnitude of the issue to conserve old growth in Victoria. Excluding less than 1 ha patches of remaining old growth after a fire will leave many remnant patches vulnerable to potential human-based disturbances. The extent of old growth forests has been declining heavily, mainly as a result of wildfires. Future wildfires will cause old growth forests to be patchier, potentially resulting in a significant increase in the number of small patches. VicForests advised that their voluntary field survey for all coupes will ensure that these small patches of modelled old growth forest will be protected as part of retention harvesting plans. However, an update of the 1 ha grid system is still required as VicForests' voluntary coupe survey is not following the field assessment tool.

The Panel found that around 70 to 75 per cent of remaining old growth extent is protected under the CAR reserve system.

Mixed species forest

Mixed aged forests have varying levels of age structure depending on different disturbance history with different time frames. There are issues to consider in applying the tool in the field assessment:

- **Different age structures of different species.** Each species has varying levels of life span. Applying a single age classification for all mixed aged forest species would be an issue in identifying old growth, because tree species have different growth trajectories depending on their growth stage and age.
- **Complexity created by multiple disturbances at different times.** As we move from even-age forests (ash forests) to multi-age forests, the ideal class of old growth forest breaks down. Multiple age classes are a result of multiple disturbance events that occurred in different times. This means that there are multiple growth stages of different species as a result of multiple disturbances. Therefore, many mixed aged forests will not meet the criteria in the assessment tool. For example, some trees might represent old growth values but there could also be a prevalence of regrowth age classes. The OCR indicated that field assessors from DELWP and VicForests have shared difficulties in assessing this forest type. In some forests, such as Dry Foothill Mixed Species forest, a constant sequence of disturbance events can lead to a lack of definition as to starting dates of single disturbance events. The OCR will improve this identification tool, but mixed species forest will always create issues in applying the field identification tool.

The Panel found that the field assessment guideline needs improvement due to the inadequacy of the 1 ha grid size system and the application of a single age classification for mixed species forest. Applying this method to mixed species forest will always be difficult due to the complexity of disturbances. Furthermore, as noted above, excluding patches of remaining old growth that are less than 1 ha will leave many remnant patches vulnerable to human-based disturbances – an issue that is particularly concerning given that the increasing number of wildfires will lead to old growth forests becoming even patchier.

The Panel found that the field assessment guideline needs improvement due to the inadequacy of the 1 ha grid size system and the application of a single age classification for mixed species forest.

Timber harvesting where high-severity fires burned old growth forest

At the Panel's request, VicForests provided the following list of EVCs in the East Gippsland, Gippsland and North East RFAs where timber harvesting can be conducted:

- Dry Forests
- Lowland Forests
- Montane Grasslands, Shrublands or Woodlands
- Wet or Damp Forests.

Based on this list, the Panel could narrow down the areas and EVCs that could be exposed to timber harvesting where high severity fires impacted during the 2019–20 bushfires. The Panel found that 963.4 ha is potentially exposed to timber harvesting activities, as these areas overlap with Timber Release Plan (TRP) areas after the high-severity fires that occurred. Many of these EVCs are mixed species forest, which means that old growth values could remain in those areas. VicForests stated that:

a bushfire impact of Class 5 and 6 would be considered disturbance that is not negligible, as per the definition of old growth. It is highly likely that this fire will create a significant new cohort of regrowth that will contribute to the forest structure consideration. Timber harvesting would not necessarily be excluded in every case where MOG had been severely burnt. In each case, fire severity mapping would need to be ground truthed.

This demonstrates that VicForests has a systematic process to ensure that old growth forest will not be harvested regardless of the degree of fire impact, but its ground-truthing results have to be shared with stakeholders for transparency. Therefore, DELWP and VicForests should publicly release survey results of the 963.4 ha that are scheduled for harvest, to ensure that old growth values no longer exist as a result of high-severity fires. More details of vegetation types for these areas within the three RFA regions can be found in Table 4.10.

The Panel found that 963.4 ha where high-severity fires impacted during the 2019–20 bushfires is potentially exposed to timber harvesting activities. DELWP and VicForests should publicly release survey results of the 963.4 ha that are scheduled for harvest, to ensure that old growth values no longer exist as a result of high-severity fires.

Results

Prior to the 2019–20 bushfires, the modelled extent of old growth forest across all RFA regions was around 406,000 ha (Table 55). More than half of the modelled extent was in the North East and West Victoria RFA regions. Approximately 70 per cent of modelled old growth forest is located within RFA regions where high-severity fires occurred during the 2019–20 bushfires.

Table 55. Modelled old growth forest distribution, by RFA

RFA	Area (ha)
East Gippsland	88,488
Gippsland	73,214
North East	127,834
West	107,473
Central Highlands	9,226
Total old growth forest	406,236

Note: No old growth forest is modelled in non-RFA areas or on private land. Source: DataVic 2021

Around 200,000 ha and 85,000 ha of modelled old growth were protected by dedicated reserves and SPZ respectively (Table 56). This means that approximately 70 per cent of modelled old growth forests are protected by these two components of the CAR reserve system, with additional smaller areas protected by prescription. This proportion is five per cent lower than that reported in the Further Assessment of Matters Report. In particular, the size of the area protected through SPZ for all RFA regions except for the West Victoria RFA region was consistently lower. This means that SPZ conserved area after the 2019–20 bushfires could be less accurate. Identification of areas outside of formal and informal reserves does not indicate that these areas are potentially exposed to timber harvesting, as old growth forest will be protected, but these areas need to be assessed in the field prior to logging²⁰⁶. To enable recognition of old growth forest in the field, the Office of the Conservation Regulator (OCR) put out an old growth field assessment procedure in July 2020.

Table 56. Protection status of modelled old growth forest by formal and informal reserves prior to 2019–20 bushfires

RFA	Dedicated reserves prior to 2019–20 bushfires	Special Protection Zone prior to 2019–20 bushfires	Total
Central Highlands	3,763	3,125	6,888
East Gippsland	52,566	11,151	63,717
Gippsland	28,941	19,615	48,556
North East	48,800	23,126	71,926
West	65,556	27,722	93,278
Total	199,626	84,739	284,365

Notes: The Panel did not receive spatial data for prescriptions and private land. Therefore, this table only covers formal and informal reserves. This table was created by Panel members, meaning that DELWP's future analysis of protection status might differ. Source: DataVic 2021

206. The Victorian Regional Forest Agreements (RFAs) replicate the Victorian Government commitment, under the Victorian Forestry Plan, to protect all Old growth forest within Native forests on public land from timber harvesting. The RFAs explicitly state that. Source: Commonwealth of Australia and the State of Victoria (1988) [The Central Highlands Regional Forest Agreement](#), Clause 66A-B, Commonwealth of Australia and the State of Victoria, accessed 2 February 2022.

When old growth forest is burnt by severe fires, particularly Class 5 (High Canopy Scorch) and 6 (Canopy Burnt) of severity class, DELWP no longer consider those areas to meet the Woodgate et al modelling criteria for old growth forest. Ground survey using the Field Assessment Tool will validate whether these sites are old growth. By subtracting severely burnt areas from the model, remaining Old Growth forest extent can be estimated after the 2019–20 bushfires.

The results of the Panel's analysis of the potential impacts of the bushfires on modelled old growth within dedicated reserves and SPZs in each RFA region are shown in Table 57. For example, analysis of the potential impacts on modelled old growth forest protected by the CAR reserve system shows that as a result of the impact of high-severity fires in 2019–20, a reduction of around 14 per cent (40,795 ha) in modelled old growth forest (now 243,570 ha, down from 284,365 ha) within the CAR reserve system occurred (Table 57). The analysis suggests that the area of old growth forest protected under dedicated reserves decreased by 28,500 ha across all RFA regions, with more than half of the reduction occurring in the East Gippsland RFA region. The area protected under SPZ also reduced by around 12,300 ha.

Table 57. Potential impacts on old growth forests within categories of the CAR Reserve System (Dedicated reserve and Special Protection Zone) by RFA region

RFA	Dedicated reserves after 2019–20 bushfires	Change of areas for dedicated reserves	Special Protection Zone after 2019–20 bushfires	Change of areas for SPZ	Total after 2019–20 bushfires
Central Highlands	3,763	–	3,125	–	6,888
East Gippsland	36,833	15,733	7,527	3,624	44,360
Gippsland	25,036	3,905	15,858	3,758	40,894
North East	39,938	8,862	18,212	4,914	58,150
West	65,556	–	27,722	–	93,278
Total	171,126	28,500	72,444	12,295	243,570

Source: DELWP 2021

Results of the analysis of bushfire impact on modelled old growth forest for RFA regions in eastern Victoria will be discussed in the rest of this section.

East Gippsland

The old growth forests in the East Gippsland RFA region sustained the greatest impact, by severity and extent, as a result of the 2019–20 bushfires. This analysis found a similar pattern: 62,292 ha of modelled old growth forest was impacted by fire, which is around 70 per cent of overall old growth forest extent in this region (Table 58). These areas impacted by bushfire do not represent only protected areas but the whole East Gippsland region, regardless of protection status. From the overlaid fire extent by fire severity database, about 29,000 ha, which is 33 per cent of the modelled old growth extent, was impacted by severe bushfires (Class 5 and Class 6). As a result, the remaining extent of modelled old growth in this RFA region has potentially decreased from 88,488 ha to 59,450 ha.

Table 58. Severity categories of 2019–20 bushfires in modelled old growth forest areas in East Gippsland RFA region

East Gippsland	Fire-affected modelled old-growth area (ha)	% modelled old-growth forest*
Non-woody vegetation (unclassified)	74	0.08
Unburnt (UB) (canopy and understorey foliage are largely (>90%) unburnt)	6,621	7.48
Low Canopy Scorch (LCS) (canopy foliage is largely unaffected (<20% scorched) but the understorey has been burnt)	19,046	21.52
Medium Canopy Scorch (MCS) (canopy is a mosaic of both unburnt and scorched foliage, 20%–80%)	7,514	8.49
High Canopy Scorch (HCS) (>80% of canopy foliage is scorched)	23,102	26.11
Canopy Burnt (CB) (>20% canopy foliage consumed)	5,936	6.71
Total	62,293	70.40

Source: DELWP 2021

When fire severity Class 5 and Class 6 impact on old growth extent is classified by EVC, around 90 per cent of its footprint is concentrated in 5 EVCs (Table 59):

- Damp Forest EVC (8,500 ha impacted, 37% of its extent)
- Shrubby Dry Forest EVC (7,660 ha impacted, 41% of its extent)
- Wet Forest EVC (6,201 ha impacted, 28% of its extent)
- Lowland Forest EVC (2,159 ha impacted, 29% of its extent)
- Banksia Woodland EVC (5,087 ha impacted, 28% of its extent).

Many EVCs lost 30 per cent to 50 per cent of their old growth extent as a result of the bushfires. The Riparian Forest and Grassy Dry Forest EVCs were potentially reduced to half of their extent.

This analysis also found that some EVCs that were impacted by Class 5 and Class 6 high-severity fires during the 2019–20 bushfires are potentially exposed to timber harvesting, as severely impacted areas are no longer classified as old growth forests. In the East Gippsland RFA region, 715.1 ha of the severely burnt old growth is within the current TRP extent. This means that there is potential for these areas to be harvested over the next three to five years. The EVCs that could be potentially exposed to timber harvesting²⁰⁷ in areas where high-severity fires impacted are:

- Banksia Woodland EVC (5.0 ha)
- Blackthorn Scrub EVC (1.0 ha)
- Cool Temperate Rainforest EVC (0.2 ha)
- Damp Forest EVC (330.2 ha)
- Lowland Forest EVC (49.1 ha)
- Montane Riparian Woodland EVC (0.5 ha)
- Riparian Forest EVC (0.2 ha)

207. VicForests advised the Panel that only seven EVCs are possibly exposed to timber harvesting in the fire-affected RFA regions. These EVCs are: Dry Forests, Lowland Forests, Montane Grassy Woodlands, Montane Grassy Shrublands, Montane Dry Woodlands, Wet Forests, and Damp Forests. This will be discussed further in the "Findings" section of this report.

- Riparian Scrub/Swampy Riparian Woodland Complex EVC (0.1 ha)
- Shrubby Dry Forest EVC (184.9 ha)
- Tableland Damp Forest EVC (23.5 ha)
- Valley Grassy Forest EVC (21.0 ha)
- Warm Temperate Rainforest EVC (3.6 ha)
- Wet Forest EVC (95.9 ha).

The Panel acknowledges that not all EVCs mentioned above that are within a gross TRP boundary will end up being harvested as VicForests conducts field survey programs, which could result in being protected by regulation or being identified not suitable for harvesting. This will be discussed further in the discussion section.

Table 59. Impact of Class 5 and Class 6 fire severity on old growth EVCs in East Gippsland RFA region

EVCs	Remaining extent before 2019–20 bushfires (ha)	Impacted by Class 5 and Class 6 fire severity (ha)	Proportional impact per EVC	Change of areas for SPZ
Damp Forest	22,848.6	8,500.0	37	330.2
Shrubby Dry Forest	18,865.1	7,659.7	41	184.9
Wet Forest	22,161.5	6,200.9	28	95.9
Lowland Forest	7,549.3	2,159.2	29	49.1
Banksia Woodland	5,086.6	1,448.9	28	5.0
Grassy Dry Forest	1,369.5	667.5	49	
Warm Temperate Rainforest	822.6	393.7	48	3.6
Valley Grassy Forest	1,239.5	358.2	29	21.0
Blackthorn Scrub	1,047.2	348.9	33	1.0
Montane Dry Woodland	930.4	262.5	28	
Riparian Scrub/Swampy Riparian Woodland Complex	884.3	239.8	27	0.1
Riparian Forest	401.1	193.3	48	0.2
Montane Wet Forest	1,373.0	178.5	13	
Tableland Damp Forest	1,180.0	149.5	13	23.5
Cool Temperate Rainforest	677.1	117.3	17	0.2
Foothill Box Ironbark Forest	141.2	31.8	23	
Coast Banksia Woodland	149.4	29.5	20	
Cool Temperate Rainforest/Warm Temperate Rainforest Overlap	67.2	27.2	40	
Wet Heathland	99.5	24.6	25	
Rocky Outcrop Shrubland	95.3	21.2	22	
Estuarine Wetland	17.7	6.4	36	
Coastal Dune Scrub/Coastal Dune Grassland Mosaic	188.4	6.0	3	
Clay Heathland	15.1	5.7	38	
Limestone Box Forest	357.8	3.3	1	
Heathy Dry Forest	54.8	2.1	4	

EVCs	Remaining extent before 2019–20 bushfires (ha)	Impacted by Class 5 and Class 6 fire severity (ha)	Proportional impact per EVC	Change of areas for SPZ
Riparian Shrubland	13.5	0.8	6	
Coastal Lagoon Wetland	6.9	0.8	11	
Montane Riparian Woodland	3.8	0.7	17	0.5
Grassy Woodland	18.2	0.5	3	
Coastal Saltmarsh	3.2	0.5	14	
Montane Riparian Thicket	0.6	0.3	44	
Water Body – Estuary	4.3	0.3	6	
Montane Grassy Woodland	12.3	0.2	2	
Coastal Sand Heathland	1.3	0.1	8	
Herb-rich Foothill Forest	0.4	0.0	7	
Dry Valley Forest	0.6	0.0	3	
Water Body – Fresh	0.7	0.0	1	
Total	88,487.8	29,039.6	33%	715.1

Note: This EVC analysis was undertaken by the Panel; therefore old growth extent and bushfire impact assessment may differ from DELWP's future analysis results. Source: DataVic 2021

Gippsland

About a fourth of the modelled old growth extent (17,898 ha) was impacted by the 2019–20 bushfires in the Gippsland RFA region (Table 60). Of this, 60 per cent (10,698 ha) was in areas that were severely impacted, leading to a potential reduction of the extent from 73,214 ha to 62,516 ha.

Table 60. Severity categories of 2019–20 bushfires in modelled old growth forest areas in Gippsland RFA region

Gippsland	Fire-affected modelled old-growth area (ha)	% modelled old-growth forest
Non-woody vegetation (unclassified)	16	0.02
Unburnt (UB) (canopy and understorey foliage are largely (>90%) unburnt)	867	1.18
Low Canopy Scorch (LCS) (canopy foliage is largely unaffected (<20% scorched) but the understorey has been burnt)	4,855	6.63
Medium Canopy Scorch (MCS) (canopy is a mosaic of both unburnt and scorched foliage, 20%–80%)	1,462	2.00
High Canopy Scorch (HCS) (>80% of canopy foliage is scorched)	6,810	9.30
Canopy Burnt (CB) (>20% canopy foliage consumed)	3,888	5.31
Total	17,898	24.45%

Source: DELWP 2021

The distribution of severe fire impact on old growth EVCs in the Gippsland RFA region had a similar pattern to that in the East Gippsland RFA region. The top 10 EVCs severely impacted by fire account for 87 per cent of overall impact (Table 61). Some EVCs have lost over half of their old growth extent (up to 79 per cent).

The 10 old growth EVCs most impacted by high-severity fires were:

- Shrubby Dry Forest EVC (1,428 ha impacted, 9% of its extent)
- Heathy Dry Forest EVC (1,069 ha impacted, 10% of its extent)
- Montane Damp Forest EVC (1,062 ha impacted, 33% of its extent)
- Sub-alpine Woodland EVC (1,028 ha impacted, 28% of its extent)
- Montane Dry Woodland EVC (1,020 ha impacted, 19% of its extent)
- Damp Forest EVC (798 ha impacted, 17% of its extent)
- Montane Grassy Woodland EVC (788 ha impacted, 33% of its extent)
- Montane Wet Forest EVC (769 ha impacted, 46% of its extent)
- Blackthorn Scrub EVC (715 ha impacted, 46% of its extent)
- Herb-rich Foothill Forest EVC (581 ha impacted, 16% of its extent).

In the Gippsland RFA region, 246.6 ha of the old growth impacted by high-severity fire is within the current TRP extent. This means that there is potential for these areas to be harvested over the next three to five years. EVCs that could be potentially exposed to timber harvesting in areas where high-severity fires impacted are:

- Damp Forest EVC (132.3 ha)
- Grassy Dry Forest EVC (0.2 ha)
- Heathy Dry Forest EVC (1.5 ha)
- Herb-rich Foothill Forest EVC (2.9 ha)
- Montane Damp Forest EVC (24.4 ha)
- Montane Dry Woodland EVC (25.3 ha)
- Montane Grassy Woodland EVC (0.7 ha)
- Montane Wet Forest EVC (0.1 ha)
- Rocky Outcrop Shrubland/Rocky Outcrop Herbland Mosaic EVC (0.3 ha)
- Shrubby Damp Forest EVC (16.0 ha)
- Shrubby Dry Forest EVC (13.9 ha)
- Shrubby Foothill Forest EVC (8.7 ha)
- Shrubby Wet Forest EVC (0.2 ha)
- Sub-alpine Woodland EVC (5.1 ha)
- Valley Heathy Forest EVC (0.1 ha)
- Wet Forest EVC (15.0 ha).

The Panel acknowledges that not all EVCs mentioned above that are within a gross TRP boundary will end up being harvested, as VicForests conducts field survey programs, which could result in being protected by regulation or being identified not suitable for harvesting. This will be discussed further in the discussion section.

Table 61. Impact of Class 5 and Class 6 fire severity on old growth EVCs in Gippsland RFA region

EVCs	Remaining extent before 2019–20 bushfires (ha)	Impacted by Class 5 and Class 6 fire severity (ha)	Proportional impact per EVC	Overlay with Timber Release Plan (ha)
Shrubby Dry Forest	15,461.7	1,427.7	9	13.9
Heathy Dry Forest	10,952.2	1,068.9	10	1.5
Montane Damp Forest	3,239.9	1,062.1	33	24.4
Sub-alpine Woodland	3,716.1	1,028.6	28	5.1
Montane Dry Woodland	5,304.5	1,020.4	19	25.3
Damp Forest	4,712.1	797.8	17	132.3
Montane Grassy Woodland	2,368.7	787.5	33	0.7
Montane Wet Forest	1,660.2	768.8	46	0.1
Blackthorn Scrub	1,555.4	714.9	46	
Herb-rich Foothill Forest	3,530.1	581.0	16	2.9
Grassy Dry Forest	3,444.8	406.2	12	0.2
Shrubby Damp Forest	1,773.7	271.0	15	16.0
Wet Forest	2,251.0	174.7	8	15.0
Valley Heathy Forest	365.3	158.0	43	0.1
Shrubby Foothill Forest	660.3	107.8	16	8.7
Montane Herb-rich Woodland	1,768.6	67.5	4	0.0
Montane Riparian Thicket	203.1	38.0	19	
Lowland Herb-rich Forest	213.4	35.4	17	
Montane Riparian Woodland	67.9	34.9	51	
Rocky Outcrop Shrubland/Rocky Outcrop Herbland Mosaic	45.9	22.9	50	0.3
Riverine Escarpment Scrub	76.1	20.3	27	
Riparian Forest	87.3	17.4	20	
Tableland Damp Forest	466.6	16.7	4	
Montane Grassy Shrubland	20.8	14.1	68	
Lowland Forest	987.4	12.4	1	
Montane Rocky Shrubland	8.8	7.0	79	
Rocky Outcrop Shrubland	687.4	6.2	1	
Limestone Box Forest	43.0	5.5	13	
Sub-alpine Treeless Vegetation	27.6	4.4	16	
Valley Grassy Forest	25.7	3.9	15	
Grassy Woodland	73.9	3.1	4	
Dry Valley Forest	185.3	2.4	1	
Valley Slopes Dry Forest	50.4	2.0	4	
Warm Temperate Rainforest	62.9	1.9	3	
Cool Temperate Rainforest	62.0	1.6	3	
Alpine Grassy Heathland	9.0	1.1	12	
Riparian Scrub	789.4	1.0	0	
Alpine Grassland	3.9	0.6	14	
Dry Rainforest	1.9	0.4	22	
Swampy Riparian Woodland	0.8	0.4	47	

Note: This EVC analysis was undertaken by the Panel; therefore old growth extent and bushfire impact assessment may differ from DELWP's future analysis results. Source: DataVic 2021

North East

About a third of the modelled old growth extent (40,122 ha) was impacted by the 2019–20 bushfires in the North East RFA region (Table 61). Of this, 56 per cent (22,390 ha) was in areas that were severely impacted, leading to a potential reduction of the extent from 127,834 ha to 105,444 ha.

Table 62. Severity categories of 2019–20 bushfires in modelled old growth forest areas in North East RFA region

North East	Fire-affected modelled old-growth area (ha)	% modelled old-growth forest
Non-woody vegetation (unclassified)	5	0.0
Unburnt (UB) (canopy and understorey foliage are largely (>90%) unburnt)	962	0.8
Low Canopy Scorch (LCS) (canopy foliage is largely unaffected (<20% scorched) but the understorey has been burnt)	9,895	7.7
Medium Canopy Scorch (MCS) (canopy is a mosaic of both unburnt and scorched foliage, 20%–80%)	6,869	5.4
High Canopy Scorch (HCS) (>80% of canopy foliage is scorched)	16,357	12.8
Canopy Burnt (CB) (>20% canopy foliage consumed)	6,034	4.7
Total	40,122	31.4%

Source: DELWP 2021

The distribution of severe fire impact on old growth EVCs in the North East RFA region had a similar pattern to that in the other two RFA regions. The top 15 EVCs severely impacted by fire account for 88 per cent of overall impact (Table 63). Riverine Escarpment Scrub EVC, which only has a very small extent, has lost most of its old growth extent (91 per cent, 1.2 ha).

The five old growth EVCs most impacted by high-severity fires were:

- Shrubby Dry Forest EVC (7,985 ha impacted, 17% of its extent)
- Herb-rich Foothill Forest EVC (5,477 ha impacted, 17% of its extent)
- Montane Dry Woodland EVC (3,419 ha impacted, 26% of its extent)
- Granitic Hills Woodland EVC (1,384 ha impacted, 41% of its extent)
- Heathy Dry Forest EVC (1,280 ha impacted, 17% of its extent)

In the North East RFA region, 51.3 ha of the old growth impacted by high severity fire is within the current TRP extent. This means that there is potential for these areas to be harvested over the next three to five years. EVCs that could be potentially exposed to timber harvesting in areas where high-severity fires impacted during the 2019–20 bushfire season are:

- Damp Forest EVC (1.5 ha)
- Montane Damp Forest EVC (21.2 ha)
- Montane Dry Woodland EVC (21.2 ha)
- Montane Riparian Thicket EVC (1.5 ha)
- Shrubby Dry Forest EVC (1.2 ha)
- Wet Forest EVC (4.8 ha).

The Panel acknowledges that not all EVCs mentioned above that are within a gross TRP boundary will end up being harvested as VicForests conducts field survey programs, which could result in being protected by regulation or being identified not suitable for harvesting. This will be discussed further in the discussion section.

Table 63. Impact of Class 5 and Class 6 fire severity on EVCs in North East RFA region

EVCs	Remaining extent before 2019–20 bushfires (ha)	Impacted by Class 5 and Class 6 fire severity (ha)	Proportional impact per EVC	Overlay with Timber Release Plan (ha)
Shrubby Dry Forest	47,048.0	7,985.3	17	1.2
Herb-rich Foothill Forest	32,123.0	5,476.6	17	
Montane Dry Woodland	13,094.9	3,419.1	26	21.2
Granitic Hills Woodland	3,353.4	1,384.1	41	
Heathy Dry Forest	7,566.5	1,280.4	17	
Sub-alpine Woodland	7,340.3	1,184.5	16	0.0
Damp Forest	3,533.8	459.3	13	1.5
Grassy Dry Forest	9,149.6	457.7	5	
Montane Damp Forest	3,010.2	424.4	14	21.2
Wet Forest	839.5	164.9	20	4.8
Riparian Forest	218.1	67.8	31	
Rocky Outcrop Shrubland/Rocky Outcrop Herbland Mosaic	91.1	31.2	34	
Riparian Forest/Swampy Riparian Woodland/Riparian Shrubland/Riverine Escarpment Scrub Mosaic	101.6	30.3	30	
Montane Riparian Thicket	111.6	12.1	11	1.5
Swampy Riparian Woodland	105.9	4.5	4	
Valley Grassy Forest	18.9	4.2	22	
Sub-alpine Treeless Vegetation	28.8	1.5	5	
Riverine Escarpment Scrub	1.3	1.2	91	
Sub-alpine Wet Heathland/Alpine Valley Peatland Mosaic	5.6	0.8	14	
Alpine Crag Complex	22.6	0.1	0	

Note: This EVC analysis was undertaken by the Panel; therefore old growth extent and bushfire impact assessment may differ from DELWP's future analysis results. Source: DataVic 2021

6.4.4 Discussion

Field assessment process for old growth forest

The Panel found that around 70 per cent to 75 per cent of remaining old growth extent is protected under the CAR reserve system. In addition, 25 per cent to 30 per cent of the other extent that is outside formal and informal reserves is also protected by prescription from timber harvesting. It is noted that as a consequence of the Victorian Forestry Plan announced in November 2019 Victoria has ceased timber harvesting in all old growth forests and through the modernised RFAs²⁰⁸, Victoria commits to ensure that old growth forest will remain protected from timber harvesting. However, before an area is given protection from timber harvesting, a field assessment is needed to determine whether a planned harvesting area is old growth forest. VicForests advised that every coupe is assessed for old growth. To assist this field verification process, in 2020 the OCR released a field assessment procedure.²⁰⁹ The procedure determined that old growth 'must have a minimum area of **one hectare**, and that regrowth trees must comprise less than 15 per cent, and senescent (old and declining) trees more than 10 per cent, of the upper stratum trees'. The assessment, if required, is carried out by VicForests or its contractors.

Grid size

The minimum size of 1 ha in the OCR's field assessment tool means that if a patch of old growth identified by desktop assessment (and subsequently confirmed by field assessment) is smaller than 1 ha, the area will be subject to timber harvesting. The OCR advised that 'such a patch may still be excluded if there are other values that trigger a prescription'. VicForests advised that it voluntarily conserves and protects individual senescent trees even if these trees do not align with the field assessment tool, and has shared this information with DELWP. However, DELWP advised that individual senescent trees cannot be classified as old growth extent, and that individual senescent trees are categorised in VicForests survey results as part of the large trees database if they meet the large tree dimensional requirements (>2.4 m diameter). Otherwise, they are identified in the field by VicForests for retention either as individual trees or clumps. Therefore, the Panel found that the current approach could leave small patches of remnant extent exposed to timber harvesting. The issue here is that there is no actual extent of old growth; rather the government relies on modelled extent, which makes it difficult to estimate the magnitude of the issue to conserve old growth in Victoria. Excluding less than 1 ha patches of remaining old growth after a fire will leave many remnant patches vulnerable to potential human-based disturbances. As indicated above, the extent of old growth forests has been declining heavily, mainly as a result of wildfires. Future wildfires will cause old growth forests to be patchier, potentially resulting in a significant increase in the number of small patches. This will leave many patches out of sight of protection from timber harvesting.

Mixed species forest

Mixed aged forests have varying levels of age structure depending on different disturbance history with different time frames. There are two issues to consider in applying the tool in the field assessment:

Different age structures of different species. Each species has varying levels of life span. Applying a single age classification for all mixed forest species would be an issue in identifying old growth, because tree species have different growth trajectories depending on their growth stage and age.

208. East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments, 30 March 2020, clauses 52b, accessed 2 August 2021.

209. Conservation Regulator Victoria, *Old growth forest identification assessment tool*, Victorian Government, 2020.

Complexity created by multiple disturbances at different times. As we move from even-age forests (ash forests) to multi-age forests, the ideal class of old growth forest breaks down. Multiple age classes are a result of multiple disturbance events that occurred in different times. This means that within a forest area there can be multiple growth stages of different species as a result of multiple disturbances. Therefore, many mixed forests will not meet the criteria in the assessment tool. For example, some trees might represent old growth values but there could also be a prevalence of regrowth age classes. The OCR indicated that field assessors from DELWP and VicForests have shared difficulties in assessing this forest type. In some forests, such as Dry Foothill Mixed Species forest, a constant sequence of disturbance events can lead to a lack of definition as to starting dates of single disturbance events. The OCR will improve this identification tool, but mixed species forest will always create issues in applying the field identification tool.

The Panel found that the field assessment guideline needs improvement due to the inadequacy of the 1 ha grid size system and the application of a single age classification for mixed species forest. Applying this method to mixed species forest will always be difficult due to the complexity of disturbances. Furthermore, as noted above, excluding patches of remaining old growth that are less than 1 ha will leave many remnant patches vulnerable to human-based disturbances – an issue that is particularly concerning given that the increasing number of wildfires will lead to old growth forests becoming even patchier.

Definition of old growth forest

Protection of old growth forests is a vital issue in the maintenance of biodiversity and ecological functions. These forests play essential roles in wildlife habitat, species diversity, carbon storage, nutrient cycles and various other ecological processes. They also provide special structures and characteristics that can benefit many flora and fauna. Due to their ecological importance, many countries protect old growth forests through legislative instruments. However, the definition of old growth forest is not globally consistent, making recognition of its extent highly variable.

In 1992, the National Forest Policy Statement first defined old growth forest as:

forest that is ecologically mature and has been subjected to negligible unnatural disturbance such as logging, roading and clearing. The definition focuses on forest in which the upper stratum or overstorey is in the late mature to overmature growth phases.

In the modernised Victorian RFAs, old growth forest has the same meaning as that in Victoria's Code of Practice for Timber Production 2014. A specific definition of old growth forest is provided in the Management Standards and Procedures for Timber Harvesting Operations in Victoria's State Forests 2014.²¹⁰

forest which contains significant amounts of its oldest growth stage usually senescent trees in the upper stratum and has been subject to any disturbance, the effect of which is now negligible. For a stand to qualify as old growth, the regrowth growth stage, if present, must be sparse (less than 10 per cent of the total crown cover of the stand). Negligibly disturbed forest is that in which disturbance is known to have occurred, but the disturbance is unlikely to have altered the structure (growth stage and crown cover) or the usual species composition which characterises a given vegetation class; or, if the alteration did occur in the past, it is no longer measurable.

210. Department of Environment and Primary Industries (2014) [Management Standards and Procedures for timber harvesting operations in Victoria's State forests](#), Department of Environment and Primary Industries, accessed 2 February 2022.

The OCR's field assessment method for defining age classification of both ash-type forest and mixed species forests for identifying old growth forests is based on the definition of old growth in the Code of Practice for Timber Production 2014. Lindenmayer and Taylor (2020)²¹¹ viewed the age ranges for the three growth stages specified in the method as weakening protection for large old trees that are less than 250 years old (typically 150 to 170+ years) and provide hollows for threatened arboreal animals such as Leadbeater's Possum and Southern Greater Glider. They recommended that the age definition for old growth ash-type forest protection be 'reduced from 1 ha to a scale of an individual large old tree (defined as any stem that is 120 years or older)'. As a result of the variation in definition, potential omission of old growth extent may occur.

DELWP provided the information of alternative definitions of old growth to the Panel, indicating different definitions would create a model of differing extent of old growth and subsequently resulting in addition of new areas and removal of existing areas from the modelled extent. DELWP is currently undertaking work together with the University of Melbourne to better understand how contemporary technologies such as LiDAR remote sensing may increase understanding of high conservation value forests, including old growth forests.

Declining extent of old growth forest

DELWP advised that field assessments had not been conducted across the full extent of the 2019–20 bushfires. This means that the Panel's analysis of the extent of old growth impacted by severe fires could be modified further as a result of improved accuracy of spatial layers, including fire severity.

The Panel found that around 62,126 ha of old growth forest could be lost as a result of the 2019–20 bushfires. Those areas were impacted by Class 5 and Class 6 high-severity fire. Of the areas burnt by high-severity fire, 40,795 ha was protected under dedicated reserve and Special Protection Zone status. It is estimated that around 344,110 ha of old growth forest is left after the 2019–20 bushfires, which is around 15 per cent less than the modelled extent reported in 2018.

The reduced size of the estimated remaining extent after the 2019–20 bushfires increases the importance of protecting remnant old growth forest. Figure 19 demonstrates that there has been around 60 per cent reduction of its extent over the last 18 years (since 2003) from 851,202 ha to 344,110 ha. As reduction of old growth extent occurs when an area is exposed to high-severity fires, the projection of more frequent severe and large fires in the future due to climate change makes its remnant extent more vulnerable. A difficulty that the Panel encountered was that there is no research that has comprehensively assessed the temporal and spatial vulnerability of old growth forests. Such research would reduce knowledge gaps in assessing the magnitude of the impact of climate change-driven future fire regimes on remaining old growth extent.

211. Lindenmayer DB and Taylor C (2020) '[Extensive recent wildfires demand more stringent protection of critical old growth forest](#)', *Pacific Conservation Biology*, 26:384–394, accessed 3 February 2022.

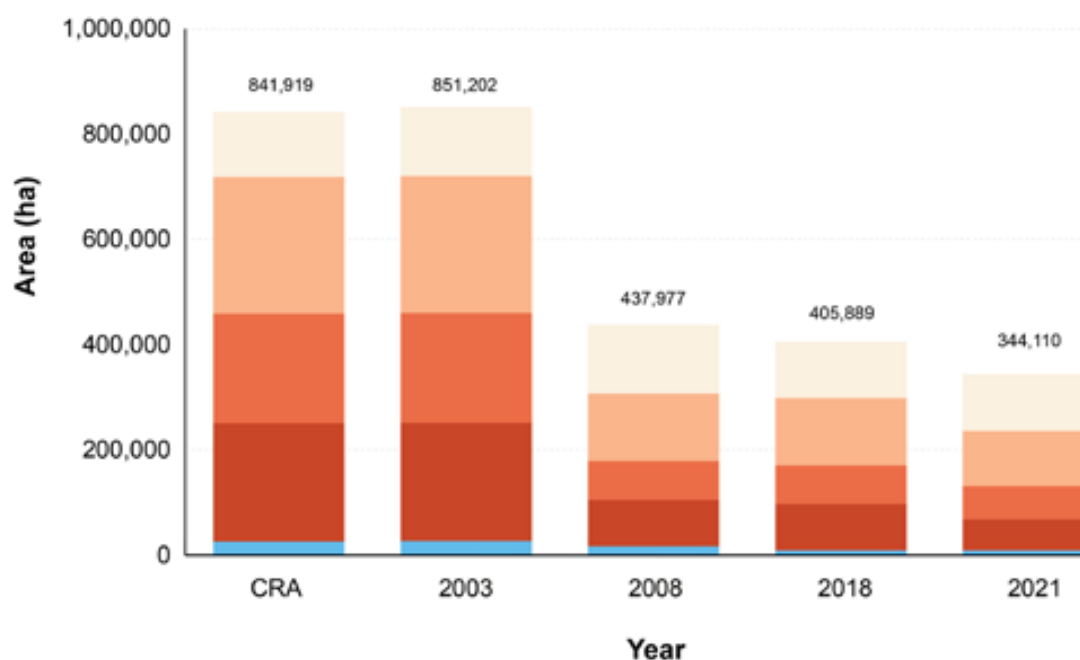


Figure 19. Old growth areas per RFA region across time

Note: This is an updated version of Figure 1 from the 'Further Assessment of Matters' Report.

Source: DELWP 2019 and DataVic 2021

The current approach to protecting the old growth forest in Victoria primarily focuses on protecting the remnant extent from timber harvesting, even though the primary reason for the very significant reduction of old growth forest is severe bushfires. The OCR's old growth forest identification tool, DELWP's Forest Protection Survey Program and VicForests' survey of coupes have all focused on the identification of old growth where coupes are scheduled for harvest. In terms of assessing bushfire impact on old growth forest, the modelled extent that was mapped based on aerial photographs has been used as a base of estimated extent. However, we do not know the true extent of old growth forest, as survey efforts are concentrated on scheduled coupes. Table 6 in the 'Further Assessment of Matters' report clearly demonstrates 'the quantum of change in the modelled old growth extent on account of disturbance, of which the vast majority is aligned with forest fires'.²¹² The reported impact from harvesting between 2006 and 2015 was a reduction of seven ha, whereas the impact from forest fires was a reduction of 390,150 ha. The two disturbance factors are beyond possible comparison. If potential reduction as a result of the 2019–20 bushfires is included, the reduction caused by fire is significantly higher. Another interpretation of this is that the current policy setting to protect existing old growth forest from timber harvesting may be working, as minimal modelled old growth areas were impacted by timber harvesting activities (Table 6 in the 'Further Assessment of Matters' report). However, if the Parties only prioritise protecting its extent from timber harvesting, remnant old growth extent may soon be much rarer and patchier and is likely to eventually disappear even if timber harvesting is completely stopped.

212. Commonwealth of Australia and Victorian Government (2019) [Victoria's Regional Forest Agreements: Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements](#), Commonwealth of Australia and Victorian Government, accessed 2 December 2021.

A current limitation in protecting old growth forest is that only the modelled extent is available. Although field identification is conducted for every coupe for timber harvesting to protect old growth areas, this only focuses on fractional portion of its extent. The Panel's analysis of the impact of the 2019–20 bushfires is also an estimate, which requires a field verification. There is no map of the true extent, leading to a difficulty in developing measures such as setting up the true extent as a priority area to protect from future bushfire risks. DELWP will add light detection and ranging (LiDAR) data for parts of the Central Highlands and East Gippsland to the modelled old growth dataset, which will improve the accuracy of forest extent estimation. DELWP should undertake research on the accuracy of modelled old growth extent based on LiDAR data through a field verification process. It should also determine whether improved data accuracy can be used as a true extent of old growth forest in Victoria.

Timber harvesting where high-severity fires burned old growth forest

In total, the Panel found that 1,013 ha of modelled old growth across three RFA regions was within TRP boundary and exposed to high-severity fires during the 2019–20 bushfires. This finding was made using the modelled old growth extent rather than using actual extent or field verification results. Therefore, field verification results should be undertaken to verify this desktop analysis. In the public consultation process, stakeholders indicated that when old growth forests are burnt by high-severity fires, they are no longer considered to be old growth. This leaves the old growth forest areas vulnerable to timber harvesting following high severity fire, even if values on the ground remain and fire severity was less than modelling showed. This is particularly important for mixed species forests, as they can often survive high-severity fires. At the Panel's request, VicForests provided the following list of EVCs in the East Gippsland, Gippsland and North East RFAs where timber harvesting can be conducted:

- Dry Forests
- Lowland Forests
- Montane Grasslands, Shrublands or Woodlands
- Wet or Damp Forests.

Based on this list, the Panel could narrow down the areas and EVCs that could actually be exposed to timber harvesting (see Table 64). Of the 1,013 ha, approximately 963 ha is potentially exposed to timber harvesting activities, as these areas overlap with TRP areas after the high-severity fires that occurred. Many of these EVCs are mixed species forest, which means that old growth values could remain in those areas. VicForests stated that:

a bushfire impact of Class 5 and 6 would be considered disturbance that is not negligible, as per the definition of old growth. It is highly likely that this fire will create a significant new cohort of regrowth that will contribute to the forest structure consideration. Timber harvesting would not necessarily be excluded in every case where MOG had been severely burnt. In each case, fire severity mapping would need to be ground truthed.

This demonstrates that VicForests has a systematic process to ensure that old growth forest will not be harvested regardless of the degree of fire impact, but its ground-truthing results have to be shared with stakeholders for transparent communications. Therefore, DELWP and VicForests should publicly release survey results of the 963.4 ha that are scheduled for harvest, to ensure that old growth values no longer exist as a result of high-severity fires.

Table 64. Modelled old growth forest extent burnt by high-severity fires and exposed to potential timber harvesting, by RFA region and EVC

RFA	EVC	Area (ha)
East Gippsland	Damp Forest	330.2
	Lowland Forest	49.1
	Montane Riparian Woodland	0.5
	Shrubby Dry Forest	184.9
	Tableland Damp Forest	23.5
	Wet Forest	95.9
Gippsland	Damp Forest	132.3
	Grassy Dry Forest	0.2
	Heathy Dry Forest	1.5
	Montane Damp Forest	24.4
	Montane Dry Woodland	25.3
	Montane Grassy Woodland	0.7
	Shrubby Damp Forest	16.0
	Shrubby Dry Forest	13.9
	Shrubby Wet Forest	0.2
	Wet Forest	15.0
North East	Damp Forest	1.5
	Montane Damp Forest	21.2
	Montane Dry Woodland	21.2
	Shrubby Dry Forest	1.2
	Wet Forest	4.8
Total		963.4

(Source: DataVic 2021)

6.4.5 Findings

The 2019–20 bushfires potentially have had a very significant impact on the extent of old growth forests in Eastern Victoria, with an estimated loss of 62,126 ha of the modelled old growth, of which 29,038 ha is located in the East Gippsland RFA region, 22,390 ha is located in the North East RFA region and 10,698 ha is located in the Gippsland RFA region. This represents an additional 15 per cent decrease in Victoria's remaining old growth forests, which means that about 60 per cent of Victoria's old growth forests have been lost, predominantly as a result of severe bushfires, since 2000. Of these areas potentially destroyed by the 2019–20 bushfires, 40,795 ha was protected within the dedicated reserve or Special Protection Zone components of the CAR reserve system.

There is absolutely no doubt that severe bushfires are the greatest threat to the conservation of old growth forests in Victoria. The ongoing loss of old growth forests as a result of severe bushfires highlights the importance of reviewing both forest management and fire management strategies to try to better protect the dwindling remnant old growth forests from severe bushfires.

The Panel's analysis identified that about 963 ha of the modelled old growth that was impacted by high-severity fires during the 2019–20 bushfires is located in areas covered by current Timber Release Plans and therefore could potentially be impacted by timber harvesting over the next three to five years.

The Panel considers that the old growth field assessment guideline needs improvement due to the inadequacy of the minimum size criteria and the application of a single age classification for mixed species forests, which are often subject to a complex series of disturbances.

Old growth forests are comprised of a large number of different EVC types, many of which have relatively small extents within a RFA region that may suffer proportionally greater losses during bushfire events. A current limitation in improving the protection and management of old growth forests is that only modelled data of its extent exists. The lack of ground-verified spatial data on old growth extent makes it difficult to appropriately provide for this very important forest value in both forest and fire management planning processes.

6.4.6 Recommendations

The Panel recommends:

Recommendation 8

That the Victorian Government implement strategies to inform and enhance the protection of remnant old growth forest from the impact of bushfires. These strategies should include:

- i. researching the impact (spatial and temporal) of more frequent high-severity bushfires on remaining old growth forests
- ii. publicly releasing field verification results for the modelled old growth forest extent that has been impacted by high-severity fires in mixed species forests and potentially exposed to timber harvesting
- iii. implementing a mix of existing and innovative fire management practices that specifically focus on reducing bushfire risks to priority areas of old growth within each Regional Forest Agreement region.

Recommendation 9

That DELWP improves the resolution of the field identification assessment tool for forest patches to better identify remnant patches of old growth forest.

6.5 Wilderness area

The National Forest Policy Statement and the Nationally Agreed Criteria for the Establishment of a Comprehensive, Adequate and Representative Reserve System for Forests in Australia (JANIS criteria) define wilderness as:

land that, together with its plant and animal communities, is in a state that has not been substantially modified by, and is remote from, the influences of European settlement or is capable of being restored to such a state; is of sufficient size to make its maintenance in such a state feasible; and is capable of providing opportunities for solitude and self-reliant recreation.

The JANIS criteria explain further that:

*wilderness is a cultural concept that relates to large areas of essentially undisturbed land, and it encompasses a range of natural and cultural values. Wilderness areas are not determined on the principles of comprehensiveness, adequacy and representativeness for biodiversity conservation. Nevertheless, reservation for wilderness will have some direct benefits for biodiversity.*²¹³

Detailed information on wilderness areas is well documented in the *Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements*,²¹⁴ which demonstrates that there are 286,853 ha of wilderness zones and parks in Victorian RFA regions. There have been no significant changes in this area over the period of the RFAs.

The Panel requested information on the impact of the 2019–20 bushfires on existing wilderness zones and parks in RFA regions; however it did not receive data that aligns with the extent of wilderness zones and parks that was reported previously. In DELWP's first analysis of the impact assessment, the total extent of wilderness areas that was impacted was reported as 164,205 ha.



Photo credit: Burnt coastal vegetation Cape Conran Coastal Park, April 21 © T. Bartlett

213. Commonwealth of Australia (1997) '[Nationally agreed criteria for the establishment of a comprehensive, adequate and representative reserve system for forests in Australia](#)', Joint ANZECC / MCFFA National Forest Policy Statement Implementation Sub-committee, accessed 25 January 2022. JANIS Criteria document.

214. Commonwealth of Australia and Victorian Government (2019) '[Victoria's Regional Forest Agreements: Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements](#)', Commonwealth of Australia and Victorian Government, pp. 31–37, 158–159, accessed 2 December 2021.

6.6 Historic heritage

6.6.1 Background

Victorian cultural heritage provides insights about our past and how our society has evolved. Cultural heritage helps us examine our history and traditions and enables Victorians to develop an awareness about themselves. Forests have been a central part in this.

The Panel's Major Event Review report is required to include an assessment of heritage values. Heritage values are of two different types: Aboriginal heritage values and historic heritage values.

This section will discuss the impact of the 2019–20 bushfires on historic heritage values that exist in forested areas across RFA regions in Victoria.

6.6.2 Impact of the 2019–20 bushfires

Historic heritage value assessment was undertaken by rapid risk assessment teams (RRATs) reporting on the 2019–20 fire season.

RRATs are multidisciplinary Victorian Government teams with specialist skills who rapidly identify, assess, evaluate and prioritise risks on public land after an emergency event. RRATs undertake a seven-day risk assessment culminating in a report which is provided to land managers. The report identifies the priority risks following an emergency event and recommends practical risk mitigation treatments and approximate costs for risk mitigation. It focuses on assessments of potential risk to life and property, critical infrastructure and the environment on public land.

The RRAT program operates within Victoria's emergency management legislative requirements and supporting frameworks, primarily the Victorian State Emergency Management Plan. The program forms part of the emergency stabilisation and initial recovery stage as described in the Code of Practice for Bushfire Management on Public Land 2012. RRATs also adhere to any State or Commonwealth legislation that imposes legal obligations on practices in the incident area.

RRAT reports are rapid assessments and are not intended to be, and should not be taken to be, comprehensive or final assessments of the impacts on values covered in the report. They have been prepared quickly for the State of Victoria through DELWP and Parks Victoria, with limited ground checking, for the purposes of providing guidance to public land managers on priority risks and mitigation options to manage the recovery of impacted values on public land. The reports are provided to other agencies for the purposes of information only. Their reports were provided to the Panel but not approved to provide context and spatial layers that they used were mostly unpublished. Therefore, the Panel could not conduct its own desktop analysis to regroup the impact assessments from RRAT reports by RFA region. Therefore, the Panel has undertaken its own desktop analysis of the potential impacts on historic heritage using the databases that are publicly available. These are:

- State Forest Historic Places dataset:²¹⁵ This dataset contains records of historic sites on Victorian public land, collected as through field survey by DELWP staff and contractors
- Victorian Heritage Register:²¹⁶ This is a listing of the state's most significant heritage places and objects protected under the *Heritage Act 1997*

215. DataVic, [Historic places \(point features\)](#) [data set], DataVic, accessed 2 February 2022.

216. DataVic, [Victorian Heritage Register](#) [data set], DataVic, accessed 2 February 2022.

- Victorian Heritage Inventory:²¹⁷ This is a listing of all known historical (non-Indigenous) archaeological sites in Victoria. While over 6,800 sites are listed on the Heritage Inventory, it is not a comprehensive list as large parts of the state have not had an archaeological survey. Heritage Inventory sites, as well as sites that have yet to be discovered, are protected under the Heritage Act
- Fire history overlay of most recent fires:²¹⁸ This layer is the same layer used for assessing the impact of 2019–20 bushfires on National Heritage places under the section 6.2
- Fire severity:²¹⁹ This layer is the same layer used for assessing the impact of 2019–20 bushfires on National Heritage places under the section 6.2.

The Panel found that some sites are listed in more than one of the heritage databases used in this analysis. There are 1,884 sites listed in both the Victorian Heritage Inventory and the State Forest Historic Places dataset. This is around 20 per cent of the State Forest Historic Places dataset. The duplicated sites have been removed in the result tables. Please note that only sites found on the Victorian Heritage database and Heritage Inventory database are places of known significance with known heritage values. Places captured by other datasets have not been recorded by Heritage Victoria as historic heritage places.

The Panel used three different spatial layers of heritage data as the Parties did not provide information on the impact of bushfire on historic heritage sites and the Major Event Review Summary Report had limited information which was insufficient for the Panel to conduct any assessments. The Parties provided relevant information post-writing stage, which was consequently impossible to include in the report.

Victorian Heritage Register

There are 2,611 sites on the Victorian Heritage Register. Of these, 854 sites are within the RFA regions. There are 12 sites within the 2019–20 bushfire extent. These 12 sites were located in the East Gippsland, Gippsland and North East RFA regions (Table 65). Ten out of the 12 sites were exposed to high-severity fires. These sites are listed in Table 66.

Table 65. Number of Victorian Heritage Register sites impacted by 2019–20 bushfires (extent and severity)²²⁰

RFA	Number of sites	Within fire extent	Impacted by Class 5 and Class 6 fire severity
Central Highlands	75		
East Gippsland	12	4	3
Gippsland	82	3	2
North East	127	5	5
West	558		
Outside RFA	1,766		
Total	2,620	12	10

Note: There are nine sites that are in more than one RFA region, which increased the total number of sites from 2,611 to 2,620. Source: DataVic 2021

217. DataVic, [Victorian Heritage Inventory](#) [data set], DataVic, accessed 2 February 2022.

218. DataVic, [Fire history overlay of most recent fires](#) [data set], DataVic, accessed 2 February 2022.

219. DELWP (27 November 2021) [Bushfire Response and Recovery - Spatial Data Coordination](#), DELWP, accessed 3 February 2022.

220. Heritage Victoria states that only sites found on the Victorian Heritage Database and the Heritage Inventory database are recorded as these are places of known significance and with known heritage values. Places captured by other data sets have not been recorded by Heritage Victoria as historic heritage places

Table 66. Victorian Heritage Register sites within 2019–20 bushfire extent and impacted by Class 5 and Class 6 fire severity

RFA	Site name	Impacted by high fire severity
East Gippsland	Buchan Caves Reserve	Yes
	Genoa River Timber Truss & Concrete Bridge	Yes
	Murrindal River Truss Bridge	Yes
	Stringers Knob Fire Spotting Tower	Yes
Gippsland	Gambetta Reef Gold Battery Site	No
	Houghtons Flat Gold Diversion Tunnel	
	Victoria Falls Hydro-Electric Power Station	Yes
North East	Buckland River Hydraulic Sluicing Paddock	Yes
	Dart River Gold Battery Site	Yes
	Glengarry Gold Battery & Works	Yes
	La Mascotte Gold Battery Site & Works	Yes
	Young Australian Battery & Gold Cyaniding Works	Yes

Source: DataVic 2021

Victorian Heritage Inventory

There are 6,983 sites in the Victorian Heritage Inventory. Of these, 2,767 sites (about 40 per cent) are within RFA region boundaries (Table 67). Over half of these (1,582) are located in the West Victoria RFA region. Of the 2,767 sites in RFA regions, only around 3 per cent (86 sites) were within the fire extent. Around half of these heritage sites within the fire extent were exposed to high-severity fires. All sites that were exposed to high-severity fires are in the East Gippsland, Gippsland and North East RFA regions. The North East RFA region had the greatest number of sites impacted. Many of the sites impacted by fire are mining sites, battery sites and cemeteries. A full list of the bushfire-affected sites can be found in Table 68.

Table 67. Number of Victorian Heritage Inventory sites impacted by bushfire (extent and severity)

RFAs	Number of sites	Within fire extent	Impacted by Class 5 and Class 6 fire severity
Central Highlands	482	5	0
East Gippsland	61	22	9
Gippsland	344	20	16
North East	298	24	19
West	1,582	15	0
Outside RFA	4,216	1	0
Total	6,983	87	44

Source: DataVic 2021

Table 68. Victorian Heritage Inventory sites within 2019–20 bushfire extent and impacted by Class 5 and Class 6 fire severity

RFA	Site name	Impacted by high fire severity
Central Highlands	Janefield 1 Coulstocks Mill	-
	Janefield 13	-
	Janefield 2 Goldmining Area	-
	Janefield 3 Road	-
	Janefield 7	-
East Gippsland	Alec Cameron's Selection Site	-
	Andrew O'Rourke Memorial	-
	Battery Creek	-
	Bola Creek Mine	Yes
	Bridle Grave	Yes
	Brutons Hotel	Yes
	Close Family Allotment	-
	Club Terrace Township	Yes
	Genoa Historical Site No.1	Yes
	Hicks Homestead	-
	James Stewart Grave	-
	Joy Allotment 21a Site	-
	Murrindal Silver-Lead Mine	Yes
	Murrungowar State School 3692	Yes
	Old Poddy Road Historical Site 1	Yes
	Sailors Grave	Yes
	Spotted Dog Quartz Mine	Yes
	Tarltan's (Or Douthat's) Farm	-
	Tom Brownlies's Selection Site	-
	Tom Miles Selection Site	-
	Tree Fern Flat	-
	Wangarabelle Cemetery	-
Gippsland	Agamemnon Claim and Gibbo River Diversion Sluice	Yes
	Black Cat Battery	Yes
	Deptford Proprietary Mine	-
	Deptford Township	Yes
	Dogtown (Hans Reef) Area	Yes
	Gambetta Mine Site	Yes
	Gippsland Timber Company Sawmill Site Tambo River	Yes
	Golden Treasure Battery	Yes
	Highland Chief Mine Battery Site 1	Yes
	Highland Chief Mine Battery Site 2	-

RFA	Site name	Impacted by high fire severity
Gippsland	Highland Chief Mine Settlement Site	Yes
	Highland Chief Mine Site 1	Yes
	Highland Chief Mine Site 2	-
	Highland Chief Mine Site 3	Yes
	Highland Chief Mine Site 4	Yes
	Houghton's/Mccoy's Flat Diversion Tunnel	-
	Mt Murphy Wolfram Treatment Works – Lower Works	Yes
	Saltpetre Creek Alluvial Workings	Yes
	Tubal Cain Mine & Battery	Yes
	Victoria Falls Hydro-Electric Power Station	Yes
Non-RFA	Clunes Powder Magazine	
North East	Agamemnon Claim and Gibbo River Diversion Sluice	Yes
	Alta & Nelson Battery Site	Yes
	Alta Reef Walls	-
	Buckland East Water Race	-
	Buckland River Alluvial Workings – Open Cut With T	Yes
	Chinamans Dam	Yes
	Cribbate Creek Alluvial Workings	Yes
	Dart River Battery	Yes
	Fairleys Creek Mine & Battery Sites	Yes
	Glendart Township	Yes
	Glengarry Battery & Chlorination Works	Yes
	La Mascotte Mine	Yes
	La Mascotte Treatment Works	Yes
	Lady Loch Mine Site	Yes
	Mountain View Workings	Yes
	Nelson Reef	-
	Pioneer Battery Site	-
	Rose River Ruins	Yes
	Saltpetre Creek Alluvial Workings	-
	Sassafras & Saltpetre Creek Alluvial Workings	Yes
	Sassafras Creek Graves (Sassafras Cemetery)	Yes
	Thowgla Creek Alluvial Workings	Yes
	Wildboar Battery	Yes
	Young Australian Mine Site	Yes

RFA	Site name	Impacted by high fire severity
West	Beaumont Co	-
	Briody Prospector Mine	-
	Daylesford Creswick Railway Reserve	-
	Dyke Mine	-
	Lake Condah – Complex B	-
	Lake Condah – Complex E	-
	Lake Condah – Complex A	-
	Lake Condah – Complex C	-
	Lake Condah – Complex D (Murphys Hut)	-
	Lake Condah – Complex F	-
	Lake Condah – Complex G	-
	Lake Condah – Complex H	-
	Lake Condah – Complex I	-
	Lake Condah Bridge Remains	-
	Lake Condah Dry Stone Structure	-

Source: DataVic 2021

State Forest Historic Places

The State Forest Historic Places database records 8,392 sites on Victorian public land, collected as a result of filed surveys by DELWP staff and contractors. Spatial analysis shows that 1,884 of these sites are also listed on the Victorian Heritage Inventory database. These are therefore not included in the site numbers in Table 69. As shown in that table, 252 of the State Forest Historic Places sites across all RFA regions were burnt during the 2019–20 bushfires. Around a third of the burnt sites (90 sites) were exposed to Class 5 and Class 6 high-severity fires. Although the greatest number of sites exposed to high-severity fire were in the East Gippsland RFA region, the North East RFA region had the highest number of sites potentially damaged by the bushfires, followed by the East Gippsland and Gippsland RFA regions. By proportion this might represent a minimal impact on the State Forest Historic Places; however, this is a desk-top analysis and it is important to conduct site assessments at least for those places that were impacted by high-severity fires. A full list of the bushfire-affected sites can be found in Table 70.

Table 69. Number of State Forest Historic Places sites impacted by bushfire (extent and severity)

RFAs	Number of sites	Within fire extent	Impacted by Class 5 and Class 6 fire severity
Central Highlands	1,683	0	0
East Gippsland	240	91	28
Gippsland	907	52	17
North East	672	102	45
West	1,752	7	0
Non-RFA	1,254	0	0
Total	6,508	252	90

Note: Site numbers omit the sites that are also listed in the Victorian Heritage Inventory. Source: DataVic 2021

Table 70. State Forest Historic Places sites within 2019–20 bushfire extent and impacted by Class 5 and Class 6 fire severity

RFA	Site name	Impacted by Class 5 and Class 6 fire severity
East Gippsland	17 Mile Tree	-
	45 Mile Tree	-
	48 Mile Tree	Yes
	50 Mile Tree	-
	Alluvial Workings	Yes
	Andrew O'Rourke's Grave	-
	Basin Road Bridge	Yes
	Battery Creek Quartz Gold Mining Site	-
	Boat Ramp	-
	Border Cairn No. 12/2	-
	Border Cairn No. 12/8	Yes
	Border Cairn No. 4	-
	Border Mound No. 11/2	Yes
	Bright Light Battery	-
	Buchan Caves Reserve	Yes
	Campbells Knob Mine	-
	Cattlemens Hut	-
	Close Family Allotment	-
	Club Terrace Gold Field	-
	Combiensbar Mine	-
	Combiensbar River Mine	-
	Crab Hole Creek Timber Workers Hut	Yes
	Crossing Place	-
	Dugout	-
	Dyers Creek Timber Workers Hut	-
	Fire Tower Hut	Yes
	Former Tonghi Creek School Hall	-
	Genoa Cemetery	Yes
	Gippsland Boulder Mine	Yes
	Glen Sheil Silver Mine	Yes
	Gold Mine	-
	Goolengook Road Timber Workers Hut	Yes
	Goongerah Sawmill Site	-
	Granite Creek Trestle Bridge Road	-
	Gypsy Point Cemetery	Yes
	Hicks' Homestead and Stockyards	-
	Hut Site	-
	James Stewart's Grave	-
	Logging Winch and Sawmill Site	-
	Lookout	Yes
	Malinns Selection	-

RFA	Site name	Impacted by Class 5 and Class 6 fire severity
East Gippsland	Martin Creek Trestle Bridge Road	-
	McKenzie Gold Field Track	-
	Mining Track Shaft	Yes
	Misery Spur Hut	-
	Monarch Mine	Yes
	Mount Mcleod Fire Tower	-
	Mount Tara Fire Tower	-
	Mount Tara Mine	-
	Mt Nowa Nowa Fire Tower	-
	Murrindal River Bridge	Yes
	Noorinbee Trig Station	Yes
	Oyster Bed	-
	RAAF Advanced Operations Base Camp	-
	RAAF Aerodrome Buildings	-
	RAAF Operations Room	-
	RAAF Transmission Station	Yes
	Raheen Boarding House	-
	Reservoir	-
	Rich River Timber Workers Hut	Yes
	Rich River Timber Workers Huts	-
	Sans Souci Hotel (former)	-
	Sawmill	-
	Shipwreck	-
	Shipwreck 'Romeo'	Yes
	Shipwreck, 'Schah'	Yes
	Sluicing Area	-
	Sluicing Area Queensborough River	-
	Stagg and Olsen Mine	-
	Stone Ruin	-
	Stringers Knob Fire Tower	Yes
	Tennyson Creek (Tree Fern Flat) Gold Field	-
	Timber Bridge	-
	Timber Workers Huts, Glen Arte	-
	Treacy Lookout	-
	Trestle Bridge	-
	Trig Station	Yes
	Wall Creek Trestle Bridge	Yes
	Williams Brothers' Sawmill	Yes
	Wingan Research Plot	-
	XITree	-
	Youngs Creek Sawmill	-
	Youngs Creek Weir	Yes

RFA	Site name	Impacted by Class 5 and Class 6 fire severity
Gippsland	Boggy Creek CRB Hut	-
	Buckwong Huts	-
	Charlie Creek Hut	Yes
	Cherry's Battery	-
	Collins' No. 1 Mill and Tramway, Double Bridges	-
	Collins' No. 2 Mill, Double Bridges	-
	Commings Hut	-
	Commotion Battery Site	-
	Dahlsen's Mill and Tramway	-
	Dawson City Mining Township	Yes
	Dogtown (Hans Reef)	-
	Double Bridges Hotel Site	Yes
	Dunsmuir Huts	-
	Earth Oven & Hut Site	-
	Elizabeth Marshall Sawmill	-
	Fork Town	Yes
	Gambetta Mine	-
	Gibbo River Diversion Sluice	Yes
	Gippsland Timber Co. Mill	-
	Hans Battery & Mine Site	-
	Haunted Stream Battery Site	-
	Honeymoon Hut	Yes
	Horsehair Hut	-
	Marthavale Farm	-
	Marthavale Hut	-
	Marthavale Mill Site	-
	McNamara Hut	Yes
	Mine	-
	Mount Murphy Lower Workings	Yes
	Mount Murphy Wolfram Treatment Works	Yes
	Mount Sugarloaf Fire Tower	-
	Mt. Baldhead Trig Station	-
	Mulhauser No. 1 Mine	Yes
	O'Connor Hut	-
	Polar Star Mine	-
	Railway Carriage Hut	Yes
	Seldom Seen Hut	-
	Settlement Site	Yes
	Stirling	-
	Store Creek Alluvial Workings	-
	Tierneys Creek Battery & Mine Site	Yes
	Tom Groggin Hut	-

RFA	Site name	Impacted by Class 5 and Class 6 fire severity
Gippsland	Tubal Cain Mine and Battery	-
	Turntable Camp	Yes
	Unknown Mine	-
	White Timber Township Site	Yes
	Yahoo Creek Battery	Yes
North East	Abbeyard Station	-
	Agememnon Gold Sluicing Claim	Yes
	Alta Quartz Reef Workings	-
	Beveridge's Station	-
	Buckland Junction Hut Site	-
	Buckland Junction School Site	-
	Buckland Junction Township Site	-
	Buckland River Alluvial Gold Workings	-
	Buckland River Sluicing No. 2	-
	Campbells Huts and Yards	-
	Canvastown Site	Yes
	Carmody's Hut and Yards	Yes
	Chinese Oven and Hut Site	-
	Cribbage Creek Alluvial Gold Workings	-
	Dart River Gold Battery Site	-
	Dart River Goldfield	Yes
	Dart River Reverberatory Furnace	Yes
	Dart River Treatment Works	-
	Dartmoor Hut BENDOC	-
	Dunstans Logging Hut	-
	Dunstans Logging Huts	Yes
	Embery's Sawmill	-
	Fairleys Creek Early Battery Site	-
	Fairley's Creek Mine	-
	Fairleys Creek New Battery Site	-
	Gibb Sawmill	-
	Gibson Old Hut	-
	Gibson Pinnibar Hut (Dam TK?)	-
	Gibson's Hut	-
	Gladstone Mine and Battery Site	-
	Golden Treasure (South Federation) Battery	-
	Golden Treasure Mine	Yes
	Goldie Spur Track	-
	Grave Site	Yes
	Great Eastern Reef Workings	-
	Great Southern Co.	Yes
	Great Southern Consols	Yes

RFA	Site name	Impacted by Class 5 and Class 6 fire severity
North East	Hamilton Brothers Sawmill	Yes
	Hamilton's Sawmill	-
	Harp of Erin Quartz Reef Workings	-
	Huggins Hut	Yes
	Hut Sites and Shallow Alluvial Workings	-
	Hut Sites and Sluice Workings	Yes
	Just in Time Mine and Battery Site	Yes
	La Mascotte Gold Treatment Works	Yes
	La Mascotte Mine Site	Yes
	La Mascotte Reef	Yes
	La Mascotte Syndicate	Yes
	Lady Loch Battery Site	Yes
	Lady Loch Mine	Yes
	Lady Luck Mine	Yes
	Laverty's Hut	-
	Leinster Mine and Battery Site	-
	Lind Lodge	Yes
	Logging Winch, Myrree	Yes
	Logging Hut Site	Yes
	Lone Hand Mine	Yes
	Lookout Shelter	Yes
	Ma Looks Flat Ground Sluicing Pit	-
	Mine	-
	Miners Right Battery Sites	-
	Mount Murray Logging Hut	-
	Mt. Pinnibar (Gibsons) Hut	Yes
	Nelson Mine and Battery Site	Yes
	New Chum Gully Quartz Reef Workings	-
	Phoenix Dredge Levee Wall & Alluvial Mining Camp	Yes
	Pinnibar Hut	Yes
	Pioneer & Ribbie Burns Mines	-
	Pioneer Battery Site	-
	Pioneer Mine	-
	Red Jacket Battery Site	-
	Red Jacket Mine Workings	-
	Red, White and Blue Battery Site	-
	Red, White and Blue Mine Workings	-
	Road Patrolman's Hut Site	-
	Samson Mine and Battery Site	Yes
	Sassafras & Saltpetre Creek Alluvial Gold Working	Yes
	Sassafras Creek Township and Cemetery	Yes
	Selwyn Hut	Yes

RFA	Site name	Impacted by Class 5 and Class 6 fire severity
North East	Shower Block Hut	Yes
	Stone Hut	-
	Thowgla Creek Alluvial Gold Workings	-
	Trestle Bridge	-
	Unnamed Hut	-
	Unnamed Hut = Bunroy Hut	-
	Upper Murray Ski Club	-
	Upper Murray Ski Club Hut	Yes
	West Briton (Barnett's) Mine and Battery Site	-
	Whealers Creek Hut	Yes
	Wild Boar Mine	Yes
	Wilson's Hut	-
	Windfall Hut	-
	Yarrabulla Creek Track Shelter	Yes
	Young Australian Battery and Mine Site	Yes
	Zulu Creek Lower Township Site	Yes
	Zulu Upper Township Site	Yes
West	Camp Hill Reservoir & Water Race	-
	Dry stone wall building, Lake Condah	-
	Post and wire fence, Lake Condah	-
	Ryans Junction	-
	Stockyard complex, Condah	-
	Stone chimney wall enclosure, Lake Condah	-
	'Way Station', Mount Eccles National Park	-

Source: DataVic 2021

6.6.3 Government actions and support following the bushfires

The Major Event Review Summary Report notes that some programs have conducted site surveys.²²¹ At that time 13 audits had been conducted through the Heritage Victoria Bushfire Recovery Program, which identified 23 heritage places that required further investigation due to direct damage from fires, potential damage from rehabilitation works, or certain types of sites becoming rarer as a result of the 2019–20 bushfires. At the time of writing, the Heritage Victoria Bushfire Recovery Program has assessed 28 places, objects and sites in its first year.²²²

221. DAWE and the State Government of Victoria (2021) [Victorian Regional Forest Agreement Major Event Review of the 2019–20 bushfires: Summary report: information and data to inform public consultation](#), DAWE and the State Government of Victoria, accessed 1 March 2022.

222. DELWP (n.d.) [Bushfire recovery program interactive map](#), DELWP, accessed 1 March 2022.

One standout example of severe impact from the 2019–20 bushfires is Buchan Caves Reserve. The fires destroyed 75 per cent of the area around Buchan. Buchan Caves Reserve is located on the Country of the Krauatungalung clan and is jointly managed by the Gunaikurnai and Parks Victoria. The Victorian Government invested \$2 million to support its reopening after the fires. The Gunaikurnai Land and Waters Aboriginal Corporation was involved in rebuilding bridges and rehabilitating trails closed during the fire season with Parks Victoria. Parks Victoria is currently developing a site concept plan that includes new interpretation facilities for cultural heritage.²²³

More examples of rehabilitation and rebuilding activities can be found in Table 71.

Table 71. Examples of rehabilitation and rebuilding activities that are part of the response to the 2019–20 bushfires^{224, 225}

Heritage site – fire impact	Responses by Heritage Victoria and others
Stringers Knob fire spotting tower – destroyed	The cabin which sat at the top of the pole was completely destroyed but there are burnt remains of the pole, including the steel spokes that were used for climbing up the pole. A heritage interpretation project is underway.
Genoa Timber Truss Bridge – destroyed	East Gippsland Shire is working towards its replacement.
Murrindal Timber Truss Bridge – destroyed	In July 2020, remnant materials were removed to prevent flood waters washing bridge debris downstream. The bridge has since undergone rehabilitation.
Buchan Caves	Buchan Caves Reserve, under the management of Parks Victoria, has received funding and its rehabilitation is progressing, including reconstruction of bridges and consideration of landscape issues.
Deptford mining township site	Planning of a walking track to other mining sites within the area is being considered.
Wairewa Bridge – major damage	Bairnsdale DELWP was addressing safety issues around the historic trestle bridge as at September 2020.

Source: DELWP 2020 and 2021, and Heritage Victoria 2022

6.6.4 Key information and issues raised during consultation

No comments on historic heritage values were discussed during public consultation.

6.6.5 Findings

About 350 historic heritage sites listed on three of Victoria's heritage databases are located within the extent of the 2019–20 bushfires. The Panel's analysis indicates that 144 of these sites were impacted by high-severity fire, but there is little information available on the specific impacts of the fires on these heritage values other than for a small number of iconic sites such as Buchan Caves, Stringers Knob fire tower and some historic wooden bridges.

223. Parks Victoria (n.d.) [Parks Victoria's bushfire recovery journey 2020-2021](#), Parks Victoria, accessed 1 March 2022.

224. DELWP (unpublished) *Bushfire Recovery Program – Heritage Update 23 September 2020*; and DELWP (n.d.) [Bushfire recovery program interactive map](#), DELWP, accessed 1 March 2022.

225. Heritage Victoria (1 March 2022) [Emergency and Bushfire Recovery Program](#), accessed 2 March 2022.

The Rapid Risk Assessment reports, prepared immediately after the bushfires, contain information on the risks to and recommended mitigation activities for historic cultural heritage values, but the information is not presented by RFA region. This made it difficult for the Panel to use them as a source of information in the Major Event Review process. For most fire-affected on-Aboriginal heritage sites, it was unclear how these recommendations have been incorporated into public land management recovery activities and the Panel considers that for future Major Event Reviews the availability of information on historic heritage values should be improved.

6.6.6 Recommendations

The Panel recommends:

Recommendation 10

That, for future Regional Forest Agreement (RFA) reviews, the Parties develop baseline information for historic heritage values by RFA region and provide future review panels with information on impacts and rehabilitation plans.

6.7 Ecosystem services

6.7.1 Background

Forests in Victoria provide a wide range of ecosystem services for Victorians. The Scoping Agreement for the Major Event Review indicates that the report of the Major Event Review Independent Panel must include an assessment of the impact of the major event on ecosystem services.

The modernised RFAs define ‘Ecosystem Services’ as:

the benefits (including goods and services) provided by ecosystems, and the contributions that ecosystems make to human well-being, arising from both biotic and abiotic processes as well as their interaction. Ecosystem Services related to Forests include, but are not limited to, carbon sequestration, provision of biomass including timber, provision of recreation, provision of clean water and pollination.

In accordance with the RFAs and the Scoping Agreement for the Major Event Review, this section will discuss the impact of the 2019–20 bushfires on various ecosystem services that Victorian forests provide.

6.7.2 Impact of the 2019–20 bushfires

Most of the impact assessment in this section is from DELWP’s assessment report on the impact of the 2019–20 bushfires on a wide range of ecosystem services.

Carbon sequestration

The Summary Report revealed that there would be an expected net reduction of 55 million tonnes in forest carbon stock as a result of the 2019–20 bushfires.²²⁶ The net reduction was calculated as a loss of 57 million tonnes due to fire, and sequestration of two million tonnes because of regrowth after fire. Of the fire-affected RFA regions, East Gippsland had the greatest loss of carbon stocks (36 million tonnes), followed by North East and Gippsland, where 10 million and nine million tonnes were lost respectively.²²⁷ The net loss of 55 million tonnes of carbon stock is around a 3 per cent decrease in carbon retention across the whole of the state.²²⁸

Biomass including timber

Biomass is harvested from native forests and plantation forests. Fire impact on these timber values is complex to calculate as there are a number of factors to consider which are difficult to quantify. Among the factors to consider are salvage timber harvesting operations and fire severity. When fire severely impacts timber values, there is limited time after the fire to commercialise those resources.

VicForests announced that salvage timber harvesting will occur for a maximum area of 3,500 ha of native timber forests impacted by high-severity fires. The section on plantations in this report shows that 8,354 ha of hardwood and softwood plantations were affected by the 2019–20 bushfires (Section 7.3). The Panel found that some of the burnt plantation areas were commercially salvaged but, again, the actual quantity that was salvaged is unclear. This is because some areas had little or no salvage value and needed to be bulldozed and the debris burnt before replanting.

Recreation and tourism

The Panel found that there was significant loss of built assets, visitation and nature-based tourism as a result of the 2019–20 bushfires. Detailed information on the impact of the bushfires on recreation and tourism can be found in Section 7.5.

DELWP estimated that recreation and tourism is expected to decrease due to 2019–20 bushfires. Many parks and state forests have been closed until safety can be ensured and damaged assets restored. This means that many parks and state forests in eastern Victoria were impacted over a prolonged time frame.

Around 1.2 million ha of state forests, parks and reserves were burnt in the 2019–20 bushfires across the East Gippsland, Gippsland and North East RFA regions. The fires impacted 49 state forests, 14 parks and 83 reserves.²²⁹ The greatest impact was in East Gippsland, where 101 state forests, parks and reserves were within the fire extent, followed by Gippsland and North East.²³⁰

226. DELWP (2020) [Ecosystem services from forests in Victoria: impact of the 2019–20 bushfires](#), p. 80, DELWP, accessed 2 February 2022.

227. Ibid.

228. Ibid.

229. DELWP (2020) [Ecosystem services from forests in Victoria: impact of the 2019–20 bushfires](#), DELWP, accessed 2 February 2022.

230. Ibid.

Water supply

Forests and trees are well known to be vital for water security – they regulate water quality and quantity and provide water provisioning services as well as regulating water quality and providing protection functions against flooding and soil erosion including debris flow. The DELWP report²³¹ indicates that it is expected that water supply could decrease over the long term (decrease by 3,900 gigalitres 0.3% of total water inflows to the RFA regions over 150 years if no subsequent bushfires subsequently) as a result of the 2019–20 bushfires. DELWP stated that the reason behind this is mortality of Ash forests by high-severity fires, leading to a decrease of a capacity in water regulation and the relatively high water use of the young, densely populated forest that regenerates

Pollination

Pollination ecosystem services are used by apiarists. The impact on the apiary industry is discussed in Section 7.4, which also covers findings from DELWP’s ecosystem services report regarding pollination services.

Air filtration

Forests are known to improve air quality. Trees remove air pollution by the interception of particulate matter on plant surfaces and absorb gaseous pollutants including nitrogen oxides, ammonia and ozone through the leaf stomata. These pollutants can cause respiratory issues from repeated exposure. Currently the Victorian Government has adopted no systems or modelling programs to quantify the benefit that this service can provide to Victorians. Air filtration is expected to decrease as a result of the 2019–20 bushfires, as vegetation cover is reduced. The size of the decrease depends on the proximity of communities to severely burnt areas of forest. Provision of this ecosystem service will increase over time as forests regenerate (“Ecosystem services from forests in Victoria – Impacts of the 2019–20 bushfires”, page 37).²³²

Pest control

Forests are important habitat for species, including birds, that are predators of pest species. Forests provide services for these species to control pest species. DELWP estimates that these services are expected to decrease as a result of the 2019–20 bushfires, as the fires impacted animals and habitat.

Soil erosion

DELWP in partnership with Alluvium Consulting, who produced annual soil erosion modelling specifically for the 2019–20 bushfires, estimated that East Gippsland, Gippsland and North East RFA regions could result in an additional 724,000 tonnes of hillslope soil erosion in 2020 and 2021, with 88 per cent occurring in the first year.²³³ Of this, 130,000 to 261,000 tonnes is estimated to discharge to major waterways. Although this is a 290 per cent increase in soil erosion from forests across the three RFA regions, this is a small decrease if magnitude of ecosystem service of soil retention by forests across the three RFA regions per year, which is around 600 million tonnes of soil, is prevented from soil erosion.²³⁴ This scenario is based on the assumption that rainfall and other conditions are similar to annual average value.

231. Ibid.

232. Department of Environment, Land, Water and Planning, Victoria, *Ecosystem services from forests in Victoria: impact of the 2019–20 bushfires*, Victorian Government, 2020.

233. DELWP (2020) [Ecosystem services from forests in Victoria: impact of the 2019–20 bushfires](#), DELWP, accessed 2 February 2022.

234. Ibid.

6.7.3 Key information and issues raised during consultation

During the public consultation process, stakeholders expressed concern about the paucity of information in the Summary Report on the impact of the bushfires on recreation, carbon sequestration and water catchments. The Panel concurs with this concern. To address this issue and better understand these important topics, the Panel met with researchers from the University of Melbourne, who provided clarifications regarding bushfire impacts on some ecosystem services.

6.7.4 Panel analysis of issues raised

The Panel found that there has been a major shift in quantifying some ecosystem services.

Carbon sequestration

On the future trend in carbon sequestration, the Australian Government Department of Industry, Science, Energy and Resources reported after the 2019–20 bushfires:

Generally, over time and in the absence of new disturbances, Australia's eucalypt forests re-absorb carbon to balance the carbon emitted during the fires. Forests burnt this year are expected to continue sequestering carbon over the next decade and beyond as they recover. As an example, more than 98 per cent of forest cover was observed to return within 10 years after the 2002-03 bushfires.²³⁵

The net loss estimated by DELWP of 55 million tonnes in forest carbon sequestration would be returned under the forest neutrality assumption in forest regrowth after the fires.²³⁶

Recently this assumption has been tested by a number of researchers. One example is Bowman et al. (2020),²³⁷ who have challenged it after reviewing the impacts of the 2019–20 bushfires. The carbon neutrality assumption about burnt forests is based on the view that fire-adapted forests, such as eucalypts, rapidly recover and there is only a negligible effect on their carbon stocks. Bowman et al. argue that the 'combination of drought and frequent fires is likely reducing the capacity to recover from the fire so future Australian forests may store less carbon',²³⁸ preventing forests from replacing all of the carbon lost to the atmosphere.

Research conducted by the University of Melbourne indicates potential decreases in carbon stability of fire-tolerant forests under future predictions of more frequent, extensive and severe bushfires.^{239 240} One study found that high-severity bushfires in 2009 decreased the carbon stability of a fire-tolerant forest by significantly decreasing absolute and proportional carbon stores in live trees, which would likely influence store recovery rates.²⁴¹

235. Department of Industry, Science, Energy and Resources (April 2020) [Estimating greenhouse gas emissions from bushfires in Australia's temperate forests: focus on 2019–20](#), Department of Industry, Science, Energy and Resources, accessed 2 February 2022.

236. DAW and the State Government of Victoria (2021) [Victorian Regional Forest Agreement Major Event Review of the 2019–20 bushfires: Summary report: information and data to inform public consultation](#), DAW and the State Government of Victoria, accessed 1 March 2022.

237. Bowman D, Williamson G, Price O, Ndalila M and Bradstock R (2020) 'Australian forests, megafires and the risk of dwindling carbon stocks', *Plant, Cell and Environment*, 44(2).

238. Ibid.

239. Clarke HG, Smith PL and Pitman AJ (2011) 'Regional signatures of future fire weather over eastern Australia from global climate models', *International Journal of Wildland Fire*, 20:550-562.

240. King KJ, Cary GJ, Bradstock RA and Marsden-Smedley JB (2013) 'Contrasting fire responses to climate and management: insights from two Australian ecosystems', *Global Change Biology*, 19:1223-1235.

241. Bennett LT, Bruce MJ, MacHunter J, Kohout M, Krishnaraj SJ and Aponte C (2017) 'Assessing fire impacts on the carbon stability of fire-tolerant forests', *Ecological Applications*, 27:2497-2513.

A second study in another extensive fire-tolerant forest type also measured significant decreases in absolute and percentage carbon stocks in live trees after one high-severity fire, and more significant decreases after two high-severity fires within six years (2007 and 2013).²⁴² The same study quantified significant decreases in soil carbon stocks after one or two high-severity fires, which could also impact on capacity to restore carbon stores in the above-ground pools.²⁴³ The impacts of changing fire regimes on Victoria's fire-tolerant eucalypt forests are important to understand because these forests store the majority of Victoria's forest carbon, due to their moderate productivity and extensive distribution.²⁴⁴ Increased vulnerability to subsequent fires was also indicated after the 2009 high-severity fires, which increased the horizontal and vertical fuel connectivity for at least seven years, indicating increased potential for crown fires;²⁴⁵ however, there were no clear effects of high-severity fires on fuel structure in the short-interval fire study.

Current assumptions underpinning the Australian National Greenhouse Accounts (NGA) do not incorporate these findings and potentially oversimplify the complex landscape-scale forest responses to varying levels of fire frequency and severity. The NGA estimates wildfire carbon emissions and spatially tracks recovery under the assumption that carbon stocks will recover within 10 to 15 years of all fires regardless of the magnitude of the impact and response to fires. However, there is increasing evidence that in the case of high-severity fires at short intervals, forests could experience substantial negative deviations from historical post-fire carbon trajectories. It is currently unclear if and how the FullCAM model that is embedded in the NGA can or will accommodate tree mortality and/or changed productivity due to severe fire, short-interval wildfires, and interactions with climate factors including drought and heat.

Water supply

Bushfires are well known to impact on water quality and yield and alter the dynamics of stream ecosystems in a complex way. In terms of water yield after bushfire, its response characteristics indicate the amount of water available for forest ecosystem and human use. In Victoria, many upstream catchments are in forested areas. This means that changes to forest conditions as a result of bushfires can impact water yield over both short-term and long-term horizons.

In ash-type eucalypt forests, a reduction in water yield occurs as vegetation regenerates.²⁴⁶ As these forests occur at high elevations and have high rainfall, fire occurs less frequently than in drier forests with lower elevations.²⁴⁷ When medium to hot fires occur, it causes widespread mortality, resulting in mass seedling regeneration from the fire-killed mature trees.²⁴⁸ Original burnt ash trees do not typically recover but forest regeneration occurs from seed. This high density of regenerating stems results in strong competition for available water, leading to reduction in catchment water capacity by the regenerating forests. This is reflected in the 'Kuczera curve'. The Kuczera curve estimates that maximum yield impacts occur approximately several decades after the fire due to the very dense young regrowth from seeds during the first few decades. A return to pre-fire yield conditions occurs as the young dense forest naturally thins as the forest matures. The Kuczera curve describes a generalised response for Ash forests.

242. Fairman TA, Nitschke CR and Bennett, LT (2022) '[Carbon stocks and stability are diminished by short-interval wildfires in fire-tolerant eucalypt forests](#)', *Forest Ecology and Management*, 505:119919.

243. Ibid.

244. Commissioner for Environmental Sustainability Victoria (2019) [State of the Forests 2018](#) report, Commissioner for Environmental Sustainability, accessed 2 December 2021.

245. Karna YK, Penman TD, Aponte C, Gutekunst C and Bennett LT (2021) '[Indications of positive feedbacks to flammability through fuel structure after high-severity fire in temperate eucalypt forests](#)', *International Journal of Wildland Fire*, 30:664-679, accessed 2 February 2022.

246. Kuczera GA (1987), '[Prediction of water yield reduction following a bushfire in ash-mixed species eucalypt forest](#)', *Journal of Hydrology*, 94:215-236.

247. Commissioner for Environmental Sustainability Victoria (2019) [State of the Forests 2018](#) report, Commissioner for Environmental Sustainability, accessed 2 December 2021.

248. Lane P (2020) 'Literature Review of Fire Impacts on Hydrology', School of Ecosystem and Forest Sciences, University of Melbourne, IFER Supplementary Project S2020:15.

In practice, runoff impacts from a bushfire will depend on local catchment characteristics such as forest type and age, rainfall conditions, fire extent and fire severity. This means that the calculation of water yield change before and after fire in ash stands may not be exactly same as the Kuczera curve but require some modifications. In addition, this does not provide a complete picture of water yield impact from the 2019–20 bushfires, as the majority of forests impacted in Victoria were fire-tolerant eucalypt forests. Ash forests make up around 15 per cent of Victorian forests.

Mixed species forests are not as sensitive to hot fires as Ash, are not killed as easily and can resprout with epicormic growth from the base of the tree, trunk or major branches. Mortality rates for mixed species are relatively low, even for high-severity fires, meaning most of the original forest survives in extreme fire conditions. Research in experimental catchments has found either small decreases or flow increases after fire in mixed species forests, depending on the severity of the burn (Figure 20). In particular, a moderate fire severity may result in a net increase in total evapotranspiration (corresponding to a decrease in catchment yield). In contrast, evapotranspiration could decrease following a high-severity fire, resulting in a potential increase in catchment yield. Regardless of the forest response and direction of the yield impact, the maximum change in runoff is expected in the first 1 to 2 years after the fire and the magnitude of the runoff change is 20 to 40 per cent compared to pre-fire conditions. The catchment is expected to gradually recover to pre-fire conditions in approximately 10 years.

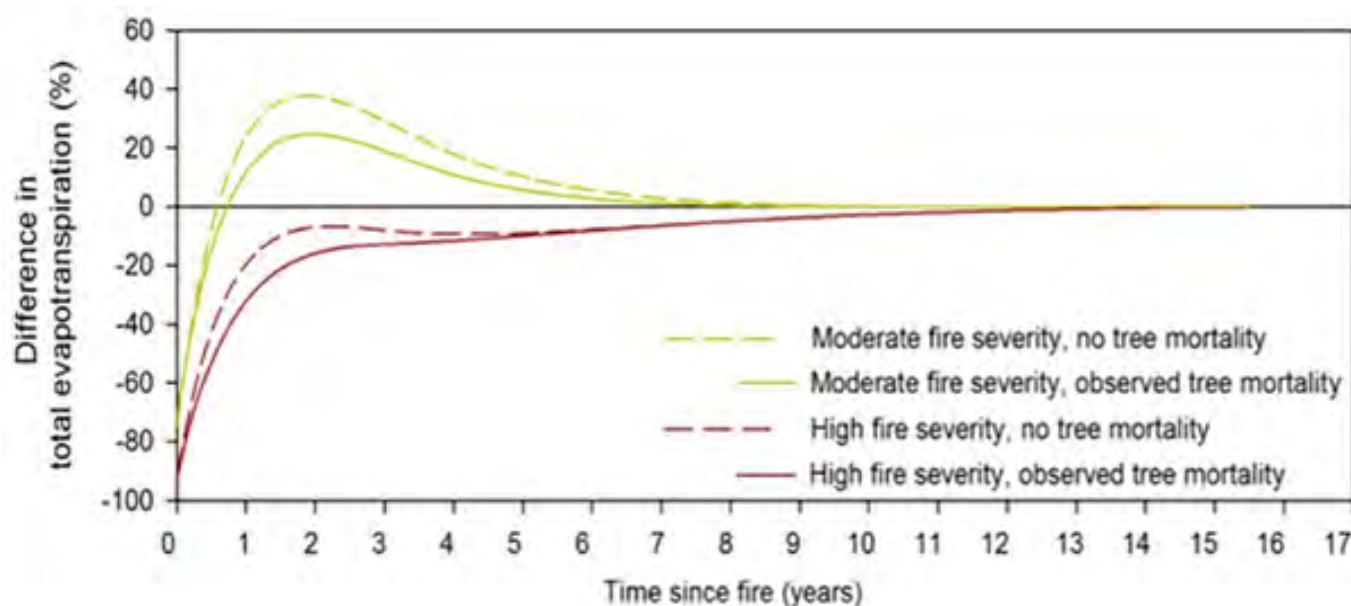


Figure 20. Difference in total evapotranspiration before and after fire for mixed species eucalypt forests in response to varying fire severity and tree mortality²⁴⁹

249. Nolan RH, Lane PNJ, Benyon RB, Bradstock R and Mitchell PJ (2015) 'Trends in evapotranspiration and streamflow following wildfire in resprouting eucalypt forests', *Journal of Hydrology*, 524:614-624, figure 7.

Researchers from the University of Melbourne have taken a holistic approach to estimating water yield as a result of the 2019–20 bushfires by considering both ash-type and mixed-type forests.²⁵⁰ Based on the real proportion of species and severity as a result of the bushfires, they found that there was very little area of ash forest burnt at stand-replacing severities, and that overall the fire-impacted mixed species forest had no impact on streamflow. This is because a mixture of high and moderate severity fires balanced out positive and negative streamflow respectively.²⁵¹ This is consistent with findings from DELWP's Ecosystem Services report (page 47).²⁵²

What is currently unknown in the water yield estimation is the impact of high-frequency, high-severity fires on mixed species, which may be altered by repeated high-severity fires.^{253,254} One dramatic example of stand structure change after fire is the replacement of ash stands (*Eucalyptus regnans*) by Silver Wattle (*Acacia dealbata*) and such changes are predicted to result in different streamflow patterns over time (Figure 21). The evapotranspiration pattern of *E.regnans* and *Acacia dealbata* over a chronosequence (10, 20, 30 and 80 years) shows that both water use peaked between ages 10 and 20, and then began to decline. One thing to note here is that the decline in water use for the acacia species was significantly more than for the eucalypts. This indicates that there could be more streamflow if multiple high severity fires result in replacing eucalypts forests with acacia species forests. It is highly important to understand the magnitude of repeated high-severity fires on post-fire water yield recovery trajectory in mixed species forests. This would help with identifying the spatial and temporal scale of future bushfire risks in hydrology and developing strategic approaches to mitigate the risks. Rainfall conditions over the past 18 to 24 months in the region have been above average. During the same period, streamflow might be expected to increase slightly as a result of the fire. Both of these factors may contribute to increased streamflow conditions, and it is difficult to attribute the impact of these two influences on observed streamflow.

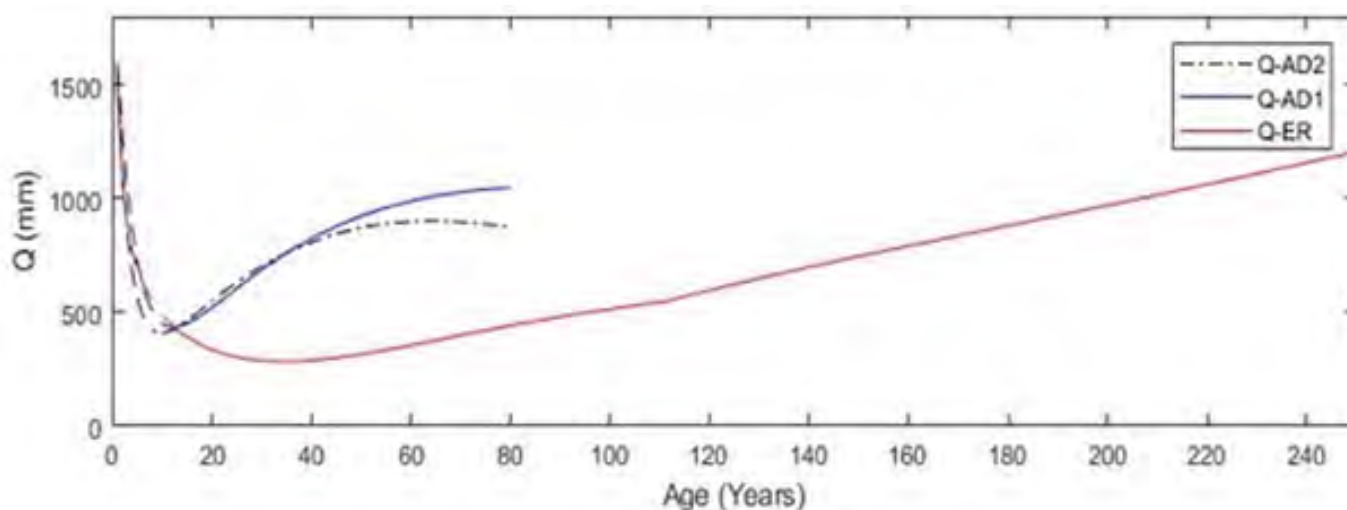


Figure 21. Modelled streamflow based on evapotranspiration measurements for *Eucalyptus regnans* (red line) and *Acacia dealbata* (blue and dash lines). Note that lower Y-axis values (modelled streamflow) indicate greater water use.

250. Lane P and Sheridan G (29 October 2021) 'Forests fire and water', presentation to the Panel members.

251. Lane P (personal communication, 29 October 2021).

252. DELWP, (2020), *Ecosystem services from forests in Victoria: impact of the 2019–20 bushfires*, Victorian Government, 2020 https://www.environment.vic.gov.au/_data/assets/pdf_file/0023/555116/Ecosystem-services-from-forests-in-Victoria-impact-of-the-2019–20-bushfires.pdf accessed 15 March 2022

253. Fairman TA, Bennett LT, Tupper S and Nitschke CR (2017) 'Frequent wildfires erode tree persistence and alter stand structure and initial composition of a fire-tolerant sub-alpine forest', *Journal of Vegetation Science*, 28:1151–1165.

254. Fairman TA, Bennett LT, Tupper S and Nitschke CR (2019) 'Short-interval wildfires increase likelihood of resprouting failure in fire tolerant trees', *Journal of Environmental Management*, 231:59–65.

It is important to note that climate change is also one of the major drivers of catchment yields. Any potential climate changes that have occurred or may continue to occur in the future will influence runoff. Research suggests that yield impacts from bushfires are second order compared to the influence of climate under many climate predictions²⁵⁵.

Water quality

Bushfire typically decreases water quality over time. In Victoria many studies have found that there could be impacts ranging from low-medium grade^{256,257} to very high²⁵⁸ after fire events. Water quality can degrade as a result of soil erosion, which typically reduces water quality of creeks, rivers and coastal areas. Eroded soil can contain nutrients, which can be deposited in the slope of the land. This can be in sediment traps, along contour banks or in grassed waterways, wetlands or dams. Soil erosion typically occurs after periods of heavy rain in fire-affected catchments, and are generally more severe in steep areas where all the ground cover vegetation has been burnt. Severe erosion events can occur from the time of the fire and continue for two to three years after fire. The temporal range varies with forest types. Wetter forest types recover more rapidly than drier types, primarily due to soil properties. Given the time that has elapsed since the 2019–20 bushfires at the time of writing, there is still a chance of soil erosion, but less now than directly after the fire event. The Panel was advised by University of Melbourne researchers that severe erosion events occurred in the Upper Murray and Tambo catchments. The Panel did not receive any information regarding soil erosion risks and modelling predictions, so it is unclear as to the level of risk currently, but the intensity and duration of rainfall events in the future will determine the magnitude and occurrence of soil erosion risks.

The 2019–20 bushfires are expected to impact on soil retention decrease, resulting in an increase of soil erosion to major waterways and risk of debris flow²⁵⁹. Run-off-generated debris flow can cause significant risk to water supplies and infrastructure once it occurs. This event requires a threshold intensity of rainfall to occur, which is why there can be either minimal or extreme erosion events after fire. A long-duration rainfall event also could trigger mass-movement erosion events.²⁶⁰

Considering the magnitude of debris flow events in the Victorian community, it is important for the Panel members to have sufficient information on spatial distribution of potential risks of soil erosion, including on listed aquatic species, and on management responses. This will assist the Panel members with developing potential remedial actions to mitigate those risks.

255. Lane P (2020) 'Literature Review of Fire Impacts on Hydrology', School of Ecosystem and Forest Sciences, University of Melbourne, IFER Supplementary Project S2020:15.

256. Lane PNJ, SheridanPJ and Noske PJ (2006) '[Changes in sediment loads and discharge from small mountain catchments following wildfire in south eastern Australia](#)', *Journal of Hydrology*, 331:495-510.

257. Lane PNJ, Sheridan PJ, Noske PJ and Sherwin CB (2008) '[Phosphorus and nitrogen exports from SE Australian forests following wildfire](#)', *Journal of Hydrology*, 361:186-198.

258. Sheridan GJ, Lane PNJ, Grayson RB, Noske PJ, Feikema PM and Sherwin CB (2008) '[Impact of the 2003 alpine bushfires on streamflow - estimated changes in stream exports of sediment, phosphorus and nitrogen following the 2003 bushfires in eastern Victoria](#)', Murray-Darling Basin Commission, Publication No 22/08

259. Department of Environment, Land, Water and Planning, Victoria, (2020), Ecosystem services from forests in Victoria: impact of the 2019–20 bushfires, Victorian Government. https://www.environment.vic.gov.au/_data/assets/pdf_file/0023/555116/Ecosystem-services-from-forests-in-Victoria-Impact-of-the-2019-20-bushfires.pdf 15 March 2022

260. Nyman P, Rutherford ID, Lane PNJ and Sheridan GS (5 April 2019) 'Debris flows in southeast Australia linked to drought, wildfire and the El Nino Southern Oscillation' *Geology*, 47(5): 491–494.

6.7.5 Findings

The 2019–20 bushfires impacted on a wide range of ecosystem services in the forests of eastern Victoria but particularly on carbon sequestration, water quantity and quality, pollination and recreation and tourism opportunities. Given the proportion of the fire extent that was subject to high severity fire, as well as the compounding effects of forest areas being subject to multiple short-interval bushfires, the Panel considers that the impacts on some critical ecosystem services, such as carbon sequestration is likely to be greater than currently predicted.

6.7.6 Recommendation

The Panel recommends:

Recommendation 11

That the Parties report on post-fire productivity and carbon-stock recovery of fire-tolerant forests after high-severity fires. The report should:

- i. consider the impact of changing fire regimes and future climate predictions
- ii. include analysis of short-interval high-severity fires
- iii. test current assumptions of carbon forest neutrality after bushfires in the National Greenhouse Accounts.



Photo credit: Recovering Spotted Gum Mottle Range March 22 © T. Bartlett

7. Forest industries

This chapter examines the implications of the 2019–20 bushfires for the long-term stability of forest industries in Victorian Regional Forest Agreements (RFA) regions. In the RFA context, forest industries include industries that generate jobs and economic benefit that depend on forests, including timber and forestry products industries, nature-based tourism and apiculture.

7.1 Harvest level

7.1.1 Background

The modernised RFAs introduced a series of new clauses related to the harvest level from state forests in each RFA region. These included commitments for Victoria to forecast and make publicly available the harvest level, including the methodology and assumptions used to forecast the harvest level.²⁶¹ It is also required to annually report on the annual and cumulative harvest volume of timber resources, by product category, taken for commercial purposes within each RFA region since July 2019.²⁶² In addition, should a major event occur in an RFA region that has the potential to significantly impact on the harvest level, Victoria is required to commence a review of the harvest level within 12 months.²⁶³

261. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clauses 53F and 53G, accessed 2 August 2021.

262. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 53K, accessed 2 August 2021.

263. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 53J, accessed 2 August 2021.

Victoria's legislation provides the framework for determining harvest levels within all state forests. The *Sustainable Forests (Timber) Act 2004*²⁶⁴ (Vic) provides for the government to review the allocation of timber resources every five years and to amend or vary an allocation order. It also empowers the Minister for Agriculture (Vic) to review access to timber resources when there have been changes to the land use decisions for public land, or when a significant variation to available timber resources occurs as a result of major fires or diseases. The allocation order, issued by the minister, specifies the maximum area of both ash and mixed species forests available for timber harvesting in any five-year period. VicForests uses a strategic wood supply model to identify the quantity of timber that can be sustainably harvested over the medium term. Under the *Forests (Wood Pulp Agreement) Act 1996*²⁶⁵ (Vic) a minimum annual supply of 350,000 m³ of pulpwood has to be made available to Opal Australian Paper's Maryvale mill until 2030, of which at least 300,000 m³ per annum will be from ash forests.

In 2013, the VAGO examined whether Victoria's native forest timber resources on public land in eastern Victoria were being managed productively and sustainably. The audit report²⁶⁶ found that VicForests estimates of the forest area and projected yield of sawlogs that could be sustainably and commercially harvested are based on sound rationale and accurate and reliable methods and data. It also found that the then Department of Environment and Primary Industries (DEPI) and VicForests were managing the timber resources in a productive way that delivered socioeconomic benefits to regional communities and that they demonstrated many environmentally, socially and economically sustainable practices to fulfil their roles in timber resource management. However, it also found that DEPI was not effectively delivering its approach to protect forest values.

Prior to the 2019–20 bushfires, VicForests's 2017 Resource Outlook was used to establish the annual volume of sawlog timber (D+) that could be commercially supplied on a sustainable basis from all the state forests in eastern Victoria. In 2017, the Victorian Environmental Assessment Council (VEAC) carried out an assessment of the viability of, and capacity for, current volumes and potential fibre and wood supply areas in state forests in the Central Highlands, North East, Gippsland and East Gippsland RFA regions. The *Fibre and wood supply: assessment report*²⁶⁷ found that VicForests's modelling process was rigorous, the modelling assumptions were appropriate and the sustainable harvest levels were reasonable. The report noted that sustainable harvest levels in the state forests of eastern Victoria had been reduced by more than 50 per cent over the past decade and that State Forest Resource Inventory data was 15 to 25 years out of date. VEAC's analysis highlighted that forest management zoning changes have resulted in changes to the areas available for timber harvesting – for example, to protect Leadbeater's Possum and other threatened species. It noted that VicForests's current resource projections for ash species were for 132,000 m³ per annum of D+ ash species and 100,000 m³ per annum of D+ mixed species sawlog to be produced for the medium term. In April 2019, the Minister for Agriculture issued a revised timber allocation order which reduced the timber resources allocated to VicForests through the 2013 Timber Allocation Order by 5,000 ha.

264. State Government of Victoria (2004) *Sustainable Forests (Timber) Act 2004*, State Government of Victoria, accessed 2 February 2022.

265. Stgate Government of Victoria (1996) *Forests (Wood Pulp Agreement Act) 1996*, State Government of Victoria, accessed 2 February 2022.

266. Victorian Auditor General's Office (VAGO) (11 December 2013) *Managing Victoria's native forest timber resources*, *Victorian Auditor General's Report* 2013-14:17, VAGO, accessed 2 December 2021.

267. Victorian Environmental Assessment Council (VEAC) (2017) *Fibre and wood supply: assessment report*, VEAC, accessed 2 December 2021.

The Victorian Forestry Plan (VFP), announced by the Victorian Government in November 2019, is the government's commitment to phase out native timber harvesting by 2030. It included a commitment to phase down harvest levels in two stages to June 2030. It specified that, for the period up to mid-2024, VicForests will meet its existing contractual obligations and supply contracts. It also specified that from mid-2024 to 2030, a competitive process will be used for allocating a decreased supply of sawlogs from state forest. The VFP does not change Victoria's pulpwood supply commitments under the *Forests (Wood Pulp Agreement) Act 1996*. As a result of the VFP, VicForests no longer produces a Resource Outlook, but continues to update its resource modelling over time and in response to events or policy changes that may affect access to forest areas for timber production.

7.1.2 Impacts of the 2019–20 bushfires

The 2019–20 bushfires had an immediate impact on VicForests' operable inventory, reducing the volume of D+ grade sawlog available for harvest into the future by ~9 per cent in ash forests and ~13 per cent in mixed species forests. VicForests provided the Panel with updated modelled estimates of the bushfire impacts on sawlog volumes. Overall, about 1 million m³ of D+ standing potential sawlogs were burnt or destroyed by the bushfires, of which about 36 per cent was ash sawlog and 64 per cent was mixed species sawlog. VicForests' estimates²⁶⁸ of the impact on standing sawlog gross volumes is shown in Table 72 by forest type for each of the fire-affected RFA regions. Some of these burnt sawlogs were able to be utilised during the salvage timber harvesting operations.

Table 72. Estimated sawlog losses within the fire-affected RFA regions

	East Gippsland	Gippsland	North East	Total
Ash D+ (m ³)	6,880	154,739	209,444	371,063
Mixed species D+ (m ³)	613,923	37,777	11,937	663,637
Total sawlogs (m³)	620,803	192,516	221,381	1,034,700

Source: VicForest presentation to MER Panel, 29 June 2021 (Slide 8)

From this information, the greatest impact on standing timber volumes occurred in the East Gippsland RFA region, which had about 60 per cent of the impacted timber. However, in terms of the impacts on the highly productive ash forests, 56 per cent of the losses occurred in the North East RFA region and 42 per cent occurred in the Gippsland RFA region.

Government support and actions following the bushfires

The Panel was advised in August 2021 that the Victorian Government had commenced a Harvest Level Review process in December 2020, in accordance with the requirement²⁶⁹ under the modernised RFAs and that the review would consider the factors specified²⁷⁰ in the RFAs.

In November 2021, the Panel was provided with a briefing note on the outcome of the Harvest Level Review. That review found, after considering the bushfire impacts on the available timber volume in eastern Victoria, that the annual timber supply commitments can still be met and ecologically sustainable forest management supported. The review found that the maximum potential harvest levels are 172,000 m³ per annum for D+ ash species sawlogs and 144,000 m³ per annum for D+ mixed species sawlogs.

268. Datasource: VicForests presentation [slide 8] (27 June 2021) to Major Event Review Panel.

269. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 53J, accessed 2 August 2021.

270. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 53F, accessed 2 August 2021.

7.1.3 Key information and issues raised during consultation

The following points were made during consultation:



Any areas that had been identified for future timber sawlog removal to supply Victorian consumer demands, that were burnt in the RFA areas and are now no longer available for supply, should be replaced by alternative areas of similar log species and grade. (Wood Products Victoria submission)



The biggest challenge for the forest industries is supply certainty and the phase out and transition decisions are already impacting on investment, staffing and updating machinery. The [Major Event Review's] consideration of timber harvesting levels should not add to the uncertainty. (Australian Forest Products Association consultation)



The 2019–20 fires impacted around 50 per cent of available annual volume in native forest, pushing the already declining industry into further decline. (Victorian National Parks Association submission)



The Major Event Review should assess the impacts of the 2019–20 bushfires on the sustainable volume of timber supply from the RFA regions. This should incorporate consideration of the currently accredited process(es) for forecasting the Harvest Level under each RFA. It should also account for the need to revise the CAR reserve system to ensure that it remains 'CAR' in the post-bushfire context. (Environmental Defenders Office submission)



There has not yet been a robust assessment of wood volumes and harvest levels that considers the impact of bushfires on non-timber values, and implications for logging operations as a consequence of fire impacts on those non-timber values. (The Wilderness Society submission)



Peer review and clear transparency around wood flow modelling needs to be made available if undertaken and undertaken as a matter of urgency. (East Gippsland Conservation Management Network submission)



There is an urgent need to reduce wood volumes to take pressure off the forests, and encroachment of logging operations into high conservation value (HCV) areas such as threatened species habitat and important recreation and cultural heritage areas. (The Wilderness Society submission)



Bring forward the 2030 transition out of native forest logging to 2022. (Lawyers for Forests submission)

7.1.4 Panel analysis of issues raised

Despite the matter of Harvest Level being listed as one of the six items for which the Major Event Review had to assess the impacts of the 2019–20 bushfires, the Panel was not in a position to do a holistic review of the Harvest Level. The Victorian Government conducted the Harvest Level Review, as required by the RFAs after a major event, in parallel with the Major Event Review process but without the Panel's involvement.

During the Panel's consultations, the Victorian National Parks Association claimed that 50 per cent of the available annual wood volume in native forest had been impacted by the bushfires. The Panel sought briefings on this important issue and undertook its own assessment of the impacts on both available and 'allowable' sawlog volumes. For the Panel's analysis, the available wood volumes are determined by the operable inventory D+ sawlog volumes that exist for the ash and mixed species forest areas in which harvesting is permitted under the allocation order. The Panel considered that the 'allowable' harvest volumes permitted under the Victorian Forestry Plan are a subset of the available volumes, after taking account of constraints including old growth and threatened species management requirements and operational constraints arising from litigation actions.

For the allowable volume analysis, VicForests provided the Panel with the following data²⁷¹ (Table 73) on the operable inventory of D+ sawlogs, as at 1 July 2019, after making adjustments for the losses associated with the bushfires.

Table 73. Remaining available D+ sawlog volumes in eastern Victoria

Forest type	Central Highlands	East Gippsland	Gippsland	North East	Total
Ash D+ (m ³)	2,331,609	46,982	763,082	579,779	3,721,452
Mixed species D+ (m ³)	1,488,137	2,068,790	360,692	396,537	4,332,156
Total (m³)	3,819,746	2,133,772	1,123,774	976,316	8,053,608

Taking into account both the remaining available sawlog volumes and the gross estimated volume of D+ sawlogs impacted by the bushfires (1,034,700 m³), the sawlog losses associated with the 2019–20 bushfires represent about 11 per cent of the D+ sawlogs that were available to VicForests prior to the bushfires.

Based on the information the Panel had access to, the Panel's analysis indicates that, after allowing for the estimated bushfire-related sawlog losses, the remaining sawlog volumes available under the current allocation order appear to be more than sufficient to meet the allowable harvesting levels under the Victorian Forestry Plan for both ash and mixed species, across all the RFA regions in eastern Victoria. The Panel acknowledges that there are both ongoing changes to threatened species management requirements and ongoing and additional legal cases that could impact on the results of this analysis.

271. Datasource: VicForests presentation [slide 15] (27 June 2021) to Major Event Review Panel.

7.1.5 Findings

Two previous independent reviews commissioned by the Victorian Government both found that VicForests's native sawlog modelling process and assumptions were appropriate, and that the sustainable harvest levels derived from this modelling were reasonable. Given that the model and assumptions have not changed and that VicForests has modelled the impacts of the 2019–20 bushfires on timber volumes, the Panel considers that these processes are a sound basis for determining the appropriate Harvest Level.

The Panel notes the outcome of Victoria's Harvest Level Review, which implies that the 2019–20 bushfires will not have impacted on Victoria's ability to continue to supply the levels of ash and mixed species sawlogs committed to under the Victorian Forestry Plan.

7.1.6 Recommendations

No recommendations are made.

7.2 Commercial native forestry

7.2.1 Policy and legislative background

One of the original intentions of the RFAs was to provide long-term stability of forests and for forest industries. Since the Victorian RFAs were developed, there have been many changes to the policies and legislation that relate to commercial native forestry. In addition, many of the native forests within RFA regions have experienced very large and intense bushfires, which impacts on the resources available within these forests to support commercial native forestry operations. The modernised RFAs recognise the importance of forest industries to generating jobs and economic benefits for rural and regional communities and commit Victoria to supporting the expansion of a range of forest industries. They contain new clauses related to Victoria's decision to cease all commercial harvesting of timber resources from native forests on public land by 30 June 2030²⁷², while recognising that until that date, state forest outside of the CAR reserve system can be available for timber harvesting.²⁷³ There are new RFA milestone commitments for Victoria to undertake a comprehensive review of the Code of Practice for Timber Production 2014 by December 2023²⁷⁴ and to review and update all the forest management plans by December 2023.²⁷⁵ In relation to conserving and protecting all ecological vegetation classes, one of the identified RFA strategies is 'investigating opportunities to implement alternative silviculture techniques such as variable retention harvesting'.²⁷⁶

Since 2004, commercial native forestry operations on public land have been managed by VicForests, which is a state-owned enterprise that operates with a commercial focus seeking to maximise the long-term economic returns to Victoria from its operations. VicForests is responsible for the sustainable harvesting and commercial sale of timber from state forest and the subsequent regeneration of harvested areas.

Victoria's *Sustainable Forests (Timber) Act 2004*²⁷⁷ provides the framework for sustainable timber harvesting in state forest areas. In undertaking sustainable forest management, the principles of sustainable development, as set out in the Act, have to be regarded.

272. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 53C, accessed 2 August 2021.

273. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 53D, accessed 2 August 2021.

274. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 33D(a), accessed 2 August 2021.

275. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 51 (b), accessed 2 August 2021.

276. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 49C(c), accessed 2 August 2021.

277. State Government of Victoria (2004) *Sustainable Forests (Timber) Act 2004*, State Government of Victoria, accessed 2 February 2022.

These principles include that decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equity considerations, as well as the need to develop a strong, growing and diversified economy while maintaining and enhancing international competitiveness in an environmentally sound manner. The Act also provides for a sustainability charter that sets out objectives, consistent with the principles of ecologically sustainable development, for both the sustainability of forests and the sustainability of the timber harvesting industry. The Sustainability Charter for Victoria's State Forests was approved in 2006 by the then ministers for environment and agriculture. Objective 6 of that charter is 'to maintain and enhance the socio-economic benefits of state forests to Victorian communities'. Under that objective, the government committed to providing access to state forests for both wood and non-wood forest products and services on a sustainable basis, to promoting the native forest harvesting sector as a sustainable and attractive investment option, and to supporting forest industries that are socially and economically viable. The Act also prescribes that an allocation order, issued by the Minister for Agriculture, is the mechanism for providing VicForests with long-term access to timber resources in state forest areas generally located east of the Hume Highway.

Forestry operations within areas covered by a RFA, that are undertaken in accordance with the RFA, are exempt from additional Commonwealth approval processes under Part 3 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth), except where such operations are within World Heritage or Ramsar Wetland sites. Any wood sourced from a RFA region is not subject to controls under the *Export Control Act 2020* (Cth). In essence, within RFA regions, the Commonwealth has accredited the state laws, regulatory processes and other components of the forest management system, but these exempt forestry operations must be undertaken in accordance with the accredited state schemes.

Prior to 2019, the policy directions for Victoria's forest industries were contained in the comprehensive 2009 Victoria's Timber Industry Strategy.²⁷⁸ That strategy was developed in the wake of major bushfires in 2003, 2007 and 2009, which the government considered to have 'reinforced the need for a new framework and long-term direction for Victoria's timber industry, focused on resource security, for the next 20 years'. It contained a vision of 'a productive, competitive and sustainable timber industry, based on secure and sustainable native and plantation forests, that fosters strong Victorian communities'. The strategy sought to help the timber industry improve its commercial and environmental sustainability through the implementation of four priority areas of focus and 13 key action areas.

In early November 2019, a few weeks prior to the start of the series of significant bushfires in eastern Victoria, the Victorian Forestry Plan (VFP) was announced by the Victorian Government. This 30-year plan²⁷⁹ includes the commitments to phase out native timber harvesting by 2030 and to transition to a plantation-based timber industry. The Victorian Government originally allocated \$120 million of funding to support businesses, workers and communities in making this transition. The ministerial announcement of the VFP also included commitments to protect an additional 90,000 ha of old growth forest and to establish immediate protection areas for Greater Glider habitat located in the Strathbogie Ranges, Central Highlands, Mirboo North area and East Gippsland. In December 2021, the Victorian Government announced²⁸⁰ a further \$90 million of funding to support workers, businesses and communities through their transition away from the native timber industry.

278. State Government of Victoria (2009) [Victoria's Timber Industry Strategy](#), Victorian Government, accessed 2 December 2021.

279. State Government of Victoria (2019) [Victorian Forestry Plan](#), State Government of Victoria, accessed 2 December 2021.

280. Thomas M, State Government of Victoria (17 December 2021) [Bolstering the Victorian Forestry Plan](#) [media release], State Government of Victoria, accessed 2 February 2022.

7.2.2 Victoria's native forest timber industry

Almost all of Australia's hardwood sawn timber is supplied from native forests. Timber harvesting in Victoria's state forests currently produces 28 per cent of Australia's supply of native forest timbers. According to the Victorian Forest Products Association,²⁸¹ the gross regional product value of the native forest sector in the Central Highlands and Gippsland regions is \$740.5 million annually. The Panel understands that the Victorian native timber industry supports about 4,000 jobs, most in regional areas, and makes annual contributions of about \$500 million to the Victorian economy²⁸². The desire for high-quality, beautiful furniture and flooring made from native hardwood timbers, such as Mountain Ash, is one of the factors that drive the native forest industry in Victoria. In addition, some key components of house construction, including window and door frames, mouldings and some roofing structures are made from native hardwood timber. Since the mid-1980s, Victoria's hardwood timber processors have undergone transformational changes to focus primarily on the production of value-added timber products. Despite these transformations, many hardwood processing industries have closed over the past 40 years, largely as a result of reduced supply of hardwood timber from state forests. Townships such as Mount Beauty and Cann River, which were once important wood processing centres, no longer have any operating timber industries.

There is a long-established philosophical divide within the Victorian community over timber harvesting in native forests, driven in part by ideology but also by history. The tension lies between the view that the forests, their timber and other attributes are resources to be managed, harvested and sold, and an alternative vision that the public estate should be conserved, protected and managed to preserve habitat and biodiversity for use in more passive ways, such as tourism. The two approaches, while arguably not mutually exclusive, have been played out in political, policy, economic and community forums for decades.²⁸³

For many years, various environmental non-government organisations have expressed concerns about native forest timber harvesting in Victoria and lobbied to end all logging of public forests. These groups have been concerned about the level and systems of harvesting, as well as the role of timber harvesting in the loss of old growth forests, the protection of threatened species, water quantity and quality, and the loss of carbon sinks. In recent years, environmental groups have launched 11 legal challenges related to some of VicForests' timber harvesting operations, including whether some specific timber harvesting operations either breach the Victorian or Commonwealth environmental laws, or fail to comply with the precautionary principle under the Code of Practice for Timber Production 2014. Five such legal challenges were ongoing at the time of the Major Event Review.

7.2.3 Areas of state forest where timber harvesting is permitted

Across Victoria, a total of 3.2 million ha of public land is designated as state forest, which represents about 40 per cent of Victoria's 7.89 million ha of public land. Under the forest management plan zoning system, a total of about 1.8 million ha of state forest was zoned as General Management Zone, which means they are managed for multiple uses, including timber harvesting (see Table 74). While timber production may be permitted in SMZs, in practice this requires the incorporation of additional conditions, such as application of increased stream buffer widths.

Table 74. Areas (ha) of state forest zoned as General Management Zone, by RFA region²⁸⁴

Central Highlands	East Gippsland	Gippsland	North East	West Victoria	Total
274,000	409,000	539,000	491,000	101,000	1,814,000

Source: Commonwealth of Australia and Victorian Government, 2019

Not all forest types that occur within these GMZs contain commercial timber species. In addition, there are a range of other restrictions that preclude timber harvesting in some areas of state forest. In 1999, when the RFAs were developed, it was estimated that the net productive area of commercial forest types within all the RFA regions was about 999,000 ha, of which 824,624 ha was in eastern Victoria.²⁸⁵ Since then, a series of large bushfires, as well as further reservation of productive forest areas for species conservation purposes, have reduced the area available for timber harvesting. When the modernised RFAs were agreed to, it was estimated that the area of state forest in eastern Victoria that was suitable for timber harvesting had fallen to 462,000 ha. These estimates include 126,000 ha of ash-type forest and 336,000 ha of mixed species forest. Just over 100,000 ha (80 per cent) of the ash forest area is located in the Central Highlands and Gippsland RFA regions, while just over 220,000 ha (66 per cent) of the mixed species forest area is located in the East Gippsland RFA region.²⁸⁶

7.2.4 Timber harvesting operations conducted in RFA regions

VicForests prepares a Timber Release Plan (TRP) detailing its planned operations in eastern Victoria, showing the areas and specific coupes where it may conduct timber harvesting. For its operations in western Victoria, VicForests prepares a Timber Utilisation Plan detailing its planned timber harvesting operations, which mainly consist of utilisation of minor forest produce for local use. Since 2004-05 both the annual area of state forest harvested and the annual quantity of D+ sawlogs produced by VicForests have decreased substantially. Over a 15-year period, the annual harvest area decreased from 6,500 ha to 3,400 ha, while the annual sawlog production decreased from 520,000 m³ to about 230,000 m³.²⁸⁷

In 2018-19, prior to the Black Summer bushfires, VicForests harvested timber from approximately 2,560 ha of state forest in eastern Victoria and about 970 ha in western Victoria.²⁸⁸ The nature and scale of timber harvesting operations are quite different in eastern and western Victoria. In eastern Victoria, VicForests harvests about 1 million m³ of timber each year using mixture of clearfelling, seed tree and regrowth-retention silviculture, and it supplies the harvested timber to about 20 wood processing customers. In western Victoria, VicForests harvests about 2,000-5,000 m³ of timber each year using selection silviculture, and this wood is supplied to 70 customers. When conducting timber harvesting, VicForests must comply with any conditions in the allocation order and the Timber Release Plan, as well as with the requirements of Victoria's Code of Practice for Timber Production 2014 and the mandatory management standards and procedures.

In 2018, DELWP established its Forest Protection Survey Program to support the delivery of better protection for threatened species that occur within areas planned for timber harvesting and to improve the quality of data on threatened species that can be used in forest management decision-making processes.

281. Victorian Association of Forest Industries (2020) (unpublished) *Industry review*, report provided to Panel by Victorian Forest Products Association.

282. VicForests (n.d) [Forest Facts: Q and A](#), VicForests, accessed 2 February 2022.

283. DELWP (2 June 2021) [Building a better understanding of bushfire risk consultation paper](#), DELWP, accessed 2 December 2022.

284. Commonwealth of Australia and Victorian Government (2019) [Victoria's Regional Forest Agreements: Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements](#), Commonwealth of Australia and Victorian Government, p. 178, accessed 2 December 2021.

285. Ibid, p 181.

286. Ibid p 180.

287. Commonwealth of Australia and Victorian Government (2019) [Victoria's Regional Forest Agreements: Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements](#), Commonwealth of Australia and Victorian Government, p. 200, accessed 2 December 2021.

288. VicForests (2019) [Annual harvesting and regeneration report 2018/19](#), VicForests, accessed 2 December 2021.

The data on where and when surveys have been conducted and what target species have been identified is publicly available on DELWP's website. Information provided to the Panel clearly shows that the threatened species observations from pre-harvest and post-harvest surveys have increased at least fourfold in the three years since the Forest Protection Survey Program was commenced.

Revised silvicultural systems for native forest timber harvesting

In 2019, VicForests revised its native forest harvesting and regeneration systems²⁸⁹ to incorporate previous long-term silvicultural research findings from Victoria and Tasmania and adopt a more adaptive approach to applying systems that better protect a broad range of forest values. The revised approach comprises three components:

- strengthening the processes for identifying and protecting high conservation values, including old growth, rainforests and threatened species
- increasing the use of variable retention harvesting, to retain existing habitat trees and cohorts of potential habitat trees
- reducing the use of high-intensity controlled fire for regeneration purposes.

Variable harvesting retention involves lighter harvesting, with up to 80 per cent of a forest stand being retained within the harvesting coupe, and the regeneration being achieved by re-seeding with reduced reliance on high-intensity burning. VicForests has now identified three types of variable retention silvicultural systems, with progressively increasing levels of retained vegetation. VicForests intends that from 2020 onwards, the previous system of clearfelling and seed trees will account for no more than 25 per cent of its harvesting operations across both its ash and mixed species forest types.

In 2021, research by VicForests scientists^{290,291} combined data from Leadbeater's Possum sightings with high-resolution light detection and ranging (LiDAR) data to create a habitat suitability model, covering both hollow-bearing trees and mid-storey vegetation, that enables more appropriate identification of retained habitat, as the possum had recently been found nesting in silver wattle regenerated after timber harvesting 30 years ago. Their research also documented the persistence of the Greater Glider in or around most previously logged coupes where the variable retention harvesting systems had been used.

Regulation and certification of timber harvesting in state forests

In 2019, the Victorian Government established the Office of the Conservation Regulator (OCR) to oversee DELWP's regulatory functions, including those related to timber harvesting. The main regulatory instrument used by the OCR to regulate timber harvesting is the Code of Practice for Timber Production 2014 (as amended 2021), including the incorporated Management Standards and Procedures for Timber Harvesting Operations in Victoria's State Forests 2014. The OCR undertakes two forms of audit and inspection activities: the annual forest audit program, undertaken by an independent accredited auditor, which assesses compliance of previously harvested coupes; and compliance audits and inspections, conducted by OCR staff, which cover planned or current harvesting coupes.

289. VicForests (2019) [Harvesting and regeneration systems](#), Victorian Government, accessed 2 December 2021.

290. Jiang R (11-14 October 2021) 'The importance of mid-storey connectivity on the LiDAR-based habitat suitability model for Leadbeater's Possum in Victoria's Central Highlands' [conference presentation], *Forestry Australia national conference*, Launceston, Tasmania, accessed 2 December 2021.

291. Ryan M (11-14 October 2021) 'Aboreal species presence following adaptive harvesting in the Central Highlands in Victoria' [conference presentation], *Forestry Australia national conference*, Launceston, Tasmania, accessed 2 December 2021.

Each year, the OCR proactively inspects about 30 VicForests harvesting coupes, with the aim of preventing environmental harm. It also investigates alleged breaches of environmental law. The OCR has the power to issue direction notices to remedy or prevent harm, or in the case of offences it can issue warning letters or prosecute VicForests. Its 2019–20 environmental audit of timber harvesting operations in state forests²⁹² found that on average the audited coupes fully conformed with 94 per cent of the 146 compliance criteria. While no instances of actual environmental harm were recorded, the audit found 26 non-conformances with moderate potential environmental impact, such as inappropriately constructed waterway crossings and one non-conformance assessed as having major potential environmental impact, which related to a Leadbeaters Possum SPZ being impacted by a regeneration burn.

Consumers who purchase forest products also need to know that these products have been produced sustainably. Forest certification is a mechanism for monitoring timber harvesting operations and tracing and labelling the timber, wood and pulp products produced, whereby the quality of forest management is independently audited against a series of agreed standards. Credible forest certification schemes are based on sound forest science. They cover the environmental prescriptions associated with timber harvesting, as well as aspects related to the social and economic wellbeing of workers and local communities, and the transparency and inclusiveness of forest management decision-making processes. Since 2007 VicForests timber harvesting operations have been certified under Australia's Responsible Wood Certification Scheme, which includes the Australian Standard for Sustainable Forest Management (AS4708). Each year there is an independent audit of VicForests's compliance with the requirements of the Australian Standard, and every three years VicForests must undergo an independent recertification audit process to maintain its accreditation under the Responsible Wood Certification Scheme. For some years, VicForests had been working towards attaining Forest Stewardship Council (FSC) standards and certification, the first step of which was to attain the FSC Controlled Wood Standard. Following an initial FSC audit in 2017, VicForests was working towards achieving this by 2020. Due to the combined impacts of the 2019–20 bushfires, COVID-19 and ongoing legal challenges, the Panel understands that VicForests postponed its timeline for achieving the FSC certification standard.

7.2.5 Impacts of the 2019–20 bushfires

Implications for VicForests timber harvesting operations

The 2019–20 bushfires had a direct impact on VicForests timber harvesting operations in the East Gippsland, Gippsland and North East RFA regions, including varying levels of damage to timber coupes. There was no impact on the TRP coupes in the Central Highlands RFA region, as it was not directly impacted by the fires. The Panel understands from VicForests's analysis found that one-third of the scheduled logging coupe areas in the current TRP were impacted by the 2019–20 bushfires. The areas that were impacted within each RFA region are shown in Table 75. The Panel was advised that VicForests had assessed 121 coupes from the existing TRP as being so severely damaged by the bushfires that they are no longer considered viable to harvest.

292. Jacobs Group (17 July 2019) [Audit of timber harvesting operations in Victoria](#), Report on the 2017-18 Forest Audit Program, IS247800-RP-002, DELWP, accessed 2 December 2021.

Table 75. Impacts of 2019–20 bushfires on VicForests Timber Release Plan areas, by RFA region²⁹³

RFA region	Total TRP area (ha)	Within the fire footprint (ha)	Not affected	% of TRP area affected
Central Highlands	30,867	0	30,867	0
East Gippsland	25,282	18,695	6,587	74
Gippsland	15,253	5,260	9,992	34
North East	7,279	2,260	5,019	31
Total	78,681	26,215	52,466	33

According to VicForests annual reports,^{294 295} in 2019–20 VicForests sold 363,851 m³ of sawlogs, 544,279 m³ of pulp logs and 48,559 m³ of other timber products, including 24,433 m³ of firewood, generating \$84.792 million in sales. These quantities represented decreases of 61,420 m³ of sawlog (14.4 per cent) and 86,716 m³ of pulp logs (13.7 per cent) from the quantities supplied to industry in 2018–19, and a decrease of \$9.247 million (9.8 per cent) in sales revenue. VicForests attributes its inability to meet timber supply demands to reasons related to the bushfires in the North East and particularly in East Gippsland, as well as legal injunctions and ongoing threatened species reservations. The longer term implications of the 2019–20 bushfires on available sawlog volumes are detailed in Section 7.2.

Implications for native forest industries

Native forest timber harvesting operations were disrupted in the East Gippsland and North East RFA regions for many weeks during the bushfire suppression operations. The Panel was advised that, for the second half of 2020, log production in Gippsland decreased 56 per cent compared to the same period in 2019, which meant that some Gippsland timber processors could not receive their normal level of supply. Ten harvesting and haulage contractors were unable to work in the forest for extended periods. The magnitude of the specific impacts on processors and contractors was not made available to the Major Event Review Panel. However, given the financial impacts reported by VicForests, the Panel considers that the possible financial implications for these forest industry businesses would have been in the order of a 10 per cent reduction in their normal operating profit.

Cross-border implications

Under normal circumstances, some of the timber harvested from Victorian state forests is sold to interstate processing industries. Following the 2019–20 bushfires in eastern Victoria and south-eastern New South Wales, the quantity of timber supplied to industries located in Eden during 2020 was only 25 per cent of the normal annual supply. This resulted in an economic loss of \$33.5 million for the harvesting and haulage contractors.²⁹⁶

293. Excel spreadsheet (TRP_Fire_Severity_&SalvageArea.xlsx) [unpublished] provided to the Major Event Review Panel in response to Panel data request HL-6.

294. VicForests (12 October 2020) [Annual Report 2019–20](#), VicForests, accessed 2 December 2021.

295. Ibid.

296. Allied Natural Wood Enterprises, written submission to Major Event Review.

7.2.6 Government actions and support following the bushfires

Application of the precautionary principle

Following the 2019–20 bushfires, the OCR formed the view that the precautionary principle under section 2.2.2.2 of the Code of Practice for Timber Production 2014 had been triggered. The OCR identified 34 species of concern that it advised would require additional precautionary protection from timber harvesting to assist their recovery. The OCR then provided written advice to VicForests on its interpretation of the precautionary principle and guidance on measures needed to avoid or reduce the risk of harm to the environment from timber harvesting operations. This correspondence included:

- general guidance about the application of the precautionary principle
- specific precautionary principle advice in relation to the 2019–20 bushfire impacts
- supporting analysis undertaken by the DELWP Biodiversity Division.

The advice provided by the Conservation Regulator²⁹⁷ had three major components:

- ‘Continued postponement of harvesting in East Gippsland FMA [Forest Management Area]’
- ‘Postpone harvesting in areas of highest value habitat’ (top 20%)
- ‘Survey and mitigate if harvesting in the best habitat for identified priority species’.

VicForests reviewed the information provided by the Conservation Regulator and prepared a refined risk assessment to establish which of the species of concern occurred in areas within the fire-affected area and were covered by timber harvesting plans. It identified some refinements of timber harvesting operations including:

- reducing the timber harvesting impact area, identified by DELWP at around 270,000 ha, to approximately 35,000 ha across the east of the State in the next 10 years
- including a greater retention of habitat trees in its variable retention harvesting approach implemented six months prior to the bushfires.

VicForests developed an approach to protect the identified species of concern for submission to the Conservation Regulator for review, which included:

- VicForests Precautionary Principle Approach – Overview
- Risk Assessment – Fire and Timber Harvesting
- VicForests Bushfire Species of Concern Information
- Adaptive Management Protections Fire Impacted Species.

The Panel was advised that the OCR reviewed these protective measures and maintained its ongoing expectation that VicForests fully meet its obligations under the precautionary principle.

In consultation with the OCR and DELWP biodiversity experts, VicForests developed a suite of precautionary measures that were implemented throughout 2020 to manage the specific risks from timber harvesting to soils, water, biodiversity and habitats in the post 2019–20 bushfire environment. VicForests implemented an immediate precautionary response to the bushfires by pausing all timber harvesting in the East Gippsland RFA region until 30 June 2020. It also ceased harvesting of unburnt forest areas within the East Gippsland fire footprint until the end of 2020, so that further assessment of the fire impacts could be undertaken.

297. Conservation Regulator Victoria (May 2020) [Precautionary measures in timber harvesting post the 2019/20 Victorian bushfires: regulatory position statement](#), accessed 2 December 2021.

An evaluation of the relative vulnerability of key threatened species to timber harvesting was undertaken at both the statewide and forest management area scales, to inform a staged resumption of harvesting in fire-affected areas. The Panel was advised that additional precautionary adaptive management measures were applied to harvesting coupes to protect key threatened species and better protect habitat, soil and water values.

VicForests subsequently resumed some harvesting of unburnt forest areas within the East Gippsland fire-affected areas in June 2021, to enable it to restore log supplies to timber processors that had been significantly impacted by log supply constraints in 2020.

Salvage timber harvesting

Victoria has a long history of conducting salvage timber harvesting operations in forests affected by major bushfires, having conducted such operations on multiple occasions since the RFAs were developed. The mandatory management standards and procedures incorporated into the Code of Practice for Timber Production 2014 include specific provisions for the management of environmental protection during salvage harvesting. Immediately after the 2019–20 bushfires, VicForests undertook fire severity mapping in both ash and mixed species forests using Sentinel satellite imagery to understand the impact of the fires on timber resources and assist with planning for any timber recovery harvesting and salvage operations. In ash species, the trees are killed when tree crowns have been burnt or severely scorched, and there is a 20 per cent yield reduction when the crowns have been moderately scorched. In mixed species, which have better tolerance of bushfires, normally there is a 30 per cent reduction in timber yield on the most severely scorched areas. However, after the 2019–20 bushfires, field inspections of the East Gippsland fire areas indicated that there was likely to be a 50 per cent reduction in timber yields in the most severely burnt mixed species forests.

In July 2020, VicForests added 59 new coupes to its Timber Release Plan to enable salvage harvesting operations and roading activities to be conducted within severely burnt areas of state forest. These new coupes were predominantly located in the North East RFA region, with a smaller number in the Tambo FMA area within the Gippsland RFA region. The areas to be salvage harvested included fire-killed ash forests and areas of regrowth mixed species forest in which tree crowns were burnt or had severe crown scorch. The Panel was advised by VicForests that the salvage harvesting operations in the ash forests were conducted between April 2020 and January 2021, while the mixed species salvage commenced in mid-2020 and may continue until May 2022.

The Panel was advised that, before the commencement of the salvage harvesting, VicForests redrafted its Post Bushfire Timber Harvesting Instruction to better align with its updated habitat retention practices. All salvage harvesting was subject to additional environmental protection protocols, beyond those applying in unburnt forests. These protocols included conducting pre-harvest species and habitat surveys; having a smaller maximum coupe size; retaining an area of high-quality habitat within 3.5 km of the coupe; creating better links between unburnt areas and suitable habitat; expanding buffer widths; and retaining all live ash trees and all habitat trees whether they were dead or alive. The Panel understands that the salvage harvesting operations were monitored by the OCR as part of its routine coupe inspection program.

Vicforests advised the Panel that a total of 57,377 m³ of D+ sawlogs were salvaged up to the end of June 2021, of which 50 per cent came from the North East RFA region, 40 per cent from Gippsland RFA region and 10 per cent from East Gippsland RFA region. About 86 per cent of the salvaged sawlogs were in the ash species category. The volumes of ash and mixed species sawlogs that have been salvage harvested in the three most fire-affected RFA regions are shown in Table 76.

Table 76. D+ sawlog volumes salvaged from fire-affected RFA regions

Forest type	East Gippsland	Gippsland	North East	Total
Ash D+ (m ³)	0	21,788	28,577	50,365
Mixed species D+ (m ³)	5,486	1,526	0	7,012
Total (m³)	5,486	23,314	28,577	57,377

VicForests advised the Panel that a total of 183,831 m³ of pulp logs were salvaged in conjunction with the sawlog salvage operations up to the end of June 2021, of which 48 per cent came from the North East RFA region, 25 per cent from Gippsland and 27 per cent from East Gippsland. The volumes of ash and mixed species pulp logs that have been salvage harvested in the three most fire-affected RFA regions are shown in Table 77.

Table 77. Pulp log volumes salvaged from fire-affected RFA regions

Forest type	East Gippsland	Gippsland	North East	Total
Ash D+ (m ³)	0	44,618	88,767	133,385
Mixed species D+ (m ³)	49,239	1,207	0	50,446
Total (m³)	49,239	45,825	88,767	183,831

In addition to the salvaged D+ sawlogs and pulpwood, VicForests advised the Panel that it was able to salvage 119,801 m³ of low quality burnt timber which was sold as E grade sawlogs or firewood. For these low-grade salvaged timbers, 41 per cent came from the North East RFA region, 48 per cent from Gippsland RFA region and 11 per cent from East Gippsland RFA region.

Ongoing implementation of additional environmental protections

The Victorian Government's announcement of the Victorian Forestry Plan included a commitment to immediately protect an additional 90,000 ha of old growth forest. The Panel was advised that VicForests worked with the OCR to develop an old growth field assessment tool which is now being implemented across the state to identify old growth forests and ensure their full protection from timber harvesting operations.

In December 2020, DELWP advised VicForests that, following further assessment, five of the original 34 'species of concern' would no longer require the application of additional precautionary measures and that four of the aquatic species did not occur in the planned timber harvesting areas. This meant that VicForests would continue to apply additional precautionary protection from timber harvesting to 25 species of concern to assist their post-bushfire recovery. The protections for these species are being managed through a range of species-tailored landscape-level and coupe-level regulatory and adaptive management measures.²⁹⁸

The Panel was advised that from January 2021, when VicForests recommenced harvesting of available unburnt and lightly burnt forests with the fire-affected RFA regions, it was agreed that the adaptive management measures developed in 2020 would continue to be applied due to the ongoing uncertainty regarding bushfire impacts on many species.

298. 2019/20 Bushfires - [VicForests' Precautionary Principle Application and Adaptive Management Response](#) Version 2 March 2021.

Under these measures, a 3.5 km planning envelope around each planned coupe is used to identify 500ha of the highest quality flora and fauna habitat to be placed in timber harvesting exclusion zones. Whenever it is safe and practical to do so, VicForests ensures that pre-harvest habitat and targeted species surveys are conducted, with DELWP's Forest Protection Survey Program aiming to survey at least 80 percent of planned coupes.

Towards the end of the Major Event Review process, the Panel became aware of media coverage about the impacts on the forest industries from the application of some of the species-specific precautionary measures being applied in East Gippsland. The Panel received a written briefing on this issue from DELWP. This indicated that about 56,000 ha of Special Management Zone had been created as interim protection from timber harvesting to cover seven listed species and listed communities. The briefing indicated that the measures were based on scientific evidence on the steps necessary to prevent the risk of serious or irreversible harm to the listed species and communities, but that the required Special Protection Zone watercourse buffer width measures for Orbost Spiny Crayfish would only apply at sites where the species was detected during pre-harvest surveys. DELWP indicated to the Panel that it intended to use the RFA provisions to develop permanent protections to replace the interim protection measures.

Review of the Code of Practice for Timber Production 2014

In July 2020, the Victorian Government announced that it was commencing a review of the Code of Practice for Timber Production 2014. This was not the comprehensive review of the code as required under the modernised RFAs,²⁹⁹ which will be undertaken in 2022. It was conducted because of a number of legal challenges that were putting the Victorian Forestry Plan at risk and potentially limiting the ability of VicForests to deliver on its native timber supply commitments.³⁰⁰ In reviewing the code's provisions, the Victorian Government also wanted to restore a clear definition of the precautionary principle, strengthen the regulatory powers available to the OCR, and include regulatory reforms informed by the 2019–20 bushfires. Public consultation on the draft amendments to the code and a new draft Forest Management Zoning Accountability Framework was conducted in July 2021. The Forest Management Zoning Accountability Framework is intended to provide structure for publicly reporting on DELWP's progress towards meeting the fixed forest management zoning targets for specific threatened species and communities. Following the completion of the review process, a revised Code of Practice for Timber Production 2014 (amended 2021) came into effect from 17 November 2021.³⁰¹

Government funding support

In 2020, the DJPR provided \$4.2 million of state funding to VicForests to support salvage harvesting operations in burnt native forests. These funds covered a portion of the additional costs of salvage harvesting, including the additional costs related to environmental protection. The funding allowed fire-affected native timber to be recovered and utilised in a way that is commercially equivalent to the use of non-fire-affected timber.

In Victoria the \$2.5 million Bushfire Recovery Timber Storage Grants, funded in part through the Commonwealth Government's Salvage Storage Fund, provided support to enable the storage of an expected 125,000 green tonnes of salvaged timber from both native forests and plantations. Eligible businesses could apply for grants of up to \$500,000 over a two-week period in December 2020 to cover eligible costs incurred from 1 January 2020 to 30 June 2021. Under this program, grants totalling about \$440,000 to the native forest industry enabled about 22,500 m³ of burnt native sawlogs to be recovered.

299. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 33D(a), accessed 2 August 2021.

300. State Government of Victoria (27 July 2020) [Review to protect Victoria's forest jobs and timber industry](#), State Government of Victoria, accessed 2 December 2021.

301. State Government of Victoria (3 March 2022) [Timber Harvesting Regulation](#), accessed 10 March 2022.

Funding provided under the Victorian Forestry Plan

The following grants have been provided under the Victorian Timber Innovation Fund to assist existing forest industries to diversify their businesses by experimenting with new products using different timber sources:

- \$1.6 million for Australian Sustainable Hardwoods in Heyfield to install a new manufacturing line to produce engineered flooring made from plantation shining gum and radiata pine plywood and to expand both its online and retail outlets
- \$397,000 for Radial Timber in Yarram to introduce a small log line and experiment with processing plantation timber
- \$246,000 for Longwarry Sawmill in Longwarry to use recycled and reclaimed timber to make new timber products
- \$100,000 for Ryan & McNulty Sawmillers in Benalla to research the potential transition to the production of beams from plantation pine
- \$40,000 for Brunts Harvesting in Orbost to undertake a feasibility study of transition to plantation harvesting
- \$82,000 for Talbot Timbers in Talbot to undertake a feasibility study of transition to plantation harvesting.

7.2.7 Key information and issues raised during consultation

The following points were made during consultation:



Forests impacted by the 2019–20 bushfires provide important resources for local communities and industries. The importance of forest industries to the health and diversity of forests is often poorly understood and underestimated. Forest managers and timber industry employees were important players in fire response, protecting lives, housing and infrastructure and have used their expertise to assist forest recovery after fires. (Institute of Foresters of Australia (IFA)/ Australian Forest Growers (AFG) submission)



We seek to activate provisions in the Cultural Landscape Strategy and Taungurung CNRM Strategy for Taungurung to heal and manage all public forest land on Taungurung Country and to develop suitable provisions and resourcing through the implementation of the Victorian Forestry Plan and the implementation of the RFAs to support this objective. (Taungurung Land and Waters Council submission)



The Victorian RFAs have not provided the intended stability of supply and operation for the forest industries. The last 10 years have seen increasing uncertainty within the timber industry as the Victorian Government has not committed to a clear vision for managing State forests for multiple uses, which has had detrimental impacts on forestry operations. (Australian Forest Products Association submission)



The demand for construction timbers in Victoria has increased by 30 per cent over the past two years, while the decreased availability of imported timbers has generated significant shortfalls in a wide range of timber building products. The decision to phase out native forest timber harvesting by 2030 will exacerbate the lack of processed timber supplies in Victoria, as there will be no replacement timber available from new plantations ready for harvest for 40 to 80 years. (Wood Products Victoria submission)



The 2019–20 bushfires directly reduced the industry’s ability to harvest in native forests and this led to a reduction in log volumes supplied to forest industry processors. (Australian Sustainable Hardwoods consultation)



Nine harvesting and haulage contractors in East Gippsland were displaced from normal operations since the escalation of the fires in December. Some of these contractors have been engaged partially on roadside clearing along the Princes Highway. (Australian Forest Products Association consultation)



The review should objectively consider the environmental, socio-economic and safety opportunities of harvesting fire-affected trees as a key component of remedial actions to address the impacts of the 2019–20 bushfires. (Allied Natural Wood Enterprises submission)



Post fire or salvage logging is one of the most destructive forms of logging and has long -lasting impacts on the forest ecology and health as well as forest-dependent wildlife. There is a need to establish long-term monitoring plots across all FMA areas that have been subjected to salvage and post-disturbance logging to further understand the impacts (Victorian National Parks Association submission)



Allowing so-called salvage logging will directly lead to potentially devastating impacts on already compromised soil conditions and seriously impact, possibly halt, the recovery of critical ecosystem components such as critical understorey species including ground cover plants. (Goongerah Environment Centre submission)



The claim in the [Major Event Review] Summary Report that there was no timber harvesting of unburnt areas within the fire footprint in 2020 is not true. (Orbost/Omeo community consultation)



Active forest management is a key ‘tool’ that can be used to help ecological recovery of forests, while also managing them to ensure they continue to provide the services that the public expects from them. Active forest management can improve forest health and resilience, support local industries, and makes the forest safer. (IFA/AFG submission)



Active forest management and timber harvesting has led to improved environmental outcomes for Victoria's forests and its dependent biota. For example, over 1,000 colonies of Leadbeater possum have been found in previously harvested forests as the acacia understorey in 20-year-old ash regrowth is the preferred feeding habitat for the possum. (Victorian Forest Products Association submission)



The timber harvesting systems, particularly in mixed species forests, should not change the forest structure, but rather build 'resilience' in the reproductive capacity of these forests ecosystems to cope with climate change and achieve a more equitable co-existence with other forest uses and values. (Victorian Apiarists Association consultation)



The history of selection harvesting and major fire events in Low Elevation Mixed Species Forests has resulted in many stands having a species imbalance often biased towards heavy seeding species, such as Silvertop Ash and to a lesser extent White Stringy Bark, with durable species such as Yellow Stringy Bark and Ironbark in lower proportions than would naturally be the case. A research trial undertaken in 2011, proved that forests like this which VicForests considered uneconomic to harvest using the conventional clearfell-seed tree system, could be safely and economically harvested using a modified-gap selection system to maintain the uneven-aged forest structure and increase the proportional representation of durable species across all age and size classes. (Geoff Proctor consultation)



The recently modernised Victorian RFAs specify the need for ongoing active management of forests. It is time to give serious intent to that objective, to design a new silviculture for Victorian native forests and invest in implementing this to create forests that are more diverse, more resilient and with greater long-term capacity to provide the cultural, environmental and economic values Victorians expect from our forests. (IFA/AFG submission)



An independent study³⁰² of the implications of ending the native timber industry on Wellington and East Gippsland LGAs showed that it could cost 1,100 direct jobs and \$311 million of economic output in just these two LGAs. (Forest and Wood Communities Australia submission)



The ongoing interpretation and application of the precautionary principle for the protection of certain threatened species in fire-affected areas in late 2021 is having a substantial impact on the livelihoods of forest contractors and on wood supplies to various wood processors. These changes are not considering the impacts on forest industries and other users as required by the modernised RFAs. (Victorian Forest Products Association consultation)



Timber harvesting in State forests is now at its lowest level in 20 years. The CAR reserves are there to protect flora and fauna values and the area of Special Protection Zones has increased by 200,000 has. We need to see a balanced outcome that enables forest industries to continue to operate. (Australian Sustainable Hardwoods consultation)

302. ID Consulting Pty Ltd (2021) [Economic Analysis of the Timber Industry: Specialised industry sector analysis for the Wellington and East Gippsland regions](#), ID Consulting Pty Ltd, accessed 2 December 2022.



In East Gippsland timber harvesting has declined to less than 750 ha per year and could be maintained at this level in perpetuity despite this large bushfire event. However, a new approach to timber harvesting in that RFA region is required that is sensitive to the impacts of the 2019–20 bushfires and based on new silvicultural models that integrate with forest restoration at the landscape scale. (IFA/AFG submission)



We are not seeking to stop forestry, but want it done in a more sustainable way. The bushfires mean there are now less trees available for harvesting and it is more important that Matters of Traditional Owner Significance are taken into account. For example, we need to protect ‘grandmother’ trees during logging and ensure high biodiversity is maintained. (Taungurung Land and Waters Council consultation)



We are not saying that logging should stop, but Traditional Owners need to have a say in how it is done and we need local jobs that enable young people to stay on Country. (Snowy-Cann River Mob consultation)



In early 2022, ASH will have commissioned its engineered timber flooring line, allowing Australians to access 100 per cent Australian-made engineered timber flooring. ASH will market a number of flooring products utilising timber from plantations and timber supplied from RFA regions, making it imperative that the resource is still available, at minimum until 2030. While attempting to plan for business after 2030, the company is still faced with the fact that 90 per cent of ASH’s timber resource is sourced from VicForests and there is no proven available alternative. (Australian Sustainable Hardwoods submission)



The Victorian Government’s Forestry Plan to stop harvesting in native forests from 2030 and concentrate timber production in a small area of plantations carries very high risks for future wood supply under a changing climate. As we saw in the 2019–20 bushfires, forest plantations are very vulnerable to bushfires. Australia already has a heavy reliance on imports of both softwood and hardwood sawn timber to meet domestic demand, which is predicted to continue to grow. (IFA/AFG submission)



The Victorian Government and environmental groups wrongly claim that reduced harvesting in native forests will increase carbon sequestration. This is at odds with the international and Australian scientific evidence. (Australian Forest Products Association submission)



All Australians want to use products and processes that are good for the environment and that reduce CO₂ emissions. Globally it is well recognised and understood that a sustainable timber industry storing carbon in forests and wood products is one of the best ways to combat climate change. (Wood Products Victoria submission)



Photo credit: Recovering tree ferns McKenzie River Rainforest, March 22 © T. Bartlett

7.2.8 Panel analysis of issues raised

The long-term polarised views about the value and appropriateness of timber harvesting operations within Victoria's state forests continued to play out during the Major Event Review process. The Scoping Agreement for the Major Event Review is very clear that the Major Event Review will not open the Victorian RFAs up to renegotiation and that the Parties are committed to ensuring that the obligations and commitments contained in the RFAs are delivered to ensure effective conservation, forest management and forest industry outcomes. Accordingly, the Panel has focused its analysis on those issues raised during consultation or as part of formal briefings to the Panel that are relevant to the Scoping Agreement for the Major Event Review and take into account actions by the Parties in the lead-up to and after the 2019–20 bushfires.

Application of the precautionary principle

The precautionary principle was conceived as a means to ensure that decision-makers would take into account uncertain but potentially serious and/or irreversible threats of environmental harm. Despite its being part of policy settings since the early 1990s, the Panel believes that this is the first occasion in Australia when the precautionary principle has been formally applied to timber harvesting following a major bushfire. The Panel was briefed on the processes used and the additional protection measures applied to timber harvesting in the fire-affected forests. The Panel commends the approach used by Victoria in this instance and considers that it represented a careful but timely assessment of the likely risks to threatened species and the application of proportionate additional protection measures. The Panel acknowledges that the application of this process did result in some economic impacts on forest industry businesses, but considers that it was consistent with the views expressed by Productivity Commission staff³⁰³ that such processes should be consistent with good decision-making principles while avoiding unnecessary costs and the potential for perverse outcomes.

303. Peterson D C (2006) [Precaution: principles and practice in Australian environmental and natural resource management](#) [conference paper], Presidential Address at 50th Annual Australian Agricultural and Resource Economics Society Conference, accessed 2 December 2022.

Revised approaches to planning and implementing timber harvesting

It is apparent to the Panel that from 2018 some significant changes have been made to the planning, implementation and monitoring of timber harvesting by both DELWP and VicForests, with some additional refinements implemented following the 2019–20 bushfires as part of the application of the precautionary principle. While the Panel was not able to observe the application of these refinements on sites where timber harvesting was occurring, the Panel considers that these changes should have resulted in many improved outcomes including:

- better information about threatened species occurrence in the vicinity of planned timber harvesting
- improved planning of timber harvesting to achieve an appropriate balance of timber and flora and fauna values
- a reduced likelihood of instances of environmental harm occurring as a result of timber harvesting.

The Panel considers it likely that, if implemented as described, these new measures will achieve better protection for threatened species and communities, as well as potentially improved outcomes for other forest uses and services such as apiculture and water quality.

During the consultation process, the Panel heard criticisms from at least three different stakeholder groups about the detrimental impacts of the clearfell-seed tree silvicultural system on other forest values. VicForests's revised timber harvesting and regeneration systems include a selection harvest system. According to VicForests, this system is to be used when the forest is generally composed of uneven-aged mixed species trees ranging from young regrowth to large old habitat trees. VicForests indicates that it aims to maintain the uneven age class structure for the benefit of biodiversity and apiculture. It cites the 2018 Barjarg Flats coupe in the Strathbogie Ranges, which was brought to the Panel's attention by the Victorian Apiarists Association, as the evaluation site for this harvesting and regeneration system. From evidence presented to the Panel, it is clear that previous trials of this alternative harvesting and regeneration system have been successfully implemented in mixed species forests in both north-eastern Victoria and East Gippsland and that fostering a multi-age structure with a more diverse range of tree species is likely to address many of the concerns raised by stakeholder groups. During the finalisation of the Major Event Review report, the Panel was advised by VicForests that the adaptive forest management practice is currently in use across all of eastern Victoria and that in the 2020-21 financial year less than 10 per cent of its timber harvesting coupes had a clear-fell and seed tree silvicultural system.

Salvage timber harvesting

The stakeholder views about salvage timber harvesting were very polarised. The Panel is aware that the salvage harvesting of timber burnt in the 2019–20 bushfires was supported by government policy and dedicated funding and that all of these operations were subject to additional environmental protection measures. These salvage operations have resulted in about 57,377 m³ of D+ sawlogs being recovered from three RFA regions. About 80 per cent of the salvage harvesting operations were focused on recovering ash species sawlogs, as these fire-sensitive trees were killed by the bushfires. However only about 14 per cent of the estimated fire-affected ash D+ sawlogs and about 1 per cent of the fire-affected mixed species D+ sawlog volumes have been salvaged to date. The Panel was advised by DJPR that the net areas of forest that was subject to salvage timber harvesting were about 1,800 ha of ash forest and about 4,400 ha of mixed species forest. If these burnt trees had not been salvaged, other areas of unburnt forests would have had to be harvested to supply the same quantum of sawlogs to the forest industry customers.

The Panel notes that only about 10 per cent of the salvaged D+ sawlogs and 27 per cent of the salvaged pulpwood logs were sourced from the East Gippsland RFA region, which experienced the largest fire extent and the greatest proportion of forests burnt at high severity. The Panel also notes that the magnitude of this salvage harvesting was significantly smaller than the salvage harvesting conducted after the 2009 Black Saturday bushfires, in which VicForests salvaged 587,000 m³ of sawlogs and 1,128,000 m³ of pulp logs,³⁰⁴ although that salvage timber harvesting was conducted mostly in ash forests. This means that the salvage harvesting operations following the 2019–20 bushfires produced only about 10 per cent of the sawlog volume produced after the 2009 bushfires, even though these bushfires burnt about 3.5 times as much forest as was burnt in 2009.

The Panel was advised by one of VicForests's sawlog customers that about 13 per cent of its 2020 log intake from VicForests was salvaged sawlogs. The customer indicated that the salvage logs had both lower sawn timber and grade recoveries than unburnt logs but that they were able to process these logs into value-added products, given its wide range of manufacturing processes. The customer stressed the importance of being able to utilise burnt ash sawlogs and complimented VicForests' proven salvage sawlog grading system.

Harvesting in unburnt areas of the fire footprint in 2020

The Panel was advised that VicForests agreed to provide one coupe in unburnt forest in Gippsland for TAFE Gippsland to use in its accredited tree-felling training programs for firefighters and personnel involved in bushfire recovery and forestry operations. The Panel considers that this one exception to the green harvesting moratorium was appropriate because these skills are necessary to keep the community safe and support regional jobs.

Ongoing implementation of additional environmental protections

The Major Event Review Scoping Agreement required the Panel to assess the impacts of the bushfires on listed species and communities and report on its findings and recommendations for remedial actions. Aside from initial briefings from DELWP on the work being undertaken on threatened species and communities risk assessments, the Panel did not have any role in considering the nature of the remedial protection measures developed by DELWP. From the information provided to the Panel by DELWP and forest industry stakeholders, it is very clear that the magnitude of these additional protection measures, particularly those related to the creation of 56,000 ha of new Special Management Zones for seven threatened species and communities, is likely to have a very significant impact on timber harvesting and the associated supply of timber to the forest industries in the East Gippsland and Gippsland RFA regions.^{305, 306} What is less clear is whether the process used to determine these measures complies with all five of the provisions in the modernised RFAs covering components of the forest management system that relate to listed species and communities (as detailed in Clause 15G of the East Gippsland RFA).³⁰⁷

304. VicForest (2011) [VicForests Annual Report 2010-11](#), VicForests, accessed 2 December 2022. f

305. Hunt P (10 November 2021) Timber cuts: East Gippsland loggers lose access to 56,000 ha., Weekly Times, accessed 2 February 2022.

306. The Nationals for Regional Victoria (5 November 2021) '[Timber jobs sacrificed for Labor's crayfish zoning change](#)' [media release], accessed 2 February 2022.

307. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 15G, accessed 2 August 2021.

Planned native forest harvest until 2030

VicForests has indicated to the Panel that only a very small proportion (0.68 per cent) of Victoria's public native forests in eastern Victoria could be subject to timber harvesting before June 2030 and that this would represent 1.46 per cent of the state forest that is potentially available for timber harvesting operations. In addition, under the current Timber Release Plan, information provided to the Panel by VicForests indicates that it only intends to harvest a small area of the unburnt forest in the East Gippsland RFA region over the next 18 months, and that a decision to maintain a moratorium on logging in unburnt forest would result in very substantial shortfall in sawlog supplies to specific timber processors over the next three years. The Panel notes that the modernised RFAs do not require that timber harvesting cease in an RFA region that has been impacted by a major bushfire.

Victorian Forestry Plan

The Victorian Forestry Plan was announced during the period in which processes were underway to modernise the five Victorian RFAs. The primary policy within this plan, to cease native timber harvesting by June 2030, was incorporated into the modernised RFAs. The scoping agreement for the Major Event Review requires the independent Panel to consider the impacts of the 2019–20 bushfires on the long-term stability of (both) forests and forest industries, while specifying that the purpose of the review is not to open the RFAs up to renegotiation. Accordingly, the Panel focused its consideration of this issue to those matters raised during the consultation process that are related to the stability of the forests and forest industry and which may have been exacerbated by these very significant bushfires.

Some stakeholder groups consulted during the Major Event Review process suggested that the planned cessation of native forest timber harvesting should be brought forward as a result of the impacts of the 2019–20 bushfires on available timber resources and threatened species and communities. However, other stakeholders stressed the importance of providing certainty to the forest industries up to June 2030. The Panel considers that both these matters are important but complex and therefore require careful consideration by the Parties to the RFAs. During the MER, the Panel was unable to find any clear evidence as to why the timber supply commitments under the VFP could no longer be met as a result of the bushfires.

The issue about the transition out of native timber harvesting and the rate of progress of supporting the transition was raised with the Panel during several of its consultation meetings. In October 2021, the Panel was briefed on progress to date with the implementation of the various financial assistance programs under the VFP and received an update in February 2022 on the provision of grants. The Panel acknowledges the positive contributions being made through the eight announced Timber Innovation Grants to six businesses, as well as the support for business transition planning and the development of economic development strategies for 11 affected communities. These programs should go some way towards reducing the expected economic and social impacts on the affected businesses, individuals and communities. Given the number of communities and businesses affected by the planned transition out of native timber harvesting, the Panel formed the view that the progress with the implementation of these programs is slower than desirable and that many of the affected businesses may not be adequately engaged in the process. The Panel notes the grant provided to Australian Sustainable Hardwoods to support the development of a shining gum flooring product is and also that there is some uncertainty about the adequacy of native timber resources suitable for this decorative wood product once native timber harvesting ceases in June 2030. There is a limited area of shining gum plantation in Gippsland (about 8,000 ha) and therefore the potential log supply for this new product will be much smaller after 2030 than the current supply of ash species sawlogs from public land.

The Panel's analysis of the impacts of the 2019–20 bushfires on the long-term stability of the forests (see Section 10.4) raises significant concerns about the cumulative effects of frequent severe bushfires on forest values and suggests the need for greater adoption of active and adaptive management practices. While the three-page VFP claims to be a 30-year forestry plan, the Panel has concerns that it does not cover the full range of forestry values covered under the modernised RFAs. By definition, forestry is 'the science or practice of planting, managing, and caring for forests', yet the VFP document contains no information or strategies as to how Victoria's native forests will be managed over the next 30 years, and does not detail the related announcements on the protection of old growth forests and Greater Glider habitat which were made concurrently with the announcement of the cessation of timber harvesting. Importantly, it provides no clear direction on how Victoria intends to meet the RFA commitments to implement active management of threats, including the use of silvicultural practices,³⁰⁸ adapt to the impacts of natural disturbances on forest values,³⁰⁹ or expand the range of forest industries,³¹⁰ including businesses that would involve some use of public native forests. The Panel considers that each of these RFA commitments has been impacted by the 2019–20 bushfires and hence the absence of related strategic directions in the VFP appears to be a significant deficiency.

Role of sustainable forest management in climate change strategies

The 2019–20 bushfires had a very significant impact on the carbon stocks in the forests that were burnt within the East Gippsland, Gippsland and North East RFA regions. When a bushfire occurs, tree and other plant biomass is burnt, which releases carbon dioxide into the atmosphere thereby reducing the carbon stocks in the burnt forests, with the magnitude of the reduction depending on the area of forest burnt and the intensity of the bushfire. A DELWP study³¹¹ estimated that 57 million tonnes of carbon was emitted from the forests burnt in 2019–20, with about 36 million tonnes of this coming from the forests in the East Gippsland RFA region. The study also estimates that one year after the fires, 1.7 million tonnes of carbon will have been sequestered back into the forests across the East Gippsland, Gippsland and North East RFA regions due to post-fire regrowth in the burnt forests. However, the rate of sequestration within the burnt forests of East Gippsland was estimated at only 0.1 million tonne due to the significant area of forest burnt at high intensity in that RFA region. The Panel notes that Victoria's Climate Change Strategy³¹² projects a reduction in carbon emissions of up to 1.7 million tonnes on average per year for 25 years once native timber harvesting ceases in 2030, but it is silent on the issue of carbon emissions from bushfires. Considering the 57 million tonnes of carbon emitted by the 2019–20 bushfires, it would take over 33 years of no timber harvesting to sequester the carbon emitted in this major bushfire event.

The modernised RFAs include a range of new provisions³¹³ related to climate change, including:

- the need to manage native forests to maintain or enhance the sequestration and storage of carbon
- the requirement for effective management of forests to maintain functioning forest ecosystems in a changing climate to maintain the quality and quantity of water resources.

It is apparent that anthropogenic climate change is contributing to increases in the frequency, severity and extent of severe bushfires in Australia³¹⁴ and hence the level of greenhouse gas emissions from them.

308. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 15S, accessed 2 August 2021.

309. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 50A, accessed 2 August 2021.

310. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 53A (a), accessed 2 August 2021.

311. DELWP (2020) [Ecosystem services from forests in Victoria: Impact of the 2019–20 bushfires](#), pp 79–80, accessed 2 December 2021.

312. State Government of Victoria (2021) [Victoria's Climate Change Strategy](#), p 31, State Government of Victoria, accessed 2 December 2022.

313. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 52E, accessed 2 August 2021.

314. Canadell JG, Meyer CP, Cook GD, Dowdy A, Briggs PR, Knauer J, Pepler A, and Haverd V (2021) [Multi-decadal increase of forest burned area in Australia is linked to climate change](#), *Nature Communications* 12:6921, accessed 2 December 2021.

The Panel considers that it is highly likely that greenhouse gas emissions from bushfires will continue to increase, unless something can be done to reduce both the extent and the severity of large forest-based bushfires. The Panel considers that the significant difference between carbon emissions from bushfires and those from timber harvesting clearly indicates why it is important to consider the role of sustainable forest management in climate change strategies, as well as in implementation of the RFAs. Carbon emissions from bushfires cannot be ignored, therefore the Panel considers that further consideration of appropriate strategies to ensure that sequestration and storage of carbon within forests can be maintained or enhanced is warranted.

Estimates of carbon emissions from bushfires are highly variable and highly dependent on the assumptions used in the calculations. Another study³¹⁵ estimated that the 2019–20 Victorian bushfires, which represented 20 per cent of the total area burnt across south-eastern Australia, emitted 55 million tonnes of CO₂, equivalent to about 15 million tonnes of carbon. In contrast, a different study³¹⁶ estimated that the 2009 Black Saturday bushfires, which burned a substantial area of fire-sensitive ash forests, emitted 3.9 million tonnes of carbon, which represented about 8.5 per cent of the total biomass carbon stock across the landscape.

Australia's National Greenhouse Accounts assume that the carbon stocks in forests burnt by wildfire fully recover within 10 to 15 years and that there are no stand-replacing wildfires. The Panel was briefed on research³¹⁷ conducted by the University of Melbourne that questions these assumptions because of the large losses of ash-type forests and the observed decline in regenerative capacity within areas of 'fire-tolerant' mixed species forest that have been burnt multiple times within short intervals. That research also found that in some parts of the forest landscape, recent bushfires have resulted in extensive areas of densely stocked regrowth forests that are stressed and in poor health.

The Panel notes that, at the global level, there is consensus that sustainable management of native forests can both lower greenhouse gas emissions and contribute to adaptation to climate change, while providing wood and non-wood products as well as ecosystem services and functions. In 2019 the Intergovernmental Panel on Climate Change *Special report: climate change and land*,³¹⁸ which addresses greenhouse gas fluxes in land-based ecosystems, land use and sustainable land management, reached the following conclusions about sustainable forest management in relation to adaptation and mitigation response options:

B.5.3 Sustainable forest management aimed at providing timber, fibre, biomass, non-timber resources and other ecosystem functions and services, can lower GHG emissions and can contribute to adaptation (high confidence).

B.5.4 Sustainable forest management can maintain or enhance forest carbon stocks, and can maintain forest carbon sinks, including by transferring carbon to wood products, thus addressing the issue of sink saturation (high confidence). Where wood carbon is transferred to harvested wood products, these can store carbon over the long term and can substitute for emissions-intensive materials reducing emissions in other sectors (high confidence).

315. Mallapaty S (15 September 2021) '[Australia's bushfires belched out immense quantity of carbon](#)', *Nature*, 15, accessed 2 December 2021.

316. Keith H, Lindenmayer D et al (10 September 2014) 'Accounting for carbon stock biomass change due to wildfire in temperate forest landscapes in Australia', *PLOS ONE*, 2014, 9(9):e107126, accessed 2 December 2021.

317. Keenan RJ, Weston CJ and Volkova L (October 2021) '[Potential for forest thinning to reduce risk and increase resilience to wildfire in Australian temperate Eucalyptus forests](#)', *Current Opinion in Environmental Science and Health*, 23, accessed 2 December 2021.

318. Intergovernmental Panel on Climate Change (IPCC) (2020) '[Special report: climate change and land](#)', accessed 2 December 2022.

During consultations with the Panel, some Traditional Owner groups and other stakeholders raised concerns about the changed tree density in large areas of native forests, primarily as a result of the bushfire history over the past 20 years. The Panel is aware that in other countries, such as the USA, governments are funding large-scale mechanical thinning of forests to reduce tree density and fuel hazards and thereby improve the resilience of forests to bushfires. However, the Panel understands that thinning is expensive to implement, particularly if there is no commercial recovery of wood products created by the thinning operations. The Panel considers that further research on this important issue is required, together with consideration of the research findings from the CSIRO Young Eucalypt Program, implemented in the late 1980s, as well as from the more recent Mechanical Bushfire Fuel Load Reduction Programme.³¹⁹

7.2.9 Findings

Commercial native forestry

The 2019–20 bushfires had a material impact on the volumes of native timber supplied to Victorian forest industries during the 2019–20 financial year, primarily due to the extended period that normal forest operations were not possible.

Since DELWP established its Forest Protection Survey Program in 2018, the Panel considers that the combined measures by DELWP and VicForests, to increase pre- and post-harvesting threatened species surveys and adopt landscape habitat planning approach, should result in better knowledge about and improved decisions on protection measures for those threatened species that occur in the vicinity of planned timber harvesting.

The establishment of the Office of the Conservation Regulator in 2019 appears to have enabled improved independent monitoring of VicForests' timber harvesting operations, as well as providing an appropriate mechanism for determining the application of the precautionary principle for use in timber harvesting after the 2019–20 bushfires.

The need to consider the application of the precautionary principle with respect to timber harvesting following the 2019–20 bushfires was appropriate, given the magnitude and intensity of these bushfires and the time required to assess bushfire impacts on threatened species. The process used by the Office of the Conservation Regulator and VicForests and the outcomes in relation to enhanced immediate protection measures represent a good model that could be more widely applied around Australia.

The 2019–20 bushfires had a material impact on the volumes of native timber supplied to Victorian forest industries during the 2019–20 financial year, primarily due to the extended period that normal forest operations were not possible. Data from VicForests annual reports indicates that its 2019–20 log sales decreased by 61,420 m³ of sawlog (14.4 per cent) and 86,716 m³ of pulp logs (13.7 per cent) from the quantities supplied to industry in 2018–19. From the information provided to the Panel by DELWP and forest industry stakeholders, it is likely that the creation of 56,000 ha of new Special Management Zones for seven threatened species and communities will have a significant impact on the ongoing volumes of native timber that can be harvested from the East Gippsland and Gippsland RFA regions.

The Panel understands that the government funding to support provided native forest industry businesses and to VicForests enabled logs from burnt trees to be utilised for an extended period and additional environmental protection measures to be implemented.

319. ID Consulting Pty Ltd (2021) Economic Analysis of the Timber Industry: Specialised industry sector analysis for the Wellington and East Gippsland regions, ID Consulting Pty Ltd. Report prepared by ID Consulting Pty Ltd and provided to the Major Event Review Panel.

Given the process used to approve and manage the salvage harvesting operations, the Panel considers that these operations were a well-considered and appropriate response that resulted in the recovery and utilisation of about six per cent of the estimated fire-affected D+ sawlog volumes. The ratio of sawlogs to pulp logs produced from salvage logging was consistent with the ratios obtained from timber harvesting in non-fire-affected areas. The response included additional precautionary protection measures to better protect significant environmental values and was consistent with the Victorian Government's commitment to maintain sawlog supply agreements under the new Victorian Forestry Plan. The comparatively smaller proportion of salvage harvesting conducted in the East Gippsland RFA region, which was the most fire-affected region, limited the chance of significant additional impacts occurring in these significantly stressed forest ecosystems. The Panel is satisfied that the sawlogs from these operations were utilised by the receiving forest industries to produce a range of value-added wood products.

While there are clearly divided opinions in Victoria on the merits of harvesting timber in public native forests, the Panel observed that a degree of convergence exists among some stakeholder groups – including some Traditional Owners, forest scientists, some apiarists and some timber processors – on the point that a greater application of selection and variable retention harvesting systems in mixed species forests would result in better forest management outcomes and a more equitable co-existence of different forest industries.

The greater use of retention harvesting and regeneration systems by VicForests, is an important change to forest management practices. This change should result in improved protection for threatened species and have less impact on apiculture, and therefore should result in more resilient forest ecosystems within state forests following the planned cessation of native forest timber harvesting in 2030.

The 2019 Victorian Forestry Plan does not articulate either how Victoria intends to meet the RFA commitment to expand the range of forest industries, or what strategies will be implemented to achieve active management of native forests post 2030.

The long-term health of the Victorian communities in which native forest timber industries have provided substantial employment opportunities is important. The three focuses of funding programs under the Victorian Forestry Plan directed at the affected industries, workers and communities is a rational approach to providing support to those most affected by the planned cessation of native timber harvesting on public land. However, it is not yet clear whether these programs will result in the maintenance or creation of sufficient jobs to cover the expected loss of up to 1,100 jobs³¹⁹ in Gippsland, as well as an unknown number of jobs in the Central Highlands and North East regions.

The 2019–20 fires and other recent bushfires have implications for both the carbon stocks and structure of the fire-affected forests which need to be considered by both policymakers and forest managers. Areas of dense regrowth could be mechanically thinned to improve forest resilience and return these forests to a more open structure, but for this to be commercially viable the development of novel products and new enterprises will need to be encouraged and supported. Such a form of sustainable forest management could make a positive contribution to Victoria's commitment to net-zero emissions and climate resilience by 2050.

Areas of dense regrowth could be mechanically thinned to improve forest resilience and return these forests to a more open structure ... Such a form of sustainable forest management could make a positive contribution to Victoria's commitment to net-zero emissions and climate resilience by 2050.

320. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clauses 56, 56A, 56B and 56C, accessed 2 August 2021.

7.2.10 Recommendations

The Panel recommends:

Recommendation 12

That the Parties examine the progress of expanding forest industries (e.g. clause 53A in the East Gippsland Regional Forest Agreement) and supporting communities to transition away from native timber harvesting, as per the Regional Forest Agreements (RFAs), at the next scheduled five-yearly review of the RFAs in 2025.

Recommendation 13

That the Victorian Government identifies the strategies it will implement to maintain or enhance the sequestration and storage of carbon in forests and further investigate the mechanical thinning of dense regrowth forests, as a strategy to restore forest landscapes to a more open forest structure in order to enhance the resilience of forests to more frequent occurrence of severe bushfires.

7.3 Plantations

7.3.1 Background

Under the modernised Victorian RFAs, the Parties confirmed their commitment to the goals, objectives and implementation of the National Forest Policy Statement, including supporting internationally competitive forest industries. The modernised RFAs contain provisions³²⁰ related to the important current and future roles of plantations in the provision of wood supplies to forest industries, the generation of jobs and other economic benefits, and the provision of exemptions from Commonwealth legislative requirements related to controls over exports and environmental protection. Both the Victorian and Commonwealth governments recognise the important contribution of plantations to the sustainable future of Victoria's timber industries and the generation of jobs and economic benefits to Victorian communities. The Victorian Government acknowledges that the expansion of the plantation estate will assist in supporting the timber industries to transition out of harvesting of state forest by June 2030.

Victoria has a significant plantation industry comprising both softwood (*Pinus radiata*) and hardwood (*Eucalyptus* spp.) estates, the vast majority of which are privately owned. In 2015, Victoria had 421,000 ha of timber plantations, which was about 21 per cent of the national plantation estate,³²¹ and 99 per cent of its plantations were located in the five RFA regions (see Table 78). At that time about 53 per cent of the plantation estate was softwood and 47 per cent was hardwood,³²² with most of the hardwood plantations having been established in the period from the late 1990s to the mid 2000s. The softwood plantations are grown on rotations of 25 to 35 years, while the hardwood plantations are generally grown on rotations of 10 to 14 years, but up to 60 to 80 years for mountain ash plantations. Victoria's plantations, which are almost entirely under private management, in many cases are located adjacent to or close to public forested land.

321. Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) (2018) [Australia's State of the Forests Report](#), p 181, ABARES, accessed 2 December 2021.

322. Ibid.

Table 78. Area of Victorian plantations, by type and RFA region, in 2015³²³

RFA region	Hardwood ('000 ha)	Softwood ('000 ha)	Mixed/unknown ('000 ha)	Total ('000 ha)
Central Highlands	4	9	0	12
East Gippsland	4	2	0	6
Gippsland	29	59	1	89
North East	3	53	0	56
West Victoria	159	99	0	257
Total area	199	222	1	421

Source: Commonwealth of Australia and Victorian Government, 2019

Victoria's plantations make significant contributions to sustainable forest management as well as to both regional development and the maintenance of viable rural economies. The wood from the softwood plantations, which represents 23 per cent of Australia's softwood log production, is sent to domestic processing industries to produce a range of products including structural sawn timber, plywood, paper and packaging. The wood from hardwood plantations, which represents 34 per cent of Australia's hardwood plantation log production, is predominantly chipped and exported, though some sawlogs are produced from the mountain ash plantations located in the Strzelecki Ranges.

Under the 2017-18 State Budget, the Victorian Government committed \$110 million as part of the Timber Plantation Establishment initiative for the Gippsland Plantations Investment Program, a component of the Victorian Forestry Plan, to encourage further investment by the private sector in the establishment of new plantations in Gippsland in order to increase Victoria's future plantation wood supply.

The Victorian plantation growing and processing sectors provide jobs, improved domestic productivity, export revenue and broader economic benefits to the state from the growing, harvesting, processing and utilisation of Victorian-grown fibre. In 2015 the Victorian plantation sector generated approximately \$3.26 billion for the state's economy. Softwood supply chains were the predominant contributor to this total, generating \$2.5 billion. The gross regional product arising from the Victorian plantation and processing sector was estimated at \$1.4 billion, highlighting the importance of the sector in supporting regional communities. Over the life of the RFAs, the existence of these plantations has enabled Victoria to maintain a viable forest industry sector while progressively phasing out of native forest timber harvesting.

Under the *Country Fire Authority Act 1958* (Vic), all plantation owners are required to operate and fund a forest industry brigade once they have 500 ha of plantations in a 25 km radius zone. The Country Fire Authority (CFA) currently has 20 forest industry brigades within its structure across Victoria. For plantation owners, this is a significant contribution towards protecting their assets as well as suppressing bushfires on other lands. For example, Hancock Victorian Plantations (HVP) currently operates seven forest industry brigades with 200 trained firefighters, 20 tankers, 60 slip-on units, two medium-sized helicopters and access to heavy plant, all of which are deployed alongside CFA volunteer firefighters and Forest Fire Management Victoria firefighters in bushfire suppression operations. HVP advised the Panel that it expends about \$5 million annually on fire management, including operating forest industry brigades, conducting fire prevention and preparedness activities and paying its state Fire Services Property Levy. HVP also advised the Panel that in 2019–20 its forest industry brigades were deployed for 54 days and its additional expenditure on bushfire suppression activities amounted to about \$2.5 million.

323. Commonwealth of Australia and Victorian Government (2019) [Victoria's Regional Forest Agreements: Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements](#), Commonwealth of Australia and Victorian Government, p. 191, accessed 2 December 2021.

7.3.2 Impacts of the 2019–20 bushfires

Because of the importance of plantation industries to the future of Victoria's forest industries and some doubts regarding the accuracy of the data in the Summary Report³²⁴ on impacts of the 2019–20 bushfires on plantation areas, the Panel conducted its own analysis of plantation losses. Information provided to the Panel by representatives of plantation owners across Victoria indicated that the 2019–20 bushfires impacted on about 8,350 ha of softwood and hardwood plantations across three Victorian RFA regions: East Gippsland, North East and West Victoria. Table 79 shows the areas of plantation burnt, by RFA region.

Table 79. Plantation losses from the 2019–20 bushfires³²⁵

RFA region	Hardwood ('000ha)	Softwood ('000ha)	Total ('000ha)
North East	31	6,393	6,424
East Gippsland	870	280	1,150
West Victoria	-	780	780
Total area	901	7,453	8,354



Photo credit: Recovering old growth eucalypt tree McKenzie River, March 22 © T. Bartlett

324. DAWE and the State Government of Victoria (2021) [Victorian Regional Forest Agreement Major Event Review of the 2019–20 bushfires: Summary report: information and data to inform public consultation](#), DAWE and the State Government of Victoria, accessed 1 March 2022.

325. Data sourced from Panel member discussions with plantation companies.

The North East RFA region was the most severely impacted, with a total of 6,424 ha of plantations burnt. Importantly this included a loss of 6,393 ha of privately owned softwood plantations of varying age classes, with losses occurring in two large bushfires. A total of 3,569 ha was destroyed around Shelley by the Upper Murray/Walwa bushfire, and a further 2,824 ha was burnt in the Dandongadale/Abbeyard bushfire. Most of these plantations (5,913 ha) belonged to HVP, with the area lost representing 12 per cent of the plantations in its northern region. The remaining 480 ha of burnt plantations belonged to D&R Henderson Pty Ltd, which produces wood panels and sawn timber at its factory near Benalla. An estimated 31 ha of hardwood plantations of unknown ownership were also destroyed in the North East RFA region.

In the East Gippsland RFA region, about 870 ha of hardwood plantations and 280 ha of softwood plantations were destroyed. The softwood plantations belonged to Southern Cross Forests and were all less than two years old when burnt. The hardwood plantations, which are managed on rotations of 12 to 20 years, belonged to Sapphire Forests. These plantations were destroyed in three locations: Lower Bendoc, Combienbar and Murrungowar. As the burnt trees were aged between one and 20 years, some salvage harvesting was possible in about half of the burnt area. While the total area of plantation destroyed was much smaller than in the North East region, the proportional impact on the plantation estate was much greater. The burnt plantations represented 54 per cent of the company's current planted hardwood plantations in East Gippsland, so these losses will have a very significant impact on future wood flows from these plantations. In contrast to softwood plantations, in which the trees are grown to much greater sizes, only a small proportion of the burnt trees from hardwood plantations can be commercially salvaged following a bushfire. Therefore, losses of such magnitude greatly reduce the projected returns from a plantation estate and can result in the owners deciding to withdraw from such investments.

In the West Victoria RFA region, a total of 780 ha of softwood plantations were destroyed in the Wade Junction fire in the Kentbruck area. HVP owned 400 ha of these losses, representing a loss of about 1 per cent of its plantations located in the western region. The remaining 380 ha belonged to Green Triangle Forest Products, with the loss representing about 1.7 per cent of its plantations located in the Green Triangle region.

Unfortunately, the Panel did not have access to information on the quantum of economic losses experienced by all the plantation owners in each RFA region. Using the data provided by HVP and Southern Cross Forests on the value of their losses, the Panel estimates that the total loss related to the burnt softwood plantations was \$70 million and the total value of the burnt hardwood plantations in the order of \$4 million to \$5 million. The plantation-based forest industries also suffered economic losses associated with these bushfires, although there is limited actual financial data available. The Alpine Shire's municipal recovery plan for the 2019–20 bushfires³²⁶ estimated that the Carter Holt Harvey softwood processing mill in Myrtleford experienced additional costs of \$2 million from the processing of burnt logs. In addition, logging contractors working for D&R Henderson had logging equipment destroyed in the Walwa bushfire. They lost two harvesters, two excavators and one forwarder, with an estimated total value of at least \$2 million, depending on the age of the equipment. Therefore, it is likely that the total direct losses to Victoria's plantation-based industries from the 2019–20 bushfires were in the order of \$80 million.

326. Alpine Shire Council, Community Recovery Committee (2021) [Municipal Recovery Plan: Enabling community recovery and resilience from the 2019–20 bushfires](#), p 19, Alpine Shire Council, accessed 2 December 2022.

In plantation forest industries, the impacts of losses from bushfires are felt both immediately and for a very long time. HVP's situation in the North East region is used to explain the range of short-term impacts. In the period immediately after the bushfires, HVP needed to suspend harvesting operations in some other locations and move logging contractors to the North East to increase its capacity to salvage the burnt trees from the older aged plantations. Younger aged burnt plantations have little or no salvage value and needed to be bulldozed and the debris burnt before replanting. In the North East region the bushfires have significantly disrupted HVP's plantation age classes, which will continue to affect the quantity of wood supplies available to the associated processing industries for the next 25 years. HVP advised the Panel that the cumulative loss of future sawlogs represented the equivalent of one year's log supply from the plantation estate in the North East region. Another significant impact is the need for a substantially increased annual re-establishment program. Normally, within a 53,000 ha softwood plantation estate about 1,750 ha would be felled and replanted each year. To replant these burnt plantations while maintaining its ongoing regular replanting program, HVP needed to double its replanting program for a period of three to four years. HVP advised the Panel that within the plantation areas there were also substantial impacts to the environment and infrastructure, including roads and bridges, from the bushfires and subsequent soil erosion.

The long-term impacts arise as a result of the loss of mid-rotation age classes within a plantation estate and the disruption to the plantation age class distribution within a plantation estate. The loss of these partly grown plantations means that there will be reduced available log volumes for many years, with the impacts felt by the plantation owner, the harvesting and haulage contractors and the processing industries. A recent study of economic losses associated with burnt softwood plantations in the Bombala region of southern New South Wales indicated that the economic value of lost future wood flows to processing industries is about 2.5 times the value of the burnt plantations. Applying this assumption to the Victorian situation suggests that there was an additional future economic loss to the plantation industries of about \$120 million.

7.3.3 Government support following the bushfires

In 2020, the DJPR funded the North East Plantation Bushfire Affected Timber Salvage Program, which assisted the plantation forest industries to maximise the salvage of fire-affected plantation timber before it became unmerchantable. This was an industry-wide program that covered fire-related costs borne by harvest and haulage contractors, wood processors and the plantation owners. Concentrating harvesting operations into the burnt plantations and reducing harvesting of unburnt plantations elsewhere reduces further losses from fungal decay of the merchantable burnt timber and saves timber in the unburnt plantations, which would otherwise have been harvested, for utilisation in future years.

Following the 2019–20 Black Summer bushfires, the Australian Government provided \$40 million to the Forestry Recovery Development Fund, which provided grants of between \$1 million and \$5 million to privately owned processors that faced long-term reductions in log supply. Four wood processors that utilise wood from Victorian plantations received a total of \$10.3 million of funding from this fund.

7.3.4 Key information and issues raised during consultation

The following points were made during consultation:



Victoria's plantation industry has and continues to be disproportionately affected by bushfires when compared to other states and this is driven by the higher incidence of bushfires in Victoria. Around 85 per cent of the area of Victoria's plantations that have been burnt since 1935 has occurred since 2000 and the softwood plantations have been disproportionately impacted. (Victorian Forest Products Association (VFPA) submission)



Hancock Victorian Plantations reported an economic loss of \$62 million associated with the loss of about 6,300 ha of pine plantations, predominantly in the North East region. They explained that bushfires resulted approximately one million tonnes of burnt softwood logs being salvaged and sent to a range of wood processors in the Murray Valley and Green Triangle plantation regions. (HVP consultation and submissions)



The Carter Holt Harvey softwood processing mill in Morwell closed in 2017, with the loss of 160 jobs, largely as the result of the 9,500 ha of plantations destroyed in Gippsland in the 2009 Black Saturday fires and the consequential decline in available wood flows in the outyears. (VFPA submission)



Of the five bushfires that impacted on Victorian plantations, three originated from lightning and caused 95 per cent of the losses, one originated from a camp fire and one originated from machinery. Inappropriate management of forest areas predispose the landscape to catastrophic fires and exacerbate the risk of major economic impacts to long-term plantation investments. (VFPA submission)



Regardless of all the efforts of plantation managers with their own resources, the significant lack of closely coordinated and appropriately resourced fire control measures across all landscape tenures poses the most significant fire risk to the plantation resource. It is often out of control wildfire started and driven from other areas that eventually strikes and damages or destroys plantation resources. (Wood Products Victoria submission)



The Forest Industry Brigades are not always well integrated into bushfire suppression operations, particularly when the plantations are located remotely from the Incident Management Team, and decisions about implementing tactics such as backburning to protect plantations are not always made in a timely manner. (Private plantation manager)



Fuel modification, using burning and mechanical treatments, needs to be undertaken both close to communities and assets as a protection measure, and in native forests to assist in the control of fires and in reducing the risk of fires becoming large, uncontrollable catastrophic bushfires. (VFPA submission)



There is sufficient timber available from plantations to meet Victoria's sawlog and pulpwood needs without harvesting native forests, and the plantations are sufficiently spatially disjunct to avoid major losses from bushfires. Plantation pulpwood should be used in Victoria rather than exported. (David Lindenmayer consultation)



There are significant challenges in new plantation development including: long lead times between planting and harvest, land scarcity and competition with other agricultural uses, high land cost and low investment rates, economic scale, water competition, perceived rural population dislocation impacts, and most importantly the annual risk of bushfire and tree fire-loss. (Wood Products Victoria submission)

7.3.5 Panel analysis of data and issues raised

Given the Victorian Government's policy commitment to transition to a fully plantation-based forest industry and the evidence presented on both the increasing occurrence of bushfire-caused plantation losses and the implications that these losses have for future plantation wood supplies, the Panel examined the current level of protection given to plantations under the strategic bushfire management plans in the areas that were most affected by the 2019–20 bushfires.

In the Gippsland bushfire management strategy,³²⁷ many of the private plantations located around the Tubbut, Bonang, Bendoc and Coast Range areas do not appear to be given adequate fuel management protection via bushfire moderation zones. The situation in the Hume bushfire management strategy³²⁸ is less clear, as the plantations are more dispersed across the region and the interactive website does not directly compare plantation areas and the fuel management zones. Nevertheless, there appears to be a lot of landscape management zone in proximity to many of the plantation areas, which would mean that they are not necessarily given a high level of priority for protection.

7.3.6 Findings

Plantations

The 2019–20 bushfires resulted in the loss of 8,354 ha of privately owned commercial plantations in three regions of Victoria. The bushfires have had particularly significant physical and economic impacts on the softwood plantation sector in the North East RFA region and also on the hardwood plantation sector in the East Gippsland RFA region. Because of the proportional impact on the plantation estates in these two RFA regions, there will be some long-term impacts on the quantity of wood flows coming from these plantations in future years. There were also some impacts on softwood plantation resources in the West Victoria RFA region, though the comparatively low proportional loss should not create long-term wood flow problems in the Green Triangle region.

The magnitude of the current economic losses to plantation owners from these bushfires, estimated by the Panel at about \$75 million, is significant and it is borne almost entirely by the private sector investors. When such losses are coupled with the increasing bushfire risk profile, the 2019–20 bushfires could result in a decline in plantation investments in the future.

327. State Government of Victoria (2020) [Gippsland Bushfire Management Strategy](#), accessed 3 March 2022.

328. State Government of Victoria (2020) [Hume Bushfire Management Strategy](#), p. 9, accessed 2 March 2022.

The Panel considers that the financial support programs provided by the governments to the plantation industries to maximise the quantum of burnt timber recovered from plantations was an effective policy response to partially reduce the level of impacts of these bushfires on the long-term stability of the plantation forest industries.

The Panel was unable to assess the magnitude of the decline in future wood flows to the processing industries arising from these plantation losses and therefore is unable to identify whether this presents any risks to the viability of the existing processing industries in the regions that have been affected. However, given the length of softwood plantation rotations and the proportion of the estate destroyed in the North East RFA region, it is critical that additional efforts be made to reduce the risk of further large losses from bushfires in the next 10-to-20-year period.

The 2019–20 bushfires have demonstrated that Victoria’s plantations are not sufficiently disjunct to avoid major losses from catastrophic bushfires under the current and expected climate change scenarios. The increasing occurrence of bushfires impacting on plantations and the increasing cumulative loss of plantation resources is a significant and increasing threat to the future viability of the forest industries in Victoria and therefore to the effectiveness of the current policy to transition to an entirely plantation-based forest industry. To remain internationally competitive, most modern wood processing facilities require ongoing access to a minimum annual log volume. Therefore, the likelihood of significantly reduced log supplies in future years can threaten the economic viability of such processing facilities many years after a major bushfire.

While most Victorian plantation owners operate forest industry brigades, it appears that the smaller forest industry brigades may not always be effectively integrated into bushfire suppression operations, particularly when the bushfire is very large and the plantations are located remotely from the incident management team.

The Panel acknowledges the need to consider what impediments exist to achieving more domestic processing of timber from Victoria’s private plantation estates. However, the Panel was not in a position to assess the economic viability of a stakeholder claim about diverting hardwood plantation logs from export markets to wood processing industries in other regions of Victoria.

The 2019–20 bushfires have demonstrated that Victoria’s plantations are not sufficiently disjunct to avoid major losses from catastrophic bushfires under the current and expected climate change scenarios.

7.3.7 Recommendations

The Panel recommends:

Recommendation 14

That the Parties commission an independent analysis of the impacts of the 2019–20 bushfires on wood flows to the plantation-based industries in Victoria, as well as the feasibility of and impediments to more domestic use of existing plantation timber, to enable these matters to be further considered in the next five-yearly review of the Victorian Regional Forest Agreements.

Recommendation 15

That the Victorian Government, in consultation with plantation businesses, improve the integration of forest industry brigades in bushfire suppression operations; identify options for reducing the risk to plantation assets from bushfires that originate on public land; and, where necessary, update the zoning system in the bushfire management strategies.

7.4 Apiculture

7.4.1 Background

Under Victoria's RFAs, apiculture is included as part of the forest industries as it generates jobs that are dependent on access to public native forests. In addition, it is recognised that the apiculture industry contributes to food security through the provision of crop pollination services and that it requires access to floral resources within forested public land. There is a commitment to provide beekeepers with access to, and management of, selected areas of native forest, including access to apiary sites.

In 2019, an estimated 1,000 to 1,500 tonnes of honey was produced from apiary sites in Victorian RFA regions, with an estimated ecosystem service value of around \$3 million to 4.5 million per year.³²⁹ Victoria's apiculture industry is heavily dependent on floral resources from the public land estate for honey production and, most importantly, for the maintenance of beehive health. Nationally, native flora has been estimated to support 70 per cent to 80 per cent of honey production. Eucalypt trees are by far the most important source of nectar and pollen.

Apiculture is conducted in accordance with the 2013 Apiculture (Beekeeping) on Public Land policy,³³⁰ under which apiaries are permitted on public land, except within defined distances from the boundary of a wilderness park or zone or a reference area. The policy covers access to and the security of floral resources, as well as the licensing and allocation of bee sites. The policy also requires that apiculture will be considered in timber production planning, with a view to optimising coexistence between the two activities, and DELWP is required to seek to minimise the impacts of managing fire on apiculture. In addition, incident management teams, so far as is practicable, are to consider beekeeping in planning and implementing response and recovery actions following bushfire incidents. The policy indicates that in 2012 there were 3,637 bee sites on the 7.6 million ha of forests, parks and conservation reserves in Victoria.

In 2019, there was a total of 4,485 apiary sites on public land, of which 2,475 (55 per cent) were within the five RFA areas, with the largest number of apiary sites being located in the West Victoria RFA region and the smallest number is in the Central Highlands RFA region³³¹ (see Table 80).

Table 80. Number of public land apiary sites in each RFA region

RFA region	Number of sites
Central Highlands	170
East Gippsland	349
Gippsland	586
North East	363
West Victoria	1007

329. DELWP (2019) [Ecosystem services from forests in Victoria: Assessment of Regional Forest Agreement regions](#), DELWP, accessed 2 December 2022.

330. Agriculture Victoria (n.d.) Apiculture (Beekeeping) on public land policy, DELWP, accessed 2 December 2021.

331. DELWP (2019) [Ecosystem services from forests in Victoria: Assessment of Regional Forest Agreement regions](#), DELWP, accessed 2 December 2022.

7.4.2 Impacts of the 2019–20 bushfires

The Victorian Apiarists Association (VAA) advised the Panel that at the time of the 2019–20 bushfires there were between 100 and 120 active public land bee licences, and about 50 of the licensees had sites that were impacted by the bushfires. They indicated that about 1,000 beehives were lost, including hives that were burnt and hives in which the bees suffocated.

Data from DELWP³³² indicates that the 2019–20 bushfires impacted directly on 305 public land apiary sites, located in the East Gippsland, Gippsland and North East RFA regions. The directly impacted sites represent about 12.5 per cent of the total apiary sites within the five RFA regions and 23.5 per cent of the sites in the three most affected RFA regions. In addition, a further 140 sites had part of their range within a burnt area, which means that in total there were impacts on 445 apiary sites. The greatest number of impacted sites was in the East Gippsland RFA region. The details of the impacted sites, by RFA region, are shown in Table 81.

Table 81. Number of apiary sites impacted by the 2019–20 bushfires, by RFA region

RFA region	Total apiary sites	Apiary sites within burnt area	Apiary sites partly within burnt area
East Gippsland	349	196	261
Gippsland	586	85	150
North East	363	24	34
Total	1,298	305	445

332. DELWP (2019) [Ecosystem services from forests in Victoria: Assessment of Regional Forest Agreement regions](#), DELWP, accessed 2 December 2022.

7.4.3 Government support following the bushfires

The VAA indicated that the Australian Honey Bee Industry Council had requested support for apiarists after the 2019–20 bushfires and that, as a result, a range of support programs were provided by both the Commonwealth and Victorian governments. These covered aspects such as subsidies for sugar and protein supplements, covering financial gaps related to unusable licence fees, and support for programs to increase bee breeding stocks. DELWP advised the Panel that, in accordance with the 2013 Apiculture on Public Land policy, fee waivers were provided for fire-affected apiary sites and in some cases alternative apiary sites were made available to assist fire-affected apiarists.

The VAA also indicated to the Panel that the Victorian Government has agreed to allow the current licensees that had apiary sites severely impacted by bushfires to hold the ongoing rights to these sites without having to pay fees until the sites recover their productivity.

The East Gippsland Shire indicated that Murphy Honey received \$0.54 million to support the development of the Tambo Valley Honey Shop.

7.4.4 Key information and issues raised during consultation

The VAA met twice with the Panel and presented the following views:



In most locations, the apiarists were given adequate notice by DELWP to enable them to remove beehives located in the path of the bushfires. However, in some locations it was too dangerous to go to the apiary sites, and about 700 hives were burnt.



The unprecedented scale of loss of floral resources on public land to the beekeeping industry as a result of the 2019–20 bushfires is enormous. In the forest areas of Gippsland, where the bushfires were most severe, there is a massive economic impact for apiculture as these forests will not recover their value for apiculture for at least 15 years.



The VAA reaffirmed its view presented to the RFA Reference Group in 2019 that the RFAs fail to recognise all forest uses and values and fail to provide appropriate certainty for the beekeeping industry. There is an important interdependence between maintenance of a viable apiculture industry and ongoing access to public land floral resources. Without this access, a high percentage of Victoria's apiculture businesses would fail and this would have consequential impacts on the pollination services they provide for crop farming and other agribusinesses.



When logging is planned in state forest, there is no overlay of the bee site ranges. DELWP has told the VAA to liaise with VicForests about planned logging coupes, but according to VAA for the past few years VicForests management has not been willing to engage with the VAA. The current harvesting practice, under which most of the canopy trees are removed, results in a disruption of the floral reproductive cycle and the site having very limited floral resources for the next 40 years.



The cumulative impact over time of excessive timber harvesting has contributed to erratic regeneration outcomes, changes to floral reproductive capacity, forests that burn more readily, and the loss of eucalypt species that are valuable to the beekeeping industry. The severe impact of the bushfires on these previously logged sites has further reduced their ecosystem functionality. Significant forest restoration programs will have to be implemented to restore many areas of mixed species forests that are now severely compromised, with a high probability of major secondary structural change.



The VAA engaged Forest Solutions to trial an alternative silvicultural system in mixed species forests that results in a multi-aged residual stand structure which provides better maintenance of future floral resources. When the silviculture in mixed species forests is modified to achieve a higher retained basal area and a multi-aged structure, the harvested forests recover their value for apiculture in about 10 years. However, according to the VAA, to date VicForests and DELWP have not shown any interest in implementing this improved silvicultural system in mixed species forests.

7.4.5 Panel analysis of data and issues raised

The Panel reviewed the report³³³ prepared by Forest Solutions for the VAA on a trial of the alternative harvesting prescription for mixed species forests, which the VAA provided to the Panel. During 2018, VicForests trialled the application of a ‘continuous forest cover’ harvesting prescription proposed by the VAA on the Barjarg Flat logging coupe in the Strathbogie Ranges in the North East RFA region. The prescription is designed for use on licensed bee site forage ranges in mixed species eucalypt forests, wherever the timber and beekeeping industries share the same natural resource, to achieve a more equitable coexistence for both industries. The prescription aims to achieve a sustainable yield of timber using the silvicultural system known as single tree selection, while maintaining a tree canopy that is capable of flowering and producing nectar and pollen for foraging honey bees. In essence, the prescription seeks to retain 50 per cent of the reference basal area of the stand, retain at least two-thirds of the trees with high floral value that have diameters greater than 40 cm, and avoid the creation of crown gaps of greater than 20 m wide. Mature habitat trees for Greater Gliders are also retained.

The Forest Solutions report indicates that from the post-harvest assessment report, it is apparent that the application of this harvesting prescription largely enables the maintenance of floral values for the beekeeping industry post logging. The immediate flowering potential of the retained forest was assessed as being very close to the pre-harvest value, with the coupe therefore remaining a viable forage range for the licensed apiary site. Given the history of regeneration failure in the Strathbogie Ranges under the standard harvesting prescription, Forest Solutions considered that another benefit from this approach is that the coupe meets the required stocking levels post harvesting, and the early results from post-harvesting regeneration surveys indicated that a new cohort of eucalypt seedlings have germinated in the gaps. The report concludes that the logging operation produced an immediate yield of timber and an improved investment in trees with future sawlog potential on the site. Furthermore, benefits to other forest values, such as arboreal habitat and social acceptability were achieved.

333. Forest Solutions (2018) Timber harvesting on licensed bee-site forage ranges located on public land within low elevation mixed species forests in Victoria, p.19 [Unpublished report] commissioned by Victorian Apiarists' Association.

DELWP has acknowledged that the floral resources from forests burnt in the 2019–20 bushfires are expected to decrease in the short to medium term, reducing the capacity of these forests to support the provision of honey and pollination services. It also considers that the provision of this ecosystem service is expected to increase over time as forests regenerate and that the speed at which this occurs is likely to depend on how severely forests were burnt.³³⁴ The post-bushfire floral resources recovery time estimates range from 3 to 25 years, but eucalypt trees that have had their crowns burnt can take over 10 years to recover.³³⁵ The Panel considers that this situation is likely to have implications for the viability of some apiary sites in mixed species forests due to the evident increasing exposure of such sites to more frequent and more severe bushfires.

7.4.6 Findings

The 2019–20 bushfires had significant impacts on the Victorian apiculture industry, most significantly in the East Gippsland RFA region, with lesser impacts in the Gippsland and North East RFA regions. The most substantial impact is the long-term loss of floral resources in the most severely burnt forests and in the burnt areas of regenerating mixed species forests. These impacts are expected to persist for 10 to 25 years, depending on the burn severity and the residual forest structure.

The apiculture industry received appropriate financial support from governments following the bushfires, and a compassionate response from the Victorian Government regarding the arrangements for future access to severely impacted apiary sites.

The treatment of the apiculture industry in relation to the planning and implementation of logging within some apiary site ranges in mixed species forests currently does not appear to be appropriate, particularly when a clear-felling and seed tree silvicultural system is applied, as this does not appear to be the most appropriate way to maintain the floristic reproductive capacity of various eucalypt species.

The most substantial impact is the long-term loss of floral resources in the most severely burnt forests and in the burnt areas of regenerating mixed species forests.

7.4.7 Recommendation

The Panel recommends:

Recommendation 16

That the Victorian Government urgently review the current arrangements for consulting the apiculture industry regarding planned logging operations and give active consideration to amending the silvicultural prescriptions that apply to logging of mixed species forests within the ranges of licensed apiary sites, in order to improve the floral reproductive capacity of the logged forests.

334. DELWP (2019) [Ecosystem services from forests in Victoria: Assessment of Regional Forest Agreement regions](#), DELWP, accessed 2 December 2022.

335. AgriFutures Australia (July 2020) [Bushfire Recovery Plan: Understanding what needs to be done to ensure the honey bee and pollination industry recovers from the 2019–20 bushfire crisis](#), Clarke M. Publication No. 20-057, accessed 2 December 2021.

7.5 Tourism and recreation

7.5.1 Background

Under Victoria's RFAs, nature-based tourism is included as part of the forest industries as it generates jobs that are dependent on access to public native forests. In addition, the provision of recreation opportunities within public forested areas is considered to be an ecosystem service provided by these forests. Because tourism and recreation are closely aligned and often use the same locations and facilities within the public forested estate, the Panel has grouped them together for the purposes of this review. The modernised RFAs contain clauses³³⁶ that acknowledge the role of nature-based tourism, cultural tourism and forest-based recreation in regional economies and support access to and management of public forests to provide for a diverse range of recreation and tourism experiences.

Tourism is a significant economic driver for regional Victoria, including in both the North East and Gippsland regions, which were badly affected by the 2019–20 bushfires. For tourism and recreational visits to state forests, the Gippsland DELWP region (the Gippsland and East Gippsland RFA regions) is the most popular for state forest visitation, followed by the Hume region (the North East RFA region). In all the RFA regions, both state forests and the areas within the parks and reserves system are widely used by visitors and local people. Prior to the bushfires, over 42 million people visited Victoria's state and national parks annually, while an estimated 14 million people visited state forests annually.³³⁷ About 95 per cent of these visits are from Victorian residents, with two-thirds of the balance being interstate tourists and one-third being international visitors.

The range of recreational users of public land is very broad, and different types of recreational activities may require different settings and facilities. Similar to the approach used to manage other RFA values, the tourism and recreational facilities and opportunities provided in each public land category complement each other as visitor destinations. Some recreational activities, such as camping, hunting and other high impact activities, may be regulated or prohibited in some categories of public land. In most RFA regions there are nature-based tourism enterprises that provide recreation services on a commercial basis, thus contributing to rural small business opportunities, employment and sustainable regional development initiatives.

7.5.2 Impacts of the 2019–20 bushfires

At the statewide level there was an estimated loss in tourism revenue of \$330–350 million in bushfire-affected regions between December 2019 and March 2020.³³⁸ The Panel was advised that for Parks Victoria, the 2019–20 bushfires resulted in the most significant loss of built assets for 10 years, with \$25 million of assets destroyed, and major impacts on visitation and nature-based tourism. The most significant losses occurred in in East Gippsland at the Buchan Caves Reserve (\$1.3 million) and at Cape Conran Coastal Park (\$9.1 million).

In East Gippsland, where 685 tourism businesses were significantly affected by the bushfires, there was an estimated \$170 million to \$180 million loss of visitor expenditure,³³⁹ and the Princes Highway in Far East Gippsland was closed for 37 days. A significant number of Parks Victoria campgrounds, walking trails and visitor facilities were damaged or destroyed in the Cape Conran Coastal Park, Croajingolong National Park and around Mallacoota.

336. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clauses 57A and 57B, accessed 2 August 2021.

337. DELWP (2019) [Ecosystem services from forests in Victoria: Assessment of Regional Forest Agreement regions](#), DELWP, accessed 2 December 2022.

338. Boston Consulting Group, Department of Jobs, Precincts and Regions, 2020

339. State Government of Victoria and Department of Jobs Precincts and Regions (15 July 2020) [Victorian 2019–20 Bushfires: Regional Business and Economy Recovery Plan – Gippsland](#), State Government of Victoria and Department of Jobs Precincts and Regions, accessed 2 December 2021.

The iconic McKenzie River Rainforest Walk in the Bemm River Scenic Reserve, which was developed in the 1980s under the Victorian Rainforest Conservation Strategy, was also badly damaged by the bushfires and was still closed in December 2021.



Photo credit: Repaired boardwalk McKenzie River Rainforest Walk (reopened in early 2022), March 2022 © T. Bartlett

In north-east Victoria's Alpine Shire, of which 92 per cent is public land, the bushfires resulted in large-scale evacuations of tourists and local residents across multiple communities across the shire. The Alpine Shire estimated³⁴⁰ that its tourism businesses had an economic loss of \$90 million and a visitation loss between 140,000 and 190,000 visitors. This amount equates to approximately 25 per cent of the total tourism revenue for the year. The Shire's research indicated that over the three months following the bushfires, 70 per cent of businesses lost over 75 per cent of their revenue, with consequential job disruptions affecting 670 and 900 (full-time equivalent) positions. The Alpine Shire also considered that the extended closure of the national parks following the bushfires had a direct impact on the viability of local businesses and industry within the Alpine and surrounding shires. Parks Victoria's visitor facilities, walking trails and bridges were also damaged in Mount Buffalo National Park, around Lake Catani and in the Horn, Rocky Creek and Cresta Valley areas. In the Upper Murray region, Parks Victoria had visitor facilities damaged in Burrowa Pine Mountain National Park, Mount Mitta Mitta Regional Park, Murray River Reserve, and the iconic Mount Pinnibar area in Alpine National Park.

340. Alpine Shire Council, Community Recovery Committee (2021) [Municipal Recovery Plan: Enabling community recovery and resilience from the 2019–20 bushfires](#), p 19, Alpine Shire Council, accessed 2 December 2022.

7.5.3 Government support following the bushfires

The Victorian Government provided funding under the Eastern Victorian Fires 2019–20 State Recovery Plan, including the following projects related to addressing bushfire impacts on tourism and recreation on public forested lands:

- \$10 million for damaged roads, assets and dangerous tree removal, used to repair and reinstate roads, crossings and fire-tower infrastructure on public land
- \$6.4 million for rehabilitation of visitor assets on public land including safety works in parks and forests so they are fit for public use.

In addition, under joint Commonwealth and state funded programs to stimulate economic recovery in bushfire-affected areas, Alpine Shire received \$10.575 million for upgrading tourism infrastructure. The 2020-21 Victorian Budget provided \$18.5 million under the Gippsland Tourism Recovery Package to build new tourist accommodation, upgrade the East Gippsland Rail Trail and improve access to remote natural and human-made attractions in East Gippsland, including projects at Cape Conran, Orbost and Mallacoota. A further \$2.25 million of Victorian government funding was provided to rebuild damaged facilities at Buchan Caves and upgrade the Boggy Creek walking track near Nowa Nowa.

Parks Victoria advised the Panel that \$16.6 million of bushfire recovery and tourism recovery funds, together with several million dollars of insurance funds, is being used to rebuild and expand visitor facilities in Cape Conran Coastal Park. A further \$2 million of government funding has been provided to Parks Victoria and the Gunaikurnai Land and Waters Aboriginal Corporation to rebuild visitor facilities at Buchan Caves Reserve. In the Mallacoota and Croajingolong National Park areas, \$6.65 million has been provided under the Victorian Government Tourism Recovery Package to improve facilities around Mallacoota Inlet and improve access to Point Hicks Lighthouse, and a further several million dollars of insurance funding is being used to replace the Thurra River bridge and to implement recovery work at Mallacoota.

7.5.4 Key information and issues raised during consultation

The following points were made during consultation:

There were economic and social impacts for businesses that run organized camp activities arising from the bushfires and the associated closures of forested areas. (Australian Camps Association consultation)

Bushfires change the structure of forests and alter habitat for deer with populations increasing. Shutting large areas of forest land after bushfires precludes access for recreational deer hunters who currently remove 200,000 deer from public land each year, as part of Victoria's Deer Control Strategy. (Sporting Shooters Association of Australia consultation)

7.5.5 Panel analysis of issues raised

The Panel acknowledges that a large number of tourism-related business that rely wholly or partially on forest-related sites in Gippsland and North East Victoria were affected by the bushfires, but it was unable to identify any specific cases where such businesses could not be included in bushfire recovery programs.

While the Sporting Shooters Association of Australia expressed legitimate views about both the importance of their access to public land for deer shooting and the associated environmental benefits that arise from deer shooting, the Panel was advised that some areas of fire-affected public land needed to be closed to recreational shooting while the large-scale arial deer control program was undertaken. The 2020 Victorian Deer Control Strategy does not cover any bushfire-related matters. The strategy acknowledges that there is a gap in understanding of how burning regimes, bushfire and drought affect deer distribution and abundance.

7.5.6 Findings

The 2019–20 bushfires had a very significant impact on tourism and recreation, particularly on the



There were economic and social impacts for businesses that run organised camp activities arising from the bushfires and the associated closures of forested areas. (Australian Camps Association consultation)



Bushfires change the structure of forests and alter habitat for deer, with populations increasing. Shutting large areas of forest land after bushfires precludes access for recreational deer hunters who currently remove 200,000 deer from public land each year, as part of Victoria's Deer Control Strategy. (Sporting Shooters Association of Australia consultation)

The scale and intensity of the bushfires resulted in very substantial losses of and damage to visitor and recreational facilities in national parks, other reserves and state forests – perhaps at a scale not previously experienced.

The very substantial investments provided by the Commonwealth and Victorian governments under bushfire recovery programs and through subsequent Victorian Government programs will enable all the impacted facilities to be replaced.

The magnitude of these combined post-bushfire investments will enable a significant number of new forest-related visitor facilities to be developed in the worst affected regions, thereby ensuring that the future opportunities for forest-related tourism and recreation will exceed those that existed before the bushfires. This is particularly important in the East Gippsland RFA region where there will be fewer opportunities for job replacement following the cessation of native forest timber harvesting in 2030.

7.5.7 Recommendations

No recommendations are made.



Photo credit: Burnt softwood plantation and harvesting machine © Ruth Ryan, Hancock Victorian Plantations

8. Economic and social values

8.1 Economic values

8.1.1 Background

Victoria's forests provide economic benefits across a range of values including timber harvesting, wood processing industries, apiculture, recreation and tourism, and provision of clean water.

The *Regional Forest Agreements Act 2002* (Cth) requires that RFAs are entered into having regard to assessments of various matters, one of which is the economic values of forested areas and forest industries.³⁴¹ The *Sustainable Forests (Timber) Act 2004* (Vic)³⁴² includes economics-related guiding principles relevant to ecologically sustainable development. They are:

- The need to develop a strong, growing and diversified economy which can enhance the capacity for environmental protection
- The need to maintain and enhance international competitiveness in an environmentally sound manner.

341. Australian Government, Federal Register of Legislation (28 March 2021) [Regional Forest Agreements Act 2002 No. 30 2002, Compilation No. 4](#) (compilation date 28 March 2021), Section 4 Definitions, accessed 2 December 2021.

342. State Government of Victoria (2004) Sustainable Forests (Timber) Act 2004, State Government of Victoria, accessed 2 February 2022.

In the modernised RFAs, most of the economic focus sits within the sections on forest industries. Specifically, the Parties recognise the importance of forest industries to generating jobs and economic benefits for Victorian communities³⁴³. The new clauses related to Traditional Owner rights and partnerships also commit Victoria to empowering Traditional Owners to develop a sustainable funding model to enable them to meaningfully partner in forest management and to identify economic and employment opportunities from forests.³⁴⁴

As well as the economic impacts that are directly associated with the 2019–20 bushfires, there are economic impacts associated with the 2019 announcement of the Victorian Government's plan to cease native forest timber harvesting by June 2030.

8.1.2. Impacts of the 2019–20 bushfires

The 2019–20 bushfires resulted in far-reaching devastation and impacts for local people, communities, ecosystems, businesses and infrastructure. Key regional industries such as agriculture, tourism, forestry and retail were severely affected. Homes, businesses, community facilities and thousands of kilometres of roads and fences were damaged or destroyed. For the businesses and economy related to RFA values, data provided by Bushfire Recovery Victoria indicates that the following economic impacts occurred in the bushfire-affected regions of Victoria:

Table 82. Economic impacts in bushfire-affected local government areas (LGAs), by category^{345, 346}

Category	Estimated economic loss
Tourism revenue (December 2019 to March 2020)	\$330 million to \$350 million
Industry decline (Alpine, Towong, East Gippsland LGAs)	\$114 million to \$199 million
Industry decline (Indigo, Mansfield, Wangaratta, Wellington, Wodonga LGAs)	\$79 million to \$181 million
6,350 km of farm fencing destroyed	\$69 million

8.1.3 Government actions and support following the bushfires

Following the bushfires, \$78.06 million was invested under the Eastern Victorian Fires 2019–20 State Recovery Plan towards region-wide projects vital for recovery, including the following forest-related components:

- \$10 million to repair and reinstate roads, crossings and fire-tower infrastructure and \$8 million to ensure the safety of the arterial road network
- \$7.7 million to fund new seed stocks and directly sow forest areas by hand and helicopter, and \$5 million to protect threatened species from pests and predators
- \$7.15 million to upgrade infrastructure at Cape Conran to make it 'visitor ready'
- \$6.4 million for safety works in parks and forests so they are fit for public use
- \$4.8 million to support Aboriginal community organisations, businesses, jobs and infrastructure.

343. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clauses 53, 53A, 53B, 53E, 53L, 53N, 53P and 53R, accessed 2 August 2021.

344. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clauses 55C (e) (i) and (iv), accessed 2 August 2021.

345. Information provided through Panel briefing.

346. Bushfire Recovery Victoria (August 2020) [Eastern Victorian Fires 2019–20 State Recovery Plan](#), p 11, Bushfire Recovery Victoria, accessed 2 December 2022.

Bushfire Recovery Victoria has worked with some Traditional Owner groups to use bushfire recovery as a first step in empowering Traditional Owners to improve economic outcomes for Aboriginal people through recovery programs on Country. A project implemented by Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC) is assisting Gunaikurnai people to improve their health by healing Country. The project includes land monitoring works, revegetation, cultural research and healing and engagement events. GLaWAC has established a bushfire recovery crew, providing employment to young Aboriginal people. This not only creates some economic outcomes but also helps those involved to connect to their cultural roots and to Country and to learn more about managing biodiversity through working in partnership with ecologists.

8.1.4 Key information and issues raised during consultation

The following points were made during consultation:



Economic opportunities in forests are more than timber and there are a range of opportunities impacted by fires. A holistic or cultural landscape approach to management is also relevant to consideration of the range of cultural, social and economic opportunities impacted by fires. Flow-on effects of the changing landscape of economic activity impacts on broader social and economic opportunities such as the towns where people live, the ability to pass on traditional knowledge to younger generations, access to Country, Indigenous tourism ventures and employment. (Federation of Victorian Traditional Owner Corporations submission)



The East Gippsland economy was particularly hard hit by the Black Summer bushfires and the economic impacts were very wide ranging and extended for a very long period. The Princes Highway, from Orbost to the NSW border, was closed for 37 days, which greatly affected business supply lines into NSW. The township of Mallacoota was without road access and mains electricity supply for 38 days. (Regional Development Victoria, Gippsland consultation)



Closure of the National Parks for extended periods had a direct impact of the viability of local businesses and industry within the Alpine and surrounding shires. Over a three-month period, visitation dropped by 190,000 visitor days and tourism businesses lost over 75 per cent of their normal revenue during this period. (Alpine Shire consultation)



Forest industry personnel were directly impacted by the 2019–20 fire event. Some lost machinery and property, many lost incomes due to the 75 per cent reduction in available timber stocks following the fire. (Forest and Wood Communities Australia submission)



Because of the highly integrated supply chain within Australia's forest industries, the Black Summer fires have caused significant economic impacts to these industries. These impacts associated with the burnt forests and plantations affect the forest owners but also the harvest and haulage contractors and the downstream timber processors, that rely on these resources and they affect both the short and long-term wood supplies available to these industries. (Australian Forest Products Association consultation)



The health of the environment is linked to the health of the community and employment opportunities. If the government is phasing out the logging industry, they need to create new employment opportunities. However, not as much investment is being put into new businesses in the communities where jobs will be lost, when compared to the amount of economic activity currently associated with the logging industry. (Orbost-Omeo community consultation)

8.1.5 Panel analysis of issues raised

The Panel was not provided with any specific information on the direct economic impacts of the bushfires on either the native forest or softwood processing industries. According to the Australian Bureau of Agricultural and Resource Economics (ABARES) data,³⁴⁷ Victoria experienced a 10 per cent drop, worth about \$8.8 million, in the value of its native sawlog harvest in 2019–20. There was no drop in the value of softwood sawlogs, probably due to the extensive softwood sawlog salvage program that was implemented following the bushfires. At the time that the Panel considered this issue, ABARES had not yet published the data on the value of sawn timber produced by each state during 2019–20; however, using average multipliers from previous years the Panel estimates that it is likely that the drop in sawn timber value was in the order of \$50 million. With the estimated direct and future losses to the Victorian plantation industries (Section 7.3.2), the total economic loss to Victoria's forest industries can be estimated at \$259 million.

The projects funded by Bushfire Recovery Victoria with some Traditional Owner groups represent a possible model to progress some aspects of the RFA commitment to identify economic and employment opportunities for Aboriginal people from forests. However, on the basis of feedback provided to the Panel during the Traditional Owner engagement process, they appear to address only part of Traditional Owner expectations, and to date at the regional level DELWP has made very little progress on the implementation of this RFA commitment.

The Panel was provided with information produced independently for the Wellington and East Gippsland shire councils on the potential economic loss to those local government areas associated with the planned cessation of native forest timber harvesting in 2030. That report³⁴⁸ estimates the native and plantation industry's contribution to local employment at 1,856 jobs. It also estimates a current direct output value of \$311 million and a further \$204 million of indirect output value. About half of the value is linked to wood product manufacturing, about 40 per cent is linked to the forestry and timber harvesting sector, and the balance relates to forestry support services. The estimated impacts if the native timber industry closed immediately are an estimated loss of 1,110 jobs and an annual drop in economic output of \$308 million, of which \$155 million is from direct impacts. There would also be an estimated annual value-added loss of \$108 million, with \$50 million being from direct impacts.³⁴⁹

The Panel was also provided with a 2015 Deloitte Access Economics report³⁵⁰ of economic modelling of the value of the native timber industry in the Central Highlands RFA region.

347. Department of Agriculture, Water and the Environment and ABARES (March and June quarters, 2020) [Australian forest and wood products statistics](#), datasets 2020. Technical Report 20.9, accessed 2 December 2022

348. ID Consulting Pty Ltd (2021) [Economic Analysis of the Timber Industry: Specialised industry sector analysis for the Wellington and East Gippsland regions](#), ID Consulting Pty Ltd, pp 3-5, accessed 2 December 2022.

349. ID Consulting Pty Ltd (2021) [Economic Analysis of the Timber Industry: Specialised industry sector analysis for the Wellington and East Gippsland regions](#), ID Consulting Pty Ltd, p. 17, accessed 2 December 2022.

350. Deloitte Access Economics (2015) [Economic Assessment of the native timber industry in the Central Highlands RFA Area: Report 1 – Economic and financial impact](#). Previously available at: <https://www.vicforests.com.au/about-vicforests/economic-report>

Considered against a counterfactual of no native timber harvesting, this modelling found that Victoria's gross regional product is estimated to be \$357 million higher, with an additional 2,036 full-time equivalent jobs, relative to the counterfactual scenario. These economic analyses suggest there will be significant job and economic losses to the Gippsland and North East regions once native timber harvesting ceases. What is less clear is whether new industries will be established as a result of the industry support programs under the Victorian Forestry Plan, thereby generating new job and economic output, and what proportion of current native forest related jobs can be transitioned to the plantation sector.

8.1.6 Findings

From the published information and the Panel's analysis, it is evident that both the tourism and forest industries within the Local Government Areas most affected by the 2019–20 bushfires suffered very significant economic losses, with a combined estimated loss likely to be in the order of \$600 million.

The economic losses to the tourism industry were exacerbated by COVID-19 restrictions that followed the Black Summer bushfires, but it can be expected that much of the tourism sector in the fire-affected areas will recover to its pre-bushfire level during 2022.

The economic losses to Victoria's forest industries will endure for many years to come. In the plantation-based sector, these losses will continue for up to 25 years, particularly in north-east Victoria, due to the magnitude of softwood plantation estate that was destroyed and the time it takes for new plantations to grow. In the native forest sector the economic losses will continue until 2030, due primarily to any ongoing constraints on timber harvesting related to the impacts of the bushfires on environmental values during the planned phase-down of log supplies under the Victorian Forestry Plan.

With the exception of some limited Bushfire Recovery Victoria projects, very little progress has been made in identifying economic and employment opportunities for Aboriginal people from forests.

8.1.7 Recommendation

The Panel recommends:

Recommendation 17

That the Parties invest in the preparation of data on the current and expected changes by 2030 to social and economic benefits derived from forests, for consideration at the next five-yearly review.

8.2 Social values

8.2.1 Background

The *Regional Forest Agreements Act 2002* (Cth) requires that RFAs are entered into having regard to assessments of various matters, one of which is social values (including community needs).³⁵¹ During the modernisation of the Victorian RFAs, a range of social indicators were considered, drawing on data relevant to the Montréal Process Criteria and Indicators for Sustainable Forest Management. These indicators include aspects such as the range of recreational/tourism activities available, direct and indirect employment in the forest sector, importance of forests to people and the resilience of forest-dependent communities to changing social and economic conditions.

Importantly, the modernised RFAs incorporate a range of new clauses related to Traditional Owner rights and partnerships, some of which relate to the social values of importance to them, including tangible and intangible heritage and identity.

8.2.2 Impacts of the 2019–20 bushfires

The Black Summer bushfires caused substantial social impacts for a very large number of people. Individuals, families and communities who experienced these bushfires have lived through, and continue to experience, significant levels of distress and anguish. For many, this comes after previous experiences of large bushfires.

Tragically these bushfires resulted in five deaths in Victoria. Three of the deaths were of people who were directly involved in the bushfire suppression operations, including two Forest Fire Management Victoria firefighters and one timber harvesting contractor. Two residents died in East Gippsland, one of whom was the owner of a small sawmill at Maramingo Creek.

The emergency and evacuation warnings that were issued affected residents in many areas, as well as thousands of tourists in popular summer holiday destinations such as Bright and Lakes Entrance. An estimated 3,000 holidaymakers and 1,000 residents were trapped when a bushfire entered the small township of Mallacoota on New Year's Eve, and about 2,000 people were subsequently evacuated by the Australian Defence Force's sea and air operations several days later. The bushfires entered many townships and rural settlement areas in East Gippsland and north-east Victoria, destroying or severely damaging 313 homes. Several remote communities in East Gippsland were isolated for long periods because of closures of major arterial roads including the Princes Highway, Monaro Highway and Great Alpine Highway, which led to shortages of essential goods.

The impacts of these bushfires have been particularly acute for Aboriginal Victorians, given their deep spiritual connection to and cultural obligation to care for Country. The destruction of Country has taken a significant toll on Aboriginal communities, causing immense grief due to the extent of the damage to forest areas, the loss of and damage to tangible and intangible cultural heritage, and the large numbers of deaths of wildlife, in addition to the destruction of or damage to 42 homes of Aboriginal people.

The Panel was advised during its consultation meetings that the social impacts from these bushfires were still very evident 18 months later and were most acute in the communities of Far East Gippsland.

351. Australian Government, Federal Register of Legislation (28 March 2021) [Regional Forest Agreements Act 2002 No. 30 2002, Compilation No. 4](#) (compilation date 28 March 2021), Section 4 Definitions, accessed 2 December 2021..

8.2.3 Government actions and support following the bushfires

In the Eastern Victorian Fires 2019–20 State Recovery Plan there are two lines of recovery related to social issues: People and Wellbeing Recovery, and Aboriginal Culture and Healing. These programs are coordinated by Bushfire Recovery Victoria (BRV) but implemented through partnerships between state government agencies, local government, Traditional Owners and affected communities.

Key activities under People and Wellbeing Recovery are:

- operating a bushfire case support program, working with over 1,400 individuals and families
- distributing \$16.9 million in Personal Hardship and Assistance Payments
- establishing 8 community recovery hubs
- facilitating 22 community recovery committees
- implementing a mental health bushfire recovery package.
- Key activities under Aboriginal Culture and Healing are:
 - distributing \$4.2 million of Bushfire Recovery Grants to Aboriginal communities
 - supporting some Traditional Owners to implement three interrelated programs: Reading the Country, Healing the Country, and Caring for Country
 - getting people back on Country and creating employment opportunities for young Aboriginal people.

A BRV project implemented by Taungurung Land and Water Council focuses on healing both Country and people by sharing traditional ecological knowledge from the Taungurung community and elders. The project includes a Reading the Country component to identify the presence of cultural heritage within the fire-affected area. The Healing the Country component seeks to renew the cultural and spiritual connections to land through traditional ecological knowledge. The Caring for Country component will share and promote traditional ecological knowledge across selected fire-affected sites managed by Taungurung.

Various grants provided under the Local Economic Recovery Program supported rebuilding and upgrading of community facilities. These included substantial grants for work on community recreation facilities at Swifts Creek, Mallacoota, Bruthen, Lakes Entrance, Marlo, Goongerah, Tawonga, Corryong, Tallangatta, Myrtleford and Harrietville. A grant of \$362,000 was provided for the development of an Aboriginal cultural journey walk in Orbost.

The Victorian Traditional Owner Cultural Landscapes Strategy, authored by Victorian Traditional Owners and supported by DELWP and Parks Victoria, was released in August 2021. It acknowledges the rights of Traditional Owners to practice cultural activities and generate economic, environmental, cultural and social benefits from the management and use of Country and will support Traditional Owner rights and interests in managing Country according to their lore and customs.

8.2.4 Key information and issues raised during consultation

The following points were made during consultation:



Bushfires may impact on the mental health and wellbeing of all communities, and for Indigenous communities the impact on tangible and intangible cultural heritage, its protection and maintenance may also be negatively impacted not only by the fires but by the emergency management responses and decisions made without Traditional Owner input. (Federation of Victorian Traditional Owner Corporations submission)



The 2019–20 bushfires may not have happened or to the severity experienced if Traditional Owner Nations had been able to implement a cultural fire approach in the preceding years. The current system is broken and the application of Indigenous Ecological Knowledge and healing Country through cultural management will play a critical role in relieving the pressures on the forests. (Federation of Victorian Traditional Owner Corporations submission)



There is a need to ensure institutional frameworks (including law, policy, planning frameworks, governance and partnerships) enable and facilitate the application of Traditional Owner cultural practices across tenure. (Federation of Victorian Traditional Owner Corporations submission)



There is significant hurt and trauma just looking at all this severely burnt Country, which triggers memories of our ancestors and we don't know what impact these fires have had on our ancestors and our cultural sites. I am not enjoying the recovery process, having to apply for mainstream competitive grants with everyone else rather than being more meaningfully involved. (Snowy-Cann River Mob Traditional Owner engagement)



After major bushfires, our people should not face restricted access to forests, they should be supported to get out on Country and to undertake cultural heritage surveys. (Victorian Federation of Traditional Owners (FVTOC), Dhuduroa Waywurru, Bidwell, Wadawurrung consultations)



Our forest industry members were directly impacted by the 2019–20 fire event. These are people who were on the front line during the fires, defending the forest and their communities. (Forest and Wood Communities Australia submission)



In addition to the 42 individuals, families and businesses directly impacted by the bushfires in the Alpine Shire most residents were affected by the fires financially, psychologically or physically due to the fire risk, multiple evacuations and extended exposure to smoke. (Alpine Shire consultation)



The small town of Goongerah, and the surrounding communities, were terribly impacted by the fires. Many lost their homes, and communities were hard hit by trauma as a result. Many fought the fires to save their homes, properties, and livestock. The fires had a personal impact on communities, which even now is still being felt. (Goongerah Environment Centre submission)

8.2.5 Panel analysis of issues raised

The Panel was somewhat surprised that the social issues stemming from personal experiences and impacts from these devastating bushfires were not raised more substantively during the public and community consultation phases of the review process. This is possibly related to a combination of the passage of time between the bushfires and the review process, the implications of COVID-19 restrictions and the effectiveness of BRV's recovery programs. Despite its attempts, the Panel was not able to connect with any communities in north-east Victoria during its consultation process.

Recovering the social fabric of communities and the wellbeing of affected individuals after major bushfires is a long journey and requires substantial long-term holistic programs funded by governments. Programs are needed to support personal wellbeing as well as the rebuilding of homes, businesses, livelihoods and communities. The Panel considers that, at least in East Gippsland, the fire-affected communities were still exhibiting substantial social impacts at the time of the Major Event Review.

BRV's Aboriginal Culture and Healing program appears to have been a progressive and culturally appropriate initiative to engage with and empower some Aboriginal communities affected by the bushfires. However, it appears not to have been implemented equitably across all the Traditional Owner groups whose Country was impacted regardless of their formal recognition status. From the Panel's consultations, it is clear that a number of Traditional Owner groups did not have access to their fire-affected Country or receive any funded support to undertake healing activities or to conduct cultural heritage surveys.

8.2.6 Findings

From the Panel's engagement with Traditional Owner groups and fire-affected communities it was very evident that there is still a significant degree of residual trauma within both Aboriginal and some non-Aboriginal communities as a result of the impacts of these very severe bushfires.

BRV's dual lines of recovery, People and Wellbeing Recovery and Aboriginal Culture and Healing, appear to have delivered very worthwhile programs to address many of the social impacts directly arising from the bushfires. Because the Panel did not receive information from the fire-affected individuals or communities about the social impacts arising from the bushfires, it is not in a position to make any findings on the effectiveness of the People and Wellbeing Recovery programs.

For Traditional Owner groups that were supported through Getting on Country grants, Aboriginal people were able to reconnect with Country; learn about cultural knowledge, including language; identify cultural artefacts; and share stories about their mob, kinships, and connection to their land. Some indicated that there was no funding available to support cultural healing activities. However, the competitive grants process may not be the most appropriate mechanism for engaging and supporting smaller, not yet formally recognised Traditional Owner groups that have fewer resources available to develop proposals and manage grants processes.

8.2.7 Recommendation

The Panel recommends:

Recommendation 18

That the Parties strengthen activities with all Traditional Owners within each RFA region to identify culturally significant species and cultural landscapes, as a component of Matters of Traditional Owner Significance, and have these included within RFA monitoring and reporting systems and considered in each five-yearly review of the RFAs.



Photo credit: Bush foods regeneration after the 2019–20 Bushfires © Katherine Mullett

9. Indigenous heritage and Traditional Owner rights and partnership, including research and Traditional Owner knowledge

9.1 Background

Country is a term often used by First Nations people. It is a term that reflects many things for them culturally: their place of belonging, the place their ancestors came from, the place where they grew up and the place they heard stories about. Country also refers to any location; it may mean the beach, the mountains, a mountain, a place, a significant location or even an animal. It all depends on context. Throughout this review, we refer to Country from a Traditional Owner perspective; it is the RFA regions, the parks and reserves and the Traditional Owners' traditional place of Country.

We pay our respects to Country and acknowledge the harm Country experienced during the time of the 2019–20 bushfire event.

In March 2020, the RFAs were modernised and for the first time included consideration of Traditional Owners' rights and respect for managing Aboriginal (Indigenous) cultural heritage, including the embedment of Traditional Owner knowledge into forest management practices.

The Major Event Review Panel had a dedicated seat for Traditional Owner representation. The Traditional Owner Panel member acknowledges that they could not represent all Traditional Owners and their interests; therefore the Panel completed a dedicated consultation process that ensured that all people, groups, and corporations that represent Traditional Owners were engaged by direct means. Over an approximately two-month period, the Panel spoke to a total of 29 groups and individuals. Some groups chose not to participate in the consultation process.

9.1.1 Past and future management of Aboriginal cultural heritage

As part of this Major Event Review, we reviewed the recommendations made in the 2003 post-wildfire report. Volumes 1 to 3 of that report have been revisited (Fresløv et al. 2004a; Fresløv et al. 2004b; Fresløv 2004). This was one of the first cultural heritage reviews after a major fire event. The report made 66 recommendations in Volume 1, of which three were general recommendations, six were for specific areas (e.g. Stanley Forest, Mount Buffalo National Park) and 57 were specific recommendations for individual sites (Fresløv et al. 2004a). Some recommendations were funded by the State Government and formed the basis of detailed follow-up studies for areas or sites such as the Tawonga Huts area, Dinner Plain Track, Macs Hut site on the Dargo High Plains, the Gattamurh Creek site, Mount Cope rockshelter and the Willis campground area on the Snowy River (Fresløv 2005; Fresløv and Simons 2005a; Fresløv and Simons 2005b; Fresløv et al. 2005; Shawcross et al. 2006; Fresløv and Shawcross 2005). There is little evidence that any of the recommendations in the 2003 post-wildfire reports were carried out.

More general management principles were made in Volume II (Fresløv 2004) (see Appendix 3). Having reviewed these principles, the Panel considers it likely that many of them are in general National Park management practice, though to what extent is not clear and is beyond the scope of this review.

Nearly 20 years have passed since the previous major review of the management of cultural heritage during and after bushfires from a broad-scale cultural heritage perspective. In that time much has changed. Legislation to protect Aboriginal cultural heritage in Victoria was passed in 2006 and has changed the way in which this process is managed and by whom. The intent of the *Aboriginal Heritage Act 2006* (Vic) is set out in section 1 of the Act. Subsections (b) and (c) are particularly important:

- b. to empower traditional owners as protectors of their cultural heritage on behalf of Aboriginal people and all other peoples; and
- c. to strengthen the ongoing right to maintain the distinctive spiritual, cultural, material and economic relationship of traditional owners with the land and waters and other resources with which they have a connection under traditional laws and customs;

Since 2007, when the Act came into effect, the management bodies for cultural heritage have devolved from many small regional cooperatives to larger bodies recognised as Registered Aboriginal Parties (RAPs) that have greater control over heritage in their areas than the previous cooperatives did. Since 2007, they have formed informal partnerships with land managers.

It is accepted that climate change is affecting the frequency, ferocity and extent of forest fires. Forest extent is variable across the RFA areas while some RAPs such as Gunaikurnai are well acquainted with bushfires across their area, they have established partnerships with the land managers, have informal protocols for fires and are currently completing active research with universities to improve their understanding of fires and cultural heritage. In the West Victoria, North East and Central Highlands RFAs, most Aboriginal places are outside the forested areas, while in East Gippsland, Gippsland and the southern portion of the North East RFA, most registered Aboriginal places are within forested areas. The RFAs touch on working with Traditional Owners to integrate Traditional Owner knowledge to combine with science to create a more adaptive forests in order to deliver on ecologically sustainable forest management practices and outcomes that provide greater forest resilience.

The modernised RFAs have strong clauses on engagement with Traditional Owners. Given that the RFAs are new and these clauses are new to the Parties, the Panel did not expect to find all of the clauses implemented in practice as yet.

9.2 Impacts of the 2019–20 bushfires

The Black Summer fires had major impacts on Aboriginal people, community, Country and cultural heritage. Many of these impacts are still felt today, years on.

Traditional Owners have a deep connection to the environment. Since settlement, Traditional Owners have felt removed and disposed from their Country. The Black Summer fires in many ways brought back many old memories and trauma while they watched the landscape burn so fiercely and they themselves were forced to evacuate from Country.

Aboriginal Victorians have deep spiritual connection to and cultural obligation to care for Country. The destruction of Country has taken a significant toll on Aboriginal communities, causing immense grief due to the extent of the damage to forest areas, the loss of and damage to tangible and intangible cultural heritage, and the large numbers of deaths of wildlife totem animals, in addition to the destruction of/or damage to 42 homes of Aboriginal people.

The Panel has been advised³⁵² by communities that they experienced not only the intangible impacts of the fires on Country but also tangible impacts on known sites of cultural significance. The Panel heard from many Traditional Owners that the Major Event had caused significant impact to the condition of the Forest estate (e.g. scale of fire, intensity of fire, vegetation structure, floristic composition, impact to totemic species). This section provides an indication of likely impacts on known tangible and intangible heritage of significance to Traditional Owners within the bushfire and RFA footprint.

The Major Event Review conducted its own independent assessment of the impacts of Aboriginal Cultural Heritage on known tangible and intangible heritage to understand the real likely impacts of the Major Event. This analysis was a desktop only exercise, with ground truthing impractical due to time frames, COVID safety and other factors.

A review of the Victorian Aboriginal Heritage Register shows that there are 19,810 Aboriginal places in the RFA areas. Many of these sites have multiple components (e.g. artefact scatter/hearth/earth features) and the Aboriginal Cultural Heritage Register and Information System (ACHRIS) lists the components separately, so this total is the number of features rather than the number of sites. Table 83 lists all these sites/components in the RFA areas.

352. Caling T (November 2021) Traditional Owner Engagement Regional Forest Agreement Major Event Review 2019/20 Bushfires; and Jackson W (May 2019) [Independent Consultation Paper – Modernisation of the Victorian Regional Forest Agreements](#), accessed 3 September 2021.

Table 83 shows that although the West Victoria RFA region has the largest number of sites, only 2.4 per cent were affected by the 2019–20 fires. As expected, the impact on Aboriginal sites was overwhelmingly in the East Gippsland RFA region, with a shocking 55.1 per cent of sites likely to have been affected. The Central Highlands sites were least affected. However, given the creeping urbanisation within this RFA region and the gradual loss of sites as a result of development, even this smaller impact by fire is critical.

Table 83. Impacts on Aboriginal heritage sites, by RFA area³⁵³

RFA area	Total number of sites in RFA area	Fire-affected	%
West	11,782	285	2.4
Central Highlands	1,569	8	0.5
Gippsland	3,397	97	2.8
East Gippsland	1,324	730	55.1
North East	1,738	82	5.3
Total	19,810	1,183	5.97

In the past,³⁵⁴ consultation with Traditional Owners has demonstrated that Aboriginal places without physical remains, places of traditional or spiritual practice, places in recent memory and historic locations are of equal importance to archaeological sites.

The Historic References section of ACHRIS lists some such places but it is very clear that this part of the register has barely skimmed the surface of Traditional Owner knowledge about such places. While protection of such places is equally important to Traditional Owners, there remains much misgiving about disclosure of such information. Therefore, the information in Table 83 needs to be understood in this context, and direct consultation with relevant Traditional Owners needs to be carried out regarding these and similar unrecorded places.



Photo credit: Burnt artefacts in Mitchell River National Park, 2020. © Katherine Mullett

353. Freslov J, (2021) Regional Forest Agreement Major Event Review Volume 1: Aggregated Report, Impacts on Aboriginal Cultural Heritage.

354. Freslov J, Hughes P, Mullett R (December 2004), [Post Wildfire Indigenous Heritage Survey, Vol. 1 Background Survey](#), Results and Recommended Management Options, A Report to Parks Victoria, the Department of Sustainability and Environment, and Aboriginal Affairs Victoria, Perspectives Heritage Solutions, accessed 2 November 2021.

The Panel felt that it was important to consider the historic references, as these places are just as significant to Traditional Owners but have limited protection measures or consideration in fire suppression efforts and planning.

Table 84. Aboriginal historic references affected in the bushfire-affected RFA areas³⁵⁵

ID	Historic reference type	Total number of places	Number fire-affected	%
1.1	Properties where initial contact with pastoralists occurred	14	1	7.1
1.2	Properties where people are known to have worked	66	6	9.1
1.3	Properties where people are known to have lived/camped	42	2	4.8
1.4	Properties where people are known to have frequented	14	1	7.1
1.5	Places where people camped/lived around towns	82	1	1.2
1.6	Places where people worked in forest industries	34	7	20.6
1.7	Places where people lived in forests	8	3	37.5
1.8	Places where Aboriginal people were killed/assaulted/threatened by Europeans	34	4	11.8
1.9	Camp sites/meeting places	17	1	5.9
2.1	Spiritual places	40	6	15
2.2	Ceremonial places	23	1	4.3
2.3	Travelling routes	14	3	21.4
2.4	Burial/burial grounds	1	1	100
2.5	Businesses	1	1	100
2.6	Associations with pastoralism/farming/rural industry	1	1	100
	Total	391	39	5.09

Traditional Owners have deep connection with Country. Country refers to the diversity of the land that we live on and the importance of that land. The landscape (Country) they traditionally came from. Traditional Owners see Country and Culture as one, as they rely on each other. When they think of Country, they think of it as their everything.

With this deep connection to Country, Traditional Owners felt a deep sense of hurt during and after the major event. This hurt was expressed uniformly by all Traditional Owners engaged throughout the Major Event Review consultation process.

Central Highlands

Collectively Traditional Owners in this region expressed gratitude that their Country was not as heavily impacted by the fires as other groups' traditional Country was. They did acknowledge that this did not mean their Country was not impacted, and they expressed their sorrow for others' Country that was significantly impacted.

It is estimated that 0.68 per cent of known sites were impacted on Country of the Traditional Owners in the Central Highlands RFA region.

355. Freslov J, (2021) Regional Forest Agreement Major Event Review Volume 1: Aggregated Report, Impacts on Aboriginal Cultural Heritage.

Table 85. Fire-affected Aboriginal heritage sites in Central Highlands RFA region³⁵⁶

Site type	Total number of sites in RFA area	Number fire-affected	%
Artefact scatter		11	0.68
Collective number of sites not impacted by fire	2,279	0	0
Total	3,886	11	0.68

Ongoing development in the urban areas of this region means that sites are gradually being destroyed through legal and illegal mechanisms. Aboriginal places preserved in parks like Plenty Gorge Regional Park in outer urban development areas are highly significant cultural places.

The Central Highlands forests have had minimal surveys completed, most surveys are mainly along forested tracks. As climate change increases the incidence of forest fires, sites in forests on the urban fringes will come under threat. These sites hold greater value to Traditional Owners, as their Country is ever changing with further development. Therefore the areas impacted by the major event, though smaller in footprint than in other regions, still hold significant value to the Traditional Owners in this RFA region.

East Gippsland

Sixty-seven per cent of the East Gippsland RFA region was impacted by the major event – a total area of 815,410 has. This area had a known total of 1,324 sites registered. It is estimated that 55.1 per cent of this Aboriginal heritage is likely to have been impacted by the bushfires, and this does not include any possible impacts from fire suppression efforts. There are numerous Traditional Owners who identify part or whole of this RFA region as their Traditional Country. Many of these people live in remote areas and experienced the trauma of observing their Traditional Country burning with extreme intensity, while being locked down in town halls and blocked from any support services for an extended period. Many felt they could not leave their hometowns as they did not want to remove themselves from Country.



Photo credit: Burnt coastal vegetation, Bastion Point, Mallacoota, April 2021 © T. Bartlett

356. Freslov J, (2021) Regional Forest Agreement Major Event Review Volume 1: Aggregated Report, Impacts on Aboriginal Cultural Heritage.

Table 86. Fire-affected Aboriginal heritage sites in East Gippsland RFA region³⁵⁷

Site Type	Count of sites	Count of fire-affected sites	% of fire-affected site type
Site type not to be disclosed		1	50.0
Site type not to be disclosed		2	50.0
Aboriginal Historical Place		2	33.3
Artefact Scatter		602	57.8
Artefact Scatter/Earth Feature		2	66.7
Earth Feature		1	25.0
Grinding Grooves		1	100.0
Low Density Artefact Distribution		30	43.5
Quarry		4	80.0
Quarry/Artefact Scatter		1	50.0
Rock Art/Artefact Scatter		2	100.0
Scarred Tree		4	5.3
Shell Midden		68	46.3
Shell Midden/Artefact Scatter		46	69.7
Shell Midden/Artefact Scatter/Earth Feature		6	66.7
Shell Midden/Earth Feature		9	47.4
Shell Midden/Hearth		1	50.0
Shell Midden/Hearth/Earth Feature		1	50.0
Shell Midden/Stone Structure		1	100.0
Collective number of sites not impacted by fire	693	0	0
Grand Total	1324	784	55.1

Traditional Owners in Far East Gippsland spoke of their distress about not having access to clear information or being able to work closely with incident management teams to provide support and advice on the protection of their significant cultural sites and places.

The impact of the bushfires to the wellbeing of the Snowy Cann River Mob (SCRM) and devastation to Country has really brought the past trauma and hurt of the historical inequalities of the RFA back to the surface – this is the greatest impact for SCRM and with lack of follow-up engagement this is exacerbated.³⁵⁸

The long delay in accessing Country, community and family after the active fire front came through added stress to the Aboriginal community. Many spoke of the stress of the Stolen Generation, the removal from each other and away from their homes, not knowing if family was okay. For the Panel it was clear that the stress of the bushfires is still felt 18 months past the event itself.

The Panel notes that an estimated total of 55.1 per cent of known Aboriginal heritage sites of significance are likely to have been impacted by the major event. Little to no information has been provided for assessment of Aboriginal heritage sites post fire, either by desktop research or through ground truthing methods. The Panel notes that Traditional Owners have been provided funding to support assessment of fire impact to Country.

357. Freslov J, (2021) Regional Forest Agreement Major Event Review Volume 1: Aggregated Report, Impacts on Aboriginal Cultural Heritage.

358. Caling T (November 2021) Traditional Owner Engagement Regional Forest Agreement Major Event Review 2019/20 Bushfires.

However, Traditional Owners expressed frustration about their inability to access the required registry and data to understand the nature and extent of registered and known heritage sites, their locations and detail. It is the Panel's understanding that no full assessment of the likely impacts had been completed prior to the Major Event Review process.

The East Gippsland RFA region is predominantly not represented by any Traditional Owner group with any 'formal legal recognition'. The Panel found, through consultation, that it appears that these groups are not treated with due respect, tact or care, compared to other RFA regions. The Panel acknowledges that although their rights to Country are not currently recognised under any Act, they still exist and they still have interest in and knowledge of Country. Snowy Cann River Mob (SCRM) believe an incredible opportunity has been missed over the years by the State engaging in silos, and generally only with Traditional Owners about known (registered) physical cultural heritage sites.

Traditional Owners felt a personal hurt at seeing Country burn so harshly. They felt a sense of disbelief about the devastation, a sense of personal loss and also a sense of frustration. The impacts on Country and the Traditional Owners will be long felt.

Gippsland

In the Gippsland RFA region a total of 322,417 ha was affected by the 2019–20 bushfires. Most of this region is made up of the traditional Country of the Gunaikurnai people. Within the Gunaikurnai Recognised Area, 4.98 per cent of known sites were impacted by the fires. A number of newly rediscovered sites have been identified since the fires and are yet to be registered. This makes a total of 2.79 per cent of all sites in the whole Gippsland RFA region impacted by the event.

Table 87. Fire-affected Aboriginal heritage sites in Gippsland RFA region

Site Type	Total number of sites in the area	Number fire-affected	%
Artefact Scatter	2,045	86	4.21
Earth Feature	58	2	7.14
Low Density Artefact Distribution	245	5	2.04
Quarry	10	1	10.00
Scarred Tree	373	3	0.80
Collective number of sites not impacted by fire	776	0	0
Grand Total	3,477	97	2.79

GLaWAC spoke of the harm that the fire event caused to their people and their Traditional Country. The 2019–20 bushfires destroyed several community members' homes. Many were evacuated and felt forced off their traditional Country during the evacuation efforts. The Lake Tyers community is still feeling the long-term effects of the mandatory evacuation. It was explained to the Panel how the lack of engagement before, during and after the major event impacted on the Lake Tyers community and other Aboriginal communities in far East Gippsland. Communication and information didn't seem to arrive at impacted communities until it was time to evacuate.

Stories were told of Traditional Owners being evacuated in buses and the trauma of seeing their Country burning exacerbated by images of Stolen Generation (e.g. having to leave Country through evacuation). This impact was compounded by the fact many community members were/are in industries relevant to RFAs (e.g. conservation or timber) – seeing Country burnt and livelihood ‘gone’ is traumatic. Traditional Owners explained how early engagement (before and during the major event) by government agencies, including Local Government, is critical to ensure common understanding when an emergency occurs.

Though the percentage of cultural sites impacted by the fires may seem small, the Gunaikurnai raised concerns mostly about fire management activities, which are of the greatest concern in relation to destruction to their known and unknown sites of significance. In fact the sites that are off known tracks and unregistered are of the greatest concern for greater protection, as these sites are generally intact and have greater potential for research, and are of interest to the Gunaikurnai people to further their knowledge of their Country.

North East

The 2019–20 bushfires burned 351,913 ha of the North East RFA area, with several small fires in the north-western and south-eastern parts of the region. It is estimated that the fires impacted 5.3 per cent of the known sites on Country of the Traditional Owners in the region.

Table 88. Fire-affected Aboriginal heritage sites in North East RFA region

RFA region	Total number of sites in RFA area	Number fire-affected	%
Site type not to be disclosed	4	1	25.00
Artefact Scatter	1018	74	7.27
Low Density Artefact Distribution	104	3	2.88
Quarry	6	1	16.67
Quarry/Artefact Scatter	7	1	14.29
Scarred Tree	338	2	0.59
Collective number of sites not impacted by fire	77	0	0
Grand Total	1554	82	5.28

The greatest number of sites affected were artefact scatters, the most likely site type to be disturbed by fire suppression activities. Two scarred trees may have been damaged in the remote north-east high country in areas of high fire severity. These trees may not have survived.

Across the fire-affected areas, 113 (6.02 per cent) Dhuduroa Waywurru Nations Aboriginal Corporation (DWNAC), Dalka Warra Mittung Aboriginal Corporation (DWMAC), Bangerang Aboriginal Corporation (BAC) and Duduroa Dhargal Aboriginal Corporation (DDAC) sites were impacted on their Traditional Country, additionally there are historic reference sites not represented on the table above. DDAC expressed disappointment at how there was no rapid response to a post-fire archaeologic survey, and that the post-fire funding they received did not cover cultural heritage, while the other Traditional Owner groups received little to no funding post fire.

It is nearly impossible to assess the real impact on cultural heritage of the major event in the North East, as almost no survey has been conducted in the remote Upper Murray corridor. Therefore the true impact on significant heritage is unknown, coupled with little to no post-fire funding for Cultural Heritage, Traditional Owners of the North East RFA have had limited support to heal.

Many of the Traditional Owners expressed frustration and concern about the ferocity of Country being burnt. They also expressed frustration about the added stress of being locked out of decision-making processes to support and mitigate the harm to their cultural sites. These impacts are long lasting, added to the damage to undocumented and known sites.

Taungurung Land and Waters Council Aboriginal Corporation (TLaWC) spoke of sites that have been newly discovered post fire and are yet to be registered. TLaWC also commented on how they were included in conversations, planning and operational decision making with the Mansfield ICC, but found it difficult to get a response from the Ovens ICC.

West Victoria

The 2019–20 bushfires burned 16,736 has of the West Victoria RFA area, with several small fires in the north-western and south-eastern parts of the area. It is estimated that the fires impacted 2.4 per cent of the known sites on Country of the Traditional Owners in the region.

Table 89. Fire-affected Aboriginal heritage sites in West Victoria RFA region

RFA region	Total number of sites in RFA area	Number fire-affected	%
Site type not to be disclosed		1	100
Artefact Scatter		6	0.09
Fish Trap		27	10.6
Low Density Artefact Distribution		1	0.2
Rockwell		1	10.0
Scarred Tree		1	0.13
Stone Arrangement		15	10
Stone Structure		235	56.7
Collective number of sites not impacted by fire	1,620	0	0
Grand Total	11,782	285	2.4

The impact on cultural heritage is to some extent unknown, but from the known sites it is clear that the fires have had a severe impact affecting 285 sites, 15.9 per cent of the total known Aboriginal places in the Budj Bim area. No evidence was presented to the Panel of any long-term impact to the sites at Budj Bim and Traditional Owners have completed post-fire impact assessments.

Impact on one historic reference place was also identified but the nature of the impact is unknown. Traditional Owners have expressed that there is an opportunity to complete post-fire assessment of cultural heritage. The Panel notes that the information here may be out of date, as Traditional Owners have completed their own post-fire condition assessments of the cultural place Budj Bim (the Gunditjmara name meaning 'High Head').

Budj Bim Cultural Landscape, a UNESCO World Heritage Site, was impacted by the major event. Even though the fires in this area were small in size compared to other RFA areas, this fire still had significant impacts on the cultural heritage values within the cultural landscape. Even though the physical impact was

felt, the Gunditjmara people spoke of the opportunity the fire provided, with a great working relationship with the incident team, to support protection of significant heritage and to complete post-fire cultural surveys to identify new unregistered heritage. The Gunditjmara Traditional Owners were about to work closely with fire operation teams to support on-ground protection measures for the Budj Bim Cultural Landscape.

Eastern Maar Aboriginal Corporation (EMAC) expressed how Traditional Owners' role is greater than cultural heritage alone, and includes all management activities, including fire and emergency, that happen on Country. EMAC advised how it is Traditional Owners who need to advise on who is best to be included for different activities and events, not land and fire agencies. There is a feeling that the door is often closed and that it needs to be 'opened'.

9.3 Government response following the bushfires

The Aboriginal Culture and Healing Bushfire Recovery Grants were established to support Aboriginal heritage priorities, promote culturally safe recovery initiatives and invest in projects that deliver on Aboriginal culture and healing outcomes. These grants, implemented by BRV, ensured significant and appropriate focus is given to the unique needs and attributes of Aboriginal individuals, families, communities, businesses and Traditional Owner groups.

BRV has expanded on previous recovery models by establishing a dedicated line of recovery for Aboriginal Culture and Healing. The objectives under this line of recovery are:

- Aboriginal people's unique experiences of trauma are addressed, and healing is supported
- recovery and resilience are strengthened through Aboriginal culture, knowledge and the connection between Country and healing
- Aboriginal communities have increased capability to lead recovery and healing.

In 2021-22, \$4 million was dedicated to supporting the Aboriginal Culture and Healing Bushfire Recovery Grants program, with the grants being made available in two streams to address the recovery needs for Aboriginal communities:

- Funding Stream 1: Cultural Heritage Recovery
- Funding Stream 2: Aboriginal Community Support

Funding under these grants has supported a number of Traditional Owner groups to re-interact with their Country and provided economic opportunity to support Traditional Owners getting back to Country to gain a greater understanding of Country from their traditional perspective. Funding grants were a competitive process.

9.4 Key information and issues raised during consultation

The Major Event Review Panel ensured that there was a significance focused on engagement with all known identified Traditional Owners groups or individuals. The Major Event Review Panel received a detailed report on the TO engagement process as reported in the report “Traditional Owner Engagement” prepared by Ty Caling and Associates (Appendix A). For every consultation session with Traditional Owners, at least one Panel member attended all consultation sessions.

Traditional Owners spoke to nine main areas of concern:

- Engagement process
- Aboriginal cultural heritage management
- Economic impacts
- Access to Country
- Healing of Country and culture
- Implementation of Traditional Owner clauses
- Cultural burning
- Current condition of Country
- Timber harvesting.

During consultation, Traditional Owners consistently advised of their desire to be actively involved in direct management of Country before, after and during a fire event. All Traditional Owner Groups without formal recognition, highlighted the contrast in the level of engagement between the groups and ‘formal recognised’ groups – including the lack of engagement (limited to none) on the RFA itself. Several groups identified that as what they considered to be a breakdown in the engagement system. Traditional Owners raised concern with regard to their lack of knowledge about the RFAs themselves. They noted that before being able to comment on the operationalisation of the RFAs, they would first need to be consulted on the drafting of the agreements. It was clear that the Traditional Owners, mostly legally recognised, who had been engaged by DELWP were more aware of the RFAs and the modernisation of these agreements.

Consistently the Panel heard that engagement needs to be done in a meaningful way that supports Traditional Owners to understand all the layers of management and policies so that they are able to make an informed decision around the strategic direction of management of Country. This process requires resourcing and adequate support for the departments and for Traditional Owner groups.

Federation of Victorian Traditional Owner Corporations (FVTOC) stated in their submission that building relationships between Traditional Owner Nations and government/regional agency staff is vital to cultural competency. Without underestimating this importance, it is also critical to move beyond personal relationships to embed systems and processes to support Traditional Owner decision-making for fire response and management.

Traditional Owners expressed concern that there is a lack of engagement by government agencies on activities that have a likelihood of impacting cultural heritage, both tangible and intangible. Traditional Owners raised a greater concern about fire suppression activities, compared to the direct fire impact on cultural heritage. They felt that there was a lack of engagement during the suppression efforts to avoid any harm to cultural heritage within their Country.

Traditional Owners felt that there is a lack of understanding that their Country is a cultural place. They expressed concern about a management approach that does not include their voices or perspectives on Country and management, which they believe could help to protect their sites and prevent further harm to their totem animals. Traditional Owners also felt that there is a great opportunity post fire to complete surveys of burnt ground for unrecorded heritage. All Traditional Owner groups expressed a great desire to have surveys as a standard approach to gain further understanding and transfer of knowledge to the younger generation, just like in the old days.

The Environmental Defenders Office submission stated:

It is important that Traditional Owners are properly engaged in the ongoing process to assess the impacts of the bushfires on Aboriginal cultural heritage. Any work to understand impacts on Aboriginal heritage places must directly inform the identification of remedial action to ensure that those places are properly protected.

In conversation with Traditional Owners, direct impacts of the 2019–20 bushfires did not feature prominently. Rather, Traditional Owners spoke more about the historical and current inequities with broader society, including the current economic disparity between legally recognised groups and Traditional Owner Groups without formal recognition. Many felt that this major event has widened these disparities between groups. Traditional Owners felt that the major event opens up future economic opportunities to work more closely with agencies to reduce the risk of such major events occurring again; however, this can only happen with greater opportunity to close the funding disparities between groups.

Traditional Owner groups that were successful in receiving post-fire funding spoke highly of the project and the opportunity. However, the Panel heard from a large proportion of groups that they felt there was a disparity in the funding approach; and many that did receive funding felt that the funding arrived too late after the event, by which time the window of opportunity had closed and it was too late for Country. Traditional Owners also raised concern about the limitation of funding: they felt that there is no ongoing approach with opportunities for them to be financially independent.

Accessing Country is a big part of healing for Traditional Owners. However during and after, and even before the 2019–20 bushfires, Traditional Owners collectively spoke to the feeling of being locked out of Country through policies, lack of economic support or general disparity between rights and access to true self-determination rights.

Traditional Owners spoke of the window of opportunity to assess their cultural sites and locations of significance. They felt that with the lack of post-fire communication or access they were restricted to accessing areas of significance. Traditional Owners spoke highly of the 2004–2005 post-fire survey, stating that this is a model to follow following a major event. This survey supported Traditional Owners to access Country post fire, enabling culturally sensitive surveys to occur while ensuring post-fire safety. Traditional Owners spoke to needing real-time access to see Country post fire. Policies are required to reflect the need for this opportunity to be provided to all.

Victoria's Code of Practice for Bushfire Management on Public Land (2012) includes the following strategy under "Recovery":

identifying, assessing and treating any further risks (including risks to natural and cultural values) not identified or mitigated in the emergency stabilisation phase.

Other than the short-term approach under the Rapid Risk Assessment Teams (RRAT) report, this important activity is not done systematically after large bushfires and historically does not involve Traditional Owners.

In many conversations with Traditional Owners concerning the Major Event Review, all described the knowledge and practices they would like to express on Country, with RFAs providing the enabling conditions and opportunities to contribute to healing Country and culture. Many Traditional Owners felt that the major event caused further trauma through disconnection from culture, family and Country. Many of the issues heard by the Panel relate to Traditional Owner frustrations about the inability to adequately heal from historical trauma. As healing approaches are unique and linked to people and culture, the responses are also unique. For example, one group spoke of cleansing Country before being able to start the healing process.

Traditional Owner knowledge of the RFAs and awareness and understanding of the role and operation of RFAs varied. Some Traditional Owner groups had been actively engaged through the modernised process. Other groups expressed very limited knowledge or understanding of the RFAs, their purpose and the clauses within them to support Traditional Owners. Many expressed concern that there may be strong engagement in the drafting of these policies but limited engagement or action on the real-life implementation of policy. Traditional Owners spoke to a real disconnect between engagement on initiatives and regional implementation. They advised how they want to see on-Country implementation. Ongoing dedicated engagement by departments is seen as a priority by most Traditional Owner groups to ensure that the intent of the clauses is fully realised. One group highlighted the role of the National Indigenous Forestry Strategy (DAWE 2005) in RFA implementation, as that strategy seeks to derive economic benefits for Traditional Owners, including non-wood products, bush foods, medicine, tourism, conservation, sustainable forestry job opportunities, joint forestry initiatives etc.

Many groups highlighted the recent development of the Victorian Traditional Owner Cultural Fire Strategy (2019), which was led by Traditional Owner fire knowledge holders, which can facilitate the reintroduction, adaptation and implementation of cultural use of fire to support healing and caring of Country. Almost all Traditional Owner groups raised concerns regarding traditional burning and how a partnership approach is needed to help reinstate cultural burning regimes. One group spoke highly about requiring a holistic approach to the management of fire, including year-round management of Country that is properly resourced. A number of groups highlighted that the current management system is broken and that the 2019–20 bushfires may not have been as severe if traditional burning regimes had been reinstated. Traditional Owners identified that holistic approaches to cultural burning by Traditional Owners will both achieve healthy Country outcomes and deliver on Victoria's state obligations for managing risk to Victorian communities from bushfire.

It was felt that the Major Event Review provides an opportunity to change the current regimes and embed a cultural landscape approach through implementation of the Traditional Owner Cultural Landscapes Strategy (2021). Traditional Owners seek to be managing fire directly, with their own crews and equipment. They see themselves as fire givers, not firefighters.

Many spoke of the change to Country – of what we see today versus the older days. Country has drastically changed; to support cultural fire, first we need to support Country to go back to the old forest structure. Some groups indicated that cultural burning needs to be linked to cultural objectives and that each Traditional Owner group may have different cultural burning objectives, linked to culture, lore, stories or totems etc.

Traditional Owners view maintaining the healthy condition of the forests as an integral component of managing Country. They referred to their Country plans often. To Traditional Owners, Country is more than the land, water, air, plants and animals. It includes the spirituality, the way of life for Traditional Owners, and all of these things connected. Traditional Owners acknowledged that caring for Country in the present day requires the intersection of traditional and contemporary knowledge and practice. During the Major Event Review consultation, Traditional Owners consistently advised of their desire to be more actively involved in direct management of forests before, during and after bushfires. The Panel heard how the major event caused impacts to the condition of the forest estate – for example, the scale of fire, intensity of fire, and impact to totemic species – and how Traditional Owners need to be more actively involved in the direct management of forests to provide for more holistic management of Country.

All groups expressed a feeling that they are not genuinely involved in the management of forests for forest (Country) health and that the majority of the engagement is focused on the management (or harm minimisation) of physical cultural heritage sites. One group in particular advised that management of Country is far more holistic than simply managing for physical cultural heritage sites. Traditional Owners seek meaningful engagement and involvement in the management of Country.

Only a small number of Traditional Owners raised concerns regarding timber harvesting in direct relation to the major event. Two groups highlighted that they were not ‘against’ timber harvesting; rather they would like to see greater opportunity for Traditional Owner involvement and employment. One group spoke strongly about Traditional Owners needing to be actively involved in timber harvest planning to ensure that cultural heritage is not impacted. They expressed concern that the assessment of cultural heritage is predominantly focused on desktop-only assessments of known sites, and advised that Traditional Owners need to be involved in active on-ground assessments. Country needs to be seen as a cultural landscape, and unregistered heritage should be as highly considered in planning as registered sites. A better understanding of the forest resource for a range of benefits, such as economic opportunities and cultural management, can be achieved with more Traditional Owner led processes and policies. One group highlighted the importance of protecting ‘grandmother’ trees during timber harvesting.

Traditional Owners also spoke to the Panel about a number of other concerns that do not directly relate to the operations of the modernised RFAs.

9.5 Panel analysis of issues raised

The consultation period raised several different topics and concerns, ranging from impacts to opportunities.

One strong message from Traditional Owners was:

Country heals us and connects us to our ancestors, our culture and our history. But our mob cannot be healthy when Country is sick which is why it's been so important to get community out and involved in bushfire recovery – reading and healing, connecting and sharing knowledge. (Gunaikurnai)

Consistently, the Major Event Review found that the majority of Traditional Owner groups were not satisfied with the level of engagement they received from the state government agencies. The disconnect between government agencies' understanding of engagement and the level of engagement that is set out in policies was apparent in briefings provided to the Panel.

Traditional Owners spoke of wanting to be more actively managing Country, including fire, and stressed the importance of listening to Traditional Owner knowledge in order to do things differently, particularly now, in the aftermath of the Black Summer bushfires.

It is suggested that guiding principles of engagement should be:

Registered Aboriginal Parties

- Each RAP and each RAP area must be treated and respected as a separate entity. One set of rules cannot apply to all RAPs over the whole state
- Each RAP has the right to choose how it manages cultural heritage matters in its Country, how they form partnerships with land managers, and who they form partnerships with
- Each RAP must be recognised as the expert in its Country and of its cultural heritage and treated as such.

Non-Registered Aboriginal Parties

- Like RAPs, non-RAPs must be treated with respect, tact and care, acknowledging that just because their rights to Country are not currently recognised under the Aboriginal Heritage Act '06, they still exist and have interest
- Non-RAPs are to be consulted just as consistently as RAPs are. They are knowledge holders and keepers of culture, without the legal status
- All Traditional Owners deserve to be engaged with respect and supported to be engaged meaningfully, they are the experts in their Country and of their cultural heritage.

Drawing on information provided by Traditional Owners and Victorian Government officers, it is apparent that while Standard Operating Procedures exist for the protection of Aboriginal cultural heritage during bushfires, these may not be consistently applied during very large bushfire suppression operations. When it comes to managing Aboriginal cultural heritage during major bushfires, practically speaking it is not possible to manage all heritage places, particularly in remote areas or during rapidly moving and dangerous fire conditions. What needs saving or protecting is sometimes unknown, and there is a lack of respectful research, engagement and science-based information with which to make the right decisions for protection. Add to this the *Emergency Management Act 2013*, where there is even less clarity around the appropriate measures or triggers for the protection of Aboriginal Heritage while an event is active.

A stronger practical knowledge of the impacts on Aboriginal heritage from large-scale fires is required. As we move into a changing climate, resourcing more studies of Aboriginal heritage will support well-informed decision-making processes for protection of these sites of significance while supporting the outcomes of suppressing wildfires. Supporting Traditional Owners to actively refamiliarise themselves with Country will support a stronger understanding of the needs of Country. Traditional Owners spoke of being fire givers, not fire fighters. With active Traditional Owners on Country, the Parties can ensure the active implementation of the Traditional Owner Cultural Fire Strategy and Traditional Owner Cultural Landscapes Strategy. To isolate one part of Country, such as fire or tangible heritage, will likely be a detriment to the protection of Country and resilience of Country.

The Panel was advised by DAWE officers that the project component of the 2005 National Indigenous Forestry Strategy has not operated for some years. This strategy aimed to enhance the involvement of Aboriginal people in forest and wood processing industries and thereby lead to improved social and economic outcomes. The Panel considers that the intent of this strategy and its project component are highly relevant to the new provisions in the modernised RFAs covering Indigenous heritage, Traditional Owner rights and partnerships.

9.6 Findings

In talking with the majority of Traditional Owner groups, the inconsistent approach to engagement across government agencies and across regions, and the divide between DELWP policy and regional staff, was pronounced. Furthermore, the limited capacity of many Traditional Owner groups (particularly Traditional Owner Groups without formal recognition) compounded the feeling of no engagement and impact resulting from the 2019–20 bushfire season. There appear to be inconsistencies as to why some groups are well engaged while others appear to be sidelined, and this appears to be out of step with the clear and strong guiding policies and clauses within the RFAs and state agencies.

Most of the East Gippsland RFA region has no Traditional Owner group with legal, formal recognition. The Panel notes that these groups are not treated through the same processes or with the same due respect, tact or care as RAPs or Traditional Owners in other RFA regions. The Panel acknowledges that just because their rights to Country are not currently recognised under any Act, these groups still exist and they still have interest in and knowledge of Country.

During the 2019–2020 bushfires in Victoria, a total of 1,183 of Aboriginal places and 39 historic reference sites were affected to an unknown degree. While the numbers are large, it is concerning that some site types were affected disproportionately compared to other types (e.g. scarred trees, ancestral remains sites and complex midden sites). It is alarming to consider that no post-event impact assessments have been carried out by the Parties on the public estate, that all responsibility was deferred to the Traditional Owners without technical support or guidance. This governance approach left many groups feeling abandoned and set up to fail, while others with long-standing, strong governance systems flourished with this funding approach. The Panel suggests that the Parties consider each group individually and meet their needs with an as needs approach.

Many fire suppression activities took place both inside and outside the fire extent. The impact of these works outside the fire impact areas is not included in this review, so that the assessment is likely to have underestimated the extent to which those works have impacted Aboriginal places. Aboriginal archaeological places are a finite resource and are of enormous importance to Traditional Owners as they connect Aboriginal people today with their Country and their Old People. Aboriginal places are the property of the Traditional Owners, and decisions about the protection and management of these places are theirs. In this regard it is incumbent on land managers to work with Traditional Owners in a way which best suits individual groups for their Country. The modernised RFAs recognise this power dichotomy and aim to facilitate this process.

This review has assessed the impacts of the fires and summarised some of the issues and management principles, and has proposed a respectful process of formalising management of Aboriginal places before, during and after wildfires. Ultimately both RAPs and non-RAPs outside the RAP system will decide for themselves how they prefer to manage this process, and this autonomy should be respected.

The nature of the actual impacts and harm from the 2019–20 bushfires to known and unknown Aboriginal cultural sites of significance is very poorly understood. While some funding was provided to Traditional Owners for Cultural Heritage and Healing Country grants under Bushfire Recovery Victoria programs, only a very small proportion of the known cultural sites could be surveyed and this data is yet to be received.

Traditional Owners identified nine key areas of concern in relation to the RFAs:

- Engagement process
- Aboriginal cultural heritage management
- Economic impacts
- Access to Country
- Healing of Country and culture
- Implementation of Traditional Owner clauses
- Cultural burning
- Current condition of Country
- Timber harvesting.

Traditional Owners also spoke to a number of other issues such as Treaty, alpine resort management and land management legislation reform. The Panel acknowledges that these other areas of concern were outside the scope of the Major Event Review; however, the Panel encourages greater engagement by the Parties on matters of significance to Traditional Owners.

The Major Event Review found that Traditional Owners would benefit from the implementation of a statewide Traditional Owner RFA implementation plan in partnership with DELWP, with all Traditional Owners and Parks Victoria, to ensure all relevant clauses in the RFAs are fully implemented. The implementation plan must adopt the principles of continuous improvement, delegate and assign responsibilities, and include assessment, review and dispute-resolution processes.

9.7 Recommendations

The Panel recommends:

Recommendation 19

That the Victorian Government enhance the implementation of the Traditional Owner Cultural Landscapes Strategy (Victorian Traditional Owners, 2021) as a principal means of bridging Regional Forest Agreement commitments on Indigenous (Aboriginal) heritage, Traditional Owner rights and partnerships with the application of traditional knowledge and practices, such as cultural burning and forest gardening, in healing and managing Country.

Recommendation 20

That the Victorian Government review the forest management system and the existing fire management instructions and standard operating procedures to improve the management and protection of Traditional Owner identified living natural and biocultural values and uses. In future, all Traditional Owners, including Traditional Owner Groups without formal recognition, should be actively involved in site management decisions before, during and after fire-suppression operations, both in the field and in incident management teams. This includes ensuring that all Traditional Owners are notified of all bushfires on Country (in real time), to ensure awareness and ability to provide active input.

Recommendation 21

That the Victorian Government urgently implement, as a remedial action, a program of on-ground condition assessment with Traditional Owners for all known cultural sites impacted by the 2019–20 Black Summer fires. Future management advice and protection measures need to be put in place with consultation with Traditional Owners to protect, conserve and prevent future harm to these sites where possible.

Recommendation 22

That the Australian Government revitalise the 2005 National Indigenous Forestry Strategy to provide joint-funded programs that support Traditional Owners to manage Country, develop economic and employment opportunities from Regional Forest Agreement forests and partner with forest industry businesses that support self-determination of economic development opportunities.

Recommendation 23

That the Victorian Government establish an appropriate level of base funding to be provided to all Traditional Owner groups, including Traditional Owner Groups without formal recognition, to enable them to engage more effectively in the implementation of the Traditional Owner provisions under the modernised Regional Forest Agreements and support their ability to participate in consultation processes under Victoria's forest management system.

Recommendation 24

That the Victorian Government at a regional level, in partnership with each Traditional Owner group and Parks Victoria, develop Regional Forest Agreement (RFA) implementation plans for each Traditional Owner group, to ensure regular and planned engagement with Traditional Owners to:

- i. ensure oversight of the implementation of the relevant (Traditional Owner) clauses in the RFA
- ii. monitor the implementation of the government-accepted Major Event Review recommendations.



Photo credit: Sowing ash seed, post bushfires 2020 © Forest Solutions

10. Ecologically sustainable forest management

10.1 Background

Under the 1992 National Forest Policy Statement, the *Sustainable Forests (Timber) Act 2004* (Vic)³⁵⁹ and all the RFAs, the concept of ecologically sustainable forest management (ESFM) is considered to be a subset of the ecologically sustainable development approach that seeks to ensure that the public and private native forest estates will be managed for the broad range of commercial and non-commercial benefits and values they can provide for present and future generations.

When preparing for the renewal of the Victorian RFAs in 2019, the Parties commissioned an independent consultation report³⁶⁰ to deepen understanding of the RFAs by summarising the published information about the state and trends of forests and the forest industry. In discussing the theme of ESFM, the report noted three components that needed to be considered: recognise all forest values; conserve forest biodiversity and maintain ecosystem health; and promote Traditional Owner rights and partnerships. The Regional Forest Agreements Scientific Advisory Panel, appointed by DELWP to provide current scientific knowledge in relation to the modernisation of the RFAs, covered a range of topics relevant to ESFM, but its report³⁶¹ did not provide any specific advice about improvements related to ESFM.

359. State Government of Victoria (2004) *Sustainable Forests (Timber) Act 2004*, State Government of Victoria, accessed 2 February 2022.

360. Jackson W (May 2019) [Independent Consultation Paper – Modernisation of the Victorian Regional Forest Agreements](#), accessed 8 September 2021.

361. DELWP (24 November 2020) [What we're doing, Victorian Regional Forest Agreements](#), DELWP, accessed 8 September 2021.

The modernised Victorian RFAs all include the following clause:³⁶²

The Parties agree that ESFM is an objective which requires a long-term commitment to continuous improvement and that the key elements for achieving it are:

- the establishment and maintenance of a CAR reserve system
- providing for the long-term stability of Timber and Forestry Products Industries
- an integrated and strategic Forest Management System that actively generates and is capable of responding to new information
- ensuring that harvested areas of Native Forest on Public Land are successfully regenerated, maintaining the natural floristic composition.

In addition, other clauses commit Victoria to continued implementation of and improvements to its forest management system and adaptive forest management,³⁶³ including undertaking a comprehensive review of the Code of Practice for Timber Production by December 2023.³⁶⁴ The RFA clauses³⁶⁵ also recognise that ESFM outcomes are enhanced by genuinely engaging with stakeholders and local communities in a transparent and accessible way and involving them in decision-making processes.

The 2019–20 bushfires had impacts on each of the four key elements of ESFM identified in the RFAs. As the Scoping Agreement for the Major Event Review requires the Panel to give separate consideration to the impacts of the bushfires on the CAR reserve system and the long-term stability of the forest industries, this chapter will focus on the other two identified key elements of ESFM: the forest management system and previously regenerated forests. It will also cover two other topics that the Panel considers are relevant to ESFM: the long-term stability of forests and integrated forest and fire management.

10.2 Forest management system

10.2.1 Background

The background of Victoria's forest management system is covered in Section 4.3.

10.2.2 Impacts of the 2019–20 bushfires

Overall, the 2019–20 bushfires have not had a direct impact on Victoria's forest management system. However, the bushfires have had consequences for some elements of this system, such as requiring an amendment to the Timber Release Plan and revisions to coupe plans and firewood collection areas. It is highly likely that the impacts of the bushfires on particular values covered by action statements, forest management plans, national park management plans and strategic bushfire management plans may mean that revisions to some of these instruments and plans will be required as part of the scheduled review processes.

362. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 33, accessed 2 August 2021; and Boston Consulting Group report for the Department of Jobs, Precincts and Regions, 2020; and Bushfire Recovery Victoria (August 2020) [Eastern Victorian Fires 2019–20 State Recovery Plan](#), p 11, Bushfire Recovery Victoria, accessed 2 December 2022.

363. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 33C, accessed 2 August 2021.

364. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 33D (a), accessed 2 August 2021.

365. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 26B (b), accessed 2 August 2021.

10.2.3 Government actions and support following the bushfires

As reported in Section 7.2.6, the Victorian Government has conducted a review and updated some aspects of Victoria's Code of Practice for Timber Production 2014 and the associated Management Standards and Procedures since the bushfires to ensure they are clear, accurate and enforceable. The Panel understands that this review did not cover any impacts of the bushfires. The Panel was advised that Victoria intends to undertake the comprehensive review of the Code, as required by the modernised RFAs, by December 2023.

10.2.4 Key information and issues raised during consultation

The impact of the 2019–20 bushfires on the operation of Victoria's forest management system was not raised with the Panel during any of the stakeholder or community consultation sessions. Analysis of the responses provided through the Engage Victoria³⁶⁶ consultation process shows that this issue was not addressed by any of the submissions. There were more general comments expressed that the (modernised) RFAs are out of date and do not reflect Victoria's current and future environmental conditions.

In the responses analysed by Engage Victoria and in some written submissions from environmental NGO groups, there was a call to remove the exemption for timber harvesting conducted under RFAs from the provisions under Part 3 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act).

10.2.5 Panel analysis of issues raised

Exemptions from Commonwealth environmental law for timber harvesting in RFA regions

The calls made during the consultation process to remove the exemption for timber harvesting conducted under RFAs from the provisions under Part 3 of the EPBC Act imply that some groups are not satisfied that Victoria's forest management system adequately protects Matters of National Environmental Significance. However, in the Major Event Review process none of these submissions explained which components of the forest management system have been adversely impacted by the bushfires to a point at which the system no longer provides the same level of protection that the EPBC Act would otherwise provide.

Role of management plans in improving ecologically sustainable forest management

As outlined in Section 4.3.1, there are many components that make up Victoria's forest management system, each of which have different purposes and different requirements related to revision or continuous improvement. Within the forest management system there are three types of management plans that establish the detailed strategies and zoning systems for managing multiple forest values within large areas of forested public land. These are forest management plans, national park management plans and bushfire management strategies.

The modernised RFAs require Victoria to continually improve its forest management system³⁶⁷ practice active and adaptive forest management³⁶⁸ within public native forests and to review and update the forest management plans by December 2023.³⁶⁹ However, from the perspective of ESFM across the public land estate, there are no equivalent RFA commitments to update the national park management plans or to ensure that these two categories of management plans seamlessly align with the bushfire management strategies.

366. Appendix C.

367. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 36B, accessed 2 August 2021.

368. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clauses 15G (d), 33C, 50A (h) and 51A (g), accessed 2 August 2021.

369. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 51B, accessed 2 August 2021.

All of the forest management plans that apply to forested land within the five RFA regions were developed in the 1990s and early 2000s.³⁷⁰ While the written strategies within each forest management plan have not been reviewed over the past 20 years, the boundaries of management zones, particularly the Special Management Zones, have been periodically updated as a result of additional measures to protect threatened species.³⁷¹ For example, the 1995 East Gippsland forest management plan³⁷² includes very limited detail on fire management, deferring to the 1990 Regional Fire Protection Plans. While national park management plans were intended to have a 15-year time frame, it is evident to the Panel that many of these plans are now long overdue for review. As of 2018, 89 of Victoria's 124 National Parks Act parks (72 per cent) had an approved park management plan that was less than 15 years old, but as of 2022 there may be 65 (52 per cent) park management plans that are now 15 years or older.³⁷³ For example, the management plans for the Snowy River, Croajingalong and Errinundra national parks were all prepared in 1995-96. Since then, each of these national parks has experienced multiple bushfires including the 2019-20 bushfires which impacted on 76 per cent of Snowy River, 87 per cent of Croajingalong and 66 per cent of Errinundra national parks.

In 2020, Victoria prepared bushfire management strategies for its six regions that identify landscape zones, covering both public and private land, in order to focus fuel management activities to deliver bushfire risk reduction and ecological outcomes. In the Hume bushfire management strategy, fire regimes within the Landscape Management Zones are focused on maintaining ecosystem resilience and protecting ecosystem values such as old growth forests.³⁷⁴ The Panel was briefed on the process for developing these strategies, the nature of the zoning system and the capabilities and limitations of the Fire Analysis Module for Ecological Analysis (FAME) which is used to understand the impact of planned and natural fires on threatened species. While these plans were prepared after the 2019-20 bushfires, it is not apparent to the Panel how the zoning system provides for the fire management requirements of many of the environmental values, including old growth forests, rainforests or threatened species such as the ground parrot, which has specific fire management requirements. In the Gippsland bushfire management strategy³⁷⁵ the habitat for these environmental values appears to be included in the 'landscape management zone' where bushfire hazards are to be managed at the landscape level with the goal of reducing fire spread and impacts. Given the documented fire spread and intensity patterns associated with the 2019-20 bushfires in these areas, the Panel doubts that these strategies will achieve the desired ecological outcomes for many listed species and communities.

The Panel considers that the updating and integration of the management plans and bushfire strategies for all public forests in Victoria presents a clear opportunity to ensure that the impacts of severe bushfires on the range of forest values are taken into account when determining the locations of the different management zones and the management strategies used within each zone. Periodic revisions of these plans and strategies should be informed by a landscape-wide forest monitoring program covering RFA values and the stability and resilience of forest ecosystems.

370. DELWP (8 July 2021) Forest management Plans, DELWP, accessed 2 March 2022.

371. DELWP (December 2019) [Overview of Victoria's Forest Management System](#), DELWP, accessed 2 March 2022.

372. Department of Conservation and Natural Forces (December 1995) [Forest Management Plan for the East Gippsland Forest Management Area](#), Department of Conservation and Natural Forces, accessed 3 March 2022.

373. Parks Victoria (n.d.) [Parks planning and knowledge](#), Parks Victoria, accessed 2 March 2022.

374. State Government of Victoria (2020) [Hume Bushfire Management Strategy](#), accessed 2 March 2022.

375. State Government of Victoria (2020) [Gippsland Bushfire Management Strategy](#), accessed 3 March 2022.

10.2.6 Findings

There are no apparent direct impacts of the 2019–20 bushfires on Victoria's forest management system (i.e. the accredited processes under the Victorian RFAs), other than the need for some minor consequential changes to some of the instruments and plans related to timber harvesting and firewood provision.

The current forest and fire management strategies do not appear to be effective in protecting or limiting the impact of major bushfires on many important RFA values, such as old growth forests, threatened species and listed communities, and fire-sensitive communities, in both state forests and dedicated reserves. The Panel considers that this situation will get worse under the predicted climate change scenarios.

The Panel considers that improvements are required to more seamlessly align the zoning systems in three types of strategic plans that apply to public forests: forest management plans; national park management plans and bushfire management strategies. In addition, enhanced programs and new approaches to more active forest and fire management are required.

The Panel considers that improvements are required to more seamlessly align the zoning systems in three types of strategic plans that apply to public forests: forest management plans; national park management plans and bushfire management strategies.

10.2.7 Recommendation

Recommendation 25

That the Victorian Government improve the integration of zoning systems within the forest management plans, national park management plans and bushfire management strategies. This process should include coordinated revisions and an improved articulation of the nature of active management strategies required for each zone, to reduce bushfire risk and support improved resilience and recovery of forests and their associated ecological values.

10.3 Previously regenerated forests

10.3.1 Background

In the modernised RFAs one of the four key elements for achieving the long-term commitment to ecologically sustainable forest management is:

Ensuring that harvested areas of native forest on public land are successfully regenerated, maintaining the natural floristic composition.

Before 2004, the then Department of Environment and Primary Industries (DEPI) was responsible for any backlog in the regeneration of previously harvested forests in Victoria, while recognising that there had been numerous changes in the names forestry and land management departments between 1980 and 2003. Since 2004, VicForests has been responsible initially for ensuring that public forests are regenerated following timber harvesting operations. Under the provisions of the Timber Allocation Order, VicForests must submit an annual Allocation Order compliance report to the Secretary of the Department of Jobs,

Precincts and Regions each year describing the area of timber harvested and regeneration results for the preceding financial year for both ash and mixed species forest stands. The mandatory management standards and procedures set the minimum regeneration standards required within even-aged and uneven-aged forest stands. VicForests indicates that forest regeneration operations generally take up to three years to complete and that it ensures all sites are sown with the same species that were present prior to harvesting. The regenerating coupes remain on the Timber Release Plan (TRP) until monitoring indicates that the regeneration meets the required standard, after which the coupes can be removed from the TRP. Once the forest area has been removed from the TRP, the land reverts to DELWP for future management.

The Victorian Auditor General's Office (VAGO) has twice examined the issue of regeneration performance following timber harvesting. A 2013 VAGO audit³⁷⁶ noted that DEPI had estimated that the regeneration status of about 37,000 ha that had been harvested before 2004 was uncertain and that potentially 5,500 ha to 7,000 ha of this may not have been successfully regenerated. It also noted that DEPI had received \$2.8 million in 2009 to survey backlog areas in East Gippsland and regenerate 850 ha of these areas by June 2012. The audit found that neither VicForests nor DEPI had accurately reconciled the cumulative regenerated area against the cumulative harvested area since 2004, and that DEPI had insufficient seed in store to meet its projected regeneration requirements – for example, following a bushfire.

In 2018, the VAGO tabled its follow-up report³⁷⁷ on the 2013 audit. That report noted that DEPI had refined its estimate of the potential regeneration backlog to 27,400 ha and that it had assessed the regeneration status on 9,839 ha of this and found that around 8 000 ha was successfully regenerated. The report found that there was still a need to assess the remaining 17,561 ha of the potential backlog regeneration area and to treat the 1,839 ha that had been confirmed as needing to be regenerated. It also found that between 2004 and 2014, VicForests successfully regenerated 79 per cent of the 46,616 ha it had harvested, and considered that VicForests was keeping pace with the industry-accepted three-year lag between harvest and the completion of regeneration. It also found that DELWP had increased its stored seed stock from less than 1 tonne in 2013 to about 6.4 tonnes, of which about four tonnes was ash seed, noting that DELWP had estimated that it would require 12 tonnes of ash seed to assist in future fire recovery operations. The Panel understands that DELWP inherited responsibility for the areas for which DEPI previously had regeneration responsibility.

Victoria's State of the Forests reports include periodic reporting on the proportion of timber harvest area successfully regenerated. In the State of the Forests 2018 Report,³⁷⁸ prepared by the Commissioner for Environmental Sustainability (CES), it was reported that over the six-year period to June 2017 VicForests had completed the regeneration of 18,578 ha of harvested native forest and that a balance of 2,059 ha that had been harvested was still in the process of being regenerated. At that time, VicForests was harvesting about 3,000 ha of forest each year.

Over the last 22 years, an increase in bushfire frequency in Victoria has led to fire intervals below the reproductive age of Alpine Ash and Mountain Ash. As a result, Victoria has developed the capacity to undertake remedial regeneration operations in these fire-affected forests. The achievements from three such programs within ash forests after major bushfires in 2003, 2006–07 and 2009 were documented by Fagg *et al.* (2009).³⁷⁹

376. Victorian Auditor-General's Report (VAGO) (2013) [Managing Victoria's Native Forest Timber Resources](#), pp 27-30, accessed 29 March 2021

377. Victorian Auditor-General's Report (VAGO) (2018) [Follow Up of Selected 2012-13 and 2013-14 Performance Audits](#), pp 33-36, accessed 16 November 2021.

378. Commissioner for Environmental Sustainability Victoria (2019) [State of the Forests 2018](#) report, Commissioner for Environmental Sustainability, accessed 2 December 2021.

379. Fagg P, Lutze M, Slijckerman C, Ryan M. and Basset, O (29 October 2013) [Silvicultural recovery in ash forests following three recent large bushfires in Victoria](#), *Australian Forestry* 76 (3-4) 140-155, accessed 2 December 2021.

Following the 2003 alpine fires, about 1,800 ha of fire-killed Alpine Ash forest was resown. After the 2006–07 Great Divide fires, 3,930ha of fire-killed Alpine Ash and Mountain Ash forests were resown. After the 2009 Black Saturday fires, 3,990 ha of fire-killed Alpine Ash and Mountain Ash forests were resown. After the 2013 bushfires, which burned 14,000 ha within the North East RFA region, DELWP and VicForests trialled a different technique to reseed 2,075 ha of fire killed Alpine Ash in national parks and state forest in North East Victoria.³⁸⁰

10.3.2 Impacts of the 2019–20 bushfires

Because of the timber harvesting history in the East Gippsland, Gippsland and North East RFA regions, the Panel had concerns at the beginning of the Major Event Review process that a significant area of previously regenerated forest in each RFA region would have been impacted by the 2019–20 bushfires. This includes both areas that remain on the TRP and areas that had been removed from the TRP and for which DELWP has the responsibility for ongoing management. On 18 March 2021, the Panel requested advice from the Parties on the pre-bushfire status of forest regeneration activities and on post-bushfire impacts on regenerated forest. The Panel subsequently requested that DELWP provide data by RFA region on the impact of the 2019–20 bushfires on the areas of both mixed species and ash forests previously reported as successfully regenerated

The Panel was advised that the 2019–20 fires impacted 82,700 ha of ash forest, including 24,860 ha of immature ash forest, and that another 43,000 ha of young ash forest is considered to be at ongoing risk from future bushfires. DELWP provided the Panel with information on the ash forest reseeding program undertaken after the bushfires and on monitoring of the regeneration on those treated sites. However, throughout the Major Event Review process in 2021, DELWP was unable to provide the Panel with any information on the impacts of the 2019–20 bushfires on previously regenerated areas of mixed species forest that for which it has land management responsibility. The Panel acknowledges that DELWP's highest priority was the burnt ash forests and that this was the focus of forest restoration activities during the first half of 2020.

10.3.3 Government support following the bushfires

As part of the Eastern Victorian Fires 2019–20 State Recovery Plan, Victoria invested \$7.7 million to collect seed and sow areas of young ash forests that were killed by the bushfires, including both areas previously regenerated after timber harvesting and areas naturally regenerated after previous bushfires. DELWP, in partnership with VicForests and Parks Victoria, implemented a project to identify burnt ash forests at risk of vegetation-type change without silvicultural intervention, and to implement a large-scale reseeding program in some of the fire-affected ash forests. The project identified 25,632 ha of fire-killed ash forests that were less than 20 years old and which were not yet mature enough to regenerate naturally. Strategic criteria such as fire severity, level of natural seed supply and seedbed receptivity were used to identify 19,967 ha that were recommended for resowing. The project identified that 5,665 ha of these immature fire-killed ash forests lacked the seed bed receptivity required for successful resowing hence there would be a vegetation-type change.³⁸¹

380. Bassett O, Prior L, Slijkerman C, Jamieson D and Bowman D (2015) [Aerial sowing stopped loss of alpine ash \(*Eucalyptus delegatensis*\) forests burnt by three short-interval fires in the Alpine National Park, Victoria, Australia. *Forest Ecology and Management* 342 39–48, accessed 2 December 2021.](#)

381. Forests Solutions (2021) Post-fire Ash Forest Recovery-2020: An assessment of the recovery of Ash forests burnt during Victoria's 2019/20 Black Summer bushfires, with recommendations for silvicultural intervention and advice regarding forest type-change. (Unpublished report prepared for DELWP November 2021, provided to the Major Event Review panel).

The Panel was advised that this analysis, together with other modelled and operational factors informed the prioritisation of the areas that would be resown. It was recognised that any Alpine Ash reseedling operations would need to be completed by mid-July 2020, as the natural seed dormancy would be broken by snow and cold winter temperatures.

As part of this project, DELWP partnered with VicForests to increase the existing ash seed stocks from 7,300 kg to 15,800 kg between March and June 2020.³⁸²

Once the priority reforestation sites were determined, the resowing operations were conducted using specialised heli-seeders, fitted to helicopters and a fixed-wing airplane. The project successfully dispersed 4,682 kg of ash seed, which enabled the treatment of 11,587 ha of fire-affected immature ash forests, of which 11,072 ha was Alpine Ash and 515 ha was Mountain Ash³⁸³. Despite the very notable achievements of this program, the Panel understands that 8,380 ha of young fire-killed ash could not be resown, due to insufficient stored ash species seed being available and therefore could also be expected to experience a change in vegetation type. The areas of burnt young ash forests that either were resown or remain unsown within each RFA region are shown in Table 90.

Table 90. Burnt young ash forests resown and unsown, by RFA area³⁸⁴

Ash forests	East Gippsland		Gippsland		North East		Total	
	(ha)	%	(ha)	%	(ha)	%	(ha)	%
Resown	513	4.4	5,214	45.1	5,845	50.5	11,573	100
Unsown	605	8.2	3,322	44.9	3,470	46.9	7,397	100

10.3.4 Key information and issues raised during consultation

The following point was made to the Panel:



In the Mt Delusion area within the Gippsland RFA region, where logging of ash forests has occurred for many years, it is now a treeless area as large areas of regeneration activities have failed. Now these bushfires have burnt ash regeneration in the Dorothy Cutting area, but VicForests is doing nothing to address the failed regeneration. (Orbost-Omeo community consultation)

10.3.5 Panel analysis of issues raised

Progress on treatment of the pre-2004 backlog of unregenerated areas

During the Major Event Review process, the Panel had no access to any updated information about whether or not there had been any progress since 2015 on identifying and treating the backlog of pre-2004 unregenerated areas. The Panel considers that it is very likely that many of these areas would have been located within the extent of the 2019–20 bushfires, which could have resulted in them being in a condition that would have been receptive to artificial seed sowing, if appropriate seed stocks and funding were available.

382. DELWP (n.d.) Unpublished case study 'Forest Restoration Project' submitted to the Inspector-General for Emergency Management Inquiry into the 2019–20 Victorian Fire Season. Document provided to the Major Event Review Panel.

383. Forests Solutions (2021) Post-fire Ash Forest Recovery-2020: An assessment of the recovery of Ash forests burnt during Victoria's 2019/20 Black Summer bushfires, with recommendations for silvicultural intervention and advice regarding forest type-change. (Unpublished report prepared for DELWP November 2021, provided to the Major Event Review panel).

384. DELWP (November 2021) Data provided to the Panel by DELWP in an unpublished Major Event Review Panel paper 'Further Information about the Forest Restoration'.

Progress on regenerated coupe finalisation

The Panel was provided with information about the regeneration status of all coupes harvested by VicForests between 2004-05 and 2019-20. The regeneration performance, showing both annual areas and cumulative areas, for each of the eastern Victoria RFA regions is presented in figures 22 to 25.

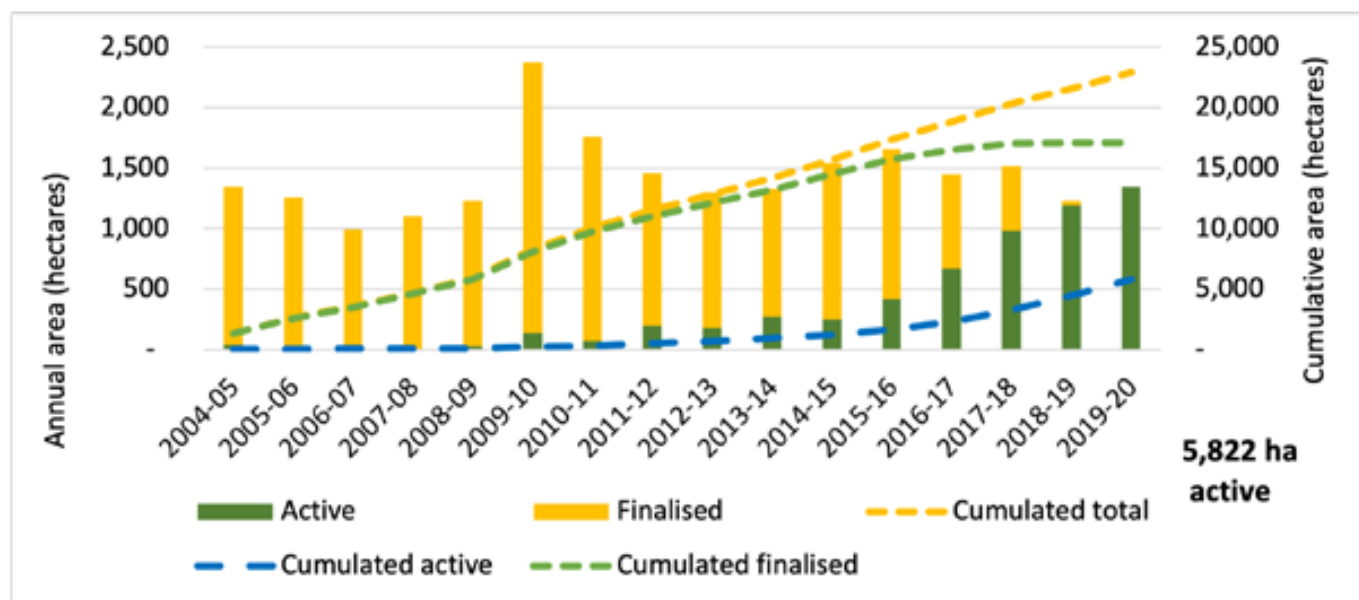


Figure 22. Central Highlands RFA region regeneration performance

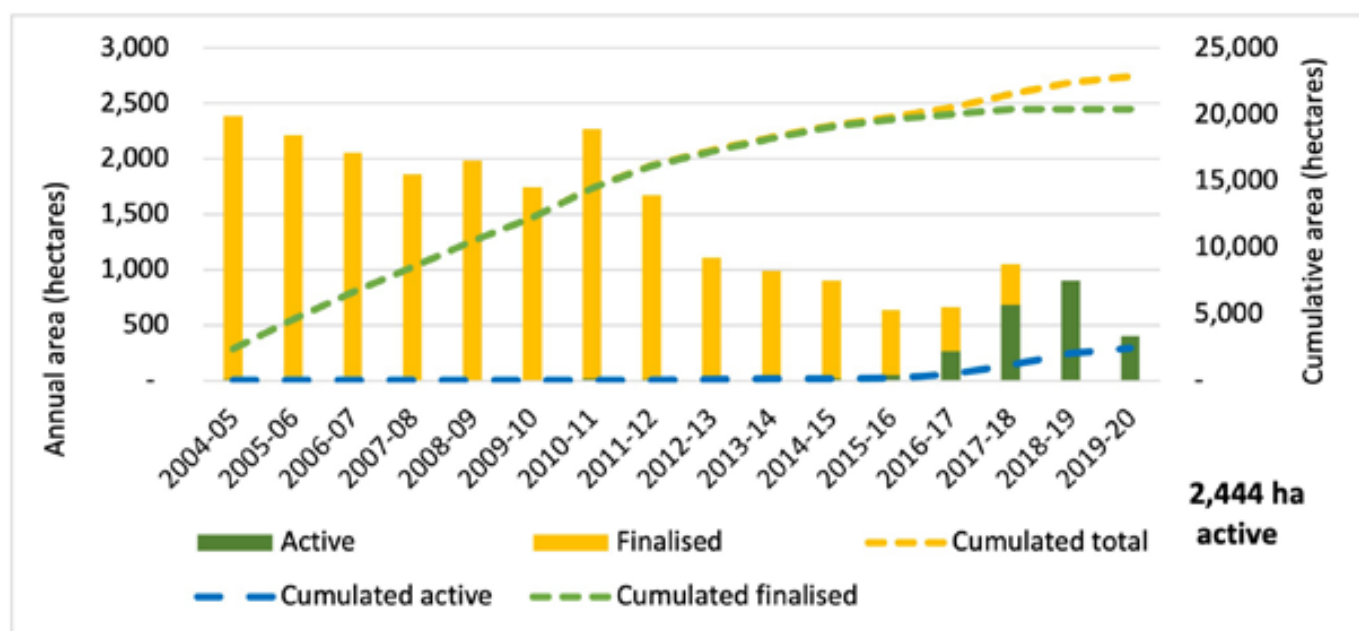


Figure 23. East Gippsland RFA region regeneration performance

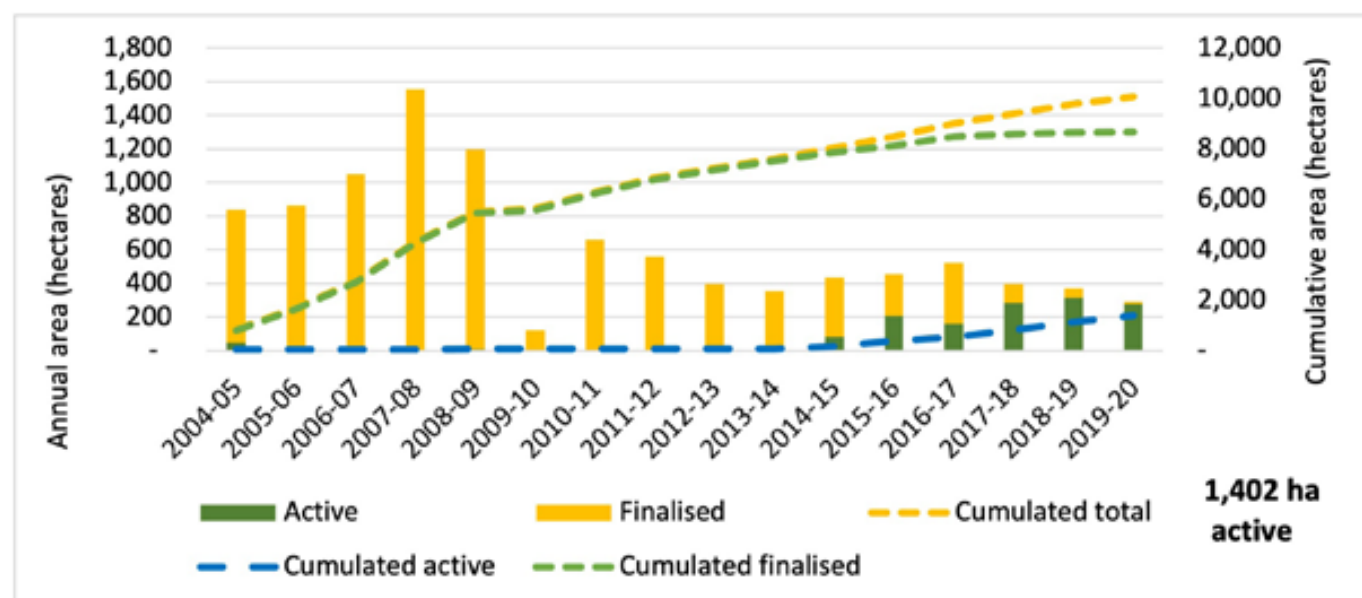


Figure 24. Gippsland RFA region regeneration performance

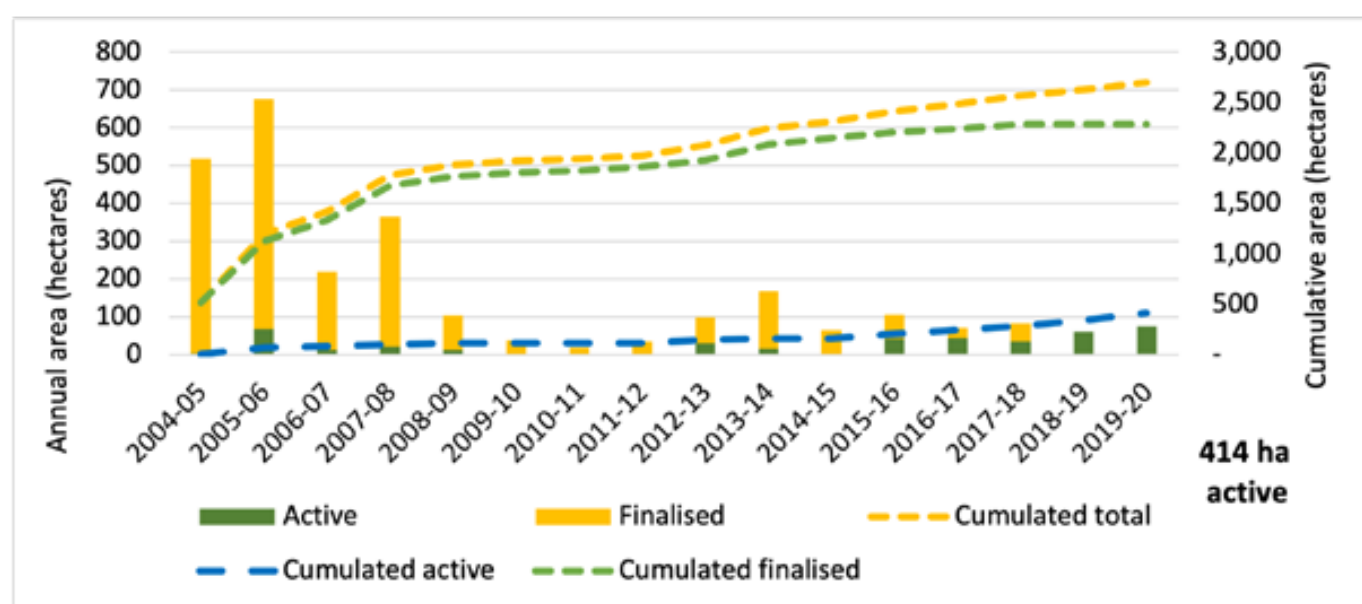


Figure 25. North East RFA region regeneration performance

The overall status of regeneration activities within the four RFA regions in eastern Victoria is shown in Table 91.

Table 91. Areas that have been harvested and regenerated in eastern Victoria between 2004-05 and 2019-20

RFA region	Area harvested (ha)	Area finalised (ha)	Area active (ha)	% still active
Central Highlands	22,891	17,069	5,823	25
East Gippsland	22,839	20,396	2,443	11
Gippsland	10,067	8,666	1,402	14
North East	2,700	2,285	415	15
Totals	58,498	48,416	10,083	17

The data provided to the Panel by VicForests indicates that across the whole of eastern Victoria, 83 per cent of all coupes harvested up to June 2020 have been successfully regenerated and finalised. Nevertheless, there is currently about 10,000 ha of logged forest for which regeneration operations are still active. The Panel acknowledges that data on regeneration status between 2017-18 and 2019-20 has greater active areas than pre-2017-18 years as harvested coupes generally takes three years to complete regeneration activities. The Panel's analysis of the yearly regeneration data indicates that regeneration on about 40 per cent of the areas harvested four and five years ago is yet to be finalised and that in the Central Highlands RFA region there is a persistent gap in regeneration performance of at least 10 per cent to 20 per cent dating back nine years.

The Panel also examined the data on coupes nominated for coupe finalisation in VicForests's annual allocation compliance reports for the 2019-20 (2,245 ha) and 2020-21 (2,314 ha) financial years. Comparing this against the reported average annual harvest area of about 2,500 ha, it appears that the balance of harvested areas not yet considered to be successfully regenerated could have been increasing in recent years by about 250 ha per year. The Panel notes that the most recent VicForests data indicates that the backlog of previously harvested areas for which regeneration is not yet finalised (10,083 ha) appears to have increased substantially from the data presented in the 2018 State of the Forests report (2,059 ha).

Monitoring of bushfire impacts on previously regenerated forests

DELWP provided the Panel with a copy of its 2009 Native Forest Silviculture Guideline No. 17, titled *Forest recovery after bushfire*. The guideline recognises that, while most burnt forest is expected to self-regenerate, there are often significant areas (in state forest) that require managed intervention to ensure eucalypt regeneration. It describes the processes required by the department to:

- determine the extent and severity of fire damage
- determine whether natural regeneration in severely burnt eucalypt forests is present and adequate, is inadequate, or is forecast to be inadequate
- where regeneration is inadequate, or forecast to be inadequate, facilitate the management intervention required to ensure regeneration.

The instructions in the guideline include the requirement for a ground assessment of stands less than 20 years old to determine capacity for self-regeneration and sowing requirements.

The Panel was advised that the principles in this silviculture guideline were used to understand the extent and severity of the 2019-20 bushfire impacts across all public land and then to guide the program of work to reseed some areas of fire-killed young ash forests. However, the Panel considers that they were not implemented appropriately to understand the bushfire impacts on areas of previously regenerated mixed species forests that are managed by DELWP. The guideline indicates that 'young stands of all species are most susceptible to fire damage and generally have the lowest capacity for self-regeneration'.

In East Gippsland, the observed fire intensity and associated impacts in lowland mixed species forests were much more severe than those experienced in previous bushfires such as the 2003 and 2014 bushfires. The Panel considers that, because of the severity of these bushfires, it is likely that there are substantial areas of previously regenerated mixed species forests where the young regeneration has been killed, and it is uncertain whether any remnant mature trees would have carried sufficient seed stocks to ensure adequate nature regeneration.

East Gippsland Silvicultural Systems Project site

In the late 1980s, a large Silvicultural Systems Project (SSP) was established over a two-year period near Cabbage Tree Creek in the East Gippsland RFA region by the then Department of Conservation and Environment. The objective of this project was to evaluate silvicultural systems other than clearfell for application in the Low Elevation Mixed Species forest type. The replicated trials involved eight different harvesting treatments, each implemented with two different regeneration treatments. Three years after the harvesting treatments, all the different treatments had successfully regenerated, although survival and growth were significantly lower in the less intensively harvested sites.³⁸⁵ Much of the old SSP site was impacted by the 2019–20 bushfires experiencing different degrees of fire intensity from no crown scorch to full crown scorch. The impact of the different fire intensity on the regrowth forests is unknown.



Photo credit: Silvicultural Systems Project clearfell site at Emphields Track, November 2021, © T. Bartlett

Failed regeneration around Mount Delusion in the Gippsland RFA region

The Panel received a copy of a 2019 report prepared by the Goongerah Environment Centre about failed regeneration in the Mount Delusion area west of Swifts Creek, in which claims were made that VicForests has removed from the Timber Release Plan at least seven coupes around Mount Delusion that have clearly failed to regenerate. The report included photos of previously harvested areas in which young regenerating eucalypt trees could not be seen. Due to COVID-19 restrictions, the Panel was unable to conduct an inspection of this area to inform its views on the issues raised. On the basis of the visual evidence presented in the report and the RFA requirement to ensure that harvested native forest is successfully regenerated to maintain the natural floristic composition, the Panel sought a briefing from the Office of the Conservation Regulator.

385. Squire R, Geary P and Lutze M (9 June 2006) [The East Gippsland Silvicultural Systems Project. I: The establishment of the project in lowland forest](#), Australian Forestry, 69:3, 167-181, DOI: [10.1080/00049158.2006.10674998](#), accessed 2 December 2021.

The Panel was advised that the OCR had received the same information and had conducted an investigation of the matter. That investigation examined the status of regeneration of these coupes, the circumstances associated with the removal of the coupes from the Timber Release Plan and whether the legislative requirements related to forest regeneration had been complied with. The Panel was advised by the OCR that no evidence was found to substantiate a claim that VicForests had not acquitted its legal responsibilities related to regeneration. The Panel was advised that DELWP is aware that some sites that previously have been regenerated have subsequently been impacted by bushfires or by native and non-native herbivores, thereby destroying regeneration on the site. During a discussion with OCR officers in November 2021, the Panel was also advised that DELWP now has a program that enables it to treat areas where young forests have been impacted by events that alter their floristic composition. The Panel also understands that the Victorian Government will provide \$2.38 million to establish best practice procedures for the long-term management of regenerated timber harvesting coupes and their reintegration to DELWP's broader, active management of state forests.³⁸⁶

10.3.6 Findings

The apparent lack of activity by the Victorian Government over a 17-year period to adequately address the backlog of unregenerated areas that were harvested before 2004 is of significant concern. This longstanding failure to successfully regenerate harvested areas is clearly inconsistent with one of the four key elements of ESFM to be achieved under the RFAs.

The reseeded of about 11,500 ha of young fire-affected areas of Alpine Ash was one of the largest projects of its kind ever implemented in Victoria and such operations have not generally been conducted in other Australian jurisdictions. The Panel commends the Victorian Government for funding and implementing a program of this nature and scale in an attempt to reduce the long-term loss of this important forest ecosystem. The Panel notes that there remains over 8,000 ha of young fire-affected ash forests for which there was insufficient seed stocks to enable reseeded operations that is likely to change vegetation type, and that the recently reseeded areas will remain vulnerable to bushfires until they reach an age of 20 years.

VicForests appears to be managing its regeneration obligations reasonably well across eastern Victoria, although in some situations in the Central Gippsland and Gippsland RFA regions the regeneration is taking longer than three years, which is contributing to an apparent backlog of about 2,500 ha above what would be expected at the current harvesting levels.

Following the 2019–20 bushfires, DELWP failed to implement all of the processes in its Native Forest Silviculture Guideline to assess the impacts of the bushfires on young previously regenerated mixed species forests. This means there is no knowledge about the area of previously regenerated mixed species forest that was killed by the 2019–20 bushfires or of the extent and adequacy of any natural regeneration that may have resulted.

Given the history of native timber harvesting in the East Gippsland, Gippsland and North East RFA regions and the observed impacts of high severity fire in regrowth mixed species forests, the lack of available data about the impacts of the 2019–20 bushfires on previously regenerated mixed species forests calls into question the RFA commitment on ESFM that all harvested areas are successfully regenerated in a way that maintains the natural floristic composition.

The Panel considers that the areas of potentially failed ash forest regeneration in the Mount Delusion area were not impacted by the 2019–20 bushfires and that the OCR has appropriately investigated the complaint raised with the Panel by the Goongerah Environment Centre.

386. DELWP (24 November 2020) [What we're doing. Victorian Regional Forest Agreements](#), DELWP, accessed 4 March 2021.

Given the huge investment in the East Gippsland Silvicultural Systems Project at the beginning of the RFAs, the Panel considers it disappointing that no effort has been made to date by Victoria to reassess the impacts of the 2019–20 bushfires on these 30-year old mixed species forests that were regenerated using nine different silvicultural systems.

10.3.7 Recommendations

The Panel recommends:

Recommendation 26

That the Parties undertake a study of the impacts of the 2019–20 bushfires on the regenerating mixed species trials within the former Silvicultural Systems Project at Cabbage Tree Creek, to improve knowledge about how the different silvicultural systems respond to severe bushfires.

Recommendation 27

That the Victorian Government identify any finalised coupes where subsequently regeneration has failed and implement remediation to restore the coupes to their natural floristic composition. The progress should be assessed by the Parties at the next five-yearly review in 2025.

Recommendation 28

That the Victorian Government assess the regeneration status of mixed species forests that have been regenerated in the past 20 years and were subject to high-severity fire during the 2019–20 bushfires. This assessment should consider both the condition of the burnt regrowth and the implications for the requirement to maintain natural floristic composition on these sites. The outcomes from this assessment, together with any remedial programs that are implemented, should be reviewed by the Parties in the next five-yearly review in 2025.

10.4 Long-term stability of forests

10.4.1 Background

The concept of 'long-term stability of forests' is relatively recent within Australian forest policies. The 1992 National Forest Policy Statement does not use this terminology, other than acknowledging that ESFM involves the management of public native forests so as to retain the full suite of forest values over time. With the progressive implementation of climate change policies and a growing public awareness that climate change related weather events are becoming more frequent and having greater impacts on native forests, the issue of maintaining the stability of forest ecosystems has entered the forest policy arena, albeit without much specific detail.

Australia, like many developed countries, uses a common framework of criteria and indicators for describing, assessing and evaluating progress towards sustainable forest management. Since 1998, Australia has adopted the framework developed by the Montréal Process Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests and tailored the criteria and indicators to Australian circumstances. At both the national and Victorian levels, these seven criteria and 44 indicators have been used for the periodic State of the Forests reporting. Under this national system there is currently no agreed approach for monitoring and assessing the stability of forests. *Australia's State of the Forests Report 2018*³⁸⁷ includes a section on 'Forest condition and function' in its executive summary, which draws on data from a range of indicators that could potentially be regarded as a surrogate for forest stability. That section indicates that 41 per cent of Australia's forests had been burnt more than once in the period 2011-12 to 2015-16 and also that 69 per cent of the cumulative area burnt in this period was from unplanned fire, or bushfires. In this five-year period, Victoria did not experience any landscape-style megafires.

During the process of modernising the Victorian RFAs, the RFA Reference Group advised³⁸⁸ that the modernised RFAs must recognise and be adaptive with regard to the impact of climate change, to ensure forests are resilient, healthy and functioning.

The modernised RFAs acknowledge that climate change is driving more extreme weather events that will have impacts on a wide range of forest values including ESFM, the CAR reserve system, the stability of forests and the stability of forest industries. Other new clauses recognise the need for active management to reduce bushfire risk and support the recovery of forests after bushfires, as well as the need to integrate climate change adaptation into forest management to build resilience and manage climate risks and the objectives of ESFM.

The concept of ecosystem resilience is also relevant to forest stability. Monitoring and reporting on ecosystem resilience is part of Victoria's Safer Together approach (introduced in 2015) to reducing the risks of bushfire. Ecosystem resilience refers to an ecosystem's capacity to absorb both natural and management-imposed disturbance but still retain its basic function so that it is able to behave in the same way over time. An ecosystem with low resilience can be considered at risk of changing into a different state. This could be caused by a single or a series of natural or planned disturbance events such as fire. DELWP³⁸⁹ has developed three measures of ecosystem resilience:

387. ABARES (2018) [Montréal Process Implementation Group for Australia and National Forest Inventory Steering Committee. Australia's State of the Forests Report 2018](#), pp 8-9, accessed 2 December 2021

388. DELWP (September 2019) [Regional Forest Agreements Reference Group. Report of Advice](#), DELWP, accessed 2 December 2021.

389. DELWP (2015) [Monitoring, Evaluation and Reporting Framework for Bushfire Management on Public Land](#), p 21, accessed 17 November 2021.

- Tolerable fire intervals – the recommended minimum and maximum periods between fires for a particular vegetation community
- Geometric mean abundance of species – a biodiversity index that can be used to identify landscape-level trends in biodiversity
- Vegetation growth stage structure – the mix of vegetation growth stages identified as being required to potentially optimise biodiversity and hence enhance ecosystem resilience across the landscape.

Forest Fire Management Victoria includes statewide data on two of these measures (tolerable fire intervals and vegetation growth stage structure) in its annual fuel management report on Managing Victoria's Bushfire Risk: Fuel Management Report.

In the 20 years prior to the 2019–20 bushfires, significant areas of forest had been burnt in eastern Victoria in at least five summer periods. DELWP staff have previously reported³⁹⁰ that about 189,000 ha of ash forest was killed or severely damaged by three major bushfires in 2003, 2006–07 and 2009, which together burned over 2.38 million ha of public land in eastern Victoria. This means that prior to the 2019–20 bushfires, one-third of Victoria's ash forests, which cover 561,000 ha, had been severely impacted by bushfires in the past 20 years. In addition, other forests were burnt by bushfires in 2013 (a total of 123,000 ha burnt in the Gippsland and North East RFA regions) and in 2014 (a total of 166,000 ha burnt in the Snowy River and Errinundra national parks in East Gippsland).

The Summary Report³⁹¹ prepared by the Parties for this Major Event Review process, contains no specific information about the impacts of the 2019–20 bushfires on forest stability. The section on 'Severity of the bushfires' states that large areas of ash forests have been impacted by recurring bushfires since 2003 and that an estimated 11,500 ha of the fire-sensitive ash forests burnt in the 2019–20 bushfires were not yet at seed-bearing age and would require artificial regeneration to maintain this forest type. The Summary Report did not present information on the location and extent of forest areas burnt by multiple large bushfires since 2003. However, it is apparent from Victoria's *State of the Forests 2018* report³⁹² (Figure 33, a map of major bushfires) that a significant area of forest within the 2019–20 bushfire area has been burnt multiple times since 2003.

During this Major Event Review process, the Panel has deliberately separated the issues of long-term stability of forests and long-term stability of forest industries, because although the second issue is somewhat dependent on the first issue for each of forest industry types described in Chapter 7, the stability of native forests will continue to be a very important issue beyond 2030, when Victoria intends to cease native forest timber harvesting.

390. Fagg P, Lutze M, Slijkerman C, Ryan M. and Basset, O (29 October 2013) [Silvicultural recovery in ash forests following three recent large bushfires in Victoria](#). Australian Forestry 76 (3–4) 140–155, accessed 2 December 2021.

391. DELWP (2021) [Victorian Regional Forest Agreements Major Event Review of the 2019–20 Victorian bushfires](#), DELWP, accessed 2 February 2022.

392. CES 2018 State of the Forests: 2018 Report, Commissioner for Environmental Sustainability Victoria.

10.4.2 Impacts of the 2019–20 bushfires

The impacts of the 2019–20 bushfires on Victoria’s forest ecosystem resilience are evident in the data reported by Forest Fire Management Victoria (Table 92).

Table 92. Changes in Victoria’s ecosystem resilience after the 2019–20 bushfires³⁹³

Ecosystem resilience measure	2018-19	2019–20
Vegetation in mature or old growth stages	42%	37%
Vegetation within tolerable fire interval (TFI)	26%	22%
Explanatory comment	Vegetation within TFI and in mature or old growth stages has decreased because of the major bushfires in the Hume and Gippsland regions during 2019–20.	

Victoria’s ash eucalypt forests, that consist of either Mountain Ash (*Eucalyptus regnans*) or Alpine Ash (*Eucalyptus delegatensis*), are one of the State’s most important and iconic forest types. The Panel was advised that the 2019–20 bushfires affected 88,247 ha of ash forests, of which about half (46,277 ha) was killed by these fires.³⁹⁴

In addition, information presented to the Panel by University of Melbourne researchers and observations in East Gippsland by one Panel member suggest that there could be significant impacts from the 2019–20 bushfires on the long-term stability of some of the ‘fire tolerant’ forests in eastern Victoria.

The coastal mixed species forests of East Gippsland have experienced and recovered from many bushfires in the past 70 years. However, in some locations the intensity of the 2019–20 bushfires in these forests was so severe that the eucalypt trees, which traditionally resprout well after bushfires, have been killed. The following photos illustrate the range of circumstances existing in the coastal mixed species forests of East Gippsland after the 2019–20 bushfires.



Photo credit: Lightly burnt forests near Cabbage Tree Creek © T. Bartlett

393. Forest Fire Management Victoria, (n.d.) Reducing Victoria’s Bushfire Risk and Managing our Environment, Forest Fire Management Victoria [Attachment 2](#) and [Summary infographic](#), accessed 2 December 2021.

394. Forests Solutions (2021) Post-fire Ash Forest Recovery-2020: An assessment of the recovery of Ash forests burnt during Victoria’s 2019/20 Black Summer bushfires, with recommendations for silvicultural intervention and advice regarding forest type-change. (Unpublished report prepared for DELWP November 2021, provided to the Major Event Review panel).



Photo credit: Moderately burnt forests near Bellbird Creek © T. Bartlett



Photo credit: Severely burnt forest near East Wingan River © T. Bartlett

The Major Event Review Summary Report indicates that 78 per cent of Victoria's warm temperate rainforest was within the footprint of the 2019–20 bushfires. While no detailed assessment of the fire severity around all the rainforest locations has been undertaken, it is apparent that some areas were subject to intense fire.



Photo credit: Fire-impacted warm temperate rainforest at Bemm River © T. Bartlett

10.4.3 Government actions and support following the bushfires

As part of the Eastern Victorian Fires 2019–20 State Recovery Plan, Victoria invested \$7.7 million to collect seed and sow areas of young ash forests that had been killed by the bushfires.

10.4.4 Key information and issues raised during consultation

The following points were made during consultation:



It is clear that climate change is impacting on health, function and species found within native forests in Victoria right now. The 2019–20 bushfires and the 2009 Black Saturday bushfires show the increase in fire size and severity in Victoria's forests and the growing impact on threatened species, EVCs and communities. (Victorian National Parks Association submission)



Two-thirds of East Gippsland's reserves are within the fire extent, and around 80 per cent of State Forests were impacted by fires, with a significant proportion impacted by high severity fire. Some of the areas in the North-East and Alpine regions have been impacted by multiple fires, devastating stands of fire-sensitive Alpine Ash eucalypt forests. The bushfires have made unburnt, and less fire-impacted forests even more ecologically valuable and important to protect. (Goongerah Environment Centre submission)



Withdrawal of resources and management capacity from most of our native forests is resulting in forests with reduced resilience, declining condition and large areas facing complete changes in species composition. The lack of monitoring, means we have little information on the overall health of our forests, or the status of species that depend on them. (Institute of Foresters of Australia (IFA)/Australian Forest Growers (AFG) submission)



RFAs tend to ignore the successive or cumulative impact of bushfire, despite the occurrence of multiple extensive fires in the last 10 years. The issue of fire is complex, yet the RFAs ignore fire impact on both the extent and structure of the forest. (Victorian National Parks Association submission)



Following most of the large bushfires in the last 20 years, immature ash has been impacted and has required intervention in the form of resowing or replanting to ensure the persistence of these forests. However, the scale of this issue in 2019/20 was unprecedented, impacting an area over four times larger than ever before. (IFA/AFG submission)



Given the recent fires of unprecedented severity and a longer-term history of landscape disturbance from logging in many areas, efforts need to be undertaken to diversify forests and mitigate the proliferation of disturbance-adapted species such as Silvertop Ash. Under climate change, some species will be lost at scale across the landscape, so continuing to reseed these sites with the same species in areas with increased fire frequency is not a climate-adjusted strategy. (World Wildlife Fund submission)



A new approach is required to achieve forest restoration at the landscape scale. This should include prescribed fire, cultural burning and other silviculture like thinning and gap creation (patch cutting) to bring back structural diversity, encourage biodiversity, return age and species mixes, and habitat. These structural changes are critical to increasing the forests' resilience to fires by reducing fuels and modifying tree density and encouraging more large trees across the landscape. (IFA/AFG submission)

10.4.5 Panel analysis of issues raised

Role of fire in Victoria's forest ecosystems

Victoria is one of the most fire-prone and fire-adapted regions of the world. Over millennia, fire has influenced the richness, composition and distribution of Victoria's ecosystems. While most of Victoria's biota are adapted to and largely dependent on fire, their response to and tolerance of different fire regimes varies considerably. A study of how high fire frequency influences plant diversity found that suitable habitat for 17,197 plant species was burnt across Australia by the 2019–20 fires. Some 3,998 of these species are known as post-fire 'resprouters', while at least 2,928 are killed by fire and need to reach reproducing adult stage prior to subsequent fires. Inadequate periods between successive fires, both before and after the 2019–20 fires pose a serious risk to the recovery of at least 595 species.³⁹⁵ Fire regimes take account of fire frequency, fire intensity, seasonality of fire and patchiness of fire. Importantly the intensity and frequency of unplanned fires, such as large bushfires, has a significant impact on the post-fire recovery of different forest ecosystems. The most fire-sensitive communities, such as ash forests and rainforests, require long periods of time between intense bushfire to regenerate and recover.

395. Gallagher RV, Allen S, Mackenzie BDE et al (19 March 2021) '[High fire frequency and the impact of the 2019–20 megafires on Australian plant diversity](#)', *Diversity and Distributions*, 27:1166–1179, accessed 2 December 2021.

Plants that are obligate seeders tend to be killed by intense bushfire and only regenerate from seed, which means they are at risk of local extinction if intense fire reoccurs before they are mature enough to set seed. Many eucalypts, including those of Victoria's mixed species forests, are generally considered to be fire tolerant, having the ability to resprout from epicormic buds and lignotubers after bushfires as well as regenerating from seed dropped onto the burnt ground.

With climate change, the frequency and intensity of severe bushfires is increasing. This has implications for the stability of Victoria's forests, most notably the ash forests. As a result of the multiple large bushfires over the last two decades, the extent of mature ash forest in Victoria is declining, while the area of immature regrowth ash forest is increasing and is vulnerable to the impacts of future bushfires. It is estimated³⁹⁶ that an area of 32,200 ha of ash forests within the 2019–20 bushfire area, including the 11,587 ha that were resown after the fires, will continue to be at risk of population collapse from future bushfires until 2040. The same report identified that a further area of 15,200 ha of older ash regrowth is also at risk if burnt by bushfire within the next to eight years.

Extent of the bushfire threat to forest stability

Disturbance regimes in Victoria's forests are changing rapidly as a result of the combination of human influences and the impacts of climate change, with large bushfires at the centre of these changes. The extent of forest areas being impacted by bushfires is increasing significantly. Between 2000 and 2020, bushfires burned 6.2 million ha in Victoria, which is a 40 per cent increase on the 4.5 million ha burnt between 1950 and 2000. The Panel also considers that in many of Victoria's forests, particularly those in the RFA regions that were impacted by the 2019–20 bushfires, there is an observable increase in both the frequency of major bushfires and the intensity as demonstrated by proportion of area being burnt at high severity (Class 5 and Class 6 fire severity).³⁹⁷ While the impact of these fire regime changes on forest stability is likely to vary between forest type, the Panel considers that the evidence is increasing on the threat from major bushfires to forest stability.

Researchers from the School of Ecosystem and Forest Sciences at the University of Melbourne made presentations to the Panel about the impacts of frequent severe bushfires on Victoria's forests, including providing a map (Figure 26) of the areas of forest in far eastern Victoria that have been burnt multiple times by bushfire within the past 20 years. These presentations helped the Panel appreciate the threats to forest stability from repeated major bushfires.

396. Forest Solutions (2021) *Post-fire ash recovery 2020: an assessment of the recovery of ash forests burnt during Victoria's 2019–20 bushfires, with recommendations for silvicultural intervention and advice regarding forest type change*, Report prepared for DELWP, accessed 2 December 2021.

397. Fairman T (29 October 2021) 'Impacts of short interval fires on forest structure and population', presentation to Major Event Review Panel.

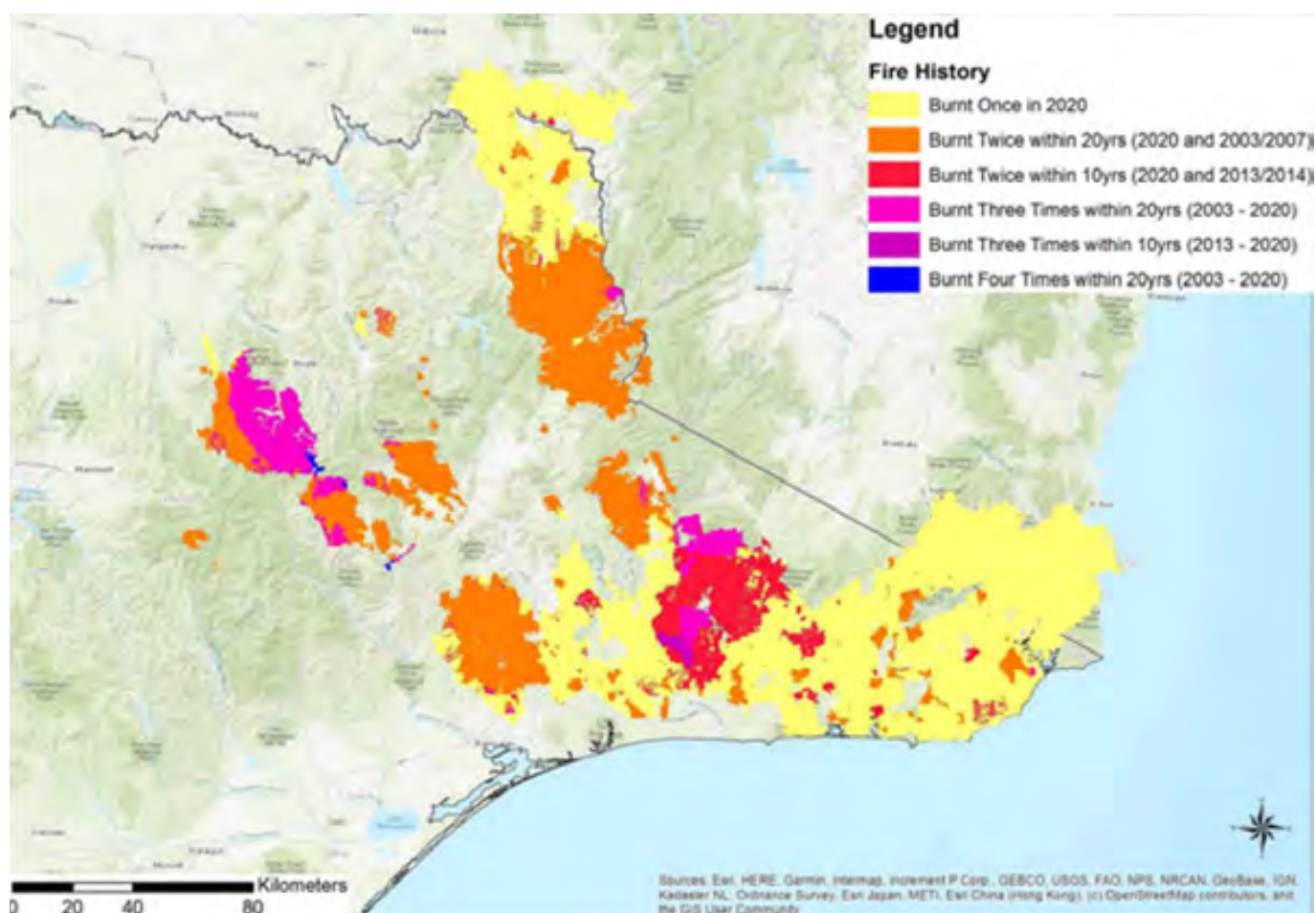


Figure 26. Forests of far eastern Victoria burnt one to 4 times by major bushfires since 2000³⁹⁸

The University of Melbourne researchers consider that within the 2000-2020 period there were eight large (>125,000 ha) bushfires. Their analysis found that these large fires resulted in about 1 million ha being burnt twice since 2000.³⁹⁹

Because of the importance of this issue to forest stability, the Panel also analysed the available data for the areas of forest within each RFA region that have been burnt between two and four times by major bushfires since 2000. The results of the Panel's analysis are presented Table 93. This analysis shows that over the past 20 years more than 5 per cent of Victoria's public land has been burnt multiple times by large bushfires, and all of this is in eastern Victoria. About 276,000 ha (6.3 per cent) of the public land in eastern Victoria has been burnt multiple times within 20 years. The forests of the Gippsland RFA region are the most affected (132,050 ha), followed by the forests of the North East RFA region (90,400 ha). The East Gippsland RFA region, which was most impacted by the 2019–20 bushfires, now has more than 52,000 ha of forest that has been severely burnt multiple times over the past 20 years.

398. Reprinted with permission from the University of Melbourne, School of Ecosystem and Forest Sciences.

399. Fairman T (29 October 2021) 'Impacts of short interval fires on forest structure and population', presentation to Major Event Review Panel.

Table 93. Areas of public land in each RFA region that have been burnt by 2 to 4 major bushfires since 2000⁴⁰⁰

RFA region	Public land (ha)	Burnt 2 times (ha)	Burnt 3 times (ha)	Burnt 4 times (ha)	Burnt 2 to 4 times (ha)	% of public land
Central Highlands	623,000	1,170	0	0	1,170	0.19
Gippsland	1,484,000	129,288	2,762	0	132,050	8.9
East Gippsland	1,052,000	52,106	507	50	52,663	5.0
North East	1,255,000	79,881	10,519	0	90,400	7.2
West Victoria	1,047,000	0	0	0	0	0
Total	5,461,000	262,445	13,788	50	276,283	5.1

Anecdotal information presented to the Panel by some stakeholders suggests that the proportion of the extent of major bushfires in eastern Victoria that is burnt at high fire severity is increasing. Because accurate data on this issue is limited, the Panel decided to undertake an analysis of the occurrence of high-severity fire both in the 2019–20 and previous bushfires. The results of that analysis are shown in Table 94 and Figure 27.

Table 94. Total area within the 2019–20 fire extent, impacted by high-severity fires and proportional distribution of high-severity fire (Class 5 and 6) by RFA⁴⁰²

RFA region	Total area within the fire extent	Total area impacted by high severity fires (Class 5 and 6)	Percentage impacted by high severity fires
Central Highlands	71	0	0%
Gippsland	322,417	154,639	48%
East Gippsland	815,410	374,927	46%
North East	351,913	153,990	44%
West Victoria	16,736	0	0%
Total	1,512,810	683,555	45%

North East RFA regions was burnt at high severity by the 2019–20 bushfires, with a little over half of that area (55 per cent) occurring in the East Gippsland RFA region.

400. This table is from the State Governments fire severity maps that have been produced between 2000 and 2020. More detailed information on method of how it was created can be found in the supplementary information for Geary, WL, Buchan, A, Allen et al. (6 May 2021) [Responding to the biodiversity impacts of a megafire: A case study from south-eastern Australia's Black Summer](#), Divers Distrib; 28: 463–478, accessed 4 March 2022.

401. Commonwealth of Australia and Victorian Government (2019) [Victoria's Regional Forest Agreements: Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements](#), Commonwealth of Australia and Victorian Government, p. 15, accessed 2 December 2021.

402. This data is derived from Table 3 and 4 of DAWE and the State Government of Victoria (2021) [Victorian Regional Forest Agreement Major Event Review of the 2019–20 bushfires: Summary report: information and data to inform public consultation](#), DAWE and the State Government of Victoria, accessed 1 March 2022.

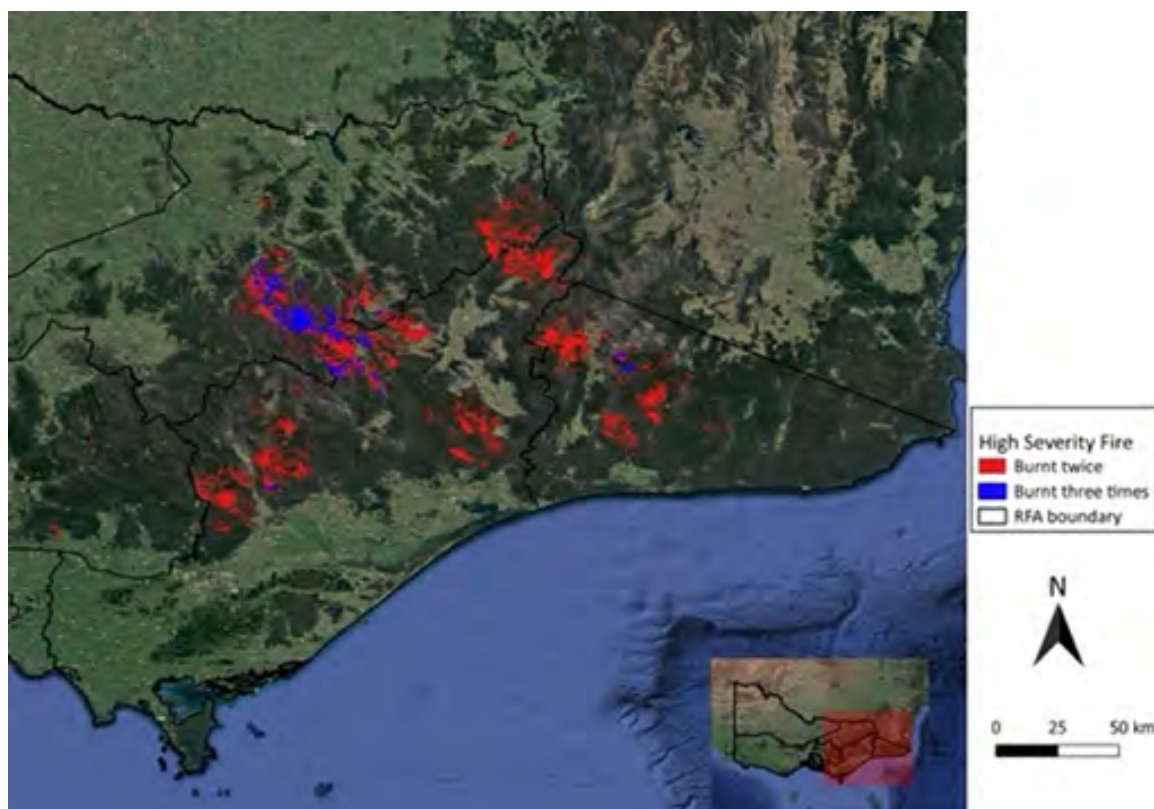


Figure 27. Location of areas in eastern Victoria burnt at high severity by multiple bushfires since 2000⁴⁰³

The data used to produce Figure 27 indicates that almost 14,000 ha has been burnt twice at high severity over the past 20 years, with most of these areas located in the North East RFA region. Because of the magnitude of these findings on areas burnt at high severity, the Panel considers that it is important that further consideration be given to both the stability of the affected forests and the impacts on the biodiversity they contain.

Stability of ash forests

In addition to the 88,247 ha of ash forests impacted by the 2019–20 bushfires, the Panel understands that a further 189,000 ha of ash forest was killed or severely damaged in the 2003, 2006–07 and 2009 bushfires.⁴⁰⁴ This means that over the past 20 years about 235,000 ha (42 per cent) of Victoria's ash forests⁴⁰⁵ have been killed or severely impacted by major bushfires. In ash forests, exposure to one severe bushfire generally results in the death of the mature trees but the forest is naturally regenerated from the seed that falls from the burnt trees. However, the exposure of that natural regrowth to another severe bushfire before the trees reach seed-bearing age (at least 20 years) is likely to result in a change of forest type unless there is a silvicultural management intervention. The Panel understands that, despite the very significant program that was implemented to resow areas of younger age burnt ash forest, about 14,000 ha of ash forest, located within both state forest and national park, is expected to change vegetation type following the 2019–20 bushfires.⁴⁰⁶

403. This Figure is from the State Government's fire severity maps that have been produced between 2000 and 2020. More detailed information on method of how it was created can be found in the supplementary information for Geary, WL, Buchan A, Allen T, et al (6 May 2021) '[Responding to the biodiversity impacts of a megafire: A case study from south-eastern Australia's Black Summer](#)', *Divers Distrib.* 2022; 28: 463–478, accessed 4 March 2022.

404. Fagg P, Lutze M, Slijkerman C, Ryan M. and Bassett, O (29 October 2013) [Silvicultural recovery in ash forests following three recent large bushfires in Victoria](#), *Australian Forestry* 76 (3–4) 140–155, accessed 2 December 2021.

405. Bureau of Rural Sciences (2002) [The Ash Forests of South Eastern Australia which indicates that Alpine Ash and Mountain Ash have a combined natural extent of 560,506 ha in Victoria](#), Bureau of Rural Sciences, accessed 2 December 2021.

406. Forest Solutions (2021) *Post-fire ash recovery 2020: an assessment of the recovery of ash forests burnt during Victoria's 2019–20 bushfires, with recommendations for silvicultural intervention and advice regarding forest type change*, Report prepared for DELWP, accessed 2 December 2021.

It is clear to the Panel that there is now a very substantial area of young ash forest in Victoria that is at ongoing risk of vegetation change as a result of bushfire. In the areas impacted by the 2019–20 bushfires, there is now 47,415 ha of young ash forest that is vulnerable to bushfires. The Panel does not have access to data on the total extent of ash forests that are now less than 20 years old, but given the known fire history the area at risk from bushfire is likely to exceed 200,000 ha, which is about one-third of the total extent of ash forest in Victoria.

Research relevant to forest stability

Victoria's iconic ash eucalypt forests, dominated by the obligate seeder species of Mountain Ash and Alpine Ash, are both dependent on and vulnerable to bushfires for their survival. Following the occurrence of three large bushfires (the 2003 alpine fires, the 2006–07 Great Divide fires and the 2009 Black Saturday fires) within a period of seven years, Victorian Government researchers examined the impacts of the fires on the natural regeneration of ash forests, along with the implementation of remedial silvicultural regeneration programs.⁴⁰⁷ They observed that natural regeneration was much poorer after the 2006–07 bushfire than it was after the 2003 and 2009 bushfires. They found that in ash forests, natural regeneration success after bushfire is a function of several factors, including climatic conditions, existing seed crops, seed maturity, tree maturity, previous land management history and timing of the fire. They noted that ash regrowth forests up to the age of 20 years remain at high risk from bushfires as the young regrowth does not produce effective seed crops. They also noted that both sub-mature and mature ash stands that survive a low-intensity fire are at risk from further bushfires as natural seed production does not occur for three to five years following a bushfire. They also observed that on areas that are burnt multiple times, the proportion of residual ash trees that are capable of self-regeneration decreases after each closely associated bushfire.

It is possible that exposure to repeated high-severity fires could increase tree mortality with more frequent fire and cause significantly reduced regeneration capacity of surviving trees. Researchers from the University of Melbourne⁴⁰⁸ reviewed the effects of multiple wildfires on tree mortality and regeneration in both obligate seeder and resprouter eucalypt forests in Victoria. They found that a structural change can occur when high-severity fire occurs more than once within six years. These changes include canopy stems that are killed by fire being replaced by stems with lower height; and an increased stem density, with thinner stems at lower height. They reported that both historical and recent evidence indicates that recurrent wildfires threaten the persistence of the 'fire sensitive' obligate seeder eucalypt forests, which can facilitate a shift to non-forest states if successive fires occur within the trees' primary juvenile period (1 to 20 years). Their research highlights the potential for structural and state changes in the 'fire tolerant' resprouter forests, particularly if recurrent severe wildfires kill seedlings and increase tree mortality.

The University of Melbourne research on the effects of frequent wildfires in sub-alpine snow gum forests in the Victorian Alps⁴⁰⁹ found that the proportion of snow gum trees killed outright by fire increased to 50 per cent after three high-severity fires in 2003, 2007 and 2013. They confirmed that snow gums can regenerate from both basal resprouts and seeds after a single fire, but detected a significant decrease in the number of basal resprouts per surviving tree after two and three successive fires. They also recorded a shift in understorey dominance from trees to shrubs and an increase in grass cover.

407. Fagg P, Lutze M, Slijkerman C, Ryan M. and Basset, O (29 October 2013) [Silvicultural recovery in ash forests following three recent large bushfires in Victoria](#). *Australian Forestry* 76 (3–4) 140–155, accessed 2 December 2021.

408. Fairman TA, Nitschke CR and Bennett LT (13 September 2015) [Too much, too soon? A review of the effects of increasing wildfire frequency on tree mortality and regeneration in temperate eucalypt forests](#), *International Journal of Wildland Fire*, 2016, 25:831–848, accessed 2 December 2021.

409. Fairman TA, Bennett LT, Tupper S and Nitschke CR (2017) [Frequent wildfires erode tree persistence and alter stand structure and initial composition of a fire-tolerant sub-alpine forest](#), *Journal of Vegetation Science*, 28:1151–1165.

More recent research⁴¹⁰ in the dry sclerophyll forests of West Gippsland indicates that exposure to short-interval high-intensity wildfires lowered the likelihood of both basal and epicormic resprouting across a range of tree sizes and increased the diameter that trees needed to have to escape the tops of the trees being killed. The decreased resprouting success was particularly evident in middle-sized trees (29 to 31 cm DBH), which were too large for basal resprouting but too small for epicormic recovery. This, in combination with reduced seedling recruitment, portends structural and demographic challenges for even the most fire-tolerant forests under emerging fire regimes.

10.4.6 Findings

The stability of Victoria's fire-sensitive forest ecosystems, including its snow gums, ash forests and rainforests, has been impacted by the 2019–20 bushfires. This compounds the impacts from the 2003, 2006–07, 2009, 2013 and 2014 bushfires. There is also an indication that the stability of some traditionally more fire-tolerant forest ecosystems is being compromised by repeated exposure to high-severity bushfire.

The long-term stability of Victoria's ash forests is in some doubt, with about 42 per cent of their extent having been impacted by four major bushfires within a 20-year period, including some areas that have been burnt multiple times, which results in the loss of natural regeneration. About one-third of the current extent of ash forests may be less than 20 years old and hence vulnerable to loss from bushfires. It is clear that the greatest risk to these forest ecosystems is from repeated exposure to severe bushfires before reaching ecological maturity.

Reported trend data on ecosystem resilience suggests that the 2019–20 bushfires have had an impact on the long-term stability of Victoria's forests, causing declines in two indicator measures: percentage in mature and old growth stages, and percentage within tolerable fire intervals. The further substantial loss of areas of the remaining old growth forest in the North East, Gippsland and East Gippsland RFA regions is of significant concern.

Given the reported research on the impacts of major bushfires on forest stability in Victoria and the fact that over 6 per cent of the public forest land in eastern Victoria has been burnt multiple times by major bushfires, it is likely that the 2019–20 bushfires have resulted in a decline in the long-term stability of some forests within the East Gippsland, Gippsland and North East RFA regions.

The significant remedial ash forest restoration program that treated 11,587 ha of fire-affected young ash forests, implemented in both state forest and national park tenures, is a positive example of Victoria's capacity to develop and implement strategies to reduce some of the undesirable impacts from major bushfires on the stability of some forest types. To achieve a program of this scale requires a long-term program of seed collection, the existence of skilled and experienced staff, and the provision of additional implementation resources as part of a bushfire recovery program.

410. Fairman TA, Bennett LT and Nitschke CR (2019) 'Short interval wildfires increase likelihood of resprouting failure in fire-tolerant trees', *Journal of Environmental Management*, 231:59–65, accessed 2 December 2021.

10.4.7 Recommendations

The Panel recommends:

Recommendation 29

That the Parties commit to a comprehensive, long-term research and monitoring program to develop a better understanding of the impacts of repeated short-interval severe bushfires on the long-term stability of forest ecosystems.

Recommendation 30

That the Victorian Government maintain and potentially expand its capacity to implement remedial regeneration strategies in sensitive forest ecosystems across all public land tenures. This requires processes to quickly and accurately determine the extent of impacts following major events such as bushfires, as well as maintaining the required technical knowledge, operational capacity and sufficient seed stocks of appropriate species and provenance.

10.5 Integrated forest and fire management

10.5.1 Background

When the Victorian RFAs were developed, Victoria's forest land management agency was recovering from the impacts of the 1982–83 bushfire season, in which 486,000 ha of parks and forests had been burnt. At that time, the primary focus for the development of RFAs was to establish holistic protection of environmental values while providing longer-term security for the forest industries, with fire management receiving little attention. During the process to modernise Victoria's RFAs, the increasing threat and occurrence of bushfires was considered by the Parties as one of the agents affecting forest health and vitality.⁴¹¹ Because the Major Event Review is assessing the impacts of the 2019–20 bushfires on RFA values, this section considers the interactions and linkages between forest management and fire management.

Forest and fire management planning arrangements

While RFAs cover the management of multiple values within public forests and establish the cross-tenure CAR reserve system, the detailed management arrangements for state forests and national parks are covered by different strategic planning arrangements. Forest management plans, which cover all state forest areas within a forest management area, detail the strategies for integrating the use of state forest for wood production and other purposes, with the conservation of natural, aesthetic and cultural values. The modernised RFAs include an expanded range of relevant matters that any review of the forest management plans will need to have regard to, including the need for active management to reduce bushfire risk and support the recovery of forests and communities that depend on them after bushfire.⁴¹² In relation to listed species and communities, the modernised RFAs also include provisions⁴¹³ that identify inappropriate fire regimes as threatening processes and specify the need to provide for active management in native forests to build their resilience and diversity.

411. Commonwealth of Australia and Victorian Government (2019) [Victoria's Regional Forest Agreements: Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements](#), Commonwealth of Australia and Victorian Government, pp 314–315, accessed 2 December 2021.

412. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 51A, accessed 2 August 2021.

413. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 15D (d) and 15G, accessed 2 August 2021.

National park management plans, which apply to individual national parks, establish a management framework to protect the park's natural values while providing for visitors to enjoy them. Almost all of these two types of management plans were prepared in the 1990s. The forest management plans were originally intended to be reviewed after 10 years, but this did not occur. Under the modernised RFAs the forest management plans will now be reviewed by December 2023.⁴¹⁴ Both types of management plans have management zoning systems which are not necessarily integrated with each other. Fire management is mentioned in both types of management plans, though in general they do not cover the specific strategies for managing fire, as these were originally detailed in regional fire protection plans and now in bushfire management strategies.

In relation to fire management planning DELWP contributes to the preparation of bushfire management strategies,⁴¹⁵ which have the dual objectives of: minimising the impact of major bushfires on human life, communities, essential and community infrastructure, industries, the economy and the environment; and maintaining or improving the resilience of natural ecosystems and their ability to deliver environmental services⁴¹⁶. These bushfire management strategies establish the strategies at a regional and landscape scale that will be implemented to achieve these two objectives.

Fire occurrence and management in Victoria

Over tens of thousands of years the distribution, composition and persistence of much of Victoria's flora and fauna has been influenced by naturally occurring and human-caused fires. Fire has a deeply spiritual value for Aboriginal people, who were the first fire managers in Victoria. Their highly skilled use of fire enabled them to control vegetation, attract game, prepare food, provide warmth and shelter, and communicate. The recommendations from the Royal Commission into Victoria's 1939 bushfires⁴¹⁷ established the foundations for contemporary forest fire management in Victoria, including the need for statewide programs to manage and control fire on public land.

Since then, adaptive management has been applied, drawing on lessons from other large bushfires, fire research and changes in government policy. In the 1980s, following the 1983 Ash Wednesday fires and a change of government, the newly integrated Department of Conservation, Forests and Lands developed regional fire protection plans,⁴¹⁸ commenced implementation of the precursor to the Australasian Inter-service Incident Management System (AIIMS) to manage bushfire suppression operations, and established long-term fire effects research in fire study areas of Wombat State Forest.⁴¹⁹ In 1995 Victoria became the first jurisdiction in Australia to approve a code of practice for bushfire management. The Code of Practice for Bushfire Management on Public Land (replaced in 2012 by the Code of Practice for Bushfire Management on Public Land) provided for the integrated management of fire and fire-related activities on public land and sought to ensure that the response to bushfires and the use of prescribed burning were conducted in accordance with sound environmental guidelines.

414. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 51B, accessed 2 August 2021.

415. For example: Government of Victoria 2020 Gippsland Bushfire Management Strategy. https://www.safertogether.vic.gov.au/_data/assets/pdf_file/0028/493534/DELWP_BushfireManagementStrategies_2020_Gippsland_rr.pdf - accessed 3/3/22

416. Department of Sustainability and Environment (DSE) (2012) [Code of Practice for Bushfire Management on Public Land](#), DSE, accessed 9 November 2021.

417. Report of the Royal Commission to inquire into [The Causes of and Measures Taken to Prevent the Bush Fires of January, 1939, and to Protect Life and Property](#), accessed 6 March 2022.

418. Auditor General Victoria (AGV) (2003) [Fire Prevention and Preparedness](#), Auditor-General Victoria Performance Audit Report No. 15 pp 52-53, accessed 6 March 2022.

419. Tolhurst KG (December 2003) [Effects of repeated low-intensity fire on the understorey of a mixed eucalypt foothill forest in south-eastern Australia](#), Research Report No. 58, Department of Sustainability and Environment Fire Management, 38 pp, accessed 2 December 2021.

The report⁴²⁰ of the Royal Commission following the 2009 Black Saturday bushfires recommended increasing the proportion of public land on which prescribed burning is conducted each year from 1.7 per cent to five per cent (about 390,000 ha) and revising the Code of Practice for Bushfire Management on Public Land (2012) to make it clear that protecting life is given the highest priority. In 2015, the Victorian Inspector-General for Emergency Management (IGEM) reviewed the ha-based performance target for bushfire fuel management on public land and recommended transitioning to a risk reduction target to guide investments in fuel reduction burning.⁴²¹

The Panel was advised that the extent of forested areas in eastern Victoria means that early suppression of bushfires is not always possible, especially when lightning ignites multiple fires in remote forested areas simultaneously. This scenario, when preceded by low rainfall and followed by hot, windy conditions, has repeatedly led to landscape-scale bushfires which can burn for two months. In the last two decades the pattern of recurring major fires has intensified, consistent with the predicted impacts of climate change on bushfire frequency and intensity. Since 2000, over 3.6 million ha of DELWP's Gippsland, Hume and Metropolitan regions have been burnt by bushfire at least once, with some areas burning up to four times.⁴²² In the 2019–20 bushfire season almost every significant bushfire in Victoria was the result of a lightning strike. Details of the major bushfires since 2000 that have affected forest areas in eastern Victoria are shown in Table 8.5.

Table 95. Areas and locations of major forest bushfires since 2000⁴²³

Year	Area burnt ('000 ha)	Locations
2003	1,300	Beechworth, Upper Murray, Ovens, Mount Hotham, Falls Creek, Omeo, Swifts Creek, Benambra, Gelantipy, Tubbut
2006–07	1,115	Great Divide, Tawonga Gap, Tatong-Watchbox Creek
2009	430	Kilmore-Upper Yarra, Beechworth, Bunyip State Park, South Gippsland hills
2013	190	Aberfeldy-Donnellys Creek, Harrietville
2014	166	Goongerah-Deddick Trail
2019	150	Dargo, Nunnett-Timbarra, Mayford Spur
2019–20	1,500	Upper Murray, Abbeyard, Tambo, Snowy

Policy and legislative background

Under the modernised Victorian RFAs, bushfires are recognised as one of the natural disturbances that have the potential to impact on forest values. Victoria's accredited forest management system includes components related to fire management. The *Forests Act 1958* (Vic) requires that proper and sufficient work be carried out in state forests, national parks and protected public land for the immediate prevention and suppression of fire and for the planned prevention of fire. The Code of Practice for Bushfire Management on Public Land (2012),⁴²⁴ which is made under the provisions of the *Conservation, Forests and Lands Act 1987* (Vic), sets the objectives for bushfire management on public land, and strategies and actions across the prevention, preparedness, fuel management (including planned burning), response and recovery spectrum to achieve those objectives.

420. 2009 Bushfires Royal Commission, (July 2010) [Final Report Summary](#), accessed 2 December 2021.

421. Inspector General for Emergency Management (IGEM) (2015) Review of performance targets for bushfire fuel management on public land, IGEM, accessed 6 March 2022.

422. Sourced from the Bushfire history and patterns sections of the 2020 Bushfire Management Strategies for Gippsland, Hume and Metropolitan regions. State Government of Victoria (2020) [Gippsland Bushfire Management Strategy](#), accessed 3 March 2022. State Government of Victoria (2020), Hume Bushfire Management Strategy, State Government of Victoria accessed 3 March 2022, State Government of Victoria (2020), Metropolitan Bushfire Management Strategy, State Government of Victoria, accessed 3 March 2022.

423. Data prepared by Panel member sourced from [Forest Fire Management Victoria](#) website, departmental annual reports and other sources.

424. Department of Sustainability and Environment (DSE) (2012) [Code of Practice for Bushfire Management on Public Land](#), DSE, accessed 9 November 2021.

In late 2015 the Victorian Government released its Safer Together policy,⁴²⁵ in which the ha-based performance target for prescribed burning changed to a risk reduction target, with different targets set for each region of the state. This policy also included the introduction of bushfire management strategies to be prepared on a regional basis and to cover both public and private lands.

In 2017, DELWP supported the Federation of Victorian Traditional Owner Corporations to work with Traditional Owner fire knowledge holders from around the state to develop the Victorian Traditional Owner Cultural Fire Strategy.⁴²⁶ The purpose of the strategy is to reinvigorate cultural fire through Traditional Owner led practices across all types of Country and land tenure, enabling Traditional Owners to heal Country and fulfil their rights and obligations to care for Country.

In 2018, Forest Fire Management Victoria (FFMVic) was established bringing together existing agencies and functions for the management of fire on all public land and includes staff from DELWP, Parks Victoria, Melbourne Water and VicForests when they are engaged in fire management activities. Management of fire in forested areas comprises four categories of activities:

- Activities related to reducing the risk and impacts of bushfires undertaken in advance of bushfires
- Activities related to the suppression of bushfires once they occur
- Activities related to the recovery from bushfires
- Activities related to the planned use of fire for cultural or environmental purposes for which reducing bushfire risk is not the main purpose.

10.5.2 Impacts of the 2019–20 bushfires

Various sections of this Major Event Review report indicate that there have been significant impacts from the 2019–20 bushfires on a wide range of RFA values, including the CAR reserve system, listed species and communities, old growth forests, Aboriginal heritage places, timber volumes, tourism and recreation facilities, floral resources for apiculture, and various ecosystem services. As noted in Section 5.5.4, DELWP's statewide monitoring of ecosystem resilience to bushfires has found reductions in two of the ecosystem resilience measures: vegetation in mature or old growth stages, and vegetation within tolerable fire interval.

As the following image shows, these bushfires had a very significant impact on the forest ecosystems and values across a very broad landscape regardless of public land tenure arrangements.

425. State Government of Victoria (17 November 2015) [Safer Together. A new response to reducing the risk of bushfires in Victoria. State Government of Victoria](#), accessed 27 September 2021.

426. Forest Fire Management Victoria (23 December 2020) [The Victorian Traditional Owner Cultural Fire Strategy. Forest Fire Management Victoria](#), accessed 3 August 2021.



Photo credit: Burnt forest landscape west of Tambo Crossing in February 2020 © J. Neville Smith

10.5.3 Government actions and support following the bushfires

During 2020 and early 2021, the Victorian IGEM conducted an independent inquiry into the 2019–20 Victorian fire season. Phase 1 of that inquiry considered preparedness for and response to the fires. The inquiry's Phase 1 report⁴²⁷ found that land and fuel management remains a contested and divisive issue in Victoria. It noted that even with an extensive fuel management program, bushfire risk remains and increases as the vegetation regrows. It expressed the view that many forest types will readily carry fire within a couple of years, at which point they cannot simply be reburnt without environmental consequences. However, it also expressed the view that the total exclusion of fire from an environment which is uniquely adaptive to it, and for some species dependent upon it for regeneration, is equally at odds with sound management of Victoria's altered 21st century landscape. In October 2020, the Victorian Government accepted all 17 recommendations of the IGEM's Phase 1 report.⁴²⁸ The intent of key IGEM recommendations and related Victorian government commitments relevant to forest fire covered the following topics:

- Defining a shared responsibility for fuel management across land and fire agencies, stakeholders and community
- Implementing a consistent risk-based approach to fuel management program planning from strategic through to operational and tactical levels
- Establishing a single body to lead and coordinate the implementation of evidence-based fuel management policy, practice and assurance and reporting on activities on both public and private land

427. Inspector-General for Emergency Management (IGEM) (31 July 2020) [Inquiry into the 2019–20 Victorian fire season Phase 1 report](#), IGEM, accessed 25 July 2021.

428. State Government of Victoria (October 2020) [Victorian Government Response to the Inspector-General for Emergency Management](#), State Government of Victoria, accessed 6 March 2022.

- Undertaking a review of the current residual risk target to ensure that it remains contemporary in terms of its designated percentage value
- Expanding the permanent network of strategic fuel breaks across Victoria and conduct risk reduction works on key arterial roads that provide strategic advantage for firefighting
- Increasing investment in non-burning fuel management treatment, including mechanical treatment and investigate vegetation management measures that support both biodiversity conservation and fuel reduction
- Increasing investment in the management of hazardous trees to ensure safe forest access for firefighters
- Developing a strategy for the transition and retention of forestry contractors and their specialist skills.

In 2020, VAGO released its independent assurance report on reducing bushfire risks.⁴²⁹ That audit had examined how DELWP informed the government's planned burn target and developed and implemented its risk reduction strategies to protect human life, property and the environment. The report concluded that DELWP and the Country Fire Authority (CFA) are collaborating to reduce the risks that bushfires pose, but that there is insufficient information available to understand the effectiveness and impacts of the risk-reduction strategies.

The Victorian Government has provided \$22.5 million to fund Traditional Owner led cultural land and fire management practices and to implement the Victorian Traditional Owner Cultural Fire Strategy.

In May 2021, the Victorian Government's budget included \$517 million for technology upgrades and risk management across multiple agencies, including:

- \$133 million for new digital radios for FFMVic staff to improve communication channels with other emergency services
- \$339.5 million for forest fire management workers and firefighters and for investments in technology, fire towers and equipment
- \$21 million to establish the Office of Bushfire Risk Management
- \$15.6 million to address highly flammable undergrowth, implement planned burns and fuel management along major road and rail corridors, and acquire specialist skills and machinery.

Under this funding, FFMVic has recruited a further 154 fire operations officers and is engaging 600 seasonal firefighters. DELWP also received \$44 million of capital funding over four years to improve strategic roads and stream crossings. More than \$35 million has been directed to enhancing the strategic fuel break network, with more than 484 km now upgraded and another 963 km scheduled for completion by June 2022.

10.5.4 Key information and issues raised during consultation

The following points were made during consultation:



The unprecedented scale and impact of these fires on all types of forests (protected areas, multiple use public forests, private native forests and plantations) is a wake-up call for policy makers, land and fire management agencies and the public. (Institute of Foresters of Australia (IFA)/Australian Forest Growers (AFG) consultation)

429. Auditor-General's Office (VAGO) [Reducing bushfire risk: independent assurance report to parliament](#), 2020-21:4, VAGO, accessed 27 September 2021.



Several Traditional Owner groups indicated that the current fire management system is broken; and the severity of the 2019/20 bushfires may not have happened if traditional burning regimes were reinstated. (Traditional Owner consultations)



At present the engagement with or inclusion of Traditional Owners by and within Incident Management Teams is reliant on personal relationships between Traditional Owners and individuals working on particular shifts in an Incident Control Centre. (Taungurung Land and Water Corporation consultation)



The current philosophy and forest management approach, involving partitioning forests into relatively small, intensively managed areas for timber and a largely passive protection strategy in the other forest lands, is resulting in forests in which wildfires are more difficult to suppress, with subsequent devastating impacts on forests, species, people and assets. (IFA/ AFG submission)



Compared to previous fires the ferocity of these fires was notable. Agencies keep doing the same thing over and over again and expecting a different response. Most tracks in the National Park are now impassable. There was only one ranger on duty at Bendoc during the fires, so who is going to protect the community from such fires. (East Gippsland community consultation)



There is a perception (especially amongst urban dwellers) that burning close to assets is best, however this does nothing to counter the fires that start in remote locations and have the potential to develop into major fires. It also biases the protection towards areas with higher populations. The VFPA is strongly supportive of fuel modification using burning and mechanical treatments to reduce the risk of very large catastrophic fires. Such activities need to be undertaken both close to communities and assets as a protection measure and in forests to assist the control of fires. (Victorian Forest Products Association submission)



The strategic use of specialised machinery to reduce understorey and dense forest regrowth (and removing the biomass from the forest floor), in conjunction with fuel reduction burns, can reduce the intensity of forest fires around communities and assets. (Australian Forest Products Association submission)



The bushfires themselves have already put multiple flora and fauna at risk, some to the point of extinction, so it is therefore important for their survival that logging and burning in and around the key refuge areas cease. (Latrobe Valley Field Naturalists Club submission)



Cultural burning practices need to be linked to clearly defined cultural objectives, and how Traditional Owner organisations are progressively developing Country Plans that should drive cultural burning activities. Each Traditional Owner group will have different cultural burning objectives, linked to culture, lore, stories, totems, etc. (Eastern Maar Aboriginal Corporation consultation)



There has been very little engagement with Traditional Owners about the implementation of the Strategic Firebreak program. Where there has been engagement, it has felt somewhat 'token'; e.g. TOs provided with a map and that is it. (Guditj Mirring Traditional Owner Aboriginal Corporation and Nindi-Ngujarn Ngarigo Monero Aboriginal Corporation consultations)



The Mt Elizabeth Conservation Reserve had never been burned but burnt in these fires. There is no ongoing plan to manage these special protection zones, to prevent them being consumed by bushfire. (Orbost-Omeo community consultation)



A recent DELWP report prepared for public consultation on bushfire risk notes that much of FFMVic's road and track maintenance funds comes from VicForests' haulage fees, which will be lost when native timber harvesting ceases in 2030. (Victorian Forest Products Association submission)



Our research shows there is a clear link between bushfire intensity and disturbance history, with previously logged forests being more susceptible to intense bushfires than old growth forests. We found that forests of intermediate age (7-40 years) burn with higher fire intensity in bushfires and areas that have been logged have stronger patterns of this spatial dependence than national park areas. (ANU Fenner School of Environment and Society consultation)



Fire management is critical to forest ecosystem sustainability. Decades of widespread wildfires has resulted in poor forest structures. This will take decades of low-intensity prescribed burning to turn around. (University of Melbourne consultation)



We would like to see planned burning at a landscape scale cease; any burning to create firebreaks be managed to exclude burning in the most biodiverse forest areas and fuel reduction burns limited to significant asset protection areas. Given the major function of National Parks in preserving regional and national ecological communities and preserving biodiversity, such burning should not occur without extensive public consultation. (Birdlife East Gippsland submission)



Many of the tracks within the forest areas are impassable. It is important that these tracks are kept open for access to bushfires, otherwise how can small towns like Goongerah be protected from intense bushfires. (East Gippsland region community consultation)



The community knows that unless there is significant improvement in the management of forests, fires will happen again and again. There must be active, grounded, pragmatic, adaptive, local and regional management, based on agreed long-term plans that will better protect the community and the forest. (IFA/AFG submission)



The Association has serious concerns regarding the impact that the proposed cessation of native forest harvesting in Victoria will have on fire management. The industry provides specialised equipment and highly skilled and experienced operators required to control fires in forested areas. Plantation harvesting equipment cannot fill this gap as it uses different equipment to native forest harvesting and that equipment is not suitable for extensive fire line construction. (Victorian Forest Products Association submission)

10.5.5 Panel analysis of issues raised

In recognition that the Black Summer bushfires were investigated by both Victoria's IGEM and the national Royal Commission into National Natural Disaster Arrangements, the Panel focused its efforts on understanding the way in which Victoria's fire management systems affect the conservation and management of native forests and the protection of the values covered under the RFAs. To do this, the Panel sought briefings from FFMVic and some of DELWP's regional staff on both fire management planning and the management of bushfire suppression operations.

Increasing occurrence of landscape-level bushfires

Since the RFAs were developed, Victoria has experienced increasingly frequent large bushfires that affect large areas of public forests. As the analysis in Section 10.4.5 shows, 276,000 ha of forest in eastern Victoria has already been burnt by bushfires two to four times since 2000. Recent research on the impact of climate change on Victoria's fire weather found that there is likely to be a 50 to 200 per cent increase in the number of days per year when the fire danger exceeds Very High.⁴³⁰ The research predicts a 103 per cent increase in the number of high fire danger days in north-east Victoria and a 216 per cent increase in East Gippsland from 2085. Other recent research on the effects of altered bushfire intervals on ash forest values in Victoria found that the likelihood of bushfire intervals exceeding stand age thresholds for sawlog production, canopy species maturation and tree hollow formation will diminish markedly compared to the recent past.⁴³¹ As the CEO of the Bushfire and Natural Hazards CRC pointed out at the time of the 2019–20 bushfires:

What is needed is a quantum shift in our thinking. Just doing the same thing or planning to do the same thing, but just more of it, is a simple solution that is neat and plausible. And wrong.

*... We need solutions that take into account all human, environmental, cultural and economic considerations.*⁴³²

430. Clark S, Mills G, Brown T, Harris S and Abatzoglou JT (January 2021) 'Downscaled GCM climate projections of fire weather over Victoria, Australia, Part 2: a multi-model ensemble of 21st century trends', *International Journal of Wildland Fire*, 30:596-610.

431. Cary G, Blanchard W, Foster C and Lindenmayer D (15 March 2021) 'Effects of altered fire intervals on critical timber production and conservation values', *International Journal of Wildland Fire*, 30:322-328, accessed 2 December 2021

432. Thornton R (4 January 2020) 'Editorial opinion', *The Australian*, accessed 2 December 2021.

Outcomes from the Inspector-General of Emergency Management inquiry on forest fire management

The IGEM inquiry examined the issue of prescribed burning and the resourcing of bushfire suppression operations. The inquiry report found that RFAs support a more integrated approach to forest and bushfire management and require the explicit consideration of conservation, economic, cultural, bushfire and social land values.⁴³³ In regard to fuel management on public land, the inquiry found that the effectiveness of fuel management treatments for reducing bushfire risk is influenced by many factors such as vegetation, climate and terrain.⁴³⁴ The Executive Summary of the report⁴³⁵ expresses the view that fuel reduction burning is not a simple panacea, any more than the reintroduction of Aboriginal burning practices will restore the Victorian bush to its pre-European condition. It also considers that building a vast bushfire response capability by marshalling more aircraft, personnel, trucks and equipment is on balance no more useful than it is affordable. It suggested that what is required to improve forest fire management is something more sophisticated: an adaptive and innovative approach that takes the best from a range of approaches, synthesising them to a point where the optimal human and environmental outcomes are pursued. The Panel considers that this is an insightful perspective, but it is uncertain about which adaptive and innovative approaches DELWP and Emergency Management Victoria intend to adopt to achieve improvements in forest fire management. The Panel was briefed on Victoria's progress on implementing the inquiry's recommendations relevant to land and fuel management and understands that work is underway to develop a whole-of-sector, cross-tenure bushfire management strategy, that will consider options for innovation in fire management in the context of a changing climate and other drivers.

Balancing bushfire risks to property and forest values

While it is accepted that the highest priority for bushfire management should be the protection of life and property, the Panel considers that it is important that there is appropriate consideration of the risks to environmental values such as old growth forests, threatened species and communities and fire-sensitive ecosystems. In developing the strategic zoning systems used in bushfire management plans, FFMVic uses the bushfire simulation technology Phoenix RapidFire to identify forest areas where fuel management treatments will result in the greatest reduction in risk of house loss. It then assesses the environmental impacts of the different strategies and considers trade-offs to select the best-performing strategy for given objectives. DELWP's Fire Analysis Module for Ecological Values (FAME) tool is used to evaluate the impact of different fire management strategies on ecological objectives and show how the relative abundance of a species changes over time and space in response to fire in the landscape. The Panel was advised that while this tool enables predictions of risk reduction to environmental values from implementation of prescribed burning, DELWP does not currently undertake such analyses in a manner equivalent to the prediction of reduced risk to house loss. The Panel considers that history and the 2019–20 bushfires have also shown that there is a strategic need to manage fuels in the broader forest landscape to improve the likelihood of containing fires, or reducing their size and intensity, before they reach property or important ecological assets. As indicated in Section 10.2.5, the Panel's examination of the Gippsland Strategic Bushfire Management Plan shows that the zoning system does not appear to result in some fire-sensitive environmental values being given high priority for protection under the zoning system, other than when an area is zoned for planned burn exclusion. There is a lack of clarity about how the zoning system covers burning planned for ecological purposes.

433. Inspector-General for Emergency Management (IGEM) (31 July 2020) [Inquiry into the 2019–20 Victorian fire season Phase 1 report](#), Finding 4.5, IGEM, accessed 25 July 2021.

434. Ibid, Finding 4.1

435. Ibid, Executive Summary p 23.

Implementation of planned burning and cultural burning

Victoria's Joint Fuel Management Program (JFMP) manages fuel on public and private land over a three-year period. It also documents plans related to the Strategic Fuel Breaks Program. The JFMP indicates that it covers burns that are conducted for a variety of purposes, which on public land include bushfire risk reduction, flora and fauna ecological requirements, regeneration and land management. The latest JFMP indicates that Traditional Owners have nominated about 95 cultural burns to be implemented in 2021-22. Under the JFMP a plan and a map of planned burn locations are prepared for each region of Victoria. The plans include information on the expected risk reduction from implementation of the JFMP, and tables indicating the extent of areas planned for burning under different purpose categories in the districts of each region. For example, in 2020-21 DELWP's Gippsland region planned to conduct 85 burns covering 70,071 ha. Of these, 68 burns (51,681 ha) were for fuel reduction; two burns (18,134 ha) were for landscape; 12 burns (3,515 ha) were for ecological purposes; and three burns (274 ha) were Traditional Owner burns. FFMVic annually reports its statewide planned burn achievements through the Managing Victoria's Bushfire Risk: Fuel Management Report, which includes data on the areas and numbers of burns by burn category in each region. From this example, it is clear that currently only a small proportion of the planned burns are conducted by Traditional Owners or for ecological purposes. With regard to the implementation of cultural burns by Traditional Owners, the Panel heard a variety of views from Traditional Owners, including the desire of many groups to be empowered and resourced to undertake cultural burns, the importance of understanding that there are different objectives for different cultural burns, and that the purpose of such burns relates to Caring for Country rather than risk reduction.

Consideration of RFA values during bushfire suppression operations

The Panel was briefed by DELWP staff on bushfire suppression operations. They explained the establishment and operation of a Level 2 incident management team (IMT) at Bairnsdale and two Level 2 IMTs at Swifts Creek and Orbost. They explained that the fires were often uncontrollable in the forest and that many efforts at direct and indirect attack were unsuccessful. Each IMT had staff who provided fire spread predictions and information on threats to biodiversity and cultural values. They demonstrated the eMap system which provides IMTs with details of the locations and nature of significant values. These values were taken into account during fire suppression operations where possible, but the priority was protection of life and property. They explained that some registered scar trees were protected by wrapping them in foil insulation. In relation to the challenges facing early suppression of the bushfire in Snowy River National Park, in which a considerable area of old growth forest was burnt by high severity fire, they explained that crews found it difficult to contain the fire in five-year-old fuels and it took considerable time to assess and manage the dangerous tree hazards along planned fire access and control lines. The Panel was satisfied that RFA values were considered during the fire suppression operation but that, given the nature of these bushfire events, it was not generally possible to protect extensive values such as old growth forests.

Adapting fire-suppression strategies to accommodate Traditional Owner values

During the Major Event Review, the Panel received a case study briefing on the suppression operations for the Lake Condah and Budj Bim Aboriginal heritage sites. During the 2019–20 bushfires the Gunditjmara Traditional Owners worked alongside the IMT to determine fire suppression strategies. Despite constraints on available resources due to the large bushfires in eastern Victoria and the forecast of severe fire weather, FFMVic agreed to construct fire control lines to the south of the Budj Bim National Park boundary on accessible private land. The Traditional Owners had indicated that they did not want bulldozers to be used on the lava flow and potentially disturb any 6,000-year-old stone fish traps. FFMVic and the CFA strengthened the control lines with retardant drops and long hose lines and were able to hold the fire control line on a day of 41 degrees and 70 kph winds. The Traditional Owners considered this to be a ‘good news story’ and congratulated the agencies on their approach.

Access to forest industry machinery for fire suppression

The Inspector-General of Emergency Management (IGEM) inquiry also touched on an issue raised with the Panel by forest industry stakeholders: the role that contractors and their equipment play in bushfire management. The IGEM report⁴³⁶ made an observation that VicForests and forestry contractors contributed a large amount of plant and other equipment that was used throughout the response efforts and in relief and road reopening initiatives. It noted that the timber industry provides an important support capacity to fire management in Victorian forests, with its skill set, knowledge base and operational experience in forest landscapes. It also noted that the cessation of native forest harvesting by 2030 poses challenges for the fuel management program and for bushfire response capacity across the state.

Heavy earthmoving and tree-removal machinery are key components of the resources needed in forest fire suppression operations. The Panel does not have any information on the magnitude of departmental or forest industry resources that were utilised during the 2019–20 bushfires. But to put this in context, during the 2003 alpine fires, which burned a similar area of Victoria’s forests to the area burnt in 2019–20, the department deployed 31 first-attack bulldozers and 6 large bulldozers, along with 70+ bulldozers owned by the forest industry.⁴³⁷ The Panel is aware that without ongoing access to these amounts of machinery and to experienced people capable of operating in steep forested country it will be impossible to contain bushfires within forests if first attack is unsuccessful.

Claims of increased bushfire hazards in logged forests

As with the issue of fuel reduction burning, there are competing views among academics and stakeholders about whether logged forests result in more severe bushfires than unlogged forests. The Panel listened to the different views and reviewed some of the published literature. For the 2019–20 Victorian bushfires, the data⁴³⁸ on the occurrence of high-severity fire in the different land tenures burnt by the fires indicates that 32 per cent of the total fire extent and 34 per cent of areas burnt at high severity was in dedicated conservation reserves. The Panel therefore considers that, at the landscape level, neither the nature of the tenure nor the previous timber harvesting history had any significant effect on the severity of the bushfires within these forest ecosystems.

436. Inspector-General for Emergency Management (IGEM) (31 July 2020) [Inquiry into the 2019–20 Victorian fire season Phase 1 report](#), Observation 4.3, IGEM, accessed 25 July 2021.

437. Wareing K and Flinn D (2003) [The Victorian alpine fires: January–March 2003](#), Fire Management Branch, Department of Sustainability and Environment, 2003, accessed 2 December 2022

438. DAWE and the State Government of Victoria (2021) [Victorian Regional Forest Agreement Major Event Review of the 2019–20 bushfires: Summary report: information and data to inform public consultation](#), DAWE and the State Government of Victoria, accessed 1 March 2022.

Road and track maintenance on public land

Since the Royal Commission into the 1939 bushfires, the development and maintenance of the road and track network within forests has been regarded as critical for both rapid access for bushfire suppression and the provision of effective fire control lines.⁴³⁹ The Panel considers that having a well-maintained network of roads and trails within forest areas is an essential component of ensuring that there can be a rapid and safe access for ground-based firefighters to suppress bushfires when they occur, and thereby reduce the risks from bushfires to both communities and RFA forest values.

The Panel understands that DELWP is a roading authority under the *Road Management Act 2004* (Vic) and that it publishes a road management plan and receives recurrent funding for the improvement and maintenance of the roading network under the government's Reducing Bushfire Risk program, which has a focus on enabling safe access for firefighters. The Panel was advised that the roading programs are managed through DELWP's regional offices, taking into account road condition, fuel management plans and fire response needs when determining priorities for maintenance works. The prioritisation of roading works consider a range of bushfire-related criteria including class of road, hazardous tree status, planned burn access and strategic firebreaks, modelled fire size, evacuation routes for high-risk communities and the potential for house loss within 10 kilometres.

The Panel understands that in some other jurisdictions, such as the Australian Capital Territory, developing and maintaining a strategic fire access network is regarded as an essential component of a strategic bushfire management plan.⁴⁴⁰ The Panel considers that Victoria's program to develop a network of strategic fuel breaks across the public forest estate is an important strategy to better protect communities and a wider range of RFA forest values from the impacts of bushfires. However, this strategy is not articulated in any of the 2020 bushfire management strategies examined by the Panel. The Panel's review of the Gippsland Strategic Bushfire Plan found that the issue of strategic access roads is only covered briefly in a section about a pilot first attack suppression strategy and that the priority areas for such activities are all relatively close to private land. One Panel member who inspected some fire-affected areas in East Gippsland in November 2021 observed that some tracks were becoming overgrown with regrowth since the fires. Given the extent of these bushfires, the Panel considers that DELWP will need to have significant maintenance programs for strategic fire access tracks in the fire-affected areas for the next decade.

439. [Report of the Royal Commission to inquire into The Causes of and Measures Taken to Prevent the Bush Fires of January, 1939, and to Protect Life and Property](#), accessed 6 March 2022.

440. ACT Government (2019) Strategic Bushfire Management Plan, ACT Government, accessed 13 March 2022.



Photo credit: Forest track affected by regrowth following bushfire © T. Bartlett

10.5.6 Findings

Because of its duration and magnitude, the 2019–20 bushfire event has had significant impacts on communities, on Traditional Owner values and on a wide range of RFA values, and has resulted in a decline in the resilience of Victoria’s forest ecosystems.

The current bushfire management strategies focus almost primarily on fuel management strategies without articulating the strategies for maintaining the fire access network across the forest estate. In addition, the models used to determine priority fuel treatment areas are largely based on the risks of house loss from bushfire. The Panel considers that the resultant zoning system should give greater priority to protecting all forest values at risk from repeated severe bushfires, particularly when these values occur in areas remote from settlements.

The Panel considers that there is a strong case to be made for further refinement of Victoria’s forest and fire management strategies in a way that puts into practice the intent of the RFAs to promote active and adaptive management of forests, address the decline in forest resilience, improve the protection of rural and regional communities and ensure that both Matters of Traditional Owner Significance and environmental values are adequately managed and conserved.

The development of a network of strategic fuel breaks across the public land estate will enhance capacity to quickly implement indirect bushfire suppression operations if initial attack is unsuccessful. This program will complement, but not replace, the need for a substantial annual program of maintenance of fire access tracks on public land.

DELWP’s support for Traditional Owners to develop the Traditional Owner Cultural Fire Strategy represents a positive approach to supporting the reintroduction of cultural burning on Country. Some positive efforts have been made in some locations to empower Traditional Owners to implement cultural burns under the Joint Fuel Management Program.

Many Traditional Owner groups feel very strongly that the current system for considering Aboriginal cultural heritage values during bushfire suppression operations needs to be improved and that there are significant disparities among incident control centers on whether and how Traditional Owners are included in conversations, planning and operational decision-making. The engagement of the Gunditjmarra Traditional Owners in decision-making for the suppression of the Bessiebelle-Budj Bim bushfire represents an effective working model.

10.5.7 Recommendations

The Panel recommends:

Recommendation 31

That the Parties develop an ongoing joint funding program to provide resources and capacity for active forest management in the Regional Forest Agreement regions, reflecting the legislative responsibilities of the Parties to protect and manage forest values under a changing climate.

Recommendation 32

That the Victorian Government enhance its support for the implementation of the Traditional Owner Cultural Fire Strategy by working closely with all Traditional Owner groups to empower them to reintroduce cultural burning practices and provide increased resources to Traditional Owner groups to integrate knowledge of how fire knowledge holders traditionally managed Country and build capacity and capability for improved implementation of cultural burning and cultural practices.

Recommendation 33

That the Victorian Government increase the number of jobs available for Traditional Owners within forest land management agencies, to allow more Traditional Owners to live and work on Country and have active roles in the management of native forests.

Recommendation 34

That the Victorian Government expand an active and adaptive management approach to scale up the implementation of ecological burning in public forests. Further research and development should be undertaken on how to better model reductions in risks to key environmental assets from the implementation of fuel management and ecological burning activities.

Recommendation 35

That the Victorian Government develop appropriate metrics for identifying landscape-level trends in biodiversity as part of its monitoring and reporting of ecosystem resilience and also include data on maintenance of strategic access to forests in its annual Managing Victoria's Bushfire Risk: Fuel Management Report.



Photo credit: Regrowth landscape © Lili Prins

11. Operation of Regional Forest Agreements

11.1 Background

Victoria's Black Summer bushfires commenced on 21 November 2019 and the last major fire complex in East Gippsland was declared contained on 27 February 2020, but with bushfire recovery operations continuing. All five Victorian RFAs were renewed in March 2020. At that time Victoria was still heavily engaged in implementing bushfire recovery activities in the fire-affected regions and had just announced a state of emergency in response to the first wave of COVID-19. The Parties recognised that natural disturbances such as major bushfires have the potential to impact on forest values, but the full extent of the impacts of the 2019–20 bushfires was not yet known. The modernised RFAs contain a wide range of amended and new provisions, including the requirement to consider conducting a Major Event Review after major events such as bushfires. The RFAs specify the composition of the panel conducting the Major Event Review, the RFA values to be assessed, and the need to include public consultation. They state that the purpose of a Major Event Review is to assess the impacts of the major event, not to open the RFA to renegotiation.

In the lead-up to the commencement of the Major Event Review in early 2021, Victoria had been dealing with the bushfire recovery operations from the bushfires and then the COVID-19 pandemic for much of the previous year. These two factors continued to influence aspects of the Parties' and the Panel's operating environment for the duration of the Major Event Review process.

Given this situation, the Panel determined that it would focus its work under this topic mainly on:

- the implementation of the RFA provisions related to conducting a Major Event Review
- whether any aspects of the bushfires impacted on implementation of the RFA provisions
- some consideration of any broader issues related to the operation of the RFAs that became apparent during the Major Event Review process.

11.2 Impacts of the 2019–20 bushfires

As documented in other chapters of this report, the 2019–20 bushfires had significant impacts on many of the values covered by RFAs, particularly in the East Gippsland, Gippsland and North East RFA regions. They also had significant impacts on the World Heritage values within the Budj Bim cultural landscape in the West Victoria RFA region. They did not have direct impacts on the operation of the RFAs other than to trigger the Major Event Review and a review of the Harvest Level.

11.3 Government support following the bushfires

As part of the Eastern Victorian Fires 2019–20 State Recovery Plan, Victoria provided \$1.2 million to support a Major Event Review to assess the impacts of the 2019–20 bushfires on the RFAs and identify remedial actions. The Commonwealth Government provided funding to ensure that all activities under the Major Event Review were jointly funded.

11.4 Key information and issues raised during consultation

The following points were made during consultation:



The current Major Event Review of the five Victorian RFAs, triggered by the 2019/20 bushfires, will be a first test in establishing and building trust in 'modernised' RFAs. (Institute of Foresters of Australia (IFA)/Australian Forest Growers (AFG) submission)



We find it extraordinary this [Major Event Review] process is only now being conducted some 20 months after the major event, occurred while logging has been allowed to continue largely unabated within months. (East Gippsland Conservation Management Network submission)



The majority of respondents to the Engage Victoria online survey believe the Summary Report adequately described or well-described the impact of the 2019–20 fires. Those that expressed concern commented on the lack of reference to climate change or having insufficient information on the impacts on the environment compared to the impacts on the forestry industry. (Where To – Engage Victoria submissions report)⁴⁴¹

441. The Engage Victoria report is included in the Appendices of this report.



We do not believe, in its current form, that the Summary Report provides appropriate information on the real impacts of the 2019–20 bushfires for the Independent Review Panel, or in assisting the Victorian public in competently providing a useful public submission. It should be updated to provide appropriate detailed information, from the respective authoritative sources, to ensure that the Independent Review Panel has a true and accurate picture of the real impacts of the 2019/20 Bushfires. (Wood Products Victoria submission)



If the [Major Event Review's] remedial actions recommend taking steps towards the appropriate protection of Victoria's native forests, the reluctance of the governments to renegotiate the RFAs will contradict the efficacy of the Review. (Victorian National Parks Association submission)



Noting that no five-yearly review will be conducted in 2030, we consider that a publicly available audit of the operation of the RFAs should be undertaken in 2030, to hold to account those who have been operating the Agreements from 2025 to 2030. (Birdlife East Gippsland submission)



Under the RFAs, Victoria has to ensure genuine community engagement in a transparent and meaningful way, to enable meaningful participation in decision making processes. But there remains no clear channel for local community involvement in the decision processes or no formal way of notifying managers of the presence of threatened species or communities. (Metung Science Forum submission)



Withdrawal of resources and management capacity from most of our native forests is resulting in forests with reduced resilience, declining condition and large areas facing complete changes in species composition. The Federal and Victorian Government should develop a new joint funding program to provide resources and capacity for ongoing, active forest management across all land tenures—public, private and conservation. (IFA/AFG submission)

11.5 Panel analysis of issues raised

11.5.1 Implementation of the Major Event Review

The requirement for independent panels to conduct Major Event Reviews under the modernised RFAs provides an important new mechanism which enables consideration of a substantial change in circumstances that has the potential to impact on RFA values and commitments. The Major Event Review Panel commenced its work in early March 2021 with three days of induction briefings and some strategic planning enabling the Panel to determine how it wanted to conduct the MER. However, at the commencement of the process, the Panel did not have the support of a project manager or access to comprehensive data about the impacts of the bushfires on various RFA values in each of the RFA regions.

At the Panel's request, a project manager was appointed at the end of June and two consultants were appointed in mid-July to support the community and stakeholder consultation program and the consultation

and engagement with Traditional Owners. Community input was sought through the Engage Victoria website for a 10-week period to the end of August, and the Panel held virtual meetings with stakeholders, communities and Traditional Owners over a two-month period to mid-October.

The Panel received a series of detailed briefings from Victorian officials and written responses to information requests between mid-June and late November. During the Major Event Review process, the Panel considered both the range of views expressed during the consultation processes and official briefings, together with its own analysis of a wide range of data and information provided to the Panel by the Parties or sourced from publicly available information. These three different information sources were used by the Panel to assess the impacts of the bushfires on the RFA values specified in the Major Event Review Scoping Agreement to determine its findings and recommendations.

Some stakeholders were critical of the long delay in commencing the Major Event Review and considered that the constraints around its mandate would limit the efficacy of the review. The Panel recognises that this was the first Major Event Review ever conducted and acknowledges that both the bushfire recovery activities and the COVID-19 pandemic impacted on some aspects of its implementation.

11.5.2 Major Event Review Summary Report

The Summary Report detailing the available information on the impacts of the 2019–20 bushfires on the RFAs was developed by the Parties and released in early June 2021, three months after the Panel commenced its work. While the primary purpose of the Summary Report was to inform the stakeholder and community consultation process, the document was also an important input to the Panel's early work. Most of the community feedback indicated that it contained an appropriate level of information about the bushfire impacts on various RFA values, although some stakeholders were critical of the level of detail provided or the balance between different values. From the Panel's perspective, the Summary Report contained very limited information on the social and economic impacts, cultural and heritage value impacts, and impacts on ecosystem services.

11.5.3 Transparent engagement of stakeholders in decision-making processes

The modernised RFAs list six categories of processes and instruments which provide for public consultation or reporting, of which five-yearly reviews and Major Event Reviews are one category. Under the Panel's terms of reference it was not able to examine the implementation of stakeholder engagement processes in all of these categories. With regard to the Major Event Review process, the Panel considers that stakeholders, communities and Traditional Owners were given genuine opportunities to engage with the Panel to inform its consideration of the impacts of the bushfires and proposed remedial actions. The Panel received the full report from the Engage Victoria consultation and survey at the time that the Major Event Review report was being finalised, which limited how the information was used.

11.5.4 Harvest Level Review

The modernised RFAs⁴⁴² require that Victoria commence a review of harvest level within 12 months of the occurrence of a major event, and also specify that a Major Event Review should assess the impacts of the major event on harvest level.⁴⁴³

During the Panel's induction process, the Panel was advised that the Harvest Level Review was within the scope of the Panel's work, but no detail was provided on the process that was underway in Victoria. From the beginning of Major Event Review, the Panel requested information on the native timber 'Resource Outlook', which it understood to be a key component of the determination of Harvest Level. In late July the Panel sought clarification of its role in Victoria's Harvest Level Review and requested a briefing on its Terms of Reference and timelines. In late August 2021, the Panel was provided with a copy of the confidential scoping paper for the Harvest Level Review, which indicated that the process had commenced in December 2020 and was expected to be completed by October 2021. This scoping paper indicated that the Panel would receive the report of the Harvest Level Review for noting once it had received ministerial approval.

While the Panel was briefed by VicForests on its timber resource modelling system and the impacts of bushfires on available D+ sawlog volumes, it was not provided with information on the methodology or assumptions that would be used by Victoria in conducting the Harvest Level Review. In mid-November 2021, the Panel was provided with the table of contents and executive summary of the report of the Harvest Level Review and advised that it would receive a copy of the full report once it was approved by Ministers. It came with a caveat that any information in the documents provided could not be published until the public release of the full report. The Panel was provided with the report of the Harvest Level Review on 16 March 2022, at the time of finalising the Major Event Review report hence, its findings have not been considered in the preparation of this Major Event Review report.

Given this situation and the fact that the Panel did not have access to the detailed timber resource data or the skills to analyse such data, the Panel was unable to independently assess the impacts of the 2019–20 bushfires on Harvest Level. No explanation was given to the Panel by Victoria as to why the Panel could not have been involved in its Harvest Level Review process.

11.5.5 CAR reserve system review

The modernised RFAs⁴⁴⁴ require that a Major Event Review assesses the impacts of the major event on the CAR reserve system. The 2019–20 bushfires had a major impact on the CAR reserve system in three of the fire-affected RFA regions. As indicated in Chapter 5, cumulatively the fire-affected land within the four CAR reserve categories represents 58 per cent of the total fire-affected area. The Panel used the accessible data to assess the nature and significance of the impacts on the CAR reserve system and the values that it protects, which informed the Panel's recommendations in relation to CAR reserves. For some important CAR reserve values, such as old growth forests, the Panel had very limited data to conduct its assessment.

As required by the modernised RFAs,⁴⁴⁵ during the Major Event Review process DELWP was undertaking a review of the comprehensiveness, adequacy and representativeness of the CAR reserve system, having regard to the current and forecast impacts of climate change. That review, which was required to be completed by December 2021, was separate to the Major Event Review process. The Panel was not briefed on the outcomes of Victoria's review of the CAR reserve system and, at the time the Major Event Review report was finalised, the report of Victoria's review of the CAR reserve system had not been released.

442. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 53J, accessed 2 August 2021.

443. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 32A (e), accessed 2 August 2021.

444. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 32A (c), accessed 2 August 2021.

445. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 52G (b), accessed 2 August 2021.

11.5.6 Consideration of impacts on listed species and communities

In relation to the operation of the modernised RFAs, there are various provisions⁴⁴⁶ for listed species and communities where a link to exposure to forestry operations is not relevant. For example, for all listed species and communities, under its forest management system Victoria is required to use its best endeavours to protect important populations and sufficient current and future habitat in the CAR reserve system and to maintain or restore ecological management regimes to ensure their viability. In addition, Victoria is required to ensure that the components of its forest management system that relate to listed species and communities will provide for their conservation and recovery and provide for active management to build their resilience and diversity.

It is clear to the Panel that the bushfires impacted many listed species and communities that occur either in the CAR reserve system or in vegetation communities in which forestry operations are not conducted. The Summary Report mentioned some such species, to which the threats could be from inappropriate fire regimes, predators or loss of water quality associated with fire-induced erosion.

11.6 Impacts of bushfires on other aspects of RFA operation

11.6.1 RFA provisions on Traditional Owner rights and partnerships

The 2019–20 bushfires definitely had some substantial impacts on RFA provisions related to Indigenous heritage and Traditional Owner rights and partnerships. The Major Event Review gave a particular focus to consultation and engagement with Traditional Owners, and the results of that work are reported in relevant sections of this report. In addition, the Panel received a comprehensive briefing from DELWP on Victoria's legislative and policy agenda for Aboriginal people, DELWP's Traditional Owner and Aboriginal Community Engagement Framework, and the work done to date with Traditional Owner representatives and groups to implement the new Traditional Owner provisions in the modernised RFAs.

The Panel was provided with Forest Fire Management Victoria's 2016 Work Instruction on the Management of Aboriginal Cultural Heritage Values related to minimising the impacts on these (identified) values during fire suppression operations. During the Major Event Review process, the Panel confirmed that these procedures were followed, where possible, during the bushfire suppression operations. The Panel's analysis has indicated that these bushfires are likely to have had a significant impact on many registered Aboriginal heritage sites, particularly in East Gippsland. However, the actual impact of the bushfires on most of these sites is unknown as, in contrast to the situation after previous major bushfires, only a limited amount of funding was provided for cultural heritage impact surveys.

11.6.2 Growing threat of bushfires to the operation of RFAs

Since 2000, megafires – bushfires larger than 1 million ha – and the repeated exposure of a wide range of forest ecosystems to high-intensity bushfires within short time periods have become a major threat to the effective operation of the RFAs. Such bushfires are resulting in ongoing loss and degradation of key RFA values, such as old growth forests and Aboriginal heritage sites. While climate change is a contributing factor to the increased threats from bushfires, these ongoing losses call into question the adequacy of the existing strategies for protecting and managing a wide range of RFA values in the context of climate change.

446. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clauses 15G, 15R, 49C and 50A accessed 2 August 2021.

From its analysis of the available data and consideration of insights provided by various stakeholders and independent scientists, the Panel is concerned that neither the Parties to the RFAs nor the wider community fully appreciate the increasing risks to Victoria's forest ecosystems from more frequent exposure to intense bushfires. As a result, the land management strategies that are currently being implemented focus either on protecting a specific value from a potential threatening process, such as timber harvesting, or on protecting assets and values outside the forest estate from the impacts of bushfires. The Panel considers that there is no coherent strategy to manage multiple values within broad forested landscapes in a manner that enhances the resilience of these systems and values to cope with bushfires. This issue is compounded by the level of resources provided for the management of forests and for research into and the monitoring of forest values.

The Panel acknowledges the stakeholder view that the progressive withdrawal of human and financial resources for managing public forests over many years has contributed to lack of adequate active management of forests.



Photo credit: Forest Fire Management Victoria fire tanker, March 22 © T. Bartlett

11.7 Findings

A Major Event Review is an important and worthwhile new mechanism for monitoring and reporting, in a consultative manner, on the impacts of events that have potential consequences for the implementation of ecologically sustainable forest management under the RFAs. The Panel considers that some aspects of the Major Event Review should be considered to improve the timeliness and efficacy of future reviews. The Summary Report is a useful component of the Major Event Review but its contents could be improved in some areas.

The 2019–20 bushfires have had a significant impact on many species and communities that are listed under the *Flora and Fauna Guarantee Act 1988 (Vic)* or the *Environment Protection and Biodiversity Conservation Act, 1999 (Cwth)*. Under the modernised RFAs,⁴⁴⁷ inappropriate fire regimes, which includes bushfires, is identified as one of the threatening processes for listed species and communities. However, under the modernised RFAs⁴⁴⁸ the definition of listed species and communities requires them to be both listed under either Act and be or have the potential to be impacted by forestry operations.

447. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 15D, accessed 2 August 2021.

448. [East Gippsland Regional Forest Agreement between the Commonwealth and Victorian Governments](#), 30 March 2020, clause 2 definition, accessed 2 August 2021.

The Panel considers that situation resulted in some confusion as to whether or not bushfire-impacted listed species that are not likely to be impacted by timber harvesting should be considered by the Major Event Review.

The Panel experienced challenges in assessing two components of the Major Event Review Scoping Agreement. The Panel was only able to partially fulfill the RFA requirement that a Major Event Review assess the impacts of the major event on harvest level, because it was not given any role in that process by Victoria and only received partial information on this topic during briefing sessions.

The Panel's assessment of the bushfire impacts on the CAR reserve system was limited by the absence of data on the impact on CAR reserve values such as old growth forests.

The implementation the new RFA provisions on Traditional Owner rights and partnerships has only just commenced but there is unequal engagement with Traditional Owner groups across the RFA regions. This inequity has been exacerbated by the impacts of the 2019–20 bushfires, as the Traditional Owners of some of the most severely fire-affected forests are not formally recognised by Victoria. The specific impacts of the bushfires on most of the existing registered Aboriginal heritage sites within the fire-affected RFAs are unknown.

Frequent exposure to intense bushfires is presenting a major and increasing threat to the effective operation of Victoria's RFAs.

11.8 Recommendations

The Panel recommends:

Recommendation 36

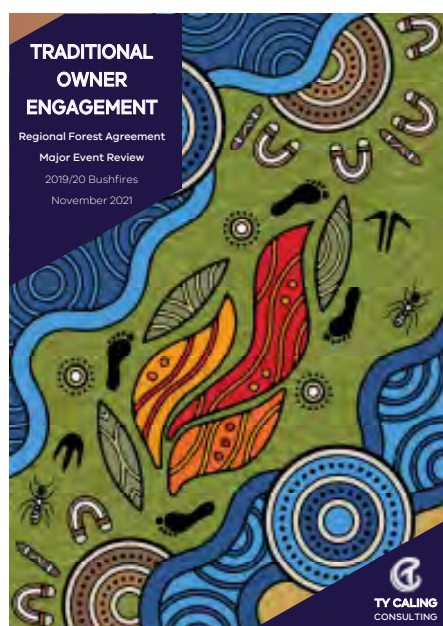
That, to benefit the operation of future Major Event Reviews, the Parties:

- i. Commence each review within six months of a major event, preceded by a detailed program of surveys and assembly of information relevant to all the matters to be assessed by the panel
- ii. Ensure that the summary report and the detailed datasets used to produce that report are available at the time the independent panel commences its work
- iii. Ensure that the scoping agreement clearly defines the panel's role in assessing each of the matters to be assessed as listed in the Regional Forest Agreement (RFA) provisions
- iv. Have access to appropriate data on impacts on CAR reserve values and Aboriginal and non-Aboriginal heritage values
- v. Consider the impacts of the major event on listed species and communities across all land tenures regardless of the potential impact from forestry operations
- vi. Determine how the independent Major Event Review panel fulfills the RFA requirement that it assesses the impacts of the major event at harvest level.

Recommendation 37

That, in considering the findings and recommendations from the Major Event Review, the Parties consider how the package of Regional Forest Agreement provisions and the components of Victoria's forest management system can be improved to provide enhanced resilience for the wide range of RFA forest values that are being severely impacted by repeated severe bushfires.

Appendix A



Appendix B



Appendix C



Appendices

Appendix A

Report of Panel's Traditional Owner Engagement	302
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Appendix B

Report of Panel's Stakeholder and Community Consultation.....	370
---	-----

Appendix C

Engage Victoria Summary (commissioned by the Australian and Victorian governments)	381
--	-----

Appendix D

Table 1. East Gippsland RFA forested EVC	422
Table 2. East Gippsland RFA non-forested EVC	425
Table 3. Gippsland RFA forested EVC.....	427
Table 4. Gippsland RFA non-forested EVC	430
Table 5. North East RFA forested EVC.....	432
Table 6. North East RFA non-forested EVC.....	434
Table 7. West Victoria RFA forested EVC.....	435
Table 8. West Victoria RFA non-forested EVC	436

TRADITIONAL OWNER ENGAGEMENT

Regional Forest Agreement

Major Event Review

2019/20 Bushfires

November 2021



TY CALING
CONSULTING

Report prepared by Ty Caling Consulting for the Regional Forest Agreement Major Event Review Independent Panel, November 2021.

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Ty Caling Consulting

ABN 31 244 674 353

PO Box 354, Bright VIC 3741

Ph: 0491 643 454

www.tycaling.com

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Version	Date	Comments	Distribution
1.0	4/11/2021	Draft report	MER Panel
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3.0	19/11/21	Proposed final report – with amendments	MER Panel
4.0	30/11/21	Final report	MER Panel

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Confidentiality

The contents of this report are the outcomes of meetings and conversations with Victorian Traditional Owner and Aboriginal groups, corporations and individuals, specifically for the Regional Forest Agreement Major Event Review. These conversations were held on the understanding that information supplied would be used for the purpose of the independent Panel deliberations, with this report made public.

Table of Contents

1. Executive Summary	6
2. Acronyms & Abbreviations	10
2.1. Acronyms	10
2.2. Abbreviations & terms	11
3. Introduction	14
3.1. Background	14
3.2. Scope of Regional Forest Agreement Major Event Review	14
3.3. Scope of Traditional Owner Engagement	15
3.4. Scope of Regional Forest Agreement Major Event Review	16
3.5. Principles for engagement and participation	16
4. Engagement approach	17
4.1. Principles	18
4.2. Approach	18
4.3. Analysis	19
5. Impacts of 2019/20 bushfires on Traditional Owners	21
5.1. Traditional Owner Engagement Processes	21
5.2. Aboriginal cultural heritage	32
5.3. Economic impacts and funding	37
5.4. Access to Country	41
5.5. Healing Country and Culture	44
5.6. Implementation of Traditional Owner clauses in 'modernised' RFAs	46
5.7. Cultural burning	49
5.8. Condition of forest estate	52
5.9. Timber harvesting	56
5.10. Other matters raised not directly related to Major Event Review	58
6. Informing processes for next 5-year review of RFAs	61
7. References	63
8. Appendices	67
8.1. Appendix A - Meeting overview	67



About the Artwork

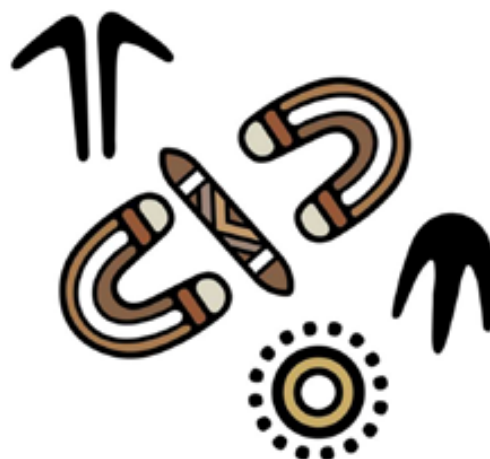
Title: Caring for Country

Artist: Dixon Patten (Bitja) – Bitja means fire in Yorta Yorta language

Tribes: Gunnai, Yorta Yorta, Dhudhuroa / Jaithmathang, Gunditjmara, Wiradjuri, Wemba Wemba, Djab Wurrung, Monero and Yuin.

This artwork represents the relationships Traditional Owners have had with Forests for millennia. 'Caring for Country' is a key principle and practice in Aboriginal culture. It encompasses sustainability, working with seasons and landscapes and understanding our role in environmental and Forest destruction and regeneration.

This art honours Traditional Owner knowledge of land, Forest and fire management through our lens. Deep listening was vital to our survival, the ability to stop, reflect, understand, and then enact was key to our cultural knowledge. We listen deeply to the land; it tells us what we need to know.



The background is a deep blue color. It features several large, stylized concentric circles in shades of blue and yellow. These circles are interconnected by thick, wavy blue lines that flow across the page. Smaller, fainter versions of these circular patterns and wavy lines are scattered throughout the background, creating a layered, textured effect. The overall style is reminiscent of traditional Indigenous Australian art, specifically the 'dot painting' technique.

Executive Summary

1. Executive Summary

In 2019-20, bushfires burnt approximately 1.5 million hectares of land in Victoria, including 1.3 million hectares, or 18 percent, of the total public native forest estate (IGEM, 2020).

Following the 2019-20 bushfires, the Victorian and Australian Governments agreed to undertake a Major Event Review (MER) to assess the impacts of the bushfires on the operation of Victoria's five Regional Forest Agreements (RFAs). An independent Panel was formed to facilitate this Review.

To support Panel engagement and participation Ty Caling Consulting was commissioned to plan and facilitate engagement between Victorian Traditional Owners and the MER Panel.

In total 29 different Victorian Traditional Owner groups and organisations were considered relevant by the Panel for engagement. Eight Traditional Owner groups with legal recognition status and eight groups without legal recognition status were engaged directly.

All other Traditional Owner groups were made aware of the process and provided opportunity to participate. The Panel also engaged with relevant Victorian Traditional Owner co-governance groups/forums (eg. Federation of Victorian Traditional

Owner Corporations) and Victorian Aboriginal Community Controlled Health Organisations.

A total of 21 on-line meetings and one in-person meeting were held. All meetings were recorded in video and/or audio and transcribed (unless a written submission was made). Fourteen written meeting summaries were prepared and six written submissions received.

Issues raised by Traditional Owners during consultation have been analysed and structured into themes and sub-themes in this report.

Common themes and issues relevant to the MER include:

1. Traditional Owner engagement processes.
 - Traditional Owners were concerned at the lack of engagement on RFA matters before, during and after bushfires.
 - Traditional Owners were concerned with the disparity in engagement approaches between legally recognised groups and groups without legal recognition.
 - Traditional Owners sought greater engagement regarding management of Country and culture on an ongoing basis.

2. Aboriginal Cultural Heritage.
 - Traditional Owners raised concerns over impacts to Aboriginal Cultural Heritage from the Major Event.
 - Traditional Owners highlighted delays and/or lack of support, funding, facilitation and management of post-fire analysis and survey to assess harm to heritage and discover new cultural heritage.
3. Economic impacts and funding.
 - Traditional Owners explained the economic impacts to livelihood and business from the Major Event.
 - Traditional Owners highlighted several economic and funding opportunities.
4. Access to Country.
 - Traditional Owners were seeking greater access to Country, before, during and after bushfire.
 - Traditional Owners spoke of how the impact from the Major Event was exacerbated as they were not supported to access Country to heal, and to heal Country immediately post-fire.
5. Healing Country and culture.
 - Traditional Owners spoke of how RFAs provide the enabling environment for healing, with many opportunities to promote on-Country healing.
6. Implementation of Traditional Owner clauses in 'modernised' RFAs.
 - Most Traditional Owners acknowledged the recent improvements to the RFAs to partner with Traditional Owners for decision-making, management and evaluation.
 - Traditional Owners did however note the delay in 'operationalising' the Traditional Owner clauses in the RFAs, and that an implementation plan is needed.
7. Cultural burning.
 - Almost all Traditional Owners engaged during the MER process raised concerns regarding traditional cultural burning; and, how a partnership approach is needed to help reinstate cultural burning regimes.
8. Condition of forest estate
 - Traditional Owners explained how the Major Event caused impact to the condition of the Forest estate (ie. Country) (eg. scale of fire, intensity of fire, impact to totemic species, changes to vegetation structure).
 - Traditional Owners want to be more actively involved in the direct management of Forests to provide for more holistic management of Country.
9. Timber harvesting.
 - Timber harvesting was not often raised during consultation with Traditional Owners concerning the MER, with only a small

number of Traditional Owners raising concerns.

A short background to each theme is included in this report, providing context. A discussion of each issue within the theme is included, with the recommendations put forward by Traditional Owners also documented.

Other matters raised by Traditional Owners (eg. formal recognition, treaty, legislative reform) beyond the scope of the MER have been included for completeness.

The Panel's approach to holistic, genuine engagement of Victorian Traditional Owners was acknowledged by several groups. Groups without legal recognition status were particularly impressed by efforts from Panel members to engage with all groups.

Traditional Owners seek the adoption of similar approaches for ongoing RFA engagement and reviews by land and fire management agencies.





Acronyms & Abbreviations



2. Acronyms & Abbreviations

2.1. Acronyms

AAV	Aboriginal Affairs Victoria (now First Peoples – State Relations)
ACHRIS	Aboriginal Cultural Heritage Register and Information System
ESFM	Ecologically Sustainable Forest Management
ICC	Incident Control Centre
IMT	Incident Management Team
MER	Major Event Review
MNES	Matters of National Environmental Significance
MTOS	Matters of Traditional Owner Significance
RAP	Registered Aboriginal Party
RFA	Regional Forest Agreement
RSA	Recognition and Settlement Agreement

Traditional Owner and Other Aboriginal Organisations

ACRWAG	Aboriginal Community Recovery Wellbeing Advisory Group
BAC	Bangerang Aboriginal Corporation
BCAC	Barapa Country Aboriginal Corporation
BGLC	Barengi Gadjin Land Council
BFNCAC	Bidwell First Nations Clans Aboriginal Corporation
BM	Bidwell Maap
BLaSC	Boonwurrung Land and Sea Council
CGCLS	Co-governance Group for Cultural Landscapes Strategy
DDAC	Duduroa Dhargal Aboriginal Corporation
DWMAC	Dalka Warra Mittung Aboriginal Corporation
DWNAC	Dhuduroa Waywurru Nations Aboriginal Corporation

EMAC	Eastern Maar Aboriginal Corporation	NNNMAC	Nindi-Ngujarn Ngarigo Monero Aboriginal Corporation
FOVTOC	Federation of Victorian Traditional Owner Corporations	SCRM	Snowy Cann River Mob
FPoMMAC	First Peoples of Millewa Mallee Aboriginal Corporation	TTAC	Tati Tati Aboriginal Corporation
GLaWAC	Gunaikurnai Land and Waters Aboriginal Council	TTLaWIC	Tati Tati Land and Waters Indigenous Corporation
GMTOAC	Gunditj Mirring Traditional Owner Aboriginal Corporation	TLaWC	Taungurung Land and Waters Council Aboriginal Corporation
JTABOONAC	Jaithmathang Traditional Ancestral Bloodline Original Owners First Nations Aboriginal Corporation	WTOAC	Wadawurrung Traditional Owners Aboriginal Corporation
LTAT	Lake Tyers Aboriginal Trust	WAC	Wiran Aboriginal Corporation
MACEG	Moogji Aboriginal Council East Gippsland Inc.	WWCHAC	Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation
		YYNAC	Yorta Yorta Nation Aboriginal Corporation

2.2. Abbreviations & terms

Major Event

- As per RFA definition, 'major event' means a substantial change in circumstances that has the potential to significantly impact,
 - the objectives and operation of the Agreement (RFA);

- the comprehensiveness, adequacy or representativeness of the CAR Reserve System;
- ESFM;
- one or more MNES; or
- the stability of Forest Industries, within the RFA Region, and includes (but is not limited to) natural events such as bushfires, floods and disease.

Major Event Review

- Means a review of the same name undertaken pursuant to relevant clauses of RFA.
- A Major Event Review may be conducted after a Major Event such as large bushfires.

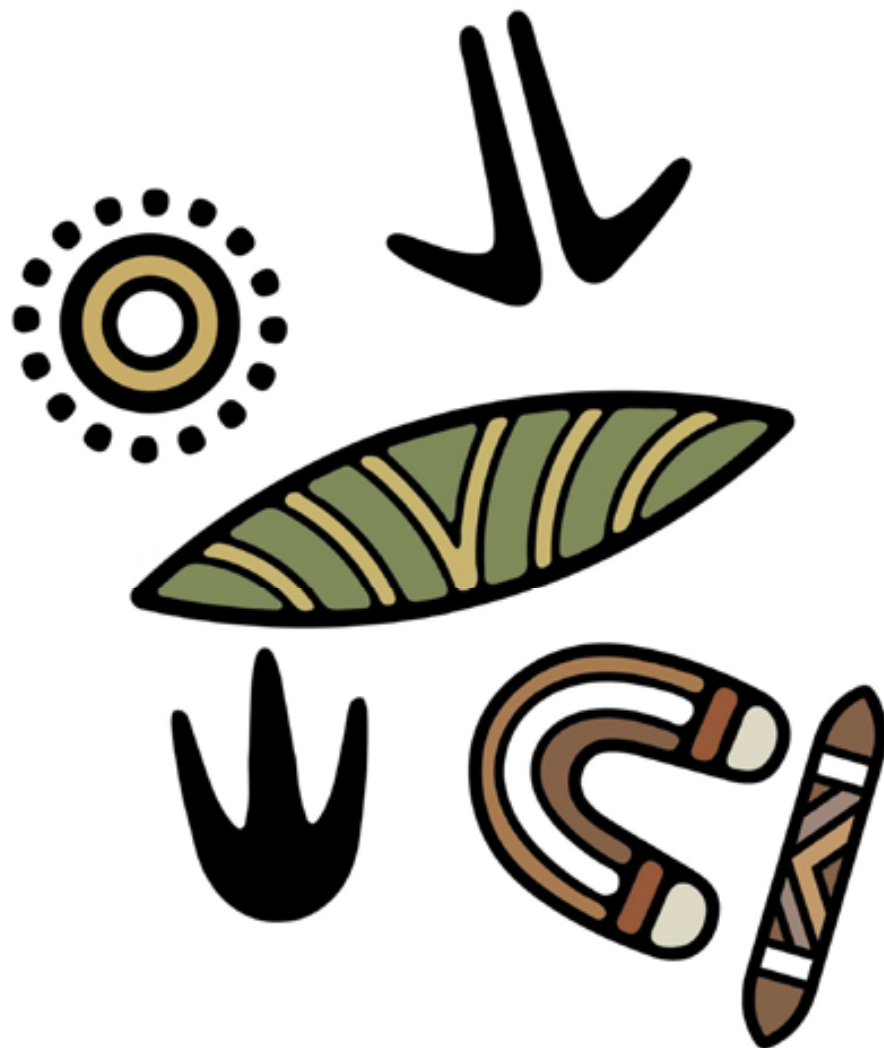
Legally recognised Traditional Owner groups

- Victorian Traditional Owner groups with formal legal recognition under the *Native Title Act 1993* (Cth),

Traditional Owner Settlement Act 2010 (Vic) and/or *Aboriginal Heritage Act 2006* (Vic).

Traditional Owner groups without formal legal recognition:

- Victorian Traditional Owner groups without legal recognition under the *Native Title Act 1993* (Cth), *Traditional Owner Settlement Act 2010* (Vic) and/or *Aboriginal Heritage Act 2006* (Vic).





Introduction

3. Introduction

3.1. Background

Ty Caling Consulting was commissioned by DELWP to provide specialist support to the independent Panel for the Regional Forest Agreement (RFA) Major Event Review (MER), so the Panel could meaningfully engage with Victorian Traditional Owner groups during the review.

Regional Forest Agreements (RFAs) are long-term agreements between the Australian and Victorian Governments that establish the framework for sustainable management and conservation of forests in Victoria's five different RFA regions (COA & SOV, 2020; SOV & COA, 2020a, b, c, d, e).

In 2019-20, bushfires burnt approximately 1.5 million hectares of land in Victoria, including 1.3 million hectares, or 18 percent, of the total public native forest estate (IGEM, 2020). The fires affected individuals, communities, businesses, infrastructure, plants, animals and forest ecosystems (COA & SOV, 2020).

Following the 2019-20 bushfires, the Victorian and Australian Governments agreed to undertake a Major Event Review (MER) to assess the impacts of the bushfires on the operation of Victoria's five Regional Forest Agreements (RFAs). A MER is a new feature of Victorian RFAs, and it is identifying what, if any, remedial

actions need to be taken to address impacts.

The independent Panel, formed to facilitate the MER, are committed to genuine engagement with Victorian Traditional Owners to understand the impacts of the Major Event.

This report summarises the outcomes of Panel consultation and engagement with Victorian Traditional Owners during August – October 2021.

3.2. Scope of Regional Forest Agreement Major Event Review

Provisions for the Major Event Review are provided for in each RFA (SOV & COA, 2020a, b, c, d, e). The Scoping Agreement (COA & SOV, 2020) outlines the scope and arrangements for conducting the review.

Specifically, the Scoping Agreement (COA & SOV, 2020) states:

The Parties agree that, as per requirements of the Victorian RFAs, the Major Event Review will assess the impacts of the 2019-20 bushfires on:

- a) the operation of the RFAs;*
- b) ESFM (Ecologically Sustainable Forest Management);*
- c) the CAR (Comprehensive Adequate Representative) reserve system;*
- d) the effective management and protection of MNES (Matters of National Environmental Significance)*
- e) harvest level; or*

f) *the long-term stability of forests and forests industries.*

The Major Event Review will include public consultation and an assessment of the impacts of the 2019-20 bushfires on Environment and Heritage Values, Listed Species and Communities, Ecosystem Services, economic and social values.

The Review will consider and make recommendations on what, if any, remedial action needs to be undertaken to address the impacts of the 2019-20 bushfires.

3.3. Scope of Traditional Owner Engagement

Ty Caling Consulting was engaged to provide specialist support to the Panel to meaningfully engage with Victorian Traditional Owner groups during the Review.

Outcomes sought from the process were to enable the Panel to obtain feedback on analysis, issues, alternatives and decisions in a way that:

- enabled meaningful engagement with Traditional Owners to be heard, and their knowledge and connection to landscape respected;
- build the credibility of the MER, through running an open and transparent process;
- elicit new information (including qualitative information) to inform the Panel's consideration with observance

of data sovereignty parameters and cultural sensitivities.

The Scope of Services sought included:

- meetings with Commonwealth and Victorian Government officials to discuss the engagement design and delivery approach;
- meetings with the Panel to discuss and finalise the engagement design and delivery approach to engage with Traditional Owner groups from legally recognised groups and groups without legal recognition, and Traditional Owner forums;
- support the Panel to refine and finalise the Traditional Owner engagement component of the draft Communications and Engagement Plan;
- establish relationships, or utilise existing relationships to establish meetings with Traditional Owner groups in a culturally safe, trauma-informed manner;
- facilitate the Panel's face-to-face and/or online meetings with Traditional Owner groups in a culturally safe manner;
- scribe outcomes of meetings;
- provide the Panel with a written summary of Traditional Owner feedback and outcomes, to inform their feedback report.

3.4. Scope of Regional Forest Agreement Major Event Review

Provisions for the Major Event Review are provided for in each RFA (SOV & COA, 2020a, b, c, d, e). The Scoping Agreement (COA & SOV, 2020) outlines the scope and arrangements for conducting the review.

The MER is assessing the impacts of the 2019-20 bushfires on:

- the operation of the RFAs;
- Ecologically Sustainable Forest Management (ESFM);
- the Comprehensive Adequate Representative reserve system;
- harvest level;
- the long-term stability of forests and forests industries.

3.5. Principles for engagement and participation

Traditional Owners may be grouped into the following tiered categories based on recognition 'status' and organisational capacity and capability:

1. Groups legally recognised under the *Native Title Act 1993* (Cth) or *Traditional Owner Settlement Act 2010* (Vic) (eg. Recognition and Settlement Agreement).

- There are six groups in this category in Victoria, and four were engaged directly for the MER (ie. DDWCAC, GLaWAC, GMTOAC, TLaWAC).
2. Groups legally recognised under *Aboriginal Heritage Act 2006* (Vic) only (ie. Registered Aboriginal Party status).
 - There are six groups in this category in Victoria. Four of these were engaged directly during MER consultation (ie. BLCAC, EMAC, WTOAC, WWWCHAC).
 3. Groups without any formal legal recognition under the *Native Title Act 1993* (Cth), *Traditional Owner Settlement Act 2010* (Vic) or *Aboriginal Heritage Act 2006* (Vic).
 - There are over 12 groups in this category in Victoria. Nine of these were engaged during MER consultation (ie. BAC, BFNAC, BLaSC, DWMAC, DWNAC, DDAC, JTABOOFNAC, NNNMAC, SCRM).



Engagement Approach



4. Engagement approach

4.1. Principles

The MER Panel agreed on the following principles for Traditional Owner engagement:

- All Victorian Traditional Owners will be made aware of the RFA MER and asked if and how they would like to be engaged.
- All Victorian Traditional Owners, regardless of whether their lands were covered by the five RFAs, will be provided the opportunity to participate in meaningful engagement concomitant with their desires and aspirations.
- Panel engagement will be guided by Traditional Owners' aspirations and engagement preferences.
- Panel members will travel to meet in-person with priority groups at the home location (subject to Covid restrictions).
- Due to relative priorities, efficiencies and other intricacies, some meetings will require full Panel representation, some will have Katherine Mullett facilitate as Panel representative, and other meetings may be facilitated by Ty Caling Consulting.
- Fundamental principles of community development (ie. valuing local systems, local processes, local relationships, local culture) will be applied, including inclusion of regional DELWP staff who have existing relationships with Traditional Owners

in Panel engagement if requested by groups. This will optimise potential for ongoing relationships to be maintained for RFA engagement, particularly for the 5-yearly RFA reviews.

- Full Panel representation will occur for meetings with legally recognised Traditional Owner groups in priority fire affected locations.

4.2. Approach

Victorian Traditional Owner groups were categorised into the following tiered categories based on recognition 'status':

1. Groups legally recognised under the *Native Title Act 1993* (Cth) and/or *Traditional Owner Settlement Act 2010* (Vic) (eg. Recognition and Settlement Agreement); and, *Aboriginal Heritage Act 2006* (Vic).
 - There are six groups in this category in Victoria.
 - Four of these groups were engaged directly during MER consultation (ie. DDWCAC, GLaWAC, GMTOAC, TLaWAC).
2. Groups legally recognised under *Aboriginal Heritage Act 2006* (Vic) (ie. Registered Aboriginal Party status) only.
 - There are six groups in this category in Victoria.
 - Four of these groups were engaged directly during MER

consultation (ie. BLCAC, EMAC, WTOAC, WWWCHAC).

3. Groups without any legal recognition under the *Native Title Act 1993* (Cth), *Traditional Owner Settlement Act 2010* (Vic) or *Aboriginal Heritage Act 2006* (Vic).

- There are at least 12 groups in this category in Victoria. considered relevant for the MER.
- Of these 12, eight were engaged directly during MER consultation (ie. BFNCAC, BLASCAC, DWMAC, DWNAC, DDAC, JTABOONAC, NNNMAC, SCRM).

Other groups engaged included:

1. Traditional Owner Co-governance groups / forums (ie. ACRWAG, CGCLS, FOVTOC).
2. Victorian Aboriginal Community Controlled Health Organisations (ACCHOs) (ie. LTAT, MACEG).

In total, 29 different Victorian Traditional Owner groups and other organisations were considered relevant by the Panel for engagement. Appendix A (section 8.1) provides an overview of meetings held.

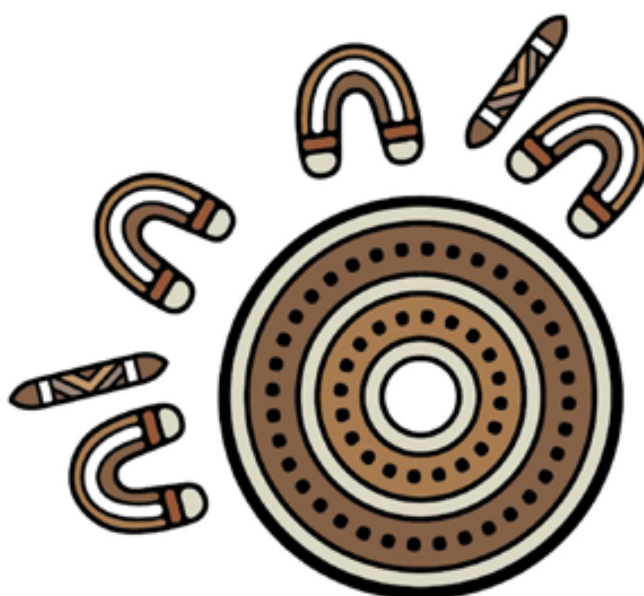
The Panel intended to travel and meet in-person with all Traditional Owner groups and organisations. Due to Covid-19 restrictions, this was only possible for one meeting (ie. BAC). All other meetings were conducted on-line (MS Teams).

All meetings were recorded in video and/or audio and transcribed (unless a written submission was made). In total 14 written meeting summaries were prepared for the Panel and six written submissions were received.

4.3. Analysis

All video and audio recordings, meeting summaries and written submissions were analysed. Common themes and issues relevant to the MER include:

1. Traditional Owner engagement processes;
2. Aboriginal Cultural Heritage;
3. Economic impacts and funding;
4. Access to Country;
5. Healing Country and culture;
6. Implementation of Traditional Owner clauses in 'modernised' RFAs;
7. Cultural burning;
8. Condition of forest estate;
9. Timber harvesting.



Impacts of 2019/20 Bushfires on Traditional Owners



5. Impacts of 2019/20 bushfires on Traditional Owners

5.1. Traditional Owner Engagement Processes

5.1.1. Background

Under Victoria's Regional Forest Agreements (SOV & COA, 2020a, b, c, d, e), the Victorian Government is committed to empowering and involving Traditional Owners on all aspects of Forest management, including decision-making. Relevant clauses state that Victoria:

- will ensure that Traditional Owners are empowered to have an active role in the management of Forests on Public Land on Country;
- is committed to ensuring the involvement of Traditional Owners in decision-making; and,
- will actively seek to incorporate Traditional Owner Knowledge when making decisions regarding the management of Forests.

Australia is a signatory to the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP 2007), which states, among other things, that:

- Indigenous peoples have the right to participate in decision-making in matters which would affect their rights, through representatives chosen by themselves in accordance with their own procedures, as well as to maintain and develop their own

Indigenous decision-making institutions; and,

- States shall consult and cooperate in good faith with the Indigenous peoples concerned through their own representative institutions in order to obtain their free, prior and informed consent before adopting and implementing legislative or administrative measures that may affect them.

In line with the Victorian Charter of Human Rights and Responsibilities (VEO & HRC 2021) and the Victorian Public Service Code of Conduct (VPSC 2015), the Victorian Government and its agencies, in carrying out its operations, must protect and nurture the human rights of Victoria's Traditional Owners, including recognition, cultural freedoms and property rights. All key Victorian Government departments and agencies have their own strategies and plans espousing these principles for effective engagement and self-determination, with DELWP's *Pupunglarli 'Marnmarnepu: 'Aboriginal' Self-Determination Reform Strategy 2020-2025'* (DELWP 2019) a relevant example.

Each Regional Forest Agreement area is a cultural landscape that has been managed for thousands of years by Traditional Owners with their own system of rights and recognition as custodians of Country. Substantial displacement and

movement of Traditional Owners occurred following European arrival. As a result, traditional ownership of areas for what is now the State of Victoria is not always clear. There are processes that seek to clarify who has the right to speak for, access, use and own Country in Victoria.

Traditional Owner groups may achieve formal recognition and procedural rights under the *Native Title Act* (NTA, 1993) *Traditional Owner Settlement Act* (TOSA, 2010) (Recognition Settlement Agreement {RSA}), or *Aboriginal Heritage Act* (AHA 2006) (Registered Aboriginal Party {RAP}). Such recognition may provide for exclusive engagement on Forest management. Two of the three RFAs (viz. North East and East Gippsland) that experienced large-scale bushfires in 2019/20 have large areas with no formal legal Traditional Owner recognition. Multiple Traditional Owner groups and individuals assert connection to Country, with several areas overlapping.

In contrast to the DELWP (2019) definition of 'Traditional Owner' (ie. "an Aboriginal person who has traditional connection{s} to an identified geographical area of Country"), the definition of 'Traditional Owner' in the RFAs is "Victorian Aboriginal persons or entities recognised under the *Native Title Act 1993* (Cth), *Traditional Owner Settlement Act 2010* (Vic) or *Aboriginal Heritage Act 2006* (Vic)".

Timely and accurate information and engagement with Traditional Owners during major events is critical to reduce potential impact and trauma. Traditional Owners have a deep and ongoing connection to Country, and not feeling included in decision-making or being made aware of developing situations can cause impact.

5.1.2. Issues raised during consultation

Most Traditional Owner groups raised concerns regarding the timeliness and adequacy of engagement before, during and after the Major Event. All Traditional Owner groups without legal recognition status highlighted the contrast in the level of engagement between legally recognised Traditional Owner groups and groups without legal recognition, including limited to no engagement on the RFA itself. Several groups pointed out what they considered a breakdown in the engagement 'system', whilst the lack of engagement on management of physical cultural heritage sites also featured prominently in discussion. These issues are further described below.

5.1.2.1. RFA Engagement

Engagement on the operation, role, content and function of Regional Forest Agreements is foundational for Traditional Owners to understand the role RFAs play and how this intersects with caring for and managing Country. Many Traditional Owner groups, particularly groups without legal

recognition status (refer section 5.1.2.3), expressed how the MER process was the first time they had been 'engaged' on the RFA. As an example, NNNMAC explained how the MER process was the first time they had been engaged in conversation regarding the RFA. NNNMAC indicated they had not been engaged at all with DELWP local staff to talk about the various parts of the RFA. NNNMAC explained how in order to talk about the 'impacts' of the bushfires from their perspective on the operation of the RFA, they first need to be engaged on the RFA itself, so that they understand it – this had not occurred. NNNMAC did indicate they would like the opportunity to sit down with DELWP and other Traditional Owner groups.

It was clear in this conversation that Traditional Owner groups (generally with legal recognition status) who have been engaged with DELWP Policy branches regarding RFAs are more aware and connected with the operation of RFAs. It was discussed how the major changes in the 'modernised' RFAs are Traditional Owner-related and how there hasn't been adequate engagement of groups without legal recognition status. From NNNMACs perspective, it appeared there had only been engagement on the MER process by the Panel, and engagement with RAPs only for RFA implementation. NNNMAC felt that the RFA areas with greatest fire severity and extent (ie. North East, Gippsland, East Gippsland), coincided with the most groups without legal

recognition status and lowest levels of engagement by land and fire management agencies.

Similarly, SCRM felt that there hadn't been the level of inclusion in the development and understanding of the RFA in order to be worthy participants in commenting on the impacts of the Major Event to the RFA. SCRM felt 'sold-out' by the RFA over the years, as their people had worked hard in the timber industry and are now not being engaged on the operation of the RFA. They felt they were an intricate part of the timber industry in the East Gippsland RFA and had to 'walk away from Country' in order to find work.

SCRM felt they were recognised in the timber industry, but only as 'workers', not as being instrumental traditionally and contemporarily in the management of Country – feeling that engagement has effectively ceased since they were workers in the industry. The impact of the bushfires to the wellbeing of SCRM and devastation to Country has really brought the past trauma and hurt of the historical inequalities of the RFA back to the surface. This is the greatest impact for SCRM and with lack of follow-up engagement this is exacerbated.

5.1.2.2. Engagement before, during and after fire and emergency

Traditional Owners reported a clear desire for greater engagement by land and fire management agencies (ie. DELWP, Parks Victoria) before, during

and after all fires and emergencies that impact Country. Engagement across the full spectrum of emergency management prevention, preparedness, response and recovery (PPRR) enables Traditional Owners to be partners in the development and implementation of plans, strategies and tactics at the strategic, operational and tactical tiers of fire management planning and operational delivery. The following Traditional Owners expressed concern regarding the need to enhance engagement before, during and after Major Events: DWMAC; DDAC; EMAC; GLaWAC; MACEG; TLaWC.

As an example, DWMAC voiced they do not feel they were adequately engaged in land and fire management prior to, during and after the 2019/20 bushfires. DWMAC indicated the map provided by the Panel of fire extent and severity in the North East RFA was the first DWMAC had seen. DWMAC community feels under substantial duress when there are major events as they feel they do not have a voice to understand, contribute to improvements and partner in fire and emergency management on Country. DWMAC advised they had requested a briefing from local land and fire staff, but there was no update, information or any feedback provided by BRV, DELWP, PV or other Departments. DWMAC were aware of a group in Gippsland they thought was run by BRV to assist in driving funding opportunities for Traditional Owners.

DWMAC expressed dismay that they weren't approached by BRV for Country burnt in North East RFA area. DWMAC indicated an apparent lack of consistency in how Traditional Owners were engaged in East Gippsland RFA area in comparison to North East RFA. DWMAC felt that agencies have a role and responsibility to engage well with Traditional Owners across the spectrum of emergency management.

BAC commented on significant rock-art sites that were 'wrapped' for protection during the Major Event, but they weren't made aware of this at the time. BAC would like to be engaged regarding the management of Aboriginal cultural heritage (section 5.2) before, during and after bushfires. BAC stated how it is Traditional Owners who have the knowledge of how sites should be managed before, during and after bushfires, so it is Traditional Owners that need to be engaged and involved in such decision-making.

All Traditional Owners engaged are looking for a true partnership with land and fire agencies for land, fire and emergency management on Country. Feeling like 'stakeholders' rather than 'rights-holders' or 'partners' was raised numerous times in Panel conversations. Traditional Owners want to be embedded in the operations of land and fire agencies as true partners. As an example, EMAC expressed how they want their community in roles in Incident Control

Centres, not only for fires but for all emergencies on Country. EMAC expressed how the role of Traditional Owners' is greater than cultural heritage alone, and includes all management activities, including fire and emergency, that happen on Country. EMAC advised how it is Traditional Owners who need to advise on who is best to be included for different activities and events, not land and fire agencies. They felt the door is often closed and that it needs to be 'opened'.

GLaWAC spoke about the need for land and fire agencies to have 'triggers' for engagement. GLaWAC expressed how the inclusion of Traditional Owners during fire-suppression operations is currently based on the 'relationship' with agency staff at a particular location, rather than a 'requirement' (to engage). GLaWACs experience with the Major Event was that if there was a good relationship with an Operations Officer or an Incident Controller, GLaWAC would be included. However, when there were IMT members not familiar with GLaWAC staff (common during Level 3 fires), the propensity for engagement and inclusion with GLaWAC was diminished. GLaWAC spoke of the need for Traditional Owners to be fully embedded within IMT structures, to have access to ACRIS, to be on Readiness Rosters and be involved in key decision-making at all levels. Triggers (linked to fire scale, severity, location, etc.) for this involvement was seen key.

GLaWACs' comments were echoed by FOVTOC, who stated in their submission that building relationships between Traditional Owner Nations and government/regional agency staff is vital to cultural competency. Without underestimating this importance, it is also critical to move beyond personal relationships to embed systems and processes to support Traditional Owner decision-making for fire response and management. FOVTOC argue for an approach to recovery that includes preparedness, emergency management and recovery as a continuum, as these stages often overlap or merge. FOVTOC stated this is especially relevant for Aboriginal communities or individuals where trauma and healing flows through all these aspects and must be considered together.

GLaWAC spoke of the desire for Traditional Owners to be informed, in real time, of all bushfires occurring on Country so that they can make informed decisions regarding if and how community should be further involved. If it is a small Level 1 fire, a courtesy call may be sufficient to indicate (for example) that a first attack bulldozer will be constructing a mineral earth break around the small (<5ha) fire, where Traditional Owners don't know of any sites of significance. Similarly, Traditional Owners also expressed the need to be informed, in real time, of any ignition on Country that has the potential to grow into a Level 2 or 3 bushfire.

Having Traditional Owners on a Readiness Roster and included as a matter of course in IMT conversation was seen by GLaWAC and other organisations (eg. GMTOAC) as imperative to enable this 'real-time' engagement. It was acknowledged how the ability to service being on a Readiness Roster (eg. 10.00am – 6.00pm during high fire risk days) would largely be dependent on the capacity and capability of the respective Traditional Owner groups. Nevertheless, over time Traditional Owners seek greater engagement and involvement in decision making; and a phone call to a contact person may suffice until such capacity and capability is developed.

Although there was limited MER consultation with LTAT, other Traditional Owners (including ACRWAG, GLaWAC, MACEG) explained how the lack of engagement before, during and after the Major Event impacted the Lake Tyers community and other Traditional Owner communities in far East Gippsland. Communication and information didn't seem to arrive at impacted communities until it was time to evacuate. Stories were told of Traditional Owners being evacuated in buses and the trauma of seeing their Country burning exacerbated by mental 'images of the stolen generation' (eg. feeling forced to leave Country through evacuation). This impact was compounded by the fact many community members were/are in industries relevant to RFAs (eg. conservation or timber) – seeing Country

burnt and livelihoods 'gone' is traumatic. Traditional Owners explained how early engagement (before and during the Major Event) by government agencies, including Local Government, is critical to ensure common understanding when an emergency occurs.

5.1.2.3. *Engagement disparity between recognised and non-recognised Traditional Owner groups*

Traditional Owners may be grouped into the following tiered categories based on recognition 'status' and organisational capacity and capability:

1. Groups legally recognised under the *Native Title Act 1993* (Cth) or *Traditional Owner Settlement Act 2010* (Vic) (eg. Recognition and Settlement Agreement).
2. Groups recognised under *Aboriginal Heritage Act 2006* (Vic) only (ie. Registered Aboriginal Party status).
3. Groups without any formal legal recognition under the *Native Title Act 1993* (Cth), *Traditional Owner Settlement Act 2010* (Vic) or *Aboriginal Heritage Act 2006* (Vic).

In conversation with Traditional Owners, particularly 'non-recognised' groups, it became increasingly obvious there was a disparity in the nature and extent of engagement between legally recognised groups and groups without legal recognition status. Many 'non-recognised' groups felt there was limited engagement on a range of Forest

management matters, including cultural heritage site management, cultural burning, fuel management (including planned burning), protected area management and fire suppression operations. Conversely, those with RAP and/or RSA status spoke of numerous examples of engagement before, during and after fire (although they also made many suggestions for improvement).

MACEG and NNNMAC, for example, felt that during the fires, agencies seemed to be talking to the 'wrong' people, and that engagement needed to be inclusive of everyone (not solely those groups with legal recognition). MACEG expressed the need to be able to express their views before, during and after bushfires, and NNNMAC felt that adequate engagement on matters affecting Country should be comparable regardless of recognition status.

5.1.2.4. Engagement approach by government and system of engagement

In talking with several Traditional Owner groups, the inconsistent approach to engagement across government agencies, across regions; and, the divide between DELWP policy and regional staff was pronounced. Furthermore, the limited capacity of many Traditional Owner groups (particularly groups without legal recognition) compounded the feeling of 'no-engagement' and impact resulting from the 2019/20 bushfire season.

Multiple government agencies have moral, ethical and legislative obligations to engage with Traditional Owners regarding Forest management and RFA operations, including: DELWP, Parks Victoria, CMAs, VicForests, CFA and Local government. The approach to engagement by each government agency and regions of the State government agency can vary. This engagement can also vary due to existing and past relationships with the respective Traditional Owner group; and, capacity and capability of the group to actually engage. Certain Traditional Owners (eg. DDAC) spoke of regular forums that DELWP staff within Hume Region facilitate, and how these are beneficial to understand aspects of the RFA and prepare for future fires. Similarly, Traditional Owners (eg. TLaWC) spoke of certain regional areas coordinating the coming together of multiple government agencies to streamline engagement with Traditional Owners.

WWWCHAC Country resides over multiple RFA Regions (ie. West; Central Highlands) and multiple DELWP Regions (ie. Loddon Mallee; Hume; Port Phillip). It is through this exposure and insight that WWWCHAC is in a unique position to identify differences and make suggestions for improvement. WWWCHAC indicated they have good relationships with Loddon Mallee Region as DELWP have had initiatives and staff, including cultural fire positions. Loddon

Mallee Region has Traditional Owners in key positions both within DELWP and within WWWCHAC, so things have been working well. In contrast, the Panel heard that DELWPs Port Phillip Region does not have like positions in place to promote engagement between organisations. As a result, WWWCHAC have experienced frustration and disappointment at the lack of engagement.

WWWCHAC explained how engagement across the three DELWP regions has been inconsistent; and how they instigated a meeting with Port Phillip and Hume Regions recently to “try to have them work better with us”. WWWCHAC felt that on-Country engagement and outcomes should not rely on local relationships – engagement should happen as a matter of course. WWWCHAC also explained how when there are opportunities to have a single-person connection with DELWP (and other agencies), it makes the relationship much easier (eg. Loddon Mallee Region has a Cultural Fire Officer and a Planned Burn Officer). WWWCHAC further described how unless there is adequate capacity within the Traditional Owner organisation it can make engagement problematic – the government agency may be wanting to engage but the Traditional Owner group cannot respond in a timely and effective manner. WWWCHAC would like to see a single point of contact for all DELWP matters connected to a single point of contact within WWWCHAC. This is consistent with the aspiration of

NNNMAC, where they suggested DEWLP appoints a Traditional Owner Engagement Officer for NNNMAC Country whose role it is to work closely with NNNMAC on all matters relating to Country across Forest and Park.

Similarly, SCRM and EMAC spoke of how their connection to land is diminished as they are required to engage with government agencies in ‘silos’ (eg. pro-conservation, pro-logging, park management, fuel management, etc.) rather than engaging in conversations that are holistic for Country. SCRM believe an opportunity has been missed over the years by engaging in silos and generally engaging only with Traditional Owners regarding known (registered) physical cultural heritage sites (section 5.1.2.6).

5.1.2.5. Engagement on Forest and Park management

Numerous Traditional Owner groups raised concerns regarding the impact of not being adequately engaged on the full breadth of issues concerning Country as it relates to Forest and Park management; and how this lack of engagement exacerbates the impact on Traditional Owner wellbeing during and following a Major Event. EMAC expressed how Forests (including Parks) should be guided by Country Plans and the Eastern Maar Biocultural Landscape Strategy (in-prep). BAC spoke of the importance of active engagement by DELWP and CFA for the ongoing care for Country – to be

able to walk side-by-side and manage Country together. BAC felt there is currently nowhere on-Country where this opportunity is facilitated, as there is not enough engagement and involvement from respective government departments. BAC felt that Parks Victoria and DELWP should be “knocking on our door daily to see how they can work with Traditional Owners”. BAC explained how this approach to engagement will not only heal Country but will aid in healing relationships with Indigenous and non-Indigenous peoples. BAC felt the Major Event should provide the impetus for major change to the way Traditional Owners are engaged. Traditional Owners felt there should be regular and routine engagement on all Forest (and Park) activities and operations, with Traditional Owners included as partners. JTABOONAC felt a lot of the current engagement, including the MER, was ‘tick-a-box’ and not genuine inclusion of Traditional Owners with effective care and management of Country at the forefront.

5.1.2.6. *Engagement regarding cultural heritage management*

Traditional Owners feel there is a lack of engagement by land and fire management agencies on activities that have a potential to impact cultural heritage sites (section 5.2). This concern was both in relation to fire-suppression activities (see section 5.1.2.2) and routine (or programmed) land and fire activities. This lack of engagement was particularly

pronounced for groups without legal recognition, as there are generally no formal mechanisms requiring engagement with such groups for routine land and fire activities. Non-recognised groups (eg. BAC, BFNCAC, DWNAC, NNNMAC) stressed the importance of an equal level of engagement on site management between them and legally recognised groups.

A common issue raised (eg. GMTOAC; NNNMAC) was the current concern over the Strategic Firebreak program, and how there has been very little engagement with Traditional Owners. Where there has been engagement, it has felt somewhat ‘token’ (eg. provided a map and that is it). NNNMAC spoke of the need for government agencies to follow up and actively engage in conversation and take concerns on board, rather than simply providing a map without follow-up. GMTOAC expressed their level of concern with the impact these breaks will likely have on-Country, and how greater inclusion in decision-making is required.

5.1.3. *Recommendations by Traditional Owners*

Traditional Owners put forward the following recommendations to improve *engagement processes*:

1. That fire (and other emergency) management Standard Operating Procedures be amended to ensure all Traditional Owners (including groups without legal recognition) have greater and earlier engagement and

involvement as partners (not simply stakeholders) in fire and emergency planning, preparation, readiness, response (including rehabilitation) and recovery operations on-Country. A tailored approach for each community is important, similar to the approach for Culturally and Linguistically Different (CALD) communities.

2. That a systematic review is undertaken by DELWP of fire management Standard Operating Procedures to clearly document 'triggers' for engagement of Traditional Owners to ensure standards and consistency in planning, preparation, readiness, response (including rehabilitation) and recovery operations. Engagement with Traditional Owners should be 'at-level' with relevant DELWP decision-makers (eg. Incident Controller, Operations Officer) depending on the nature of the engagement.
3. That local government Township Protection Plans include early conversations and agreed actions with all relevant Traditional Owners (rather than waiting for emergency operations to undertake works and engagement).
4. That all Traditional Owners (including groups without legal recognition) are notified of all bushfires on Country (real-time), to ensure awareness and the ability to provide input.
5. That systems and processes are put in place to ensure all Traditional Owner groups (including those without legal recognition) and Aboriginal Community Controlled Health Organisations (ACCHO) are included in information sharing during Major Events (eg. daily briefings, Emergency Management Team briefings, After Action Reviews, etc.).
6. That DELWP and other agencies ensure engagement with Traditional Owner groups without legal recognition is comparable to engagement with legally recognised groups.
7. That DELWP appoints a Traditional Owner Engagement Officer for each Traditional Owner group whose task it is to work closely with Traditional Owners and ensure adequate engagement on all matters relating to Country across Forest and Park.
8. DELWP (Corporate Policy) to work more closely with DELWP Regional staff to ensure there is consistency in relationships and outcomes with Traditional Owners across all DELWP Regions.
9. DELWP to improve consistency and capacity in engaging with Traditional Owners across different Regions, whilst ensuring effective and efficient systems and processes are in place to facilitate future workloads.
10. DELWP (and Parks Victoria) involve relevant Traditional Owners in the identification, recruitment and review process of government positions responsible for coordinating, facilitating and with delegated

responsibility for implementing the MER recommendations.

11. That DELWP (and Parks Victoria) engages more holistically with all Traditional Owners on all aspects of Forest management that relate to caring for and managing Country.
12. That all Traditional Owners are more actively engaged in decision-making and approvals for the Strategic Fire Break program.
13. That DEWLP and Parks Victoria engage regularly and routinely for the day-to-day management of cultural heritage sites, including protection measures for potential bushfires.
14. That all Traditional Owners are actively involved in cultural heritage site management decisions before, during and after fire-suppression operations, both in the field and in Incident Management Teams.
15. That DEWLP engages with all Traditional Owners in a more authentic and genuine manner to discuss Cultural Burning.



5.2. Aboriginal cultural heritage

5.2.1. Background

Under Victoria's Regional Forest Agreements (SOV & COA, 2020a , b, c, d, e), (the State of) Victoria:

- agrees to ensure the appropriate management and protection of Aboriginal heritage including the maintenance of Traditional Owner identified living natural and biocultural uses and values;
- agrees that the Forest Management System provides a framework for the protection of Aboriginal Heritage Values;
- will ensure that the Forest Management System provides for the management and protection of Traditional Owner-identified living natural and biocultural values and uses;
- will empower Traditional Owners to lead the application of Traditional Owner Knowledge in land-management practices and innovations, including tangible and intangible heritage and identity; and,
- will empower Traditional Owners to lead the development of Traditional Owner knowledge management systems including identification and monitoring of Matters of Traditional Owner Significance (MTOS).

Aboriginal cultural heritage refers to Aboriginal places, Aboriginal objects and Aboriginal ancestral remains (AHA, 2006). An Aboriginal place is an area in Victoria

or the coastal waters of Victoria that is of cultural heritage significance to Aboriginal people generally or a particular group or community of Aboriginal people of Victoria (AHA, 2006).

An Aboriginal object means an object in Victoria or the coastal waters of Victoria that relates to the Aboriginal occupation of any part of Australia, whether or not the object existed prior to the occupation of that part of Australia by people of non-Aboriginal descent; and is of cultural heritage significance to Aboriginal people generally or of a particular community or group of Aboriginal people in Victoria (AHA, 2006). An Aboriginal object also means an object, material or thing in Victoria or the coastal waters of Victoria that is removed or excavated from an Aboriginal place; and, is of cultural heritage significance to Aboriginal people generally or of a particular community or group of Aboriginal people in Victoria (AHA, 2006).

While the entire cultural landscape of Country is important to Traditional Owners, within it there are specific places that are special to Traditional Owners because of the stories, memories, experiences, history, ceremony, practices, resources and surviving material remains connected to those places (Parks Victoria, 2020). Both tangible (or material) and intangible (non-material) heritage exist. These are often treated as separate categories of heritage but they are deeply interconnected dimensions of

each and every Traditional Owner place (Parks Victoria 2020). Traditional Owner cultural values are also associated with specific places and features. Typically, the values of these kinds of places are documented in archaeological, geological and ecological terms (ie. scientific value) and less frequently in terms of the cultural values held by Traditional Owners (Parks Victoria, 2020). For Traditional Owners, cultural values are typically expressed as a mix of place and personal connections with culture; with creation and other stories; and, with being at, and experiencing places.

Aboriginal cultural heritage protection is provided for in Victoria by the *Aboriginal Heritage Act 2006*. The Act provides Traditional Owners with legislative ownership of all ancestral remains and secret or sacred objects in Victoria. It establishes a system of Registered Aboriginal Parties (RAPs) to enable legislative control and management of Aboriginal cultural heritage in their defined geographic regions. Where there is no RAP, legislative control and management of Aboriginal cultural heritage defaults to the Secretary to the Department of Premier and Cabinet, administered through First Peoples – State Relations (<https://www.firstpeoplesrelations.vic.gov.au/>). The Act also establishes the Victorian Aboriginal Heritage council, made up entirely of Traditional Owners.

During the Major Event of 2019/20, many ground-disturbing activities were required to contain and suppress the fires, including construction of new mineral earth containment lines and tracks, and widening of existing tracks. Such activities have the potential to harm Aboriginal cultural heritage, with values teams in established IMTs checking for registered and known Aboriginal cultural heritage to minimise harm. Bushfires can impact directly on the mental health and wellbeing of all communities. For Traditional Owners, Aboriginal cultural heritage, its protection, and maintenance can also be negatively impacted not only by bushfires but also by the emergency management responses and decisions made without Traditional Owner input.

Following bushfires, Traditional Owners and land managers are afforded the opportunity to survey the archaeological landscape in detail. Bare ground post-fire enables greater visibility and access for archaeological survey work and can be important to identify, record, document and understand Aboriginal occupation. Such understanding improves the ability to care for and manage Country well into the future. If Traditional Owners are not aware of the damage to Aboriginal cultural heritage and/or provided opportunities to discover new awareness as part of post-fire cultural healing, the trauma felt by Traditional Owners from bushfires can be increased.

5.2.2. Issues raised during consultation

Most Traditional Owner groups raised concerns over impacts to Aboriginal cultural heritage and delays in support, funding, facilitation and management of post-fire analysis and survey to:

1. assess harm to registered and other known Aboriginal cultural heritage; and,
2. discover new Aboriginal cultural heritage.

Furthermore, Traditional Owners identified a marked reduction in the amount of post-fire cultural heritage analysis and survey that occurred following the Major Event in comparison to previous large fires. Traditional Owners were informed of the desktop analysis of Aboriginal cultural heritage the Panel were undertaking and expressed interest in being provided a copy of the outcomes relevant to Country.

As an example, BFNCAC and DWNAC stated that Traditional Owners should not only be permitted to access Country (section 5.4) post-fire, but should be supported to undertake survey and analysis to determine the impacts to registered and other known cultural heritage; and, to undertake cultural heritage surveys of areas that have yet to be surveyed. This did not occur on BFNCAC and DWNAC Country to their knowledge. BFNCAC and DWNAC felt that as a matter of course, a project control group and team should have been set up to oversee such analysis, like previous years (eg. following the 2003 fires).

BFNCAC and DWNAC were aware that other groups had received funding (apparently through BRV), but they were not sure how to access such funding and felt excluded by these processes.

During consultation, GLaWAC tabled their submission to the Royal Commission into Natural National Disaster Arrangements (COA, 2020), indicating the impacts to GLaWAC from the Major Event had largely been documented in their Royal Commission submission. In this submission GLaWAC spoke of their experience during the Major Event, and how some areas of activity by emergency services under the *Emergency Management Act 2013* (Vic) resulted in rushed actions that caused damage to Aboriginal cultural heritage sites. GLaWAC is of the view that this was because recommendations (ie. Freslov *et al*, 2004) previously made for improving management of Aboriginal cultural heritage during emergency bushfire response have not been implemented. According to GLaWAC, this report provided a framework for management of Aboriginal cultural heritage in line with the following key principle: 'fire prevention planning and preparedness planning should take place in collaboration, and cooperation with Indigenous stakeholders to facilitate the protection of Indigenous cultural values'. GLaWAC (and other Traditional Owner groups including NNNMAC, BAC, TLaWC, DWNAC) were of the view that the post-fire Aboriginal cultural heritage harm

assessment and survey following the 2003 bushfires (refer Freslov *et al*, 2004) set the benchmark for how post-fire assessments should occur for all bushfires. GLaWAC and NNNMAC felt that since the DELWP, PV & AAV-commissioned work by Freslov *et al* (2004), there has been a steady and consistent reduction in the amount of survey work conducted post-fire in the successive major fires (ie. 2006/7, 2009, 2013, 2018/19), with the Major Event of 2019/20 the most disappointing as it caused the most impact and had the least survey work (relatively). NNNMAC felt things seemed to be getting worse, rather than improving.

DDAC expressed disappointment at how there was no rapid response to post-fire archaeological survey, and that the post-fire funding they received did not cover cultural heritage. In contrast, NNNMAC spoke positively of the 'DELWP Biodiversity (Eye on Country)' funding they received (section 5.3).

DWM, NNNMAC, EMAC and GLaWAC all raised the importance and impact to cultural heritage places that may not be tangible, and/or not necessarily recorded on ACHRIS (ie. known by Traditional Owners but not on government database). Such intangible heritage includes places, memories, experiences, history, ceremony, practices, resources, stories, etc. Other cultural heritage impact by the Major Event that featured prominently in these discussions were

totemic species (of flora and fauna). Traditional Owners advised how there haven't been opportunities provided for to reconnect with Country to assess and understand impacts to cultural totems.

Traditional Owners also possess knowledge of cultural heritage (both tangible and intangible) that is not recorded on ACHRIS. The ability to return to Country to assess impacts to this cultural heritage has not been provided. EMAC spoke of their Biocultural Landscape Strategy (in-prep) and how impacts to EMAC cultural heritage is inextricably linked to the values and objectives in the Biocultural Landscape Strategy.

TLaWC highlighted the disparity in inclusion between Incident Control Centres (ICC). TLaWC commented on how they were included in conversations, planning and operational decision-making with the Mansfield ICC, but found it difficult to engage the Ovens ICC. TLaWC (and other Traditional Owners) want systems and processes that ensure inclusion of Traditional Owners in all ICCs as a matter of course, rather than it being reliant on personal relationships with an individual on a particular shift. This approach would ensure Traditional Owner input, knowledge and advice is embedded in planning and operational decisions, aiding protection of Aboriginal cultural heritage.

FOVTO advised that a systems approach is needed that defers to the relevant Traditional Owner representatives and is clearly written into established processes (training, recovery manuals, etc.) and with good internal awareness of responsibilities. WWCHAC advised that they would like a system that enables Traditional Owners to go out on Country and manage cultural sites:

1. before any fire starts (ie. routine cultural heritage management with land managers);
2. during bushfire response (ie. Traditional Owners involved in decisions during fire suppression operations, both on-ground and in IMTs); and,
3. post-fire as a matter of course (ie. to undertake post-fire checking of harm and to survey for potential new sites).

5.2.3. Recommendations by Traditional Owners

Traditional Owners put forward the following recommendations to improve *Aboriginal cultural heritage*:

1. That DELWP/PV partner with all Traditional Owners (not only legally recognised groups), on a routine and regular basis for the day-to-day planning and management of cultural sites, including protection measures for potential bushfires.
2. That DELWP amend its Standard Operating Procedures to ensure Traditional Owners are actively involved as partners in management of cultural assets and values before, during and after fire-suppression operations, so that harm is minimised. This should not rely on relationships and be built into standard operating procedures.
3. That government actively engages all Traditional Owners (not only legally recognised groups) for all activities that may harm Aboriginal heritage, both tangible and intangible.
4. That all Traditional Owners (including those not legally recognised) are actively included as partners in Incident Management Teams to protect Aboriginal cultural heritage.
5. That DELWP amends its Standard Operating Procedures so that all major fires include post-fire cultural heritage (both tangible and non-tangible) harm assessment and survey work in partnership with all Traditional Owners (including groups without legal recognition), so that Traditional Owners are involved on-Country undertaking this work.
6. That previous recommendations made for improving management of Aboriginal cultural heritage during emergency bushfire response be implemented (as per Freslov, 2004).
7. That the Panel provides the outcomes of an assessment of the impacts of the Major Event on physical cultural heritage sites, including disturbance caused by fire suppression operations, to all Traditional Owners.



5.3. Economic impacts and funding

5.3.1. Background

Traditional Owners in Victoria may be grouped into the following tiered categories based on recognition 'status':

1. Groups with legal recognition under the *Native Title Act 1993* (Cth) or *Traditional Owner Settlement Act 2010* (Vic) (eg. Recognition and Settlement Agreement).
2. Groups legally recognised under *Aboriginal Heritage Act 2006* (Vic) (ie. Registered Aboriginal Party status).
3. Groups without any formal legal recognition under the *Native Title Act 1993* (Cth), *Traditional Owner Settlement Act 2010* (Vic) and/or *Aboriginal Heritage Act 2006* (Vic).

Anecdotally, consultation during the MER suggests this recognition status correlates in the same tiered approach to the amount of government funding and ensuing organisational capacity and capability (or 'economic status').

Traditional Owner groups with agreements arising from native title determinations and Traditional Owner Settlement Act outcomes (ie. BGLC, DDWCAC, GLaWAC, GMTOAC, TLaWAC, YYNAC) appear to have (relatively) high amounts of funding, organisational capacity and capability (eg. staff >30), and community members living and working on Country. Traditional Owner groups that are RAPs (eg. WTOAC) without formal recognition under *Native*

Title Act or *Traditional Owner Settlement Act* appear to have limited to no (government) funding, far less organisation capacity and capability (eg. staff <5), and fewer community members living and working on-Country.

Traditional Owner groups (eg. NNNMAC, DWMAC) without legal recognition status have no government funding, limited to no funding streams, very small, if any, paid staff, and few or no community members living on-Country.

5.3.2. Issues and opportunities raised during consultation

The economic impacts of the Major Event to Traditional Owner groups and individuals may be proportionate to the economic status of Traditional Owner groups, by having reduced economic resilience. Similarly, the economic impacts to Traditional Owners may also be directly linked to the amount of connection groups and individuals have with Country. For example, community members that rely on the timber industry and/or tourism industry may be directly impacted through the Major Event. Conversely, the adversity of major emergencies and events can provide economic opportunities not otherwise afforded (eg. grant opportunities).

In conversation with Traditional Owners, direct economic impacts of the Major Event did not feature prominently. Rather, Traditional Owners spoke more about historical and current inequalities

with broader society and the current economic disparity between recognised and non-recognised groups. As an example, BFNCAC and DWNAC (both without legal recognition status) spoke of feeling repressed and future generations being repressed through historical inequalities and lack of formal recognition, with the Major Event worsening the existing economic inequalities. BAC (non-recognised) feel that community members are still impacted by the fires, with more Aboriginal faces required on the ground to work with community. It is understood there are a lot of people in the community that are just surviving financially and don't feel comfortable going to support services.

Traditional Owners spoke more of the economic opportunities the Major Event brought, many of which have yet to be realised. DDAC highlighted opportunities for Traditional Owners to be actively involved in hazardous tree assessments, hazardous tree treatment operations, emergency soil stabilisation works and post-fire recovery works. DDAC explained how contracting Traditional Owners to undertake these works would support Aboriginal cultural heritage harm minimisation (section 5.2) during suppression operations.

Many Traditional Owner groups, including DDAC, expressed disappointment at how there was no rapid response to post-fire archaeological survey (see section 5.2),

and that the post-fire funding they received did not cover cultural heritage. Several Traditional Owner groups felt that funding for post-fire harm assessment and archaeological survey should occur as a matter of course for all major bushfires, and should be facilitated and equitably distributed to all Traditional Owner groups, both legally recognised and non-recognised. Where there was limited capacity and/or capability within Traditional Owner groups to project-manage and deliver the harm assessment and/or survey works, Traditional Owners suggested that support should be provided by land managers for project management and delivery.

In contrast to groups who did not receive funding or adequate funding, NNNMAC spoke positively of the 'DELWP Biodiversity (Eyes on Country)' funding they received, explaining how the funding enabled NNNMAC to go out on-Country almost immediately and collect knowledge and information to be retained in their database, which has really enhanced their capacity. NNNMAC were able to check impacts to their known sites and record new information. NNNMAC are grateful that they can now use this information to inform land management and management of Country into the future. Having their own database to ensure data sovereignty and that the Traditional Owner knowledge remains within their power was particularly important to NNNMAC.

NNNMAC advised that they can now share relevant aspects of that knowledge and to pass it on to other generations. The 'hands-off' approach from government with the funding was beneficial for NNNMAC, allowing the group to manage their own process of gathering data and recording knowledge. NNNMAC indicated it made them feel 'self-determined'. The fires exposed many new sites for NNNMAC and the funding allowed them to have their own view on Country, rather than being directed; an approach that is not always offered in funding streams. According to NNNMAC, the fact they were part of a funding process that wasn't 'department-driven' provided healing opportunities for their community.

Several Traditional Owner groups indicated how initiative funding from the Major Event could have been put towards capital projects that would bring enduring economic benefits to community. BFNCAC, DWNAC, DWMAC and GLaWAC all spoke of the need for development of a purpose built, multi-purpose environmental, cultural, burning and water educational precinct / centre of excellence on-Country. For BFNCAC this was at Cape Conran Coastal Park; for DWMAC and DWMAC it was in the Victorian Alps; and, for GLaWAC it was at the Forestech facility at Kalimna West.

Similarly, SCRM spoke of the demise in recent years of designated Aboriginal positions (and positions in general) from

critical locations for Forest management and related fields with government, including DELWP, Parks Victoria, VicForests, Fisheries Victoria and Catchment Management Authorities. SCRM saw an opportunity through initiative funding to reinstate these positions at priority locations in East Gippsland, including Mallacoota, Cann River and Orbost.

Almost all Traditional Owner groups without legal recognition status argued for a level of 'base' funding to be provided by government, enabling these groups to function as organisations and contribute to government processes, including RFA conversations, Major Event Review, Joint Fuel Management Planning, Park Management planning, Planned Burning, Forest Management Planning, Timber Release Plans, cultural heritage management, legislative form, etc ...

Furthermore, legally recognised groups, including GLaWAC, argued that additional funding is needed to support a position dedicated to these tasks. Although GLaWAC receives funding through their legal recognition status, they explained how most of the funding is 'tied' to the delivery of specific programs, and there is little discretion (and capacity) to divert the attention of staff to contribute to important RFA matters. GLaWAC advised it is not only difficult for groups without legal recognition to engage well on RFA matters without a proper funding model that enables focus,

but it is also difficult for recognised Traditional Owner groups. GLaWAC felt that having a dedicated person who was able to navigate the various reviews and contribute meaningfully would be beneficial. GLaWAC advised it should be long-term, not a 12-month initiative (for example). A 5-year agreement would be perfect, quoting the 'Aboriginal Water Officer' positions as a 'great example' (DELWP, 2021a).

5.3.3. Recommendations by Traditional Owners

1. That governments fast-track recognition for remaining Traditional Owner groups.
2. That DELWP include Traditional Owners as contractors in hazardous tree assessments, hazardous tree treatment operations, emergency soil stabilisation works and post-fire recovery works.
3. That funding is provided immediately post-fire to enable harm assessment and archaeological survey work to occur in partnership with all relevant Traditional Owners.
4. That government views the 'DEWLP Biodiversity Eyes on Country' grants as a positive example for funding models.
5. That the MER Panel recommends to government to provide funding for multipurpose Environmental, Cultural & Water Educational Planetarium Precincts in National Parks and other crown lands. These precincts are vital to bringing our First Nations Peoples back On Country through housing and job strategies through native title and Treaty outcomes. This will enhance the preservation, protection and showcasing of Regional Forests and the cultural heritage attached to each First Nation.
6. That a burning and country management centre of excellence be established in East Gippsland at Forestec to drive future improvements and research.
7. That funding is provided by government for a multi-purpose environmental, cultural and water education centre on-Country in North East Victoria.
8. That resources and support are provided by government to ensure Traditional Owners have more opportunities through the RFAs to live and work on-Country, including more positions with, DELWP, Parks, CMA, VicForests, Fisheries, etc...
9. That a level of base-funding is provided to Traditional Owner groups for 'Aboriginal Forest Officer' positions, like the 'Aboriginal Water Officer' positions, to enable dedicated input by Traditional Owners to government for all Forest matters.
10. That government increases Traditional Owner involvement in management of Country through the employment of Traditional Owners in Forest Officer / Ranger positions to properly manage Country.
11. Strengthen planned opportunities for Traditional Owner use of resources

and access to areas for commercial opportunities, such as seed collection, tourism, research and partnering on major works.

5.4. Access to Country

5.4.1. Background

Traditional Owner self-determination is actively supported by the Victorian Government, with agreements that recognise Traditional Owner rights and interests continuing to be pursued. The Victorian Government Aboriginal Affairs Framework (Aboriginal Victoria, 2018) provides the strategic policy framework for Government to undertake systemic, structural and institutional change to enable self-determination. This recognises it is the role of Government to change and remove systemic and institutional barriers (Parks Victoria, 2020). The Framework also recognises the role of Government to empower Aboriginal Victorians to drive and own programs that meet their community's needs while increasing the safety, relevance and accessibility of government systems (Parks Victoria, 2020). Specific Traditional Owner clauses in the RFAs promote this role and direction of the Victorian Government as it relates to Forest management.

Goal 18 'Aboriginal land, water and cultural rights are realised' of Aboriginal Victoria (2018) seeks to increase the recognition and enjoyment of Aboriginal land, water and cultural heritage rights. It is recognised that Aboriginal Victorians hold distinct cultural rights, including the right to maintain their spiritual, material and economic relationship with their traditional land and waters and other



resources with which they have a connection under traditional laws and customs (Aboriginal Victoria, 2018; VEO & HRC, 2006).

5.4.2. Issues raised during consultation

All Traditional Owners engaged during the MER asserted their rights for greater access to Country before, during and after bushfires, including the Major Event. The nature of access sought was typically related to their recognition status. 'Access' was both in form of presence on Country; and, access to cultural resources (eg. water, timber, flora, fauna, stone material, etc ...).

Traditional Owner groups without legal recognition status (ie. BAC, BFNCAC, BLaSC, DWMAC, DWNAC, DDAC, JTABOONA, NNNMAC, SCRM) were principally concerned with displaced community members being able to return to live and work on-Country. As an example, JTABOONA spoke of how in 1830 there were over 2000 Jaithmathang people living on-'Bimble' (Country); and, by 1850 there were only five living descendants remaining on-Country. Shortly after, those five individuals were removed from Country. As a result, JTABOONA have lost connection with Country, but Country has recognised its people and JTABOONA spoke of being honoured by this. JTABOONA saw the fires burning Country from a distance and want the ability for greater access to Country. JTABOONA explained how before they can return to Country to heal

and to heal Country, firstly they must return to 'cleanse' from the past.

JTABOONA & DWMAC also expressed concern at the requirement to pay a permit to access Country (ie. Falls Creek Alpine Resort). They both advised this felt offensive as they should have free access to Country.

BAC explained how following bushfires, Traditional Owner instincts are to help Country recover; and, without access to Country, recovery and healing becomes problematic. BAC feel there is nowhere on-Country where they feel they can return to Country and actively manage recovery from the Major Event. BAC feel they are not supported and empowered by government to go back on Country and care for Country. BAC has a desire to walk side-by-side with government in the management of Country, and this starts with provision of access. BAC has a desire to use the impacts of the Major Event to bring the 'whole' community together as a way of managing Country together.

DDAC spoke of the importance of Traditional Owners having access to Country, to see impacts of bushfires, 'real-time' (ie. during prolonged bushfire response) and/or immediately post-fire. DDAC explained how this access, by DELWP, should be built into systems and processes as a matter of course, rather than Traditional Owners needing to request access multiple times and/or it being reliant on 'relationships' with

individual DELWP staff members. DDAC were aware that operational fire staff may facilitate access for Traditional Owners during response operations, as occurs for media (particularly to 'quiet' areas of fireline), and post-fire during prolonged emergency stabilisation and recovery operations. Fire-affected areas may be closed to the public for months (or years), but DELWP could facilitate early and safe access for Traditional Owners to view impacts to Country. DDAC explained how if training is required to enable such access, this should also be incorporated into such considerations.

DDAC also spoke of their experience post-fire with DELWP facilitating a plane flight over burnt Country. DDAC felt this opportunity was fantastic and particularly beneficial for Elders and women. DDAC felt that 'fly-overs' should occur more frequently under partnership arrangements between DELWP and all Traditional Owner. Fly-overs can provide a totally different perspective for Traditional Owners and enable real-time awareness, particularly where accessibility on-ground is limited.

DWNAC, BFNAC and DWMAC (as examples) all spoke of the need to have access to ongoing physical presence on-Country, and how the impacts of the Major Event on community have been greater as community are not living and working on-Country. Having facilitated access to live and work on-Country through purpose-built, multi-

purpose environmental, cultural, burning and water educational precinct / centres of excellence was seen as the best way to stimulate community returning to Country.

Traditional Owner group with legal recognition status were not as concerned with returning community to Country (as those without legal recognition) as they appeared to have provision (through RAP status, Joint Management, etc.) for people to live and work on-Country. Similarly, there appeared to be a critical mass of community members living on-Country. Nevertheless, these groups spoke of the need for greater access to Country before, during and after fires. To be included, as partners, in all aspects of management of Country, including land and fire management planning and operational implementation. Many Traditional Owners felt they had no greater access rights than the public.



5.4.3. Recommendations by Traditional Owners

1. That Traditional Owner groups without legal recognition, many of which who are displaced from Country, are supported to access and return to Country for cleansing and healing.
2. That Traditional Owners have free and unencumbered access to Country (including Victoria's Alpine Resorts).
3. That DELWP amend its Standard Operating Procedures so that Traditional Owners are provided with opportunities to access fire-affected areas of Country 'real time', to see areas and impact to Country.
4. Ensure Aboriginal people can participate in works on-Country as soon as possible following future major bushfires (ie. when safe and culturally appropriate).
5. That Traditional Owners have cultural access to resources, without the need for permits; or, where this can't be avoided, access is supported / facilitated.
6. 'Fly-overs' before, during and after bushfire are a key way for Traditional Owners to see Country; and, should be facilitated by DEWLP following each major bushfire so Traditional Owners can see impacts to Country.

5.5. Healing Country and Culture

5.5.1. Background

For Victorian Traditional Owners, 'healing' is a holistic process that addresses physical, mental, emotional, and spiritual needs, and involves connections to culture, family and Country (Healing Foundation, 2021). Healing, culture, and the ability to practice culture on-Country, are inextricably linked (AIHIN, 2021). Healing works best when solutions are culturally strong, developed and driven at the local level and led by Traditional Owners (Healing Foundation, 2021). Holistic healing is recognised by Aboriginal people as a meaningful way to respond to trauma, intergenerational trauma, and restore wellbeing at a community, family and individual level (McKendrick *et al*, 2013 Victorian Aboriginal Communities, 2019;).

The vision, for Victorian Traditional Owners, as stated in the Victorian Traditional Owner Cultural Landscape Strategy (Victorian Traditional Owners, 2021) is: "we have the enabling conditions to heal country and culture through the application of our knowledge and practice in the contemporary expression of living biocultural landscapes".

5.5.2. Issues and opportunities raised during consultation

In the many conversations with Traditional Owners concerning the MER,

all described the knowledge and practices they would like to express on Country, with RFAs providing the enabling conditions and opportunities to contribute to healing Country and culture. Many Traditional Owners felt the Major Event caused further trauma through disconnection to culture, family and Country. Many of the issues heard by the MER Panel refer to Traditional Owner frustration of the inability to adequately heal from historical trauma, with the Major Event compounding this trauma. As approaches to healing are unique and linked to people and culture, the responses were also unique. For example, JTABOONAC spoke of the need to 'cleanse' Country before healing can occur.

Traditional Owners spoke of the following opportunities for healing Country and culture:

- Elders and government representatives 'sitting down' to look at opportunities for getting people on-Country (ACRWAG);
- actively engaging with Traditional Owners and other Aboriginal people in the management of Country before, during and after bushfire – thereby minimising impact of Major Events (ACRWAG, BAC) (section 5.1);
- facilitating and providing access to Country soon after bushfire so that Traditional Owners can develop knowledge of harm and culture, heal themselves and healing Country (ACRWAG, DDAC, GLaWAC) (section 5.4);
- handing back of Traditional Owners' land, water and cultural and natural resources including responsibilities to care for and heal Country (DWMAC);
- for Traditional Owners to be partners in land and water management, with Traditional Owner skills and knowledge recognised and respected;
- rapid formal recognition of Traditional Owner groups without legal recognition under the *Native Title Act 1993* (Cth), *Traditional Owner Settlement Act 2010* (Vic) or *Aboriginal Heritage Act 2006* (Vic);
- to allow Traditional Owners to heal Country and accordingly achieve their rights and obligations to care for Country by reinvigorating cultural fire through Traditional Owner-led practices across all kinds of land tenure and Country (section 5.7) (GLaWAC);
- to improve the management of state Forest reserves and private land through collaborative management to build resilience and heal Country (section 5.8) (GLaWAC);
- to promote Forest gardening and other biocultural approaches to management of Country that enable Traditional Owners to practise cultural fire (section 5.7), cultural (timber) thinning (section 5.8) and food and fibrous plant harvest and revegetation (section 5.4) (DDWCAC)

5.5.3. Recommendations by Traditional Owners

1. That Traditional Owners manage Forests directly and are decision-makers in fire planning and management.
2. To ensure implementation of the Cultural Landscapes Strategy (Victorian Traditional Owners, 2021) as a principal means of bridging RFAs with the application of Traditional Knowledge and practice in healing and managing Country.
3. To provide adequate resourcing for resilient Nations and Traditional Owners to lead the State and Commonwealth Governments to realise the intent of the RFAs and identify remedial actions for Forest management.
4. To adopt an approach to bushfire recovery that includes preparedness, emergency management and recovery as a continuum, as these stages often overlap or merge, and trauma and healing flows through all aspects.
5. That the Victorian Government ensures Traditional Owners are empowered to have an active role in the management Forest on Public Land on Country.

5.6. Implementation of Traditional Owner clauses in 'modernised' RFAs

5.6.1. Background

All five RFAs were most recently updated ('modernised') and agreed to by the Australian and Victorian Governments in March 2020. They have all been extended until 30 June 2030.

Significantly, the modernised RFAs (SOV & COA, 2020a, b, c, d, e) have specific commitments by the Victorian Government to work together with Traditional Owners to protect Country (DELWP, 2021b), including:

- ensuring Traditional Owners are empowered to have an active role in the management of Forests on Public Land on Country.
- ensuring the involvement of Traditional Owners in decision-making.
- supporting the development and implementation of a Traditional Owner Cultural Landscapes Strategy (Victorian Traditional Owners, 2021).
- actively seeking to implement relevant Traditional Owner Country Plans, or equivalent, associated strategies and agreements when making decisions regarding the management of Forests.
- actively seeking to incorporate Traditional Owner Knowledge when making decisions regarding the management of Forests.
- empowering Traditional Owners to:

- develop a sustainable funding model to partner in Forest Management
- identify opportunities to partner in land, water, fire and environmental management;
- facilitate, where possible, the use of Country for traditional cultural practices;
- lead the development of Traditional Owner knowledge management systems;
- build awareness and appreciation of Traditional Owner cultures; and,
- identify economic and employment opportunities from Forests.
- acknowledging that the development and maintenance of Traditional Owner knowledge management systems will need to be adequately resourced to meaningfully inform Forest Management and 5-yearly Reviews.
- recognising the right for Traditional Owners to practice and revitalise their cultural traditions and customs, including the right to maintain, protect and develop their cultural traditions and customs, and data sovereignty.

Of relevance to Traditional Owners, the modernised RFAs also seek to:

- enhance bushfire risk management;
- integrate climate change adaptation into forest management;

- expand forest industries to drive jobs and economic benefits to rural communities;
- provide enhanced opportunities for tourism experiences; and,
- bolster protections for Victoria's unique forest biodiversity and threatened species. (DJPR, 2021).

5.6.2. Issues raised during consultation

Traditional Owner knowledge of RFAs, their awareness, understanding, the role and operation varied. Some Traditional Owner groups (eg. TLaWC) had been actively engaged and involved in development of the relevant Traditional Owner clauses in the modernised RFAs. Other Traditional Owner groups had very limited or no knowledge of RFAs and could not recount any engagement on the development of the modernised RFA. As an example, NNNMAC indicated there had been no engagement by local DELWP staff regarding the RFA in recent years. According to NNNMAC, apart from possibly a letter from DELWP, there had been no direct engagement on RFA modernisation or RFA implementation. NNNMAC advised that in order to be able to effectively engage with the MER Panel on the 'impacts' of the Major Event, they first needed to be engaged on the 'operation' of the RFA, which had not occurred. NNNMAC advised that DELWP local staff had not engaged with them at all about the RFA, let alone the impacts of the Major Event. NNNMAC advised they would welcome the

opportunity for routine and ongoing engagement on the RFA.

Once made aware by the Panel, most Traditional Owners acknowledged the recent improvements to the RFAs to partner with Traditional Owners for decision-making, management, and evaluation, but noted the delay in operationalising these improvements. Traditional Owners (eg. DDAC, NNNMAC) recounted some engagement during the modernisation of the RFA document but highlighted the limited-to-no engagement in the implementation of the RFA clauses that relate to Traditional Owners. This was common in some of the conversations – Traditional Owners feeling that government engages on the ‘development’ of the document or policy, and then Traditional Owners see little-to-no engagement from Regional staff in the implementation of the document. Traditional Owners spoke of a real ‘disconnect’ between engagement on ‘initiatives’ (eg. RFA modernisation) and Regional implementation. Traditional Owners advised how they want to see on-Country implementation, but this is lagging behind RFA modernisation.

GMTOAC did speak positively of recent Regional engagement with DELWP / Parks Victoria staff regarding Traditional Owner requirements for Country, but did acknowledge there is still a long way to go to have many of the clauses in the modernised RFAs realised. GMTOAC advised of a recent dedicated

position that was working in Parks Victoria helping to coordinate implementation of the *Ngootyoong Gunditj Ngootyoong Mara South West Management Plan* (Parks Victoria, 2015). GMTOAC mentioned that this person had recently left Parks Victoria and so this connection had been lost.

NNNMAC highlighted the existence of the *National Indigenous Forestry Strategy* (DAWE 2005), explaining that RFA implementation at a State level should be in alignment and coordinated with implementation of Actions in this National strategy. NNNMAC advised that the *National Indigenous Forestry Strategy* fits perfectly with RFA implementation, as it seeks to derive economic benefits (see Section 5.3) for Traditional Owners, including non-wood products, bush foods, medicine, tourism, conservation, sustainable forestry job opportunities, joint forestry initiatives, etc. Greater partnerships for RFA implementation between the State and Commonwealth was seen as important as there are different funding streams.

Ongoing, genuine engagement by relevant DELWP / Parks Victoria staff on RFA implementation, including development of Statewide and Traditional Owner specific implementation plans, was seen as a priority by most Traditional Owners to ensure the intent of the new Traditional Owner clauses is fully realised.

5.6.3. Recommendations by Traditional Owners

1. That DELWP develops, in partnership with all Traditional Owners and Parks Victoria, a 'Statewide Traditional Owner RFA Implementation Plan' to ensure all relevant clauses in the RFAs are fully implemented. The implementation plan must adopt principles of continuous improvement, delegate and assign responsibilities, and include assessment, review, and dispute-resolution processes.
2. That DELWP, at a Regional level, in partnership with each Traditional Owner group and Parks Victoria, develops individual RFA 'Implementation Plans' for each Traditional Owner group, and regularly and routinely engages with Traditional Owners to:
 - i) ensure oversight of the implementation of the relevant (Traditional Owner) clauses in the RFA, and,
 - ii) monitor implementation of the government-accepted MER recommendations.
3. That there be a statewide 'Regional Forests gathering' of all First Nations Traditional Owners to discuss ongoing issues that arise from the RFA MER and oversee RFA implementation.
4. The DELWP works in partnership with Traditional Owners and the Commonwealth to ensure RFA implementation is consistent with the Actions identified in the *National Indigenous Forestry Strategy*.

5.7. Cultural burning

5.7.1. Background

Victorian Traditional Owners have strong aspirations to ensure cultural use of fire is re-introduced, adapted and applied wherever possible to allow for healing and caring for Country (Victorian Traditional Owners, 2020). The *Victorian Traditional Owner Cultural Fire Strategy* (Victorian Traditional Owners, 2020) seeks to reinvigorate cultural fire through Traditional Owner-led practices across all types of Country and land tenure; enabling Traditional Owners to heal Country and fulfil their rights and obligations to care for Country.

Victorian Traditional Owners have a vision:

- for future generations of Traditional Owners to grow up observing their Elders leading the use of the right fire for Country;
- that they will be trusted to know the special reasons why fire is used and how it brings health to the land and people; and,
- for their children and grandchildren to see culturally valuable plants and animals return to Country and know their stories (Victorian Traditional Owners, 2020).

The recent development of the *Victorian Traditional Owner Cultural Fire Strategy* (Victorian Traditional Owners, 2020) was funded by DELWP to support Traditional Owner rights and interests in

reintroducing cultural fire to the landscape. Facilitated by the FOVTOCs, the project was led by Victorian Traditional Owner knowledge-holders. Developed by Traditional Owners for Traditional Owners, this document serves to provide strategic direction for cultural burning as it relates to RFAs.

All RFAs have a specific clause that states:

- “Victoria will empower Traditional Owners to facilitate, where possible, the use of Country for traditional cultural practices, including, but not limited to, cultural burning and healing by Traditional Owners”.

5.7.2. Issues raised during consultation

Almost all Traditional Owners engaged during the MER process raised concerns regarding traditional cultural burning, and how a partnership approach is needed to help reinstate cultural burning regimes whilst not compromising on Victorian Government obligations for fire management.

As an example, TLaWC felt strongly about a holistic approach to the management of fire, including year-round management of Country that is properly resourced. In their submission, TLaWC explain the identified pathway towards cultural fire management. This pathway includes building a team and resources for cultural fire application, as well as partnering with the State on planned burn activities and response. TLaWC

have a key objective to expand the application of their cultural fire practices into an ongoing program that has the co-benefit of providing employment to Taungurung people as knowledge and practices associated with cultural fire are applied. TLaWC have given considerable thought and planning to development of the Taungurung Cultural Fire Program that includes: knowledge systems, fire crews, access to Country for fire management, and TLaWC leading fire management planning and implementation on-Country.

Other recognised Traditional Owner groups (eg. DDWCAC, GLaWAC) have on-Country Rangers through the Recognition and Settlement Agreements who participate in burning activities in collaboration with DELWP and Parks Victoria. Nevertheless, these groups are concerned about the impact current fire has on-Country, both planned fire and bushfire, and argue for greater responsibility and decision-making in fire planning and management. As an example, DDWCAC seek to manage forests directly and be the decision-makers in fire planning and management.

Several Traditional Owner groups (eg. ACRWAG) argued that ‘the current system is broken’; and, the severity of the 2019/20 bushfires may not have happened if traditional burning regimes were reinstated. Traditional Owners argue that holistic approaches to cultural

burning by Traditional Owners achieves both healthy Country outcomes and will deliver on Victoria's obligations for managing risk to Victorian communities from bushfire. It was felt the MER provides an opportunity to change the current regimes and embed a cultural landscape approach through implementation of the Cultural Landscapes Strategy (Victorian Traditional Owners, 2021) and Cultural Fire Strategy (Victorian Traditional Owners, 2020). Traditional Owners seek to be managing fire directly, with their own crews and equipment. It was acknowledged how this may require legislative amendment (EMAC).

EMAC argued strongly for cultural burning practices to be linked to clearly defined cultural objectives, and how Traditional Owner organisations are progressively developing Country Plans that should drive cultural burning activities. Each Traditional Owner group will have different cultural burning objectives, linked to culture, lore, stories, totems, etc. EMAC spoke of the development of their Biocultural Landscapes Strategy and how it will include specific fire management outcomes sought. EMAC's new Country Plan will be underpinned by this Biocultural Landscapes Strategy. EMAC have gone to the extent of declining to undertake any further burning on-Country until they have determined clear cultural objectives and basis for burning (through the Biocultural Landscapes Strategy).

5.7.3. Recommendations by Traditional Owners

1. That DELWP works closely with all Traditional Owners to reintroduce and actively support Traditional Owner partnership and participation in traditional cultural burning practices.
2. That increased resources be provided to Traditional Owner groups to build capacity and capability for improved burning operations, including cultural burning and research to understand how Elders managed Country, and cultural fire program establishment.
3. That Country Plans and cultural objectives drive cultural fire and cultural burning activities.



5.8. Condition of forest estate

5.8.1. Background

RFAs seek to maintain and enhance healthy Forest condition through:

- identifying and conserving a Comprehensive Adequate and Representative (CAR) reserve system;
- providing for ecologically sustainable, active and adaptive Forest management ;
- providing for long-term stability of Forests;
- effective management of Matters of National Environmental Significance and Matters of Traditional Owner Significance; and,
- supporting achievement of objectives within national (COA, 2019) and Victorian (DELWP, 2017) biodiversity strategies.

In accordance with nationally agreed criteria (COA, 1997), specified levels of forest protection have been adopted in Victoria to establish a comprehensive, adequate and representative (CAR) reserve system.

The CAR reserve system contains two categories:

1. Formal reserve
 - Including Crown land formally reserved where environmental protection prohibits timber harvesting (eg. National Parks)
2. Informal reserve
 - Including public land where public authorities are assigned to achieve conservation values while

excluding timber harvesting (eg. State forest assigned as Special Protection Zone (SOV, 2018).

The proportion of Victorian land assigned formal protection status is progressively rising.

Victoria's Sustainability Charter (SOV, 2006) sets the direction and objectives to achieve ecologically sustainable forest management across Victoria. Victoria's performance on progressing these objectives is monitored through the Framework of Indicators for Sustainable Forest Management in Victoria and publicly reported through the five yearly release of Victoria's State of the Forests Report (SOV, 2018). In the 2018 State of the Forests Report Card, for 52 indicators, 11 indicators were assessed as 'good', 26 of the indicators were accorded 'fair' status, and about one-third were rated 'poor' or 'unknown' (SOV, 2018).

Adaptive forest management is the practice of simultaneously managing and learning (by doing), with learning coming through the implementation of policies, strategies, and actions, complemented by research-based learning. Adaptive forest management acknowledges the complexity of natural ecosystems and the uncertainty associated with a broad range of biological, political, social and climatic challenges (Jackson *et al*, 2021).

Active adaptive forest management requires a preparedness to conduct forest management interventions that

will conserve and restore biological diversity, ecological function and evolutionary processes at multiple spatial and temporal scales (Jackson *et al*, 2021).

Forest stability may be defined as the ability of a system to remain near an equilibrium point or to return to it after a disturbance (Bo Larsen, 1994). As forests are dynamic, Forest stability is characterised by a dynamic equilibrium (steady state) achieved through interactions among functional groups of organisms and the physical environment (Bo Larsen, 1994), including Matters of National Environmental Significance and Matters of Traditional Owner Significance..

The modernised RFA's have been developed on the understanding they recognise and are adaptive to the impact of climate change and to ensure forests are stable, resilient, healthy, and functioning. The RFAs acknowledge that climate change is driving more extreme weather events and will have impacts on ecologically sustainable forest management, the CAR reserve system, the stability of forests and the stability of forest industries. The modernised RFAs recognise the need for active adaptive management to reduce bushfire risk and support the recovery of forests after bushfires, as well as the need to integrate climate change adaption into forest management to build resilience and manage climate risks.

Traditional Owners view maintaining the healthy condition of Victoria's Forests an integral component of managing Country. The Country Plans of Traditional Owners (eg. DDWCAC, 2014; EMAC, 2015; GLaWAC, 2015; TLaWC, 2016) all document Traditional Owner aspirations for managing Country well, with expectations to assert rights for decision-making and direct management of forests in future. 'Country' however is more than the land, water, air, plants and animals – it includes spirituality, the way Traditional Owners feel, live and all connections (EMAC, 2015).

Traditional Owners acknowledge that Caring for Country in present day requires the intersection of traditional and contemporary knowledge and practice. A partnership approach to management of Forests between Traditional Owners and land managers is essential.

5.8.2. Issues raised during consultation

During MER consultation, Traditional Owners consistently advised of their desire to be more actively involved in the direct management of Forests (Country). Several Traditional Owner groups have some access to management of Country with community members working on Country (eg. Joint Management), whereas other groups (eg. DWNAC; JTABOONAC) do not have legal recognition status, do not have community living or working on-Country, and are disconnected from directly managing Country and

contributing to maintaining the condition of the Forest estate.

The Panel heard how the Major Event caused impact to the condition of the Forest estate (eg. scale of fire, intensity of fire, vegetation structure, floristic composition, impact to totemic species), and how Traditional Owners need to be more actively involved in the direct management of Forests to provide for more holistic management of Country.

SCRM explained how Traditional Owners don't feel genuinely involved in the management of Forests for Forest (Country) health; and how majority of the engagement is focussed on the management (or harm minimisation) of physical cultural heritage sites. SCRM advised that management of Country (Forest) is far more holistic than simply managing for physical cultural heritage sites. Traditional Owners seek meaningful engagement and involvement in the management of Country (eg. SCRM, JTABOONAC).

Several Traditional Owner groups (eg. ACRWAG, DJAARA, GMTOAC, TLaWC) expressed concern over the current condition of much of the Forest estate (eg. dense regrowth, large areas of Country burnt intensely, weeds, pest animals, erosion) and the implications to them in terms of trying to reintroduce cultural practices, whether this be 'forest gardening', thinning, or cultural burning for instance. Traditional owners felt they

had little say in post-fire management of Forests to improve Forest condition from the impacts of bushfire.

As an example, in their submission DJAARA spoke at length regarding 'Djaara forest gardening', as the appropriate forest management philosophy. As highlighted in the passage below, DJAARA (and other Traditional Owners – eg. GLaWAC) are advocates for active adaptive Forest management from a Traditional Owner perspective, to restore Forest condition to previous states.

Djaara holistic forest management shaped past landscapes and must return to Country. Djaara's contemporary cultural landscape management philosophy and practice is called forest gardening.

Forest gardening is a cultural management toolkit that includes practices such as Djandak Wi (cultural fire), cultural (timber) thinning and food and fibrous plant harvest and revegetation. Each tool is not applied in isolation but rather all tools are applied as interactive cultural and ecological processes on Country. For instance, cultural fire may be accompanied by harvest and cultural thinning. Forest gardening holistically addresses multiple values and objectives, healing Country and Djaara in addition to producing ecological benefits for all Victorians.

Inappropriate landscape management has occurred in Australia since colonization. Western land management and conservation prefers to “lock up” areas to “protect” them from human disturbance. This ethos is a Western construct and is in stark contrast with Djaara’s ancestors’ interaction and management of Country. Prior to colonisation, the landscapes across central Victoria were distinctly the handicraft of Djaara. Djaara have since been removed, the landscapes have either been severely altered or “locked up” and overgrown and are at risk of severe bushfire and ecological decline.

Forest gardening must return to heal Country and reverse ecological decline and combat bushfire conditions. Therefore, land management legislation requires reform to enable Djaara to become recognised land managers across contemporary tenures, particularly forests, public land and plantation forestry leased and licenced land. Djaara in landscape is the leading indicator of healthy Country, forest health and bushfire defense.

5.8.3. Recommendations by Traditional Owners

1. That greater opportunities are provided for all Traditional Owners to directly manage and own Forest that is part of the CAR Reserve system.
2. That all Traditional Owners are included in partnership approach to post-fire management of Forests to

ensure biocultural landscape practices and Traditional Owner priorities are incorporated, including greater focus to post-fire management of weeds, feral animals, appropriate overstorey regeneration (eg. thinning, re-seeding of Alpine Ash, etc.).

3. That all Traditional Owners are included in partnership in the management of areas included in the CAR reserve system, so that Traditional Owner aspirations for management of Forests (Country) are adequately incorporated.
4. That the definition of 'Forest' in RFAs is holistic to capture all aspects of Country (at the moment it is restricted to public land dominated by single stem >2m with >20percent cover).



5.9. Timber harvesting

5.9.1. Background

Regional Forest Agreements provide continued access to regulatory processes for the timber industry for the next 10 years while Victoria phases out timber harvesting in native Forests as per the Victorian Forestry Plan (DJPR, 2021). The Victorian Forestry Plan is to assist the timber industry as it manages its gradual transition away from large-scale native forest harvesting.

5.9.2. Issues raised during consultation

Timber harvesting was not often raised during consultation with Traditional Owners concerning the MER, with only a small number of Traditional Owners raising concerns. This may have been as they were thinking about impacts from the Major Event and were not specifically asked their perspectives on timber harvesting.

Several Traditional Owner groups engaged had previously worked in the timber industry, and although they worked hard over the years, didn't feel they were recognised for their cultural knowledge. They felt they were recognised only as 'workers', not knowledge-holders, and the impact of the Major Event has brought some of this hurt and trauma to the surface (SCRM).

SCRM felt that working on-Country in the timber industry they offered far more

than 'labour' – they offered cultural knowledge and knowledge of how to effectively manage Forests. They felt 'sold-out' by the RFA over the years, as their people had worked hard in the timber industry prior to the initial RFA (ie. in the 70's, 80's & 90's) and received little in return when the work ran out. Community members had to move off Country to find work, where working on-Country was 'more than just a job'.

SCRM and TLaWAC highlighted they are not 'against' timber harvesting; rather they would like to see greater opportunity for Traditional Owner involvement and employment. Further, Traditional Owners would like to see timber harvesting operations more sustainable; both sustainable for the industry and for sustainable management of Country. As an example, TLaWC spoke of protecting 'Grandmother trees' during harvesting operations, and how Traditional Owners should be the decision makers regarding timber harvesting operations. TLaWAC indicated that 'modern forestry ignores the older vision for Forest management'.

DDAC raised the issue of harm minimisation in timber harvest operations; and, how they feel timber is extracted from Country with no recompense to Traditional Owners. DDAC explained how Traditional Owners need to be actively involved in timber harvest planning to ensure cultural heritage is not impacted. DDAC disagreed with what was described as current 'desktop

assessment' of known sites; and, advised that Traditional Owners needed to be involved in active on-ground assessment. DDAC felt the likelihood of unrecorded heritage and un-surveyed sites is not actively considered and needs to be.

DDAC felt there should be instruments that enable economic return to Traditional Owners from timber harvesting on Country. Similarly, DDAC felt that timber resources left over from harvesting operations and/or fire management operations should be made available to Traditional Owners.

DDWCAC spoke about the integration of biocultural landscape management (forest gardening) (section 5.8) with timber harvesting practices (including cultural thinning). Felling trees to help 'garden the environment' can also have economic benefits and manage landscapes for Traditional Owners. DDWCAC spoke of being well-advanced in their thinning approaches in coupe management in the Creswick area, with opportunities for other Traditional Owners to learn from this.

Traditional Owners see opportunity and economic potential with the Victorian Forestry Plan (DJPR, 2021). FOVTOCs explained how better understanding of the Forest resource for a range of economic benefits and cultural management can be achieved through Traditional Owner-led monitoring programs such as Reading Country.

Management of State forests in the future will support different uses as Traditional Owners assume management of some of these areas, logging is phased out and there is a diversity of uses by Traditional Owners and the broader community compared to current crop rotation for timber products (FOVTOC).

5.9.3. Recommendations by Traditional Owners

1. That government undertakes a review to identify greater opportunities for Traditional Owner involvement in Forest management and decision making.
2. That the Victorian government, in partnership with the Commonwealth government (under the provisions of the National Indigenous Forestry Strategy), undertakes a review to identify opportunities to generate greater economic return from timber harvesting operations on Country.
3. That government facilitates Traditional Owners utilising timber resources left over from harvesting operations and fire management operations.

5.10. Other matters raised not directly related to Major Event Review

5.10.1. Formal recognition of Traditional Owner groups without legal recognition

All Traditional Owner groups without legal recognition status spoke of the urgent need for their groups to become recognised under the *Native Title Act 1993* (Cth), *Traditional Owner Settlement Act 2010* (Vic) and/or *Aboriginal Heritage Act 2006* (Vic). The divide they feel and the lack of equity with other groups was prevalent in conversations.

Although not directly related to the MER, Traditional Owner groups without legal recognition generally felt the impact of the Major Event on them was greater than for groups with legal recognition status. This is due to factors including: available funding, organisational capacity and capability, access to government and relationship standing.

5.10.2. Treaty

Several Traditional Owner groups appeared to be heavily involved in Treaty conversations with the Victorian government (refer <https://www.firstpeoplesvic.org/>).

A number of Traditional Owners felt Treaty is directly relevant to Forest management, RFAs and the MER. In particular, BFNAC and DWNAC felt that

Treaty should have a specific 'Forests' chapter that included RFAs and Forest management.

5.10.3. Alpine Resort Management Board Representation

The management of Alpine Resorts and access for Traditional Owners came up in conversation with several Traditional Owner groups (see section 5.4) (eg. DWMAC; JTABOONAC). Traditional Owner groups felt Traditional Owners should not have to pay an entrance fee to access the highest elevation and some of the most significant areas of Country.

The argument is relevant for all six Victorian Alpine Resorts managed under the *Alpine Resorts (Management) Act 1997* (Vic), however access into Falls Creek Alpine Resort featured prominently in conservation (see section 5.4).

Furthermore, DWM expressed how Victorian Alpine Resort Management Boards should have majority Traditional Owner representation; and that a proportion of fees (eg. entrance) generated from the use of Country (Alpine Resorts) be directed to relevant Traditional Owner groups.

5.10.4. Land management legislation reform

TLaWC spoke of the broader suite of legal and policy reforms that can activate cultural objectives in forested Countries.

Such government forest policy reform includes the Immediate Protected Areas policy and program, review of the Code of Practice for Timber Production, review of Forestry Regulations, review of the Code of Practice for Fire Management on Public Land, RFA implementation, new Public Land legislation (including modernising the *National Parks Act 1975* (Vic), and renewal for forest management plans.

TLaWC suggested that co-governance arrangements and co-design of an implementation plan for the Cultural Landscape Strategy (Victorian Traditional Owners (2021) would be an appropriate mechanism to bring these related reform elements together. Such an implementation plan could incorporate government accepted MER recommendations.



The background is a solid orange color with a repeating pattern of white line art. The patterns include concentric circles, wavy lines, footprints, and stylized insects like ants and beetles, all characteristic of Indigenous Australian art.

Informing processes for next 5-year review of RFAs

6. Informing processes for next 5-year review of RFAs

Traditional Owners would like to see routine, ongoing engagement on RFAs, rather than little-to-no conversation and then a 'review' every 5-years or following a Major Event.

Traditional Owners want to be partners in land and fire management and argue for an approach to recovery mechanisms that includes planning, preparation, response and recovery as a continuum where these stages often overlap or merge, where trauma and healing flows through all these aspects and must be considered together (FOVTO).

Regular, routine and ongoing engagement on RFA matters with local DELWP and Parks Victoria staff and Traditional Owners, supported by DELWP policy and direction (see section 5.1.2), will aid 5-yearly RFA reviews as effective local relationships between land and fire managers will be developed and nurtured. Effective working relationships between local government staff and all Traditional Owners based on mutual respect, trust and rapport is foundational to the success of RFA operations, and any 5-yearly review. Honouring some of the fundamental principles of community development (eg. valuing local knowledge, local culture, local resources, local skill and local processes) (Ife, 2016)

is important to establish and maintain trust, respect and rapport.

Engagement on the operation, role, content, and function of Regional Forest Agreements is foundational for Traditional Owners to understand the role RFAs play and how this intersects with caring for and managing Country.

Having a dedicated position/person within each Traditional Owner group who was able to lead conversations with land and fire agency staff was suggested by GLaWAC (section 5.3). Such a position would be able to - navigate the various reviews and contribute meaningfully to RFA management. GLaWAC advised a 5-year agreement would be ideal, quoting the 'Aboriginal Water Officer' positions as a 'great example' (DELWP, 2021a).



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8. Appendices

8.1. Appendix A - Meeting overview

Traditional Owner Group / Organisation	Meeting/s	Summary	Submission
Aboriginal Community Recovery Wellbeing Advisory Group (ACRWAG)	1	Y	N
Bangerang Aboriginal Corporation (BAC)	2	Y	Y
Barapa Country Aboriginal Corporation (BCAC)	0	N	N
Barengi Gadjin Land Council (BGLC)	0	N	N
Bidwell First Nations Clans Aboriginal Corporation (BFNCAC) *	3	Y	Y
Bidwell Maap (BM)	0	N	N
Boonwurrung Land and Sea Council (BLaSCAC)	0	N	N
Bunurong Land Council Aboriginal Corporation (BLCAC)	0	N	N
Co-governance Group for Cultural Landscapes Strategy (CGCLS)	0	N	N
Dalka Warra Mittung Aboriginal Corporation (DWMAC)	2	Y	Y
Dhuduroa Waywurru Nations Aboriginal Corporation (DWNAC)	*	Y	Y
Dja Dja Wurrung Clans Aboriginal Corporation (DDWCAC)	1	N	Y
Duduroa Dhagal Aboriginal Corporation (DDAC)	2	Y	N
Eastern Maar Aboriginal Corporation (EMAC)	1	Y	N
Federation of Victorian Traditional Owner Corporations (FOVTOC)	1	N	Y
First Peoples of Millewa Mallee Aboriginal Corporation (FPoMMAC)	0	N	N
Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)	1	Y	N
Gunditj Mirring Traditional Owner Aboriginal Corporation (GMTOAC)	1	Y	N
Jaithmathang Traditional Ancestral Bloodline Original Owners First Nations Aboriginal Corporation (JTABOONAC)	1	Y	N
Lake Tyers Aboriginal Trust (LTAT)	0	N	N
Moogji Aboriginal Council East Gippsland Inc. (MACEG)	0	N	N
Nindi – Ngujarn Ngarigo Monero Aboriginal Corporation (NNNMAC)	1	Y	N
Snowy Cann River Mob (SCRM)	1	Y	N
Tati Tati Aboriginal Corporation (TTAC)	0	N	N
Tati Tati Land and Water Indigenous Corporation (TTLaWIC)	0	N	N
Taungurung Land and Waters Council (Aboriginal Corporation) (TLaWC)	2	N	Y
Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC)	1	Y	N
Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation (WWWCHAC)	1	Y	Y
Yorta Yorta Nation Aboriginal Corporation (YYNAC)	0	N	N
TOTAL	22	13	7

* denotes meeting with BFNCAC & DWNAC were combined

Major Event Review: Stakeholder and Community Consultation Report

1 December 2021

Table of contents

1	Introduction	2
1.1	Approach to consultation and engagement	2
2	Key themes - summary	4
2.1	The Summary Report.....	5
2.2	Perceptions of RFAs.....	5
2.3	The impact of the fires	6
2.4	Proposed remedial action	6
3	Appendix One: Final Consultation Schedule	10

1 Introduction

In 2020, the Australian and Victorian Governments (the Parties) agreed to undertake a Major Event Review (the Review) of Victoria's Regional Forest Agreements (RFAs) to assess the impacts of the 2019-20 bushfires and identify if future remedial actions need to be taken. To support the Panel's work, the Australian and Victorian Governments prepared a Summary Report outlining the known data about key impacts of the 2019 - 20 bushfires on Victoria's RFAs, in relation to:

- forested areas within the fire affected area
- the Comprehensive Adequate and Representative (CAR) reserve system
- forest industries
- Matters of National Environmental Significance (MNES), including listed species and ecological communities
- social and economic values
- cultural values, including Traditional Owner values, and
- ecosystem services.

On 11 June 2021, the summary report was published on www.engage.vic.gov.au to allow stakeholders and community members to provide input to the Review by either completing an online form which posed a series of questions or by submitting a written submission which could be structured in any way.

In addition to online submissions, the Panel conducted a range of intensive stakeholder and community consultations to allow broad consultation across as many community members as possible, and targeted engagement with key stakeholders with significant data or perspective relevant to the scope of the Review. In all, 28 different consultations were held with the full list provided in Appendix One. These consultations were in addition to the written submissions and also the concurrent Traditional Owner engagement. This report summarises the key themes of the 28 Consultation Sessions only (see other reports for the Major Event Review Summary of Engage Victoria submissions and Major Event Review Traditional Owner Consultation).

1.1 Approach to consultation and engagement

Prior to consultation the Panel, with input from the Parties, identified forest stakeholders and communities based on their location, previous involvement in RFA and forest policy related matters and stakeholders that had indicated interest in the Major Event Review. The Panel added to the list based on their networks, direct contact from stakeholders or their own networks including:

- Forest industry peak bodies (national and state)
- Environmental peak and community groups
- Recreational peak and community groups
- Tourism groups and businesses
- Local businesses
- Forest ecologists and researchers
- State agencies and local governments

The Panel invited key peak industry and environmental bodies and impacted local governments to participate in one-on-one consultation sessions. Community groups, interested businesses, other local government and state agencies were invited to participate in themed group consultation sessions, based on interest area or organisation type. The Panel then conducted community sessions based on locations within the impacted regions.

The original intention was for a large number of the 28 consultations to be held face-to-face, however due to COVID-19 all sessions were held online. Stakeholders were emailed invitations to participate in consultation, with details on how to register for the relevant sessions. Additionally, information on the community sessions was advertised by the Parties, via twitter, websites, and regional offices. The Panel is aware that a number of peak bodies were encouraging their members to participate in the MER, either directly in Panel consultation sessions or via the Parties Engage Victoria process.

Despite this format and approach to identifying opportunities and encouraging participation, overall participation appeared to be skewed towards those directly involved in forestry operations, with general community, tourism and recreational groups under-represented across the sample. The Panel considers there may be a range of reasons for this:

- Community - factors could include consultation fatigue post the bushfires (many reporting a large number of consultations in recent weeks and months), a preference for written commentary given the large number of submissions through the engage.vic.gov.au channel, and lack of awareness of the consultation sessions overall.
- Stakeholders – factors could include a perception that the RFAs are only relevant for those interested in forestry operations and not other users of the forests, and a lack of awareness of the opportunity to engage with the Panel.

As a result this report summarises the general themes of consultation largely amongst stakeholders and individuals with an inherent interest in RFAs. Whilst the Summary Report and key areas of scope were discussed in every consultation (eg MNES, CAR reserve system, etc) the sessions tended to be led by the interests of the stakeholder, the data the stakeholder wished to share, or the impacts of the bushfires on their particular audience, sector or business.

2 Key themes - summary

There were a number of key themes raised in these consultations that were consistent with the written submissions, including perceptions that:

- The Summary Report should include greater focus on the impact of the 2019-20 bushfires on elements other than the forestry industry, specifically including impact on the environment, species and plants, and old growth forest.
- The Summary Report should also reference climate change
- The RFAs are not serving the purpose of protecting the native forests
- There is a need for greater evidence, and a scientific and data-driven approach
- Inclusion of Traditional Owners and practices in the management of the forests are key to their future

Furthermore, the stakeholder and community consultation deep dives uncovered a range of other key themes that, while not necessarily shared by all, were brought forth by specific data or experience of the stakeholder and formed an important part of the considerations for Panel members. These include:

- The RFAs do not represent the interests of all forest users – there is a strong sense that the operation of the RFAs focus on the interests of forestry, timber industry and conservationists more so than other industries such as apiary and native foods, and the leisure and recreation sectors.
- A number of stakeholders specifically raised the issue of fire management, in particular fuel reduction burning. While this was often referenced in tandem with Traditional Owner learnings and management of the forests, there was also considerable feedback on the narrow window and approach to fire management being problematic, and the relationship with the intensity of the bushfires given fuel load.
- The need for greater evidence referenced above in particular should focus on granularity around aspects such as diversity of and impact on particular species in regeneration post bushfire activity, and the management of high and low value wood, including elevation. There are a number of considerable data gaps that if addressed would improve the quality of decision making.
- The need for greater focus and leadership on the transition of industry out of logging as the Victorian Forestry Plan progresses. Also included in a discussion around transition is certainty for contractors on timing – that the goal-posts will not change.

The following expands further on these findings.

2.1 The Summary Report

While the participants in the stakeholder and community consultations rarely referenced the contents of the Summary Report in particular, there was agreement that the impact of the 2019-20 bushfires could have been provided in greater emphasis as compared to the impact on the forestry industry.

'Old growth isn't included in the Summary Report – yet it's a clear focus on forestry values'

'The whole issue of forest management is now so much more important with changes in climate. We need to ensure the forests are resilient under future climate conditions'.

'We should be looking globally. Climate change is a major factor – that's why they're doing more land management in the US'

The voice of some in the timber industry, as noted in the written submissions, suggested the impact on the timber industry was under-reported in the Summary Report:

'The Summary Report notes about 15,000 people employed and the number is about 25,000. Include the supply chain and it is more than 50,000. Victoria's timber industry is \$7.95b in direct sales – it is important to note the timber industry contribution'

There was agreement with the need for a balanced outcome from the Summary Report, and that was the focus of the RFA's:

'There is a lot to think about – we want the forest to have a balanced protected approach. Open up areas where it is safe to be sustainably managed and harvested as well'

2.2 Perceptions of RFAs

Overall, participants viewed the modernised RFAs as an improvement on the earlier versions and were positive about the Major Event Review as an opportunity to discuss the RFAs and their role in forestry management. While there were consistent perceptions that the RFAs are not serving the purpose of protecting the native forests and some recognised that some new clauses were not perfect or haven't been activated in a dynamic way, participants were optimistic about the opportunity of renewed RFAs to modernise the forestry industry.

Some consider that RFAs are a reasonable starting point and that it is the active interpretation and management of the forests within the RFAs that most suggest to be the opportunity for the future.

'The RFAs were originally supposed to be good for industry and good for forests and good for everything.... I think scrap them and start again. Premier Andrews says logging will finish in 2030 – I'll be surprised if there is enough timber to last til then'

'The RFAs are a good frame. The default should be a landscape approach – there is a window of opportunity to address actively managing the forest, especially the immature ash resource'

'We need a new vision – RFAs are explicit about this, a stronger role for the TO, using their management philosophy to build genuine local level partnerships'

There was a perception in written submissions that RFAs allow logging in native forests to the detriment of the ecosystem it is meant to protect. In contrast, in consultations the criticism of RFAs was more to do with the perceived imbalance of the RFAs in representing the interests of all forest users. There is a perception that, the voices of timber industry and conservationists appear to be those most often heard, while other critically important industries or forest users are overlooked:

'When a coupe gets planned there is no overlay of bee sites. There are 4500 bee sites in Victoria on public land, and every time a coupe is put up that bee site is absolutely destroyed for 40 years. The beekeepers are not included in the RFA planning. We used to sit alongside the timber industry – but now they make moonscapes out of the landscape, the trees don't grow back the same and even they recognise it, and the

loss of flora is what is actually catastrophic for us. But we are not considered – yet we are a critical part of the ecosystem. There has been no open conversation with VicForests since logging ended – we have tried to negotiate, we've tried DELWP.... There's basically no room for our industry at the table'

'What about other forest industries – tourism and the natural economy? There needs to be strong consideration of the potential of that industry. A real opportunity to think differently in areas of high tourism – nature based tourism'.

2.3 The impact of the fires

Many of the online survey responses and written submissions document the impact of the fires on the environment and the impact of the fires on a range of other industries including the forestry industry (supply) and other sectors such as tourism and leisure was reported as considerable:

'Insurance is a major impact for camps and outdoor education programs. Members are unable to get insurance or if they are able to, the cost is prohibitive. There are maybe 200 businesses in Victoria – the impact will be felt by schools and other groups who use these assets... especially post COVID and addressing mental health – more people outdoors more often is a clear path of recovery especially for school children'

'The impact on the timber industry was considerable. People who work in the bush – their property, machines and their livelihoods. Contractors were key in fighting the fires – they help cut fire breaks, removed trees around properties, helped clean up the mess and provide access. Their machines are very specialised and they play an important role in prevention and remedial work around fires.'

'Recreation has been heavily impacted, there was also significant flow on effects from the smoke... huge impact on mountain biking from losses on Alpine Community Plantations'

'Small business in the region has been smashed. The impact on country is profound – it doesn't disappear because we have a pandemic. Of the 350 houses lost 12 have been rebuilt, 212 building permits issued and 80 people are still living in temporary accommodation'

'Small Business Victoria has about 1000 businesses accessing business mentoring support. The hospitality sector is even impacted – there is significant concern about the impact on our regional communities'

'There was a significant loss of machinery – replacement will cost the forest industry in the region of \$15-20 million. Potentially, some mills will close. Mills are reliant on plantations, and plantations are reliant on mills. If we cannot protect the plantations, where will Australia get its supply? We are already experiencing massive shortages globally, we'll have to import'

'For forest contracting businesses the biggest impact has been significant and severe, with the biggest challenge security of work. It flows through to regional towns and businesses – we have seen a number of people leave town due to certainty of employment... and the flow on effects of mental health and lack of support. Some have been without work for 4-5 months with little option for alternative work. A truck that is configured to pull logs cannot be repurposed and there is no other region to work. The continuity of knowledge and training due to loss of people is significant – they are like the farming industry, they have generational local knowledge of the road network, and intrinsic local knowledge. They need certainty'

'Once the expertise is taken out of the forest industry, you can't really get it back'.

2.4 Proposed remedial action

While the consultations clearly articulated the impacts of the 2019-20 fires, and some addressed the relationship with the RFAs and the key areas of operation relevant to the fires, the remedial actions in the most part were high level and broad rather than specific and detailed. While the written submissions focused

on four remedial actions (the need for an evidence based approach, the need to address logging, the need for added protection, and the need for recovery plans), the stakeholder and community consultations reflected a slightly different focus in their four proposed remedial actions;

- Aligned with the written submissions, the need for an evidence-based approach and stronger leadership
 - The inclusion of Traditional Owners in the management of the forests
 - A scientific and data-driven approach
- A need to address logging
 - While some community members called for immediate cessation of logging as in the written submission, the consultations called for greater balance and focus on the effect on the ecology in regeneration areas in the lead up to 2030.
 - Simultaneously, provide more leadership, focus and certainty of options for local communities transitioning out of logging
- Focus on fire management
 - A more proactive, scientific approach to fire management
- Include all forest users in the RFAs
 - Expand remit to include all forest users

2.4.1 Need for an evidence based approach

All forms of consultation identified a greater need for evidence and science to better understand the past impact and identify future opportunities to better manage Victorian forests. Conservationists are equally insistent on the need for evidence because many perceive that industry is not transparent, nor living up to their legislated commitments, and they consider that objective evidence is critical to hold them to account:

‘Nothing is growing back after logging. There isn’t any follow up to make sure they do what they’re supposed to, no tracking of trees that survived, the number of logging trucks going through small towns and the effect on destroying the local roads’

There is also the desire to learn from global evidence:

‘We should be reflecting on the fires taking place on the other side of the world. The US has a \$10 billion Forest Maintenance Program based on thinning – what have they learnt, how could that help us?’

However, by far and away the greatest consistent commentary around evidence was to better understand and consider the inclusion of Traditional Owners in the management of the forest, especially the role of fire management and wide open forests.

‘There is poor understanding of how aborigines managed the land – but a lot can be learned’

Perhaps the most consistent finding across all forms of consultation in all formats is the wisdom that can be gleaned from Traditional Owners in the management of Victoria’s forests.

Overall stakeholders and community members alike asked for greater leadership in this space with one stakeholder suggesting that a national model for managing the land is required.

‘The current status quo will not work any more. We need a new national model for managing the land – the Federal Government needs to be an active investor’

2.4.2 A need to address logging

While the community submissions were more likely to call for an immediate end to logging, the consultations were more likely to focus on regeneration of logging areas in particular. This focus was also related to aspects of fire management, given the perception by some that some regenerated areas post logging had higher susceptibility to future fire activity – discussed further in 2.4.3 Focus on fire management. However, the overarching issue of more productive and careful regeneration post logging was a common theme.

‘Sapling regrowth has changed, and created a much more dangerous forest’

A second aspect of the need to address logging was raised with consideration of local communities transitioning out of logging. There was widespread awareness of logging ceasing by 2030, and a need to work intensively with communities and help transition them to other industries and employment. The Panel found evidence of leadership in this area in pockets, but not consistently across all regions.

‘Many of my patient base are employed in the forest industry, and if government is phasing out the logging industry it needs to create more opportunities. There is not as much investment in that, as compared to the amount of money going into logging currently’ (Local GP)

‘The impact of the fires has heightened the anxiety of the transition. The process we have been undertaking at LVA (Latrobe Valley Authority) has been terrific – an OECD endorsed approach to regional development the way they do it in Europe... an evidence based approach for making decisions for the future’

2.4.3 Focus on fire management

Across the consultations there was significant discussion about fire management, and the perception that the 2019-20 fires burned at an unprecedented level of intensity due to the lack of appropriate management of the forest and level of available fuel. Aligned with the need for a greater evidence based approach, there were varying opinions on considerations such as elevated flammability and fire memory of 30-40 years; the seed crops produced by young forest (not until 20 years old) and that climate change is causing more flammable forests generally.

‘Fire and logging are competing for the same resource. And fire is winning’.

The intensity issue caused by fire management was a consistent theme.

‘I’ve been through various fires of 2003, 2014 and the ferocity of these fires was notable. These modern fires you don’t stand there with a hose – you run away because they are so dangerous’

‘We need more active forest management and to understand the importance of intervention. The forest needs to be actively managed and coordinated in a constructive way. Currently the complicated layering of bureaucracy makes it hard for small decisions on the ground – such as ‘it’s a good day to have a burn’ – cannot be made. We need the ability to make local decisions using traditional knowledge so we are not so vulnerable to these large scale events’

‘In my 35 years hunting here the vegetation has changed. From open bushland to now, regrowth you can’t walk through – and neither can the deer, which is why they are encroaching further and further. So much fuel locked up just waiting to burn’

‘Something has to change. If you look at controlled burning and chemical reduction plans, it ring fences Victorian forest regions. It doesn’t protect the natural environment’

There was a mix of commentary from stakeholders about the future opportunity for more active and proactive management of the forests as presented by the RFAs but not implemented – they note that this is an area where remedial action could be applied.

2.4.4 Include all forest users in the RFAs

The final remedial action recommended throughout the consultations was to ensure that the RFAs consider all forest users, not just the loudest voices at either end, the timber industry and conservationists. They reported that a number of critical industries have been affected by the 2019-20 bushfires, and are equally reliant on and critical to sustainable forestry – yet, they believe, their voices are often overlooked. This includes the Apiary industry which explained that they are not included in forestry management practices or supported by the current RFAs.

‘There is the loss of hives – maybe 700 so not a huge lot but our members weren’t allowed to go and get them, it was a total lockout because it was considered too dangerous. There is the direct loss of burnt out beehive, then there is the suffocation of bees – killed but not burnt. We lost really good breeding stock through burnt and suffocation’

The Apiarists called for better management of the forests to support the bees and bee hives and less intense clear felling for example. Similarly, recreation operators such as those involved in eco-tourism who have experienced substantial loss as a result of the bushfires believe their views are less reflected in the RFAs. Eco-tourism in particular was noted as a key area requiring a voice to ensure appropriate investment is made to optimise the opportunities to promote community engagement with the forests.

In summary, participants believed that a range of mechanisms should be considered in order to better account for these voices in future RFAs.

3 Appendix One: Final Consultation Schedule

Date	Time	Type	Theme
5 Aug	9am	Stakeholder interview	Victorian National Parks Association
5 Aug	10.30am	Stakeholder interview	Alpine Shire
9 Aug	10am	Stakeholder interview	Australian Forest Products Association
10 Aug	10am	Stakeholder interview	Victorian Forest Products Association
10 Aug	2.30pm	Stakeholder interview	CEO Forest Stewardship Council ANZ
11 Aug	9am	Stakeholder interview	CEO Responsible Wood
11 Aug	10.30am	Stakeholder interview	Fenner School of Environment and Society, ANU
11 Aug	2.30pm	Stakeholder interview	East Gippsland Shire Council
11 Aug	4pm	Stakeholder interview	Wilderness Society
24 Aug	10.00am	Stakeholder forum	Forestry industry
24 Aug	1.00pm	Stakeholder forum	ENGO/Community Organisation Gippsland
30 Aug	6.00pm	Community forum	Mallacoota region community
30 Aug	7.45pm	Community forum	Bairnsdale region community
31 Aug	10.00am	Stakeholder forum	Business/Recreation
31 Aug	1.30pm	Stakeholder forum	ENGO/Community Organisation Gippsland
31 Aug	3.30pm	Stakeholder forum	Gippsland Forestry
31 Aug	6.00pm	Community forum	Mallacoota region community
31 Aug	7.45pm	Community forum	Orbost/Omeo region
6 Sep	3.30pm	Stakeholder forum	Business/Recreation
6 Sep	6.00pm	Community forum	Corryong region
13 Sep	2.30pm	Stakeholder interview	HVP Plantations
13 Sep	4pm	Stakeholder interview	Glenelg Shire Council and President Timber Towns Victoria
13 Sep	5.00pm	Stakeholder interview	Country Fire Authority
13 Sep	6.00pm	Community forum	Myrtleford region community
14 Sep	11.30am	Stakeholder interview	The Institute of Foresters of Australia (IFA) and Australian Forest Growers (AFG) and Association of Consulting Foresters of Australia
14 Sep	6.00pm	Community forum	East Gippsland region community
15 Sep	9am	Stakeholder interview	Victorian Apiarist Assoc (Interview commenced 10 August terminated due to technical issues, recommenced 15 Sep)
15 Sep	10.30am	Stakeholder interview	Latrobe Valley Authority
15 Sep	3.30pm	Stakeholder interview	Australian Forest Contractors Association (AFCA)
22 Sep	10am	Stakeholder interview	Regional Development Victoria



WHERE
▶ TO

Major Event Review: Victoria's Regional Forest Agreements

Submissions Report –
Department of Environment,
Land, Water and Planning

24 January 2022

Table of contents

1	Executive Summary	3	3	Key themes	10
2	Introduction	7	3.1	The Consultation	10
2.1	Analysis approach	8	3.1.1	Adequacy of the Summary Report	10
2.2	Submission types	8	3.1.2	The Major Event Review process	12
2.3	Key areas of interest	9	3.2	Understanding of the Regional Forest Agreements and the impact of the fires	13
			3.2.1	Perceptions of the effective operation of RFAs	13
			3.2.2	Perceptions of climate change as a key contributing factor to the fires	14
			3.2.3	Perceived impact of the fires	15
			3.3	Respondents' Proposed Remedial Actions	19
			3.3.1	An evidence-based approach	19
			3.3.2	Timber harvesting	23
			3.3.3	Added protection for CAR Reserve system and MNES	25
			3.3.4	Forest management	30
			4	Conclusion	35
			5	Appendices	36
			5.1	EngageVic online survey questions	36
			5.2	Works that were provided as part of, or referenced in submissions	38

As part of the public consultation process and in response to the Summary Report for the Regional Forest Agreement Major Event Review, the Department of Environment, Land, Water and Planning (DELWP) and the Victorian Government collected data through the Engage Vic website. Where to, a social and market research consultancy was engaged by the Victorian and Commonwealth governments to review and assess the submissions lodged from 11 June to 31 August 2021, and summarise these into a feedback report.



1 Executive Summary

In March 2020, the Australian and Victorian Governments agreed to modernised Victorian Regional Forest Agreements (RFAs), extending their operation until 30 June 2030. At the same time, the Australian and Victorian Governments agreed to undertake a Major Event Review (the Review) under Victoria's RFAs to assess the impacts of the 2019–20 bushfires on RFA matters and identify if future remedial actions need to be taken. A Panel was established to undertake the Review in line with the relevant RFA clauses.

To inform the Review, the Australian and Victorian Governments prepared a Summary Report outlining the known data about key impacts of the 2019–20 bushfires on Victoria's RFAs, in relation to:

- the impact, extent and severity of the fires
- forested areas burnt
- the Comprehensive Adequate and Representative (CAR) reserve system
- forest industries
- Matters of National Environmental Significance (MNES), including listed species and ecological communities
- social and economic impacts of the bushfires
- cultural values, including Traditional Owner values
- ecosystem services.

On 11 June 2021, the Summary Report was published on *Engage Vic* (www.engage.vic.gov.au) to allow stakeholders and community members to provide input to the Review by either completing an online form which posed a series of questions or by providing a written submission which could be structured in any way.

In total, 79 online survey responses and 134 written submissions were received. This report summarises and identifies the key themes from these submissions.

This report, along with scientific data, Traditional Owner knowledge and additional public consultation with community, stakeholders and Traditional Owners will be considered by the independent Panel to help them assess the impacts of the 2019–20 bushfires and identify if future remedial actions need to be taken.

The views expressed in this report are the views of community members and stakeholders who participated in the Major Event Review *Engage Vic* process. They are not the views of the Major Event Review Panel or the Victorian or Australian governments.



The analysis of the submissions identified the following key themes:

The Consultation

- The majority of respondents to the online survey believe the Summary Report adequately described or well-described the impact of the 2019–20 fires. However, both the online survey and written submissions expressed a level of frustration suggesting there was insufficient information in relation to the impact, specifically on the environment, species and plants as compared to information about the impact on the timber harvesting industry.
- A number of responses highlighted the absence of any reference to climate change in the Summary Report.
- Both the online survey responses and written submissions included comments about the Major Event Review process and its ability to influence outcomes. They asked for a genuine commitment to taking action following the recommendations from the Review.

The Regional Forest Agreements and the impact of the fires

- Many of the submissions discussed climate change as a significant contributor to the scale of the fires.
- The majority of online survey responses and written submissions focussed on the impact of the fires on the environment, threatened species and the ecosystem, as opposed to the impact on other forest values.
- There was less of a focus on the impact of the fires on the timber harvesting industry. Submissions from the timber harvesting industry noted specifically the challenges facing the industry (supply, recovery and transition away from native timber harvesting).
- Some submissions indicated that the timber industry is concerned that the RFAs do not provide capacity to provide alternative timber.
- Some submissions highlighted perceptions that the RFAs are not “serving the purpose of protecting native forests”. There is a perception that the RFAs are out of date, do not reflect Victoria’s current and future environmental conditions and need to be more frequently updated.



The need for remedial action

- The submissions suggest that some stakeholders and community members believe that the RFAs or indeed any other legislative, regulatory or policy framework, are not protecting the environment and that the impact to forest areas caused by fires will result in the loss of flora, fauna and wildlife forever.
- In summary, 24 remedial actions which focused on four key areas were identified:

Remedial actions identified

An evidence-based approach

1. Increase investment in Scientific Research
 2. Review the current CAR reserve system
 3. Conduct independent surveys of MNES
 4. Research the potential impacts of salvage harvesting
 5. Conduct research into planned burning and cultural burning practices
-

Timber harvesting

6. End or bring forward the end of native forest timber harvesting
 7. Invest in more responsible timber harvesting
 8. Increase the supply of plantation timber
 9. Consider the impact of the phase out of timber harvesting on the ability to fight fires
 10. Transition the native timber harvesting workforce into alternative employment
-

Added protection for CAR Reserve system and MNES

11. Expand the CAR reserve system
 12. Open other previously protected areas for timber harvesting to offset new CAR reserve areas
 13. Undertake better preventative action
 14. Provide greater legal protections for MNES
 15. Cease timber harvesting in identified threatened species habitat
 16. Increase protections for identified threatened species
 17. Allow younger forests to establish into mature forests
-

Forest management

18. Establish an independent forest manager
19. Better Enforcement of RFAs
20. Provide greater support for ecotourism
21. Review and restrict the use of heavy machinery in forests
22. Management of catchments and the forests around catchments
23. Increase involvement of Traditional Owners in land management
24. Increase involvement of local communities

In conclusion, overall, the submissions present views from two different perspectives – those focused on the need for remedial action to increase environmental protection and those seeking remedial action to support the timber harvesting industry. There is agreement across the submissions that the impacts of the 2019–20 bushfires on Victoria’s Regional Forest Agreement regions was significant, and that more research needs to be undertaken to fully understand the impact and determine the remedial actions that will have the most effective outcome.

The Review sought feedback specifically on the remedial actions that could be taken within the scope of the RFAs and while many remedial actions were recommended, not all are within this scope. The focus on remedial actions believed to minimise the

consequences of bushfire on the forest ecosystem and broader environment, specifically bringing forward the end of native timber harvesting reflects the weighting of submissions which discussed the environmental impacts of the bushfires. Submissions in support of the timber harvesting industry, while fewer in number, presented concerns about an earlier transition from native timber harvesting, noting the impact this would have on local economies and workers seeking to transition to new industries.

Overall, submissions expressed perceptions that the RFAs, and any other legislative and policy framework, are not serving the purpose of protecting native forests, that they need to reflect Victoria’s current and future environmental conditions, and need to be more frequently updated.





2 Introduction

In March 2020, the Australian and Victorian Governments agreed to modernised Victorian Regional Forest Agreements (RFAs), extending their operation until 30 June 2030. At the same time, the Australian and Victorian Governments agreed to undertake a Major Event Review (the Review) under Victoria's RFAs to assess the impacts of the 2019–20 bushfires on RFA matters and identify if future remedial actions need to be taken. A Panel was established to undertake the Review in line with the relevant RFA clauses.

To inform the Review, the Australian and Victorian Governments prepared a Summary Report outlining the known data about key impacts of the 2019–20 bushfires on Victoria's RFAs, in relation to:

- the impact, extent and severity of the fires
- forested areas burnt
- the Comprehensive Adequate and Representative (CAR) reserve system
- forest industries
- Matters of National Environmental Significance (MNES), including listed species and ecological communities
- social and economic impacts of the bushfires
- cultural values, including Traditional Owner values
- ecosystem services.

On 11 June 2021, the Summary Report was published on *Engage Vic* (www.engage.vic.gov.au) to allow stakeholders and community members to provide input to the Review by either completing an online form which posed a series of questions (included at Appendix 5.1) or by providing a written submission which could be structured in any way. Respondents were also invited to provide additional information, reports or evidence about the impacts of the bushfires on forests to support their submission (see full list of referenced reports and articles provided to the Panel at Appendix 5.2).

This report summarises and identifies the key themes from the online survey responses and the written submissions¹ received through the *Engage Vic* website from 11 June 2021 to the closing date of 31 August 2021. The submissions lodged through this consultation process reflect the views of a sample of stakeholders and community members.

This report, along with scientific data, Traditional Owner knowledge and additional public consultation with community, stakeholders and Traditional Owners will be considered by the independent Panel to help them assess the impacts of the 2019–20 bushfires and identify if future remedial actions need to be taken.

The views expressed in this report are the views of community members and stakeholders who participated in the Major Event Review *Engage Vic* process. They are not the views of the Major Event Review Panel or the Victorian or Australian governments.

¹ References to submissions include both online survey responses and written submissions.

2.1 Analysis approach

This report reflects an analysis of primarily qualitative feedback provided through the two different formats of online survey responses and written submissions. The online survey offered a limited number of closed ended quantitative questions as well as a number of open ended questions, while the invitation to provide a written submission used open ended questions only. The nature of the survey questions and written submission format invited detailed and descriptive responses that addressed broader aspects of forest management, the impact of bushfires and different roles and responsibilities relevant to forest management for government, the community and industry.

A range of discussion points raised in the submissions were out of scope for the Review, however these are captured in this report to provide relevant context to the key areas of concern and the opportunities for remedial action.

The online survey responses and written submissions were reviewed using similar techniques. Submissions were reviewed in full with key points captured and summarised and the analysis of the written submissions and online survey responses was combined to produce this report.

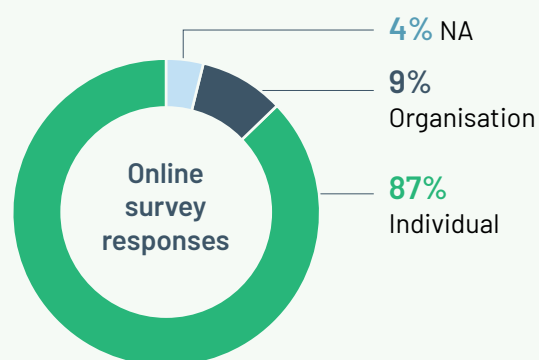
The analysis of the submissions focused on identifying:

- recurring and key themes relevant to the scope of the Review;
 - key themes relevant to specific stakeholder groups, community groups and individuals
 - any themes specific to each RFA region
- links to campaigns to enable appropriate weighting of submissions and the themes that emerged as a result;
- references to additional material for consideration by the Panel.

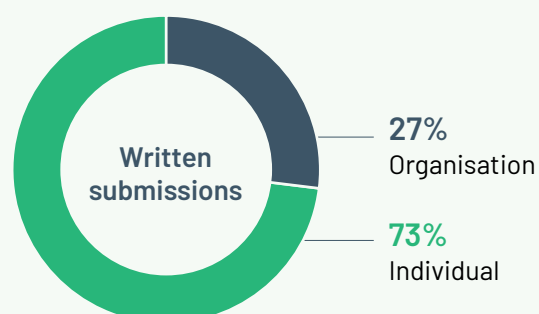
2.2 Submission types

In total, 79 online survey responses and 134 written submissions were received. The majority of submissions came from individuals – 9% of online survey responses and 27% of written submissions were lodged by organisations.

Figure 1: Submitting responses as an individual or organisation (online survey and written submissions)



Online survey question:
Are you submitting responses as an individual or organisation? Total sample, unweighted, n=80.



Written submissions analysis:
Total sample, unweighted, n=134.



2.3 Key areas of interest

There was a broad mix of views represented in the submissions. Many discussed general concerns about forests and their management with some submissions contributing points of discussion for multiple aspects of the Review while a few (mostly organisations and academics) focused on one specific area of interest.

There was limited demographic data collected in the online survey responses and the written submissions however the analysis identified five types of respondent who participated in the submissions process:

- environmental groups and academics (such as biologists and ecologists) – this group is represented through a large number of submissions;
- the timber harvesting industry – there were fewer but substantial submissions from this group;
- recreational users of the forest such as local residents, tourism operators and businesses – these were also a minority of submissions;
- local residents – some of these submissions reflected an association with a local environmental group (as above); and
- Traditional Owners – a very small number of submissions appeared to be submitted by Traditional Owner groups; however many submissions referenced Traditional Owners while addressing broader subject matters.

While the majority of online survey responses and written submissions were unique, there were also submissions with similar wording which suggests a campaign approach by a number of environmental groups and a timber harvesting group. There were likely four campaigns where content appeared consistent (three with an environmental protection focus with the fourth supporting timber harvesting) which together totalled almost half the number of written submissions. This report therefore includes more references to submissions focused on environmental impacts given the greater proportion of submissions raising these issues.

The majority of online survey responses (91%) and a large portion of written submissions from both community members and stakeholders indicated an interest in the environmental impacts of the fires.

Figure 2 shows the areas of interest nominated by respondents in the online survey while Figure 3 indicates which aspect of the Review the respondent was more interested in discussing in their response. The written submissions were more general in describing their areas of interest; therefore a quantitative analysis of these is not included.

Figure 2: Key areas of interest relating to Victoria's Regional Forest Agreements in survey responses

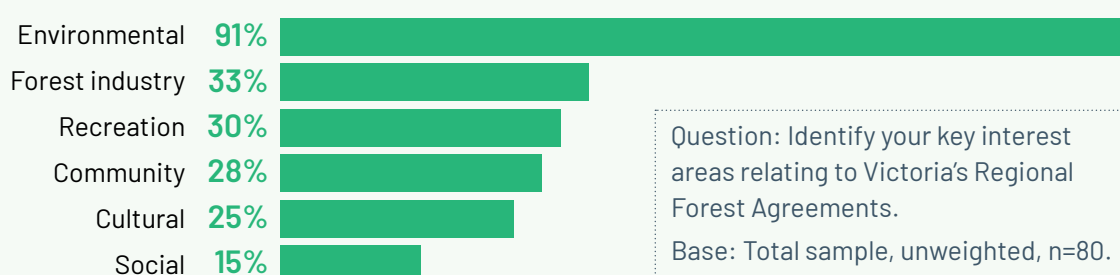
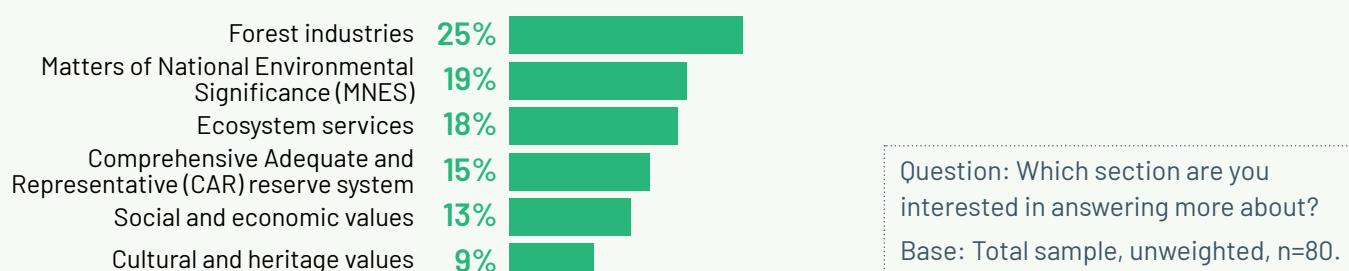


Figure 3: Section of most interest in relation to Victoria's Regional Forest Agreements in survey responses



3 Key themes

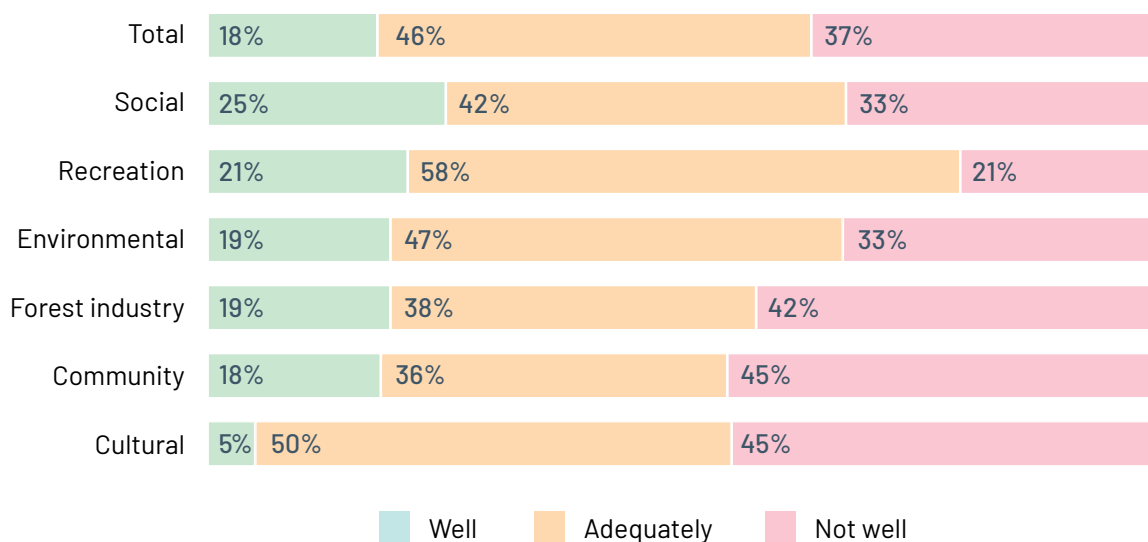
3.1 The Consultation

3.1.1 Adequacy of the Summary Report

In response to the online survey question of “How well does the Summary Report describe the key impacts of the 2019–20 bushfires on Victoria’s Regional Forest Agreement regions?”, the majority of respondents

indicated that the Summary Report adequately describes or well-describes the impact of the 2019–20 fires. This is particularly the case for respondents who noted a specific interest in recreation.

Figure 4: Views on how well the Summary Report describes the key impacts of the 2019–20 bushfires from survey responses



Question: How well does the Summary Report describe the key impacts of the 2019–20 bushfires on Victoria’s Regional Forest Agreement regions?

Base: Total sample, unweighted, n=80.

However, both the online survey and written submissions expressed a level of frustration with the Summary Report. A few submissions noted that the language used in the Summary Report is “bureaucratic” and “sounds like it is ticking boxes” rather than engaging with what respondents described as the “real effects” of the fires. Some submissions claimed that the environmental impacts, when compared to the Summary Report’s coverage of the impact on the timber harvesting industry, are not adequately described. Their perception was that the Summary Report does not sufficiently cover:

- The impacts of timber harvesting, including perceived impacts on threatened species since the fires
- The contribution of climate change as a major contributor to the fires
- The impacts on threatened species in unburnt or burnt areas
- Recommendations about possible forest restoration and rehabilitation
- Potential increased fire risk and forest recovery impacts of salvage harvesting

“(The Summary Report) Fails to outline the size and location of unburnt habitat areas for Victoria’s threatened species and whether they are currently [sic]. This information is vital to prioritising remedial action post the 2019-20 megafire.”

“More detail on the effects of harvest timber percentages compared to pre-fires available in eg [sic] the last 5 year period would have been useful. Probability of further damaging fires reducing volumes due to climate change in future should have been mentioned.”

Other areas that were seen to be lacking in the Summary Report include:

- Some submissions indicated a perception that the RFAs had not been adequate prior to the Major Event.
- There was a small number of responses that suggested the impact on the timber industry was under-reported.
- A number of responses highlighted the absence of any reference to climate change in the Summary Report arguing that this is “unacceptable” and “irresponsible” when having a discussion about bushfires and forest management.
- Some submissions highlighted the absence of information which:
 - quantified the economic impact of the fires
 - referenced Indigenous control or managements of the land
 - discussed the impact of the fires on communities in and around fire affected areas
 - mentioned farming and agriculture impacts such as smoke impacts on stock and farmers, burnt fences, time spent away from farms supporting volunteer CFA brigades
 - addressed the impacts of the feral animals including deer and pigs which moved into the private landscape due to the damage to their habitat, putting pressure on the land and crops and fences of adjoining landholders
 - considered the effects on recreation
 - captured the effects on water catchments and oil erosion
 - explained the importance of nature for people’s health, environmental education, and ecotourism.

“There is no assessment included of the health impacts of these bushfires which range from physical ill-health from the fine particular exposure and respiratory issues, to mental health including post-traumatic stress disorder.”



3.1.2 The Major Event Review process

Both the online survey responses and written submissions included comments about the Major Event Review process and its ability to influence outcomes. They asked for a genuine commitment to taking action following the recommendations from the Review. They expressed hope for significant changes and wanted to see outcomes from the Review, for the work to “be taken seriously” and for it to gather sufficient input and evidence to ensure the recommendations are fully informed by the relevant issues. Some submissions indicated a degree of scepticism about the Review process and its ability to achieve these things.

Several submissions expressed concern that there will be no change stemming from the Review because they believe there is no likelihood of “revising” the RFAs until 2030 or because the Panel’s recommendations for remedial action (if any) have already been determined without consideration of the input provided through this consultation process.

“I believe that RFA in Central Highlands will not be amended as the Summary report itself explains that the RFAs that were due to expire in 2020 were extended to 2030.”

Some submissions reported repeated engagement with government through a range of consultation programs to inform policy and legislation intended to better protect Victoria’s forests and raised concerns there has been little done to address the issues.

“The scientists have spoken and continue to speak. The people have spoken. Yet science and logic continue to fall on deaf ears. The logging industry seems to be above everybody else in the general and scientific community. I have no faith that this MER will be any different. It will be another rubber stamp with a few minor adjustments to continue the supply of dying forests that barely exist any more... Please prove me wrong. Please change things this time.”

Many respondents called for scientists and environmental experts to lead a full revision of the RFAs and plan for fire recovery actions in affected forests. The view that the Major Event Review should be guided by the best current science is mirrored in multiple submissions about forest management, forestry agreements, firefighting plans, and native species recovery plans.

Submissions from the timber harvesting industry argued that as the Western and Central Highlands RFA regions were largely unaffected by the 2019–20 fires, they should fall outside the scope of the Major Event Review.

“Two RFAs are largely unaffected by the fires (Western and Central Highlands) and a large amount of the Gippsland RFA was not affected. These should not be included in the Review as there has been no “major event” in these RFAs.”

3.2 Understanding of the Regional Forest Agreements and the impact of the fires

Some submissions indicated that stakeholders and community members require more information about the RFAs and their operations; how Victorian forests are managed; the scope of the Major Event Review; and, also the known impacts of the fires. Submissions revealed perceptions of respondents are based on their understanding of each of these areas with some submissions proposing remedial actions which reflected a need for further information or education about the RFAs, the actual impact of the fires and the scope of the Major Event Review.

3.2.1 Perceptions of the effective operation of RFAs

Both the online survey responses and written submissions were consistent in highlighting a general perception that the RFAs are not serving the purpose of protecting native forests. Submissions expressed the belief that the RFAs are out of date and do not reflect Victoria's current and future environmental conditions, that they need to be more frequently updated, and they are more "bureaucratic" than practical. Overall, the submissions indicate there is a perception of a conflict between the protection of vulnerable bushfire impacted species and the RFAs.

"The RFAs are a sham and do not protect, to any extent, our precious native species and wonderful natural places. The bushfires should mean that the RFAs are finally consigned to the bin as they should be. They should never have been renewed. All native forest logging should cease immediately."

The submissions suggest there is a belief that RFAs allow timber harvesting in native forests to the detriment of the ecosystem they are meant to protect. Several submissions raised concerns that the RFAs do not appropriately address the perceived need to restrict timber harvesting to sustain the forests and forest values and that this was true prior to the fires

and has been made more obvious since the fires. They expressed concerns about the extent to which the RFAs continue to allow timber harvesting in the face of the damage caused by the fires as evidence of their continued inadequacy.

"The RFAs [sic] as they stand now are totally incompatible with Victoria's environment. They were written at a time when there were far more forests to exploit. So little quality forest habitat now remains after the fires and years of clearfell logging, we are seeing our species spiralling to extinction... If looked at honestly, the RFAs [sic] must end native forest logging now."

Some submissions suggested the RFAs do not comply with federal environmental laws, in particular the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). These views were largely submitted by respondents who believe RFAs give the forestry industry special exemption from such laws and that this is a serious flaw in the RFA system.

"The Summary Report states: 'Through the RFAs, the Australian Government accredits Victoria's forest management system. As a result, forestry operations undertaken in accordance with a relevant RFA do not require additional approvals under Part 3 of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).' This is wrong the RFA should still be subject to approval under the EPBC Act."

A key concern noted in the submissions is that the RFAs or indeed any other legislative, regulatory or policy framework, are not protecting the environment and respondents believe that the "devastation" of the forest areas caused by fires will result in the permanent loss of flora, fauna and wildlife.

Submissions suggest that the bushfires have highlighted the importance of having supports in place that help prevent, manage and enable the recovery from disasters which put forest ecosystems at risk.



In many submissions, timber harvesting is described as the most serious and significant issue affecting the environmental protection of Victoria's forests. They show that many stakeholders and community members perceive the RFAs to be enabling timber harvesting which they believe to be extremely detrimental to the forests.

"The serious impacts on Victoria's forest ecology in these fires and the loss of an estimated 3 BILLION animals and birds was devastating."

"It is unconscionable and dangerous to continue logging in native forests in Victoria when they are in a state of near collapse. RFA's [sic] must be re-written to reflect the state of our environment."

Some submissions indicated that the timber industry is concerned that the RFAs do not ensure capacity to provide alternative timber. These submissions suggested that more needs to be done under the RFAs to support the timber harvesting industry in engaging with new developments to deliver better results.

"Fast-track the creation of more hardwood plantations, with the aim of meeting 100% of hardwood demand, from plantations, as soon as possible."

3.2.2 Perceptions of climate change as a key contributing factor to the fires

Many of the submissions discussed climate change as a significant contributor to the scale of Australia's fires and criticised the Summary Report for failing to discuss climate change as a major contributor to the 2019–20 fires.

These submissions expressed the need for urgency in taking appropriate environmental action due to climate change. Several submissions suggested that the 2019–2020 fires served to highlight what was believed to be inadequacies of the RFA system.

“The recent IPCC Report lays out the urgency of the need to act now. Logging native forests is counterproductive to reducing greenhouse gas emissions (GHGE). The carbon benefit to cease logging in native forests now is the equivalent of taking 730,000 cars off the road by 2030 (the current phase out date to end native logging in Victoria) i.e. 1.7 million tonnes of CO₂. This would make a considerable contribution to reaching Victoria’s RET by 2030, a target which has been laid out in legislation.”

“These fire events will continue and become more frequent as the impacts of climate change begin to be felt. With more forests being burnt, this means there is an ever diminishing area for wildlife and nature in general to occupy. It follows therefore that we should not be reducing that area more by logging.”

There was a common view expressed in the submissions that bushfires will continue to be a feature of the Australian landscape and these should be treated in an ongoing way rather than as isolated events. Many submissions stated that the RFAs should be designed to be more responsive to the threats of climate change because it is believed that:

- It adds further pressures on flora, fauna and biodiversity which necessitates greater areas of protected land, as well as more research into needed environmental protections
- It increases the risk of fires in the future, meaning that there should be detailed plans for future fires in the RFAs including protection of community and infrastructure, and species and biodiversity
- The removal of trees through timber harvesting contributes to the effects of climate change, and this should form part of the calculation as to whether and to what extent timber harvesting should be permitted.

3.2.3 Perceived impact of the fires

The submissions presented views on what respondents perceive as the impacts of the fires from two perspectives: the environmental, social, cultural, economic and recreational impacts at a community level; and the impact on the timber harvesting industry.

The perceived impacts of the fires on environmental, social, cultural, economic and recreational values

The majority of submissions provided assessments of the impact of the fires on the environment, threatened species and the ecosystem based on the respondent’s direct experience or observations or by referencing data and statistics from relevant reports and publications. While there was some discussion of the impact of the fires from a social, cultural, economic and recreational perspective and they were noted as important factors, the way in which the submissions were phrased indicates they are perceived as less relevant to the RFAs.

The submissions reflect a strong respect and regard for the value of the forest from an environmental perspective – its importance in nurturing an ecosystem which supports a complex and rich array of Australian native and cultural heritage.

Many respondents referenced the extent of the 2019–20 bushfires and the size of the area burnt and reported their concern that the fires pushed many ecosystems to “the brink of collapse” threatening “the survival of hundreds of plant and animal species”.

Some of the submissions quoted statistics such as “more than 200 flora species have had 50–100 per cent of their extent affected by the fires, of which 154 have been identified by the Department of Environment, Land, Water and Planning (DELWP)” and “DELWP has also identified 67 fauna species of most concern, with 20 species having between 50–80 per cent of their distribution within the fire extent” and these numbers raised concern.² Some respondents expressed views that the effect on Victoria’s forests and wildlife is

² Note the source of these statistics was not identified in submissions.



particularly devastating because it is perceived that many affected species were already at risk due to the cumulative impacts of drought, bushfires, and timber harvesting. The submissions also expressed concerns about the perceived effect on forests in terms of biodiversity loss, damage to water quality, and reduction in the ability to mitigate climate change.

“Environmental impacts as a consequence of not only the 19-20 fires, but the accumulated impacts of multiple large scale fires in Gippsland over the last 40 years. Under changing climatic conditions are forests are been [sic] redesigned in our lifetimes. They are under pressure from; increased fire frequency and intensity; novel threat animal species like deer, pigs and horses; changes in suitable habitat for flora and fauna from warmer and drier conditions under climate change and increasing human demand for resources from our forests – air, water, fibre and minerals.”

“The recently released IPCC report (labelled as a code red for humanity) has called for serious action on climate change. Such action includes protecting carbon rich forests. Logging in Australia’s native forests must cease if we are to take credible action to provide all life on this planet with a planet fit to live on.”

Many respondents felt that the environmental damage caused by the fires increased the urgent need for the protection of Victoria’s forests, particularly from timber harvesting. This sense of urgency was reflected in the language used in many submissions. The phrasing of the online survey questions and the open-ended nature of the written submission enabled detailed and descriptive responses which captured a tone and language that clearly reflects an emotive response to the issue of environmental protection. Many submissions expressed frustration at the way forests are currently managed as well as a feeling of devastation and a sense of loss in response to the effects of the 2019–20 fires from an environmental, social and cultural perspective.

“The Colquhoun Forest is being pulped! The casuarinas in that forest must be vital for black cockatoos who have lost their food source in other areas. Rescued koalas were (amidst much publicity) released into the Colquhoun. And now it’s being logged for pulp.”

“We sold our home in the Dandenongs because of the overwhelming sense of loss we were experiencing over much of the year. If it weren’t the effect and threat of fires, it was the worry and horror of fuel reduction burning and Vic Forests [sic] continual breaking of the laws. With climate change already impacting so much of our landscapes, the wildlife, way of life and amenity it was obvious to us that we could not live in the country anymore.”

“Just take a look at what remains of our precious forest estate using Google. It is absolutely devastating and a very sad reflection on how science and Indigenous culture are being totally ignored in relation to functioning diverse intact ecosystems that are not smothered in blackberries and highly fragmented by logging roads.”

As outlined below, submissions from timber harvesting industry representatives addressed the economic impacts relevant to lost revenue and other costs; however other submissions explained the economic and social impact primarily in terms of how it relates to lost homes and damage to land and farming and living in communities in and around forest areas. Respondents described the “devastation” experienced by these communities due to the bushfire impacts on their homes, neighbourhoods, and the forests. There is a strong feeling from these communities that their own healing needs to take place alongside the healing of the forests.

“Quantify the health impacts including psychological, and consider remedial actions such as including local community in opportunities to heal alongside the forest, such as regenerative forestry activities.”

Submissions that discussed cultural and heritage values of forests primarily focussed on Traditional Owners’ knowledge and management of Country. The submissions noted that bushfires and timber harvesting in forests is seen as damaging to areas of cultural significance and that cultural values were recognised in the importance of the land and Traditional Owner cultural knowledge. Many submissions recommended that the government should further invest in and draw on these values to better manage forests and future fires in partnership with Traditional Owners.

“Victorian’s identity of being home to the majestic Mountain Ash forests and Alpine forests. They hold cultural significance of Traditional Owners and Victorians who visit the region for wellbeing and recreation.”

“Listen to the Traditional Owners. Let them teach people how to listen to nature and walk on the land.”

The perceived impact of the fires on timber harvesting

A minority of submissions included references to the impact of the fires on timber harvesting. Submissions from timber harvesting industry representatives and organisations noted specifically the challenges now facing the industry in terms of supply as well as recovery.

In addition, submissions both from the timber harvesting industry representatives and from those arguing for greater protections of native forests from timber harvesting asserted that the loss of harvestable timber due to the fires is a key issue in need of action.

Submissions from the timber harvesting industry expressed concerns that the loss of timber is going to be compounded by pressure to reduce future timber supply and that this will have social and economic flow on effects for rural communities and businesses. Some submissions expressed the view that the RFAs were written based on forecasts of timber product quantities and are in need of revision due to the effects of the fires on supply; and some submissions suggested that areas unaffected by bushfires should be made available for timber harvesting.

“There will simply be ghost towns in East Gippsland and no fire prevention and fighting resource when the next big fires arrive.”

Similarly, other submissions raised concerns that the loss of harvestable timber in bushfire-affected areas will result in making additional areas available for timber harvesting. There is a concern that this will compound environmental threats to forests that have already suffered severe damage from fires.



"As the RFA makes a commitment to the forest industry to provide access for logging of agreed areas of Victorian forest the loss of substantial areas of forest planned for logging will create contractual pressure for more forest to be made available for logging. This results in a double loss for the forest of Victoria – firstly the forest lost to fire and secondly logging be allowed into areas that were not allocated to logging prior to the fires. I am one of many Victorians who cannot believe that logging of our beautiful forest continues. Our fauna extinction rate is frightening and this is primarily due to loss of habitat."

"I do have concerns that with the loss of volume of timber from the RFA areas affected by the 2019–20 that the Central Highlands will be targeted to meet quotas (as it wasn't impacted) and keep industry employed until the transition away from harvesting from native forests."

"The Central Highlands was largely unaffected by these fires. Activities in these forests cannot be restricted/penalised as a result."

Several submissions expressed concern that harvested native forests are not used for specialist products and are rather being used for woodchips and paper pulp, with some submissions indicating the perception that old growth trees were being harvested for this purpose.

"Post-fire logging is often a large loss-making exercise for the taxpayer-owned companies and contractors which do it (native forest logging is generally done by State Government-owned businesses, hiring contractors). In fact, hardly any native forest timber is used for anything but woodchips or paper pulp, even when it is unburned, eg: 87 per cent of all native forest logged in Victoria goes to woodchips and pulp to make paper. Plantations provide 88 per cent of the sawn timber in Victoria and also in NSW. The percentage of native forest going to woodchips will only further increase following these fires."



3.3 Respondents' Proposed Remedial Actions

The Engage Vic written submissions and survey responses provided possible remedial actions for the Major Event Review Panel's consideration.

Proposed remedial actions are high level and broad rather than specific and detailed. While noting that not all respondents provided proposed remedial actions, those that were suggested were largely focussed on reducing the exposure of forest ecosystems and endangered species to further harm.

In summary, 24 remedial actions which focused on four key areas were identified:

3.3.1 An evidence-based approach

Several submissions argued for the need for extensive additional research and consultation with experts (such as scientists, Traditional Owners and apiarists) to fully understand the long term impacts of the fires on Victoria's forests.

Increase investment in scientific research

There is a strong call within the submissions for increased investment in scientific research to inform any future actions in order to better protect forests, flora, fauna and biodiversity. There is a common theme amongst several of the submissions that respondents

Remedial actions identified

An evidence-based approach

1. Increase investment in Scientific Research
2. Review the current CAR reserve system
3. Conduct independent surveys of MNES
4. Research the potential impacts of salvage harvesting
5. Conduct research into planned burning and cultural burning practices

Timber harvesting

6. End or bring forward the end of native forest timber harvesting
7. Invest in more responsible timber harvesting
8. Increase the supply of plantation timber
9. Consider the impact of the phase out of timber harvesting on the ability to fight fires
10. Transition the native timber harvesting workforce into alternative employment

Added protection for CAR Reserve system and MNES

11. Expand the CAR reserve system
12. Open other previously protected areas for timber harvesting to offset new CAR reserve areas
13. Undertake better preventative action
14. Provide greater legal protections for MNES
15. Cease timber harvesting in identified threatened species habitat
16. Increase protections for identified threatened species
17. Allow younger forests to establish into mature forests

Forest management

18. Establish an independent forest manager
19. Better Enforcement of RFAs
20. Provide greater support for ecotourism
21. Review and restrict the use of heavy machinery in forests
22. Management of catchments and the forests around catchments
23. Increase involvement of Traditional Owners in land management
24. Increase involvement of local communities

want to see more scientific research and they want policies and actions to be guided by the best available science. There are fears that carrying on with timber harvesting and other practices permitted by the RFAs without first assessing their impacts post-fires, will have potential long-term effects. For example, there is concern that the burnt forests won't be able to regenerate and there will be a permanent loss of endangered species. While some submissions were from expert ecologists and biologists, many respondents acknowledged that they did not know how forest values could be better managed and considered this a question for scientific research.

"Soils are the fundamental building block of a sustainable forest ecosystem. More applied research is needed into the relationship between regular low intensity fire, soil chemistry and forest structure and health."

Review the current CAR reserve system

Several submissions called for a review and update to the CAR reserve system in light of climate change and the damage caused by the fires. The current system is described as out of date and not offering sufficient protections within CAR reserve areas. Some submissions suggested that the CAR reserve system is not at an appropriate scale and distribution to effectively protect environmental and heritage values.

"The reserve systems (CAR) regime needs to be thoroughly reviewed and revised in light of the devastation of the recent fires and also to take account of the findings of the recent IPCC 2021 report findings."

"The impacts of high intensity bushfires on soil, water flora and fauna are all important CAR reserve matters. Damage to any one of these values negates any possibility of having a sustainable CAR reserve system."

Conduct independent surveys of MNES

Several submissions expressed concerns about the bushfire impacts on MNES, particularly endangered flora and fauna. Some submissions suggested that:

"A moratorium on logging is urgently needed at least until there can be comprehensive, well-resourced surveys undertaken as part of the Major Event Review, and required protections put in place for threatened species."

"Remedial actions would also include tree planting where necessary, erosion prevention measures, vastly increased funding for biodiversity staff within DELWP to conduct surveys and collect data on threatened species."

While the submissions made some broad recommendations such as increasing pest control efforts in forests, many of the proposed remedial actions suggested to address MNES impacts were highly specific to the species or species group being considered. Many submissions indicated a belief there is a significant body of existing research on the steps required to protect MNES which should be drawn upon to determine required actions. The submissions also suggested that additional research is needed due to the unprecedented nature of the 2019-20 fires.

"Over 185 of Victoria's native plant and animal species, many already vulnerable and threatened were impacted by the fire. Greater Gliders, Brush-tailed Rock Wallabies, Brown Tree Frogs and Sooty Owls are among the many animals faced death [sic] and were forced to escape their homes. A number of rare and highly localised native fish species have been damaged by post-fire runoff into our waterways."

"The report highlights the lack of firm data on biodiversity impacts of the fires. While general threatened species ranges are known, the number of these species actually impacted by the fires is anyone's guess."

Some submissions suggested that surveys of MNES should be carried out by independent bodies to ensure objective accurate assessment of the situation.

"VicForests cannot be trusted to survey properly for MNES species, as has been continually proven by citizen scientists who do the work DELWP should be doing. It is in Vic Forests[sic] interests NOT to find the species, which they frequently conveniently don't."

Research the potential impacts of salvage harvesting

In terms of how forest values could be better managed post bushfire, the greatest concern raised in the submissions was that post-fire salvage harvesting is having a negative effect on the ability of forests and their biodiversity to recover after bushfire events. Many submissions suggested salvage harvesting is an additional threat to threatened species, and called for it to be banned.

Some submissions indicated a desire to see Government wait and give time to studies to determine the potential impacts of salvage harvesting on ecological recovery before taking action. They suggested that salvage harvesting is a significant threat to forests' post-fire recovery due to a range of factors including heavy machinery damaging or wiping out emerging seedlings, and the removal of dead and hollow trees which provide shelter for several threatened species. Further, the submissions suggest there is a perceived lack of interest by Government in determining the damage salvage harvesting could do before deciding whether it should be permitted.

"This was a very major fire event, and it will take forests much longer to recover from it. If it is disturbed, it may not recover at all, and die in patches according to where the disturbance has been. This in turn will destroy the integrity of the whole forest, that will then be made up of a number of much smaller patches, not nearly as strong ecologically as one large patch. This is based on research that I have done personally on eucalypt forests, where the seed falls to the ground following a fire, then germinates fairly quickly if left undisturbed. However only one lot of seed will fall if the adult trees have died, so if this lot is disturbed, there will be no further tree seedling regeneration."

"Reducing fragmentation of unburnt forests and ceasing the damaging 'salvage logging' will optimise forest recovery, support threatened species, prevent spread of future fires and reducing bushfire risk in the face of climate change and well documented regional shorter return interval of severe bushfires."

A small number of submissions argued for the benefits of salvage harvesting. Salvage harvesting was seen by some as a better alternative to harvesting of unburnt forests, and presenting a "life-line" for the struggling timber industry. Others argue that salvage harvesting had not been shown to have long-term effects on biodiversity, including references to academic papers supporting this.

"Salvage operations help communities to recover. There is no strong evidence that the differences of fire v's salvaged sites result in long term differences of biodiversity."

"For timber, the ability to salvage burnt trees (both plantation and native) has been critical to recovery."



Conduct research into planned burning and into cultural burning practices

Though planned burning was not within the scope of the Major Event Review *Engage Vic* consultation, it was a recurring theme in submissions. Some submissions argued that there needs to be a significant increase in planned burns. These were seen as vital to reducing fuel loads and, therefore, the severity of fires. Others however argued that planned burns can cause significant environmental damage and threaten the recovery of forests and endangered species particularly after major events such as the 2019–20 fires.

“Large controlled burns involving hundreds of utes and tankers shouldn’t be taking place.”

“The 2009 Royal Commission recommended that 5% of the forest is control burnt or mechanical works each year to manage forest fuel loads. Currently less than 2% is burnt and this is mostly around roads, towns, railways and other important infrastructure. Very little of the proposed works underway to 2023 will actually reduce forest fuel loads.”

“Planned burning within Parks & Reserves is causing a lot of environmental damage. Burns typically happen every 5 – 8 years in asset protection and bushfire moderation zones – well below the tolerable fire intervals of most EVC’s. Up to 40% of hollow-bearing trees are destroyed within each burn (see DELWP’s own research, 2016 ‘Reducing the effect of planned burns on hollow-bearing trees’).”

Overall, even where planned burns were supported in the submissions, there was a common view that Victorian planned burns currently do not adhere to the latest science or best practice. Planned burns were described as happening without regard to their impact on surviving flora and fauna species and there were calls for further research into their effectiveness as well as their impact on fauna and biodiversity.

“There needs to be a review of planned burning practices.”

“Biodiversity surveys should be carried out before burns, followed by post-burn surveys to determine the effects of the burns on flora and fauna.”

In addition, there was a strong belief expressed in many submissions that Indigenous fire management practices such as traditional cultural burns are an important and underutilised method of managing forest ecosystems and through this, protecting forests from future fires. Some respondents felt that there should be an investment in building up a strong evidence base for cultural burns so their effectiveness is recognised as scientifically supported.

“There must be a total rethink of the way government agencies mitigate high intensity bushfire risk. While government agencies regularly pay their respects to elders past, present and emerging, when it comes to fire in the landscape management, tens of thousands of years of Aboriginal fire management is largely ignored. This is having perverse ecological impacts from long term forest health and high intensity bushfire impact on ecological and a range of other values.”

“With a legacy of up to two centuries of mismanagement, in the medium term, reinstatement of traditional/cultural burning be a key step in native landscape ecological recovery, but will not necessarily manage stand density in advanced regrowth.”

As outlined below, further to this, there was a strong theme amongst the submissions indicating support for greater involvement from Traditional Owners in land management practices and assessment of fire damage. For many this was paired with a desire to see more studies on the effectiveness and environmental sustainability of such practices given the current circumstances such as climate change.

“Traditional Owner Management and Cultural Burning techniques and well of [sic] Aboriginal land management for country would enhance the protection and cultural values within this landscape. As everbents [sic] have proven and shown in cultural burn techniques and Aboriginal land manage across Australia.”

3.3.2 Timber harvesting

End or bring forward the end of native forest timber harvesting

Many of the submissions reported timber harvesting as the most serious and significant problem affecting the protection of Victoria’s forests. Many submissions raised significant concerns about the long-term future of Victoria’s forests and the continuation of timber harvesting practices in native forests which are seen as a specific and serious threat to the forests and the species within them.

Further, in the wake of the 2019–20 fires, submissions expressed major concerns that remaining unburnt forest will be more susceptible to timber harvesting to make up for the shortfall of available timber caused by the fires.

Ending or significantly reducing native forest timber harvesting is seen by many as a necessary step to maintain what remains of Victoria’s forests. Some submissions included reference to academic papers supporting this.

“Regeneration from clear-fell logging contributes to fire risk in Victoria. The ‘flash fill’ effect, whereby undergrowth leaf litter accumulates under the replanting which follows clear-fell logging, increases the likelihood of fire in immature regrowth forests. The leafy undergrowth ignites and when the fire jumps up into the lower canopy within these young regrowth forests, the fire gets carried beyond into more mature adjoining forest. Practices such as clear-felling must change and halt due to the now established modern trend of increased temperatures, extended periods of heat across the seasons and increased risk of fire.”

“The state government is to be commended for having taken a step in the right direction by committing to end native forest logging in 2030, but this is too little too late. In fact, it’s worse than that. The very deadline is adding impetus to the drive to harvest as much timber as possible before it is put out of reach.”

While most submissions called for an immediate end to native forest timber harvesting in Victoria, many suggested that at least the current phase out plan should be brought forward and end sooner than the proposed timing of 2030. For many, the 2019–20 fires have provided a strong rationale for the reconsideration of this deadline and suggested that the date must be sooner to allow the forest to recover and better protect it from future bushfires of the same magnitude.

“Trees cannot regenerate when the ground is churned up and seeds and seedlings destroyed. The disturbance caused by logging may be the final factor which makes destruction irreversible, and the wildlife loses any food and shelter remaining.”



“Long term carbon storage or carbon sequestration as referred to in the Summary Report, derives from the long-term conservation of the ash forests. Significant reductions in logging under the operation of the Victorian Regional Forest Agreements would help retain carbon sequestration, limit reduction in water yields by retaining soil moisture with less run-off, and help limit soil erosion.”

Invest in more responsible timber harvesting

Some submissions recommended improvements to responsible timber harvesting practices by developing a more strategic and considered approach, informed by research and surveys that aim to minimise the impact on forest ecosystems.

“Absolutely critical that all current logging first necessitates flora fauna surveys at a landscape scale, not coupe by coupe and includes biodiversity not just threatened species.”

“... Another tool to achieve this is timber harvesting. Timber harvesting can be used to create a mosaic of age classes in the landscape. It is a particularly important tool in our forests where patch-burning is too dangerous and unpredictable. Bushfires don't discriminate on threatened species, drainage lines, habitat trees, old-growth, rainforest etc. but we can, by using timber harvesting. However, if timber harvesting is done too intensively over a reduced land area, it will reduce biodiversity. An intermediate level of disturbance achieves the most biodiversity.”

Increase the supply of plantation timber

Some submissions indicated that plantation timber is seen as the environmentally responsible alternative to native forest timber. These submissions called for the rapid expansion of timber plantations in order to remove the need or incentive to harvest native forests.

“A real commitment to the development of a hardwood plantation timber industry would improve quality of products, sequester significant amounts of carbon, assist in offsetting the livestock industry GHG emissions, increase biodiversity on cleared farmland and provide a sustainable and renewable resource alternative to GHG emitting concrete and steel building products.”

Consider the impact of the phase out of timber harvesting on the ability to fight fires

In submissions concerned about the phase out of timber harvesting by 2030, there was reference to the potential impact on the resources, access and skill set required to fight future bushfires. Some respondents indicated that the timber harvesting industry plays an important role in managing forest fuel loads through silvicultural practices, which are vital to limiting fire severity. It is also pointed out that the roads made in forests for timber harvesting machinery have been needed for emergency vehicles to enter forests to fight fires.

"Having forest industries protects forests because of highly skilled forest workers and machinery capable of containing bushfires"

"The expertise, knowledge, skills and resources of the forestry sector (plantation, native timber and contracting/haulage) is a significant and cost effective resource for bushfire preparation, response and recovery. This should not be underestimated. For the native timber, contractors/haulage, the decision to phase out native timber harvesting will mean a huge loss in terms of not just the resource mentioned, but funding to manage roads and other access points to respond to fire events."

"I strongly support the active management of the forest and timber harvesting as a legitimate tool to manage forest fuels loads and thus bushfire severity. The government must continue to actively manage all our forests."

Transition the native timber harvesting workforce into alternative employment

Many submissions that raised concern about the environmental impact of timber harvesting and the perceived need to hasten the transition out of the native timber harvesting industry also discussed the importance of supporting the timber harvesting industry workers to secure alternative employment. They also suggested there is opportunity to create jobs with the expansion of plantation timber. There were some submissions that noted some frustration with the slow rate of establishing timber plantations.

"By investing in local, ecological agro-forestry projects, by supporting guaranteed fire management or ecosystem restoration jobs, or by redirecting public funds from this heavily subsidised industry for support packages."

"By expanding plantation timber industry. If a greater proportion of plantation timber grown were processed domestically it would lead to an increase in Victorian jobs."

Other areas suggested where timber industry employees could be redirected include:

- National parks
- Emergency services
- Eco-tourism
- Innovative trades and industries.

"Create protective safe enclosures for impacted wild life with trained up rangers to operate them: to be automatically available after any event. Under employed people could be gainfully educated for this role."

"Perhaps it is time to start hiring logging contractors to use their skills on machines as full-time firefighters?"

"Sarah Rees has estimated that 760 new jobs would be created through investment in eco-tourism."

3.3.3 Added protection for CAR Reserve system and MNES

Expand the CAR reserve system

The bushfire impact on the CAR reserve system was identified in the submissions as widespread and respondents raised this as a serious environmental concern. The majority of submissions suggested that this damage necessitates greater environmental protection such as expanding the CAR reserve system and decreasing timber harvesting in non-CAR reserve areas. However, timber harvesting industry submissions suggest this strategy would further impair an already disrupted industry.

"Almost half of the conservation parks, reserves and Special Protection Zones within the Comprehensive, Adequate and Representative (CAR) reserve system in these three FMAs is within the fire extent."



Some submissions argued that large, connected patches of CAR reserve areas are better than smaller patches with poor connectivity. To address the ongoing perceived decline of threatened species for example, expansion of the CAR reserve is seen as a necessary step. An increase in CAR reserve areas was also argued by some to be vital to increasing the resilience of MNES values against future bushfire events.

"We are now seeing ecosystem collapse in some of these CAR reserves. With the bushfires having so severely impacted the CAR on top of all this, the situation is dire. The off-reserve system must also be managed in conjunction with the CAR to support it and fortify it. Any unburned or lightly burned refuges existing outside the CAR must immediately be protected from logging due to their rarity and critical importance in establishing a viable recovery of Victoria's forest estate and its inhabitants."

"Expand CAR reserves under RFAs to meet the updated needs of threatened species and ecosystems after the bushfires."

Open other previously protected areas for harvesting to offset new CAR reserve areas

Submissions from the timber harvesting industry argued that if there was action taken to expand the CAR reserve to include areas of forest currently available for timber harvesting ('working forest'),

then other areas within existing CAR reserve should be opened up to harvesting, to avoid reducing the available timber supply and impacting the industry.

"The question for conservation estate is whether there have been impacts to the comprehensive, adequate and representativeness of the estate, and whether remediation activities will assist recovery and attenuate the impacts of the 2019-20 fires. If the answer is yes, then the Review must focus on what these remediations are (or what more could be done to achieve this outcome). If the answer is no, then investigating whether swapping out areas of our working forests will deliver the outcome. If the answer is no, then the focus must remain on the remediation actions. If the answer is yes, what area of the CAR might be swapped out (i.e. become working forests) and what areas of the working forests should swapped in and become part of the conservation estate. This MUST be a swap and not simply an activity in locking up more forests in the conservation estate."

Undertake better preventative action

Some submissions argued that preventative actions, such as ecological management regimes and prioritisation of ecosystem refuges, need to be taken to further protect CAR reserve areas and their flora and fauna from fires and other damage.

"Protect important occurrences of the species or community in the comprehensive, adequate and representative (CAR) reserve system and maintain or restore ecological management regimes to ensure its viability."

"We must ensure species survival at all cost. Our forests cannot spontaneously regenerate without intelligent planning. Sufficient ecosystem refuge a priority."

Some submissions also called for interventions such as reseedling to help restore the burnt CAR reserve areas, however this was a debated topic amongst the submissions with others arguing that the forests' best prospect for regeneration is to be left alone for an extended period of time. For example, a submission by an academic and ecologist describes research which supports a proposed policy of leaving the forest to recover by itself with minimal intervention in the form of pest-control. As mentioned, several submissions highlighted this as a question that needs to be addressed through further scientific research.

Provide greater legal protections for MNES

There was reference in some submissions to the need for laws that protect MNES from timber harvesting to be based on strong legally binding outcomes-based standards. Some submissions referred to the standards as recommended in the Samuel Review and applied at State and Federal levels.³

Cease timber harvesting in identified threatened species habitat

Some submissions expressed a belief that many bushfire-affected threatened species have timber harvesting listed as a major threat in their Flora and Fauna Guarantee Act 1988 Action Statements with many suggesting that timber harvesting should be banned in the habitat areas of identified threatened species.

"Many of the species listed in this report are set to have their conservation status upgraded in the next 24 months. Protecting any remaining habitat from logging while this process is undertaken is a critical first step to giving these species the best chance of recovery following the catastrophic bushfires and will help safeguard them against future impacts of bushfires and climate change."

"Mountain Ash and Alpine Ash forests have been identified as a unique and essential habitat for a range of threatened species1... logging in these areas means contributing to an increased loss of biodiversity and further damage to burnt areas. The clear fell logging regime that occurs under the operation of the RFAs results in a long-lasting disturbance legacy for all the wildlife and habitat of the area. The recent bushfires have now compounded this disastrous legacy."

Increase protections for identified threatened species

Some submissions suggested that there is a need for more refuges to protect identified threatened species.

"Leading scientists from the Threatened Species Recovery Hub made recommendations in January 2020 following the bushfires to locate and protect key refuge areas which "will be of profound importance for species' recovery, and hence should be the immediate and ongoing focus for conservation management". Key refuges for wildlife have already been logged, and many more are up for logging"

Some submissions suggested that the government is being swayed by large private corporations in this matter. According to one submission, against recommendations made by DELWP in May 2020, two schedules of new timber harvesting areas in native forests were approved post-fires, in July and in December 2020.

"In May 2020, the Victorian government's Environment Department made recommendations that logging stop in key unburnt habitat for threatened species to halt the threat of irreversible damage to biodiversity after the 2019-20 bushfires. Despite those recommendations, logging has recommenced in these areas following the bushfires."

³ The 'Samuel Review' refers to the Final Report of the Independent Review of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Several submissions expressed a view that a range of specific species require a space and place for shelter, rest and reproduction in the forests:

- **Micro-bats**

Some submissions suggest that hollow and dead trees provide habitat for micro-bats – they are needed for shelter, rest and reproduction and require specific protection to ensure their future.

“Micro-bats provide human health benefits by predating mosquitos and other disease carrying insects, as well as agricultural pest control”

- **Megabats (e.g. flying foxes)**

Some submissions referred to the specific needs of Megabats (flying foxes) and described the impact of the fires on their ability to reproduce while highlighting their importance in the ecosystem. They argue that the ecosystem is reliant on them to ensure cross pollination and seed dispersal in the forest.

“The Grey-headed flying fox has declined across its range (roughly Brisbane-Adelaide) by over 95% since 1900. Therefore from an MNES perspective they need better protection immediately: identify and provide greater SPZ protection for Grey-headed flying fox campsites, even where only used intermittently.”

“This submission calls for a change to the Planning Standards for timber harvesting operation in Victoria’s State forests 2014. Due to fire destruction to grey headed flying fox forest camp sites these animals are in urgent need of protection. In order to protect the grey-headed flying fox it strongly urges the following change: “Consider establishing a SPZ of 100m radius for a roost site that has a pattern of regular seasonal use” is changed to “Establish a SPZ of 1000m from any point from a Grey-headed flying fox camp /colony location”.

- **Owls**

According to the submissions, certain owl species require additional protection including promoting the growth of trees and undertaking some forms of forest thinning to offer the greatest opportunity for survival.

“There is already research available that has shown the dietary shift of some owl species from ground to arboreal prey. This has resulted from denser understorey obstructing owl access to ground dwelling prey. The shift is increasing predation pressure on arboreal species and creating additional competition for food between birds of prey... Other forms of forest thinning, with a focus on retaining/ promoting the growth of trees with the greatest ecological value (e.g. size, hollows, health and flowering capacity) will need to be undertaken.”

- **Greater Gliders**

Some submissions requested considerable attention for Greater Gliders due to their importance in the ecosystem and the history of timber harvesting that affects their habitat.

“Habitat for important species such as the Greater Glider MUST be protected from logging post fires. Every single instance of GG’s should have logging excluded. This includes areas on what remains of the magnificent Errinundra Plateau – a Gondwanic wonderland which has dwindled due to clearfell logging since the 1970’s. So little quality habitat there remains now – it’s an absolute tragedy and travesty to have any logging scheduled there at all.”



- **Cockatoos**

Additional protections were recommended in some submissions for the Black Cockatoo with a sense of urgency on the basis that previous requests to protect their habitats had not been directly responded to.

"Glossy Black Cockatoos lost most of their foraging habitat in the fires – yet FFMV burned an area of their KNOWN feed trees (Black Sheoaks) in Ewings Morass 'Wombat Track' planned burn. This was despite FFMV having been notified by multiple community members about their existence within this area, and Birdlife Australia having put in nesting boxes under a bushfire recovery program! Government & Agencies need to communicate better – FFMV should have know [sic] this yet their desktop surveys did not reveal the info as the VBA data hadn't been updated yet to reflect the numerous Glossy Black records."

Allow younger forests to establish into mature forests

While some submissions indicated that old growth forests in particular need to continue to be protected, others argued that younger forests need to be able to establish in order to protect future forests facing climate change and more severe fires.

"As the report notes Mountain Ash trees die in such hot fires, but their seeds can germinate afterwards. BUT, if the Ash trees are younger than 20 years old they are too young to germinate seeds. This suggests the significance of mature forest areas being allowed to become old-growth forests. There are many other reasons to allow these trees to grow old: they shelter plants and animals and birds: they are simply beautiful; their presence will minimise risks of future mega-fires by creating cool and/or wet forests."

3.3.4 Forest management

The submissions expressed a common dissatisfaction with the way that forests are currently being managed and offered advice on what type of agency or organisation would be best placed to better manage the forests. The majority of submissions suggested that there is much that needs to be addressed if forests are going to be managed in an ecologically sustainable way. Many also felt that a lot more needs to be done to protect forests when future fires happen, although there is significant disagreement about the value of current practices such as planned burns.

There was a common theme across the submissions that ecological considerations should be at the forefront of decision making on forest practices and management, that existing activities should be reviewed and assessed against their ecological sustainability, and that all further actions should be evidence-based in the light of the best available environmental science.

Establish an independent forest manager

Some submissions called for a change in who has responsibility for managing Victoria's forests.⁴ There was a perception that VicForests is the primary forest manager in Victoria, and many submissions suggested that this was a conflict of interest. Several submissions expressed a belief that VicForests receives public subsidies to support timber harvesting operations.⁵ They argued that on this basis, an economic business case would favour maintaining native timber harvesting in Victoria over protecting forests for economic benefits such as health, tourism and recreation.

Some submissions called for DELWP to take over forest management in Victoria, while others were sceptical of the independence of DELWP and Victorian Government bodies. Submissions called for an independent body committed to environmental interests and not tied to the forestry industry made responsible for managing forests.

"I don't believe that Vicforests [sic] should be managing forests in Victoria. They have shown that they are in the business of cutting down trees rather than conserving Victoria's biodiversity. Vicforests [sic] should not be trusted to design logging coupes. Their operations should be closely scrutinised by an independent body."

"Shows why you can't have the regulatory and commercial functions in the same organisation. Regulation has to be independent or it simply doesn't happen. VicForests/the logging industry is a machine for sucking up subsidies through regulatory capture. Without subsidies there would be no logging because the process/product would not be commercial."

"The value/contribution to GDP of ecosystem services provided by forests including water provision, agricultural production and tourism exceed that of the forestry industry. Recommencement of logging and insisting to maintain the previously agreed timber quotas are unwise means of supporting the sector and serves to undermine the aforementioned industries that depend on intact, protected native forests."

"Even from an economic point of view, continued logging of native forests is irrational. Taxpayers contribute over \$20,000,000 a year to subsidise the destructive, loss-making operations of VicForests. These funds should be invested in the well-being of bushfire-affected communities and in a just transition for all whose current livelihood depends on the logging industry."

⁴ Forests on public land in Victoria are managed by a number of agencies, including the Department of Environment, Land and Water (DELWP) and Parks Victoria, as well as Catchment Management Authorities, the Department of Jobs, Precincts and Regions and VicForests.

⁵ VicForests is the State-owned business responsible for the sustainable harvest, regrowing and commercial sale of timber from public forests on behalf of the Victorian Government. It does not receive public subsidies.

Better Enforcement of RFAs

Several submissions suggested that a lack of enforcement of RFAs is a serious problem for forest protection and that VicForests does not always operate within the constraints of the RFAs. Some submissions described VicForests as being continually taken to court for not abiding by the provisions of the RFAs. Others suggested that alleged RFA and legal violations go unnoticed or enforcement action is not taken in response.

"The Governments own rules are broken all the time, I have worked in the industry and seen how the foreman and the VicForests rep laugh about getting away with it."

"Further, it should be noted that VicForests has already been shown to repeatedly flaunt its environmental code of practice, knowingly encroaching upon the habitat of two endangered species and logging outside coup [sic] limits. The Victorian Regional Forest Agreement should stringently restrict logging until its cessation in 2030."

Some submissions requested that an independent regulatory body oversees the operations of VicForests; others suggested that the existing regulatory body should be given greater powers, provide greater regulation and monitoring of timber harvesting practices, and establish stronger punishments for RFA violations that are swiftly and consistently applied.

"Give the Office of Conservation Regulation real teeth to prosecute loggers who breach regulations."



Provide greater support for ecotourism

Some submissions suggested that ecotourism is a sustainable alternative to timber harvesting that can bring jobs and economic benefits to local communities. They noted that this could be done while actively protecting the forests and environmental values. Residents and potential eco-tourists want to see more support for the industry and an end to timber harvesting which, according to the submissions, undermines ecotourism.

"Tourism is the only sustainable industry that can thrive in the forests: There should be special support to retrain people to work and build new businesses in tourism."

"Economic benefits to regional areas from forest conservation, such as the extension of formal reserve systems in national parks, lead to significant increases in tourist visitations and added local jobs. Many city-based Victorians are willing to spend hundreds and thousands of dollars in regional Victoria visiting locations under the banner of nature-based tourism. Sadly, many of these destinations, including, for example, the beautiful Croajingalong [sic] National Park, were impacted in the 2020 bushfire, with ongoing closures and damaged environments."

Review and restrict the use of heavy machinery in forests

Many submissions outlined a view that heavy machinery in forests have environmentally damaging effects. The submissions called for a review of heavy machinery practices in timber harvesting, fire-fighting and post-fire operations.

"Due to the fires, there are reports of bulldozers going into and through creeks (to create new tracks) in East Gippsland where rare native fish had just been identified."

"The loss of soil in extreme rainfall events should be at the forefront of calculations about the involvement of heavy machinery in forests, including for controlled burns."

"Bushfire fighting methods at the edge of a wildfire are crude & destructive. Bulldozer operators push over mature trees wilfully based on their own judgement of risk; similarly for firebreak [sic] routes – there seems to be no ecological perspective to decision-making by the firefighters."

Management of catchments and the forests around catchments

A number of submissions raised concerns about the fires, forestry industry practices, and forest management on water catchments. They indicated a desire to see restrictions to the types of areas that can be harvested, such as a ban on timber harvesting on slopes with an incline of greater than 30 degrees based on concerns about this impacting water quality, and increased protection of water catchments to support biodiversity.

"Timber harvesting on slopes over an incline of 30 degrees should not occur as it can have potential impact on the quality of Melbourne & metropolitan areas potable water supply."

"The need now is to protect our water catchments from logging and protect biodiversity as it recovers from devastating changes brought on by past logging practices and climate change."

Increase involvement of Traditional Owners in land management

Submissions suggested that adopting Indigenous cultural land management practices would result in positive cultural and environmental outcomes. Several submissions argued that Traditional Owners should have greater involvement in forest management and leadership.

"Let Aboriginal communities manage or shared management with Parks Vic and Forest to enhance cultural landscape."

"Existing intrinsic indigenous cultural and spiritual values should only be spoken to by Traditional Owners."

"The Boonwurrung/Bunurong, Taungurong, Wurrundjeri and Gunai Kurnai people should be recognized as the custodians of the forests of the central highlands of Victoria. There should be genuine recognition of decision-making rights over the protection, management and use of forests for First Nations people. For example, some indigenous forest rangers already manage controlled cool burning. Ranger programs such as these could be expanded as part of the change to the way we think about land management for our Victorian forests."

Submissions expressed that Traditional Owners have a right to make decisions about their traditional lands and suggested including a requirement by government and for government to consult all Traditional Owners on forest and land-based policies.

“Establish a fully resourced forest resilience management program focussed on threat management and rewilding our east Gippsland forests. This group would be cross tenure and cross agency in its approach and would be led (over time) by Traditional Owner groups. This group would support a nature based tourism revival in East Gippsland where tourists could engage and even participate in forest management and flora and fauna resilience projects.”

“I also support the Sovereigns on Forests statement, issued to ministers in 2019. First Nations custodians have given no free, prior and informed consent for logging on their country. The rightful, traditional custodians of this land should be making self-determined decisions about its management. Any treaty process is tokenistic while clear-fell logging continues to have a damaging impact on First Nations country.”

Increase involvement of local residents and communities in consultation, leadership, healing and prevention activities

Submissions explained that residents of local communities, and farmers in particular have experienced significant trauma from the fires and described the impact on wildlife and the environment, in addition to the health impacts. There is a strong sentiment expressed by members of bushfire-affected communities that they are not being consulted or listened to. In addition to stress caused by bushfire impacts on the forests, many said they have witnessed or heard of illegal timber harvesting practices in their area which they feel is not being taken seriously and that they do not have the power to stop. Community

members explained in their submissions that they are seeking opportunities to have some control and agency and to have a say on what happens to the forests and their futures. They want more support (including financial) for:

- Addressing fire hazards and preparing for future fires
- Establishing refuges on agricultural land
- Having input into environmental protection measures including those related to timber harvesting practices.

Submissions stated that these steps would be significant in allowing them to feel like they are being heard and restoring their agency in a situation that has left them disempowered and angry. Several affected community members expressed that employment opportunities as well as healing opportunities for communities would result in funding and support provided for environmental recovery activities.

“I don’t think the panel can perhaps fully comprehend a farmer near to a bushfire area ringing wildlife rescue to come to the koalas who have hauled themselves out of the fire to die in his farm trees, and being told by the rescuers that they have so many already that they can’t come and the farmer can’t shoot them because he isn’t permitted to do it & all the other people who could like rangers & police are so busy they can’t either.”

“Have people heal from their trauma alongside nature, knowing we are part of a natural community, not separate and “in control” of it.”



4 Conclusion

Overall, the online survey responses and the written submissions present views from two different perspectives – those focused on the need for remedial action to increase environmental protection, and those seeking remedial action to support the timber harvesting industry. Other perspectives, from forest industries such as tourism and local business, apiary and fibre, as well as perspectives of community organisations, local community members, and Victorian Traditional Owners were also reflected in the submissions. However, these submissions were fewer than those that discussed environmental protections and timber harvesting.

There is agreement across the submissions that the impacts of the 2019-20 bushfires on Victoria's Regional Forest Agreement regions was significant, and that more research needs to be undertaken to fully understand the impact and determine the remedial actions that will have the most effective outcome.

The Review sought feedback specifically on the remedial actions that could be taken within the scope of the RFAs and while many remedial actions were recommended, not all are within this scope. The focus on remedial actions believed to minimise the consequences of bushfire on the forest ecosystem and broader environment, specifically bringing forward the end of native timber harvesting reflects the predominance of submissions which discussed the environmental impacts of the bushfires. Submissions in support of the timber harvesting industry were fewer in number and presented concerns about an earlier transition to the end of native timber harvesting, noting the impact this would have on local economies and workers seeking to transition to new industries.

Overall, submissions expressed perceptions that the RFAs, and any other legislative and policy framework, are not serving the purpose of protecting native forests, that they need to reflect Victoria's current and future environmental conditions, and need to be more frequently updated.



Image by Owen Bassett, Forest Solutions 2020

5 Appendices

5.1 Engage Vic online survey questions

Respondents were invited to add a marker to the map below which shows the extent of the 2019–20 bushfire event to indicate the 2019–20 bushfire event that had impacted them the most or that is of most concern.



Introduction

- Identify your key interest areas relating to Victoria's Regional Forest Agreements:
 - Environmental
 - Forest Industry
 - Recreation
 - Community
 - Social
- Which section are you interested in answering more about?
 - Forest industries
 - Matters of National Environmental Significance (MNES)
 - Ecosystems services
 - Comprehensive Adequate and Representative (CAR) reserve system
 - Social and economic values
 - Cultural and heritage values

Summary report

- How well does the Summary Report describe the key impacts of the 2019–20 bushfires on Victoria's Regional Forest Agreement regions?
- Why did you select [insert answer]?

RFAs and Forest Management

- What do you consider to be the most significant impacts of the 2019–20 bushfires on the operation of the Victorian Regional Forest Agreements?
- How could forest values, that are important to you, be better managed post bushfire?
- What are your views on potential remedial actions that could be undertaken [for forest values]?
- Please provide any additional information, reports or evidence about the impacts of the bushfires on forests, that you think is important for the Major Event Review and Panel to consider.
- Which section are you interested in answering more about?

CAR reserve

- What are your views on the most important CAR reserve matters impacted and what is the significance of these impacts?
- What are your views on potential remedial actions that could be undertaken [for CAR reserve]?
- Please provide any additional information, reports or evidence about the impacts of the bushfires on forests that you think is important to consider, related to the CAR reserve.

Forest industry

- What are your views on the most important forest industry impacts and what is the significance of these impacts?
- What are your views on potential remedial actions that could be undertaken [for forest industry impacts]?
- Please provide any additional information, reports or evidence about the impacts of the bushfires on forests that you think is important to consider, related to forest industries.

MNES

- What are your views on the most important MNES impacts and what is the significance of these impacts?
- What are your views on potential remedial actions that could be undertaken [for MNES impacts]?
- Please provide any additional information, reports or evidence about the impacts of the bushfires on forests that you think is important to consider, related to MNES.

Social and Economic Values

- What are your views on the most important social and economic impacts and what is the significance of these impacts?
- What are your views on potential remedial actions that could be undertaken [for social and economic impacts]?
- Please provide any additional information, reports or evidence about the impacts of the bushfires on forests that you think is important to consider, related to social and economic impacts.

Cultural and Heritage Values

- What are your views on the most important cultural and heritage impacts and what is the significance of these impacts?
- What are your views on potential remedial actions that could be undertaken [cultural and heritage impacts]?
- Please provide any additional information, reports or evidence about the impacts of the bushfires on forests that you think is important to consider, related to cultural and heritage values.

Ecosystem services

- What are your views on the most important ecosystem service impacts and what is the significance of these impacts?
- What are your views on potential remedial actions that could be undertaken [for ecosystem service impacts]?
- Please provide any additional information, reports or evidence about the impacts of the bushfires on forests that you think is important to consider, related to ecosystem services.

Optional Demographic Questions

- Type of submission: Individual or organisation
- Optional:
 - Organisation email
 - Organisation name
 - Post code
 - Age
 - Aboriginal and/or Torres Strait Islander origin
 - Victorian Traditional Owner
 - Gender

5.2 Works that were provided as part of, or referenced in submissions

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Appendix D: Table 1. East Gippsland RFA forested EVC

RFA region	EVCs	Pre-1750 extent (ha)	Current extent (ha)	% remaining	Status	% of pre-1750 extent in CAR reserve system	% of current extent in CAR reserve system					% of current extent on private land	% burnt by 2019–20 fires	% burnt by high-severity fires	% burnt by multiple severe fires since 2000
							Dedicated	Informal	Prescription	Private land covenants	Total				
Banksia Woodland	14	40,838	39,395	96	V	70	59	10	3	0	73	6	84	50	0
Coast Banksia Woodland	2	3,440	3,410	99	V	94	94	0	0	0	94	5	46	33	0
Cool Temperate Rainforest niche	31.1	N/A	5,486	N/A	N/A	N/A	60	12	22	0	95	0	38	16	0
Cool Temperate Rainforest*	31	9,728	4,241	44	V	43	64	13	22	0	99	0	39	17	0
Cut-tail Forest*	1506	46,015	46,015	100	V	53	31	11	11	0	52.90	1	74	43	0
Damp Forest*	29	232,132	230,636	99	V	56	34	10	12	0	56	3	87	48	8
Damp Sands Herb-rich Woodland*	3	772	484	63	V	33	52	0	0	0	52	47	1	1	0
Dry Rainforest niche	34.1	N/A	65	N/A	N/A	N/A	85	0	5	0	90	5	79	30	0
Dry Rainforest*	34	92	26	29	V	26	85	0	5	0	90	4	85	28	0
Dry Valley Forest*	169	11	11	100	R	80	0	80	0	0	80	2	5	11	0
Foothill Box Ironbark Forest*	24	584	584	100	E	99	87	10	1	0	98.50	0	90	59	39
Gallery Rainforest niche	135.1	N/A	540	N/A	N/A	N/A	26	55	9	0	90	6	95	52	0
Gallery Rainforest*	135	848	306	36	V	33	23	59	9	0	90	6	97	55	0
Grassy Dry Forest	22	31,469	27,896	89	-	39	33	5	5	0	44	34	42	27	7

RFA region	EVCs	Pre-1750 extent (ha)	Current extent (ha)	% remaining	Status	% of pre-1750 extent in CAR reserve system	% of current extent in CAR reserve system					% of current extent on private land	% burnt by 2019–20 fires	% burnt by high-severity fires	% burnt by multiple severe fires since 2000
							Dedicated	Informal	Prescription	Private land covenants	Total				
Grassy Woodland	175	37,963	34,079	90	V	58	64	0	0	0	64	34	9	2	1
Heathy Dry Forest	20	2,135	1,925	90	V	56	50	4	8	0	61.60	12	68	48	28
Herb-rich Foothill Forest	23	13	13	100	V	98	0	98	0	0	98	0	100	20	0
Limestone Box Forest	15	8,215	6,413	78	V	47	41	17	2	0	60.20	25	6	0	0
Littoral Rainforest niche	4.1	N/A	385	N/A	N/A	N/A	84	1	0	0	85	8	26	16	0
Littoral Rainforest*	4	440	49	11	V	9	79	0	0	0	79	13	22	15	0
Lowland Forest*	16	274,549	261,564	95	V	41	25	12	7	0	42.80	7	77	40	0
Montane Damp Forest	38	13,203	13,200	100	V	78	70	5	3	0	78	0	47	25	18
Montane Dry Woodland	36	65,543	59,322	91	-	55	53	4	3	0	60	18	40	25	16
Montane Grassy Woodland*	37	17,434	10,705	61	V	25	32	3	5	0	40	42	30	15	10
Montane Riparian Woodland*	40	4,939	3,027	61	V	12	13	5	1	0	20	59	15	7	2
Montane Wet Forest	39	13,068	13,068	100	V	78	75	1	3	0	78	0	34	16	11
Riparian Forest*	18	27,446	17,668	64	V	37	23	32	2	0	56.80	28	73	31	1
Riparian Scrub/ Swampy Riparian Forest Mosaic	17	21,411	19,195	90	N/A	57	37	17	10	0	63	11	67	36	0

RFA region	EVCs	Pre-1750 extent (ha)	Current extent (ha)	% remaining	Status	% of pre-1750 extent in CAR reserve system	% of current extent in CAR reserve system					% of current extent on private land	% burnt by 2019–20 fires	% burnt by high-severity fires	% burnt by multiple severe fires since 2000
							Dedicated	Informal	Prescription	Private land covenants	Total				
Shrubby Dry Forest	21	224,888	220,970	98	-	61	49	6	8	0	62	6	73	43	9
Shrubby Foothill Forest	45	2	2	100	V	100	0	100	0	0	100	0	20	0	0
Sub-alpine Woodland	43	8,739	8,672	99	V	93	91	3	0	0	94	2	35	22	20
Tableland Damp Forest*	35	5,083	5,026	99	V	50	34	13	3	0	50.70	2	20	14	0
Valley Grassy Forest*	47	21,754	17,634	81	V	29	16	13	6	0	35.70	39	73	36	1
Warm Temperate Rainforest niche	32.1	N/A	19,432	N/A	N/A	N/A	35	24	27	0	86	2	89	48	2
Warm Temperate Rainforest*	32	33,167	13,686	41	V	37	34	28	28	0	90	2	90	48	1
Wet Forest	30	31,558	31,558	100	V	64	52	6	6	0	64	1	58	26	10

Appendix D: Table 2. East Gippsland RFA non-forested EVC

RFA region	EVCs	Pre-1750 extent (ha)	Current extent (ha)	% remaining	Status	% of pre-1750 extent in CAR reserve system	% of current extent in CAR reserve system					% of current extent on private land	% burnt by 2019–20 fires	% burnt by high-severity fires	% burnt by multiple severe fires since 2000
							Dedicated	Informal	Prescription	Private land covenants	Total				
Alpine Coniferous Shrubland	156	3	3	100	E	100	100	0	0	0	100	0	0	0	0
Alpine Damp Grassland	1,002	62	62	100	E	100	100	0	0	0	100	0	22	15	15
Alpine Grassland	1,001	113	113	100	E	100	100	0	0	0	100	0	20	11	10
Alpine Grassy Heathland	1,004	87	87	100	E	100	100	0	0	0	100	0	7	1	0
Blackthorn Scrub	27	5,078	5,068	100	V	86	60	21	5	0	86	1	58	34	5
Brackish Sedgeland	13	192	192	100	R	100	100	0	0	0	100	0	0	0	0
Clay Heathland	7	2,882	2,431	84	-	45	47	4	2	0	53	22	76	35	6
Coastal Dune Scrub/ Coastal Dune Grassland Mosaic	1	3,305	3,264	99	N/A	93	94	0	0	0	94	1	30	24	0
Coastal Lagoon Wetland*	11	854	843	99	R	79	79	1	0	0	80	18	30	11	0
Coastal Saltmarsh	9	1,263	1,214	96	V	60	62	1	0	0	62	30	8	4	0
Coastal Sand Heathland*	5	673	656	97	R	90	93	0	0	0	93	7	73	68	0
Dunes	994	1,920	1,896	99	N/A	98	99	0	0	0	99	0	19	10	0
Estuarine Wetland*	10	856	844	99	V	48	27	21	0	1	49	7	21	14	0
Montane Riparian Thicket*	41	29	29	100	R	10	1	0	9	0	10	2	0	0	0

RFA region	EVCs	Pre-1750 extent (ha)	Current extent (ha)	% remaining	Status	% of pre-1750 extent in CAR reserve system	% of current extent in CAR reserve system					% of current extent on private land	% burnt by 2019–20 fires	% burnt by high-severity fires	% burnt by multiple severe fires since 2000
							Dedicated	Informal	Prescription	Private land covenants	Total				
Riparian Shrubland*	19	648	647	100	R	83	71	12	0	0	83	9	71	17	0
Riverine Escarpment Scrub	82	5	5	100	R	100	37	63	0	0	100	0	93	40	0
Rocky Outcrop Shrubland	28	1,602	1,602	100	-	98	97	1	0	0	98	0	60	35	3
Sand Heathland*	6	98	98	100	R	7	7	0	0	0	7	92	0	0	0
Sub-alpine Treeless Vegetation	44	1,842	1,814	98	V	86	84	1	1	0	87	5	9	4	3
Sub-alpine Wet Heathland*	210	149	149	100	E	99	99	0	0	0	99.40	0	16	11	10
Sub-alpine Wet Heathland/Alpine Valley Peatland Mosaic	211	11	11	100	N/A	100	100	0	0	0	100	0	17	11	6
Water Body – estuary	1107	6,177	6,175	100	N/A	40	39	0	0	0	40	1	4	6	0
Water Body – Fresh	992	889	884	100	N/A	54	51	2	1	0	54	4	12	1	0
Wet Heathland	8	31,558	9,778	31	-	24	52	21	3	0	77	4	84	50	0
Wet Swale Herbland*	12	782	781	100	R	98	99	0	0	0	99	1	5	0	0

Appendix D: Table 3. Gippsland RFA forested EVC

RFA region	EVCs	Pre-1750 extent (ha)	Current extent (ha)	% remaining	Status	% of pre-1750 extent in CAR reserve system	% of current extent in CAR reserve system					% of current extent on private land	% burnt by 2019–20 fires	% burnt by high-severity fires	% burnt by multiple severe fires since 2000
							Dedicated	Informal	Prescription	Private land covenants	Total				
Cool Temperate Rainforest niche	31.1	#N/A	6,791	#N/A	N/A	#N/A	16	13	3	45	76	13	2	1	0
Cool Temperate Rainforest*	31	11,314	3,658	32	V	26	15	12	4	50	80	14	3	1	0
Damp Forest*	29	226,048	124,927	55	V	32	12	19	25	2	57.50	20	25	10	4
Dry Rainforest niche	34.1	#N/A	79	#N/A	N/A	#N/A	63	13	15	0	91	8	9	3	2
Dry Rainforest*	34	111	27	25	V	24	76	11	13	0	100	0	6	0	0
Dry Valley Forest*	169	24,988	21,329	85	R	50	15	26	17	0	58	15	24	9	3
Gallery Rainforest niche	135.1	#N/A	169	#N/A	N/A	#N/A	37	16	2	1	56	25	13	10	0
Gallery Rainforest*	135	401	42	10	E	10	62	28	2	2	94	2	28	23	0
Grassy Dry Forest	22	39,804	36,822	93	-	53	26	20	11	0	57	28	17	9	3
Grassy Woodland*	175	48,547	25,826	53	V	15	22	5	0	1	29	68	12	4	2
Heathy Dry Forest	20	88,250	86,653	98	V	75	48	14	14	0	77	7	17	10	11
Herb-rich Foothill Forest	23	133,168	120,565	91	V	71	49	11	18	0	79	10	12	7	7
Limestone Box Forest*	15	1,383	891	64	V	20	13	18	0	0	31	49	4	3	0
Lowland Forest*	16	204,233	122,033	60	V	20	13	17	3	0	34	36	13	5	1

RFA region	EVCs	Pre-1750 extent (ha)	Current extent (ha)	% remaining	Status	% of pre-1750 extent in CAR reserve system	% of current extent in CAR reserve system					% of current extent on private land	% burnt by 2019–20 fires	% burnt by high-severity fires	% burnt by multiple severe fires since 2000
							Dedicated	Informal	Prescription	Private land covenants	Total				
Lowland Herb-rich Forest*	877	36,002	24,565	68	V	21	7	16	8	0	31	45	18	7	1
Montane Damp Forest	38	105,437	105,192	100	V	63	41	5	17	0	63.00	1	30	21	14
Montane Dry Woodland	36	138,819	130,837	94	V	58	45	7	10	0	61.90	6	24	16	13
Montane Grassy Woodland*	37	58,180	37,918	65	V	24	10	23	4	0	37.40	35	38	22	14
Montane Herb-rich Woodland	319	24,756	24,277	98	V	67	37	19	13	0	69	7	38	31	18
Montane Riparian Woodland*	40	7,470	4,135	55	V	21	25	13	0	1	39	42	15	9	6
Montane Wet Forest	39	11,692	11,691	100	V	67	38	6	24	0	67.50	1	54	29	12
Riparian Forest	18	11,641	9,837	85	V	63	37	25	11	0	74	10	12	6	3
Riparian Forest/ Swampy Riparian Woodland Mosaic	237	164	144	88	N/A	37	42	0	0	0	42	5	6	2	1
Shrubby Damp Forest	316	68,565	68,292	100	V	72	16	30	27	0	72.60	2	36	16	9
Shrubby Dry Forest	21	272,352	267,828	98	V	67	27	22	19	0	67.90	5	20	10	8
Shrubby Foothill Forest*	45	50,378	37,750	75	V	43	19	23	15	0	56.90	10	28	13	5
Shrubby Wet Forest*	201	2,235	2,233	100	V	42	5	17	20	0	42.50	1	22	8	2
Sub-alpine Woodland	43	53,482	53,446	100	V	79	74	2	2	0	79	2	25	17	17
Swampy Riparian Woodland*	83	15,659	4,171	27	V	1	2	0	0	0	3	54	1	1	0

RFA region	EVCs	Pre-1750 extent (ha)	Current extent (ha)	% remaining	Status	% of pre-1750 extent in CAR reserve system	% of current extent in CAR reserve system					% of current extent on private land	% burnt by 2019–20 fires	% burnt by high-severity fires	% burnt by multiple severe fires since 2000
							Dedicated	Informal	Prescription	Private land covenants	Total				
Tableland Damp Forest*	35	10,927	10,913	100	V	40	13	11	16	0	40	1	12	3	1
Valley Grassy Forest*	47	11,706	6,493	55	V	12	12	6	1	2	22	74	11	5	2
Valley Heathy Forest	127	1,246	1,228	99	-	90	6	86	0	0	92	7	69	17	0
Valley Slopes Dry Forest	177	1,996	1,933	97	V	74	9	63	3	0	76	14	3	1	5
Warm Temperate Rainforest niche	32.1	#N/A	6,372	#N/A	N/A	#N/A	20	21	11	12	64	27	22	12	1
Warm Temperate Rainforest*	32	11,434	2,861	25	V	21	36	23	14	13	85	10	26	15	1
Wet Forest*	30	136,276	75,929	56	V	25	10	7	12	16	45.50	30	11	5	2

Appendix D: Table 4. Gippsland RFA non-forested EVC

RFA region	EVCs	Pre-1750 extent (ha)	Current extent (ha)	% remaining	Status	% of pre-1750 extent in CAR reserve system	% of current extent in CAR reserve system					% of current extent on private land	% burnt by 2019–20 fires	% burnt by high-severity fires	% burnt by multiple severe fires since 2000
							Dedicated	Informal	Prescription	Private land covenants	Total				
Alpine Damp Grassland*	1,002	599	598	100	E	80	74	6	1	0	80	14	12	4	2
Alpine Fen	171	19	19	100	V	95	71	7	16	0	95	0	6	0	0
Alpine Grassland	1,001	713	708	99	V	71	64	5	1	0	71	16	17	11	10
Alpine Grassy Heathland	1,004	1,177	1,175	100	V	85	84	1	0	0	85	6	8	6	9
Blackthorn Scrub	27	7,364	7,359	100	V	84	20	53	12	0	85	2	57	44	10
Clay Heathland*	7	683	679	99	R	86	47	40	0	0	87	12	4	1	0
Montane Grassy Shrubland*	207	88	85	96	V	0	0	0	0	0	0	52	100	56	26
Montane Riparian Thicket	41	2,533	2,531	100	V	95	16	77	2	0	95	1	25	13	5
Montane Rocky Shrubland	192	3,168	3,168	100	V	98	92	5	1	0	98	0	2	2	5
Riparian Scrub	191	14,900	10,014	67	-	46	40	24	5	0	69	19	1	0	0
Riparian Shrubland	19	4,358	2,914	67	-	20	18	11	1	0	30	27	7	4	1
Riverine Escarpment Scrub	82	9,033	8,911	99	-	80	29	38	14	0	81	7	27	18	5
Rocky Outcrop Shrubland	28	1,813	1,808	100	-	96	37	60	0	0	96	3	1	1	0
Rocky Outcrop Shrubland/ Rocky Outcrop Herbland Mosaic	73	9,438	9,434	100	N/A	97	77	5	16	0	97	1	5	4	4

RFA region	EVCs	Pre-1750 extent (ha)	Current extent (ha)	% remaining	Status	% of pre-1750 extent in CAR reserve system	% of current extent in CAR reserve system					% of current extent on private land	% burnt by 2019–20 fires	% burnt by high-severity fires	% burnt by multiple severe fires since 2000
							Dedicated	Informal	Prescription	Private land covenants	Total				
Sub-alpine Grassland*	206	116	116	100	E	95	84	3	8	0	94.70	0	6	4	0
Sub-alpine Treeless Vegetation	44	3,106	3,028	98	V	70	50	16	6	0	71	16	14	6	4
Sub-alpine Wet Heathland	210	1,284	1,151	90	V	69	61	14	1	0	77	15	23	10	9
Sub-alpine Wet Heathland/ Alpine Valley Peatland Mosaic	211	72	72	100	N/A	83	82	0	1	0	83	10	37	26	22
Sub-alpine Wet Heathland/ Sub-alpine Grassland Mosaic	317	166	158	95	N/A	48	47	3	1	0	51	41	81	48	40

Appendix D: Table 5. North East RFA forested EVC

RFA region	EVCs	Pre-1750 extent (ha)	Current extent (ha)	% remaining	Status	% of pre-1750 extent in CAR reserve system	% of current extent in CAR reserve system					% of current extent on private land	% burnt by 2019–20 fires	% burnt by high-severity fires	% burnt by multiple severe fires since 2000
							Dedicated	Informal	Prescription	Private land covenants	Total				
Creekline Grassy Woodland*	68	10,650	5,604	53	V	3	6	0	0	0	6	67	1	0	0
Damp Forest	29	48,289	48,109	100	V	78	27	21	30	0	78	1	19	9	4
Floodplain Riparian Woodland*	56	40,391	15,916	39	V	4	10	0	0	0	10	63	9	0	0
Floodplain Riparian Woodland/Plains Grassy Woodland Mosaic	250	3,068	1,029	34	N/A	6	18	0	0	0	18	80	36	4	0
Granitic Hills Woodland	72	31,108	26,251	84	V	54	64	0	0	0	65	35	38	31	4
Grassy Dry Forest*	22	296,218	201,285	68	V	22	15	10	6	0	32	52	9	5	0
Grassy Woodland*	175	85,868	29,334	34	V	2	4	1	0	0	5	90	2	0	0
Grassy Woodland/ Valley Grassy Forest Mosaic	251	1,486	408	27	N/A	0	1	0	0	0	1	98	9	0	0
Heathy Dry Forest	20	99,330	89,042	90	V	56	36	13	14	0	62.50	17	20	14	8
Herb-rich Foothill Forest	23	555,400	450,347	81	-	44	23	13	19	0	55	19	20	11	5
Montane Damp Forest	38	39,923	39,922	100	-	73	36	9	28	0	73	0	26	15	10
Montane Dry Woodland	36	136,277	136,254	100	-	72	43	7	21	0	72	0	32	20	13
Montane Wet Forest*	39	20	20	100	E	57	0	16	41	0	57	0	58	36	28
Plains Grassy Woodland	55	143,263	27,831	19	V	0	1	0	0	0	1	93	2	0	0

RFA region	EVCs	Pre-1750 extent (ha)	Current extent (ha)	% remaining	Status	% of pre-1750 extent in CAR reserve system	% of current extent in CAR reserve system					% of current extent on private land	% burnt by 2019–20 fires	% burnt by high-severity fires	% burnt by multiple severe fires since 2000
							Dedicated	Informal	Prescription	Private land covenants	Total				
Riparian Forest	18	16,426	15,019	91	V	68	23	48	3	0	74	11	16	8	6
Riparian Forest/ Swampy Riparian Woodland Mosaic	237	11,178	7,144	64	N/A	31	13	31	4	0	48	19	22	10	7
Shrubby Dry Forest	21	291,260	281,811	97	V	68	31	15	24	0	70	4	28	15	10
Sub-alpine Woodland	43	45,346	45,280	100	V	86	82	1	3	0	86	0	17	13	21
Swampy Riparian Woodland*	83	5,202	3,702	71	V	35	19	28	1	0	49	34	14	6	1
Valley Grassy Forest*	47	250,296	80,332	32	V	3	6	3	0	0	9	86	9	3	0
Wet Forest	30	6,678	6,677	100	V	87	43	24	20	0	87	0	39	24	10

Appendix D: Table 6. North East RFA non-forested EVC

RFA region	EVCs	Pre-1750 extent (ha)	Current extent (ha)	% remaining	Status	% of pre-1750 extent in CAR reserve system	% of current extent in CAR reserve system					% of current extent on private land	% burnt by 2019–20 fires	% burnt by high-severity fires	% burnt by multiple severe fires since 2000
							Dedicated	Informal	Prescription	Private land covenants	Total				
Alpine Crag Complex	1,000	522	522	100	N/A	99	99	0	0	0	99	0	22	9	24
Alpine Damp Grassland	1,002	1,047	1,046	100	V	97	97	0	0	0	97	0	6	4	9
Alpine Fen	171	6	6	100	E	100	100	0	0	0	100	0	75	50	50
Alpine Grassy Heathland	1,004	3,635	3,633	100	V	95	95	0	0	0	95	0	1	0	3
Alpine Rocky Outcrop Heathland/ Alpine Dwarf Heathland Mosaic	1,105	554	553	100	N/A	99	98	0	0	0	99	0	1	1	1
Montane Riparian Thicket	41	1,272	1,249	98	V	92	29	64	1	0	94	0	24	16	5
Riparian Shrubland	19	1,425	1,271	89	-	56	63	0	0	0	63	20	24	10	12
Riverine Escarpment Scrub*	82	2,403	1,083	45	R	18	15	25	1	0	41	46	16	9	12
Rocky Outcrop Shrubland/ Rocky Outcrop Herbland Mosaic	73	3,367	3,252	97	N/A	88	75	16	0	0	92	8	30	22	5
Sub-alpine Dry Shrubland	1,003	283	283	100	V	100	100	0	0	0	100	0	20	5	8
Sub-alpine Treeless Vegetation	44	2,092	2,061	98	V	78	77	1	1	0	79	0	11	6	8
Sub-alpine Wet Heathland/ Alpine Valley Peatland Mosaic	211	1,080	1,078	100	N/A	95	95	0	0	0	95	0	6	4	11

Appendix D: Table 7. West Victoria RFA forested EVC

RFA region	EVCs	Pre-1750 extent (ha)	Current extent (ha)	% remaining	Status	% of pre-1750 extent in CAR reserve system	% of current extent in CAR reserve system					% of current extent on private land	% burnt by 2019–20 fires	% burnt by high-severity fires	% burnt by multiple severe fires since 2000
							Dedicated	Informal	Prescription	Private land covenants	Total				
Damp Sands Herb-rich Woodland/ Plains Grassy Woodland Mosaic	885	126,786	20,346	16	N/A	0	0	2	0	0	2	95	1	0	0
Granitic Hills Woodland*	72	6,700	2,558	38	V	9	24	0	0	0	24	75	1	0	0
Grassy Dry Forest*	22	130,645	83,263	64	V	18	16	11	1	0	28	59	1	0	0
Grassy Dry Forest/ Heathy Woodland Mosaic	783	4,175	2,800	67	N/A	41	4	57	0	0	61	38	3	0	0
Heathy Dry Forest/ Valley Grassy Forest Mosaic	390	434	434	100	N/A	98	98	0	0	0	98	2	1	0	0
Heathy Woodland	48	223,685	194,502	87	-	56	46	19	0	0	64	21	1	0	0
Heathy Woodland/ Sand Heathland Mosaic	892	8,613	5,774	67	N/A	42	50	13	0	0	63	37	3	0	0
Lowland Forest*	16	172,485	98,691	57	V	27	45	1	0	0	46.80	25	1	0	0
Riparian Scrub/ Swampy Riparian Forest Mosaic	17	6,780	5,067	75	N/A	39	52	0	0	0	52	27	1	0	0
Riparian Woodland*	641	24,312	10,290	42	V	2	3	2	0	0	5	62	1	0	0
Stony Rises Woodland*	203	76,072	43,713	57	V	14	23	0	0	1	24	74	14	0	0
Wet Heathland/ Heathy Woodland Mosaic	645	6,356	4,665	73	N/A	64	86	1	0	0	87	12	3	0	0

Appendix D: Table 8. West Victoria RFA non-forested EVC

RFA region	EVCs	Pre-1750 extent (ha)	Current extent (ha)	% remaining	Status	% of pre-1750 extent in CAR reserve system	% of current extent in CAR reserve system					% of current extent on private land	% burnt by 2019–20 fires	% burnt by high-severity fires	% burnt by multiple severe fires since 2000
							Dedicated	Informal	Prescription	Private land covenants	Total				
Aquatic Herbland/ Plains Sedgy Wetland Mosaic	691	30,169	16,725	55	N/A	10	16	1	0	1	18	77	0.1	0.0	0.0
Damp Heathland*	710	7,646	5,794	76	R	47	35	27	1	0	63	12	1.8	0.0	0.0
Plains Grassland*	132	861,000	114,021	13	V	0	2	0	0	1	4	94	0.2	0.0	0.0
Riparian Scrub*	191	6,712	5,424	81	R	57	52	18	0	0	71	26	3.3	0.0	0.0
Rocky Outcrop Shrubland	28	14,155	14,109	100	V	95	90	6	0	0	96	1	0.3	0.0	0.0
Sedge Wetland*	136	4,471	3,424	77	R	44	23	31	3	0	57	39	0.4	0.0	0.0
Shallow Freshwater Marsh	200	5,139	3,317	65	-	19	22	3	0	4	30	64	0.2	0.0	0.0
Stream Bank Shrubland	851	6,595	4,647	70	-	14	18	2	0	0	20	60	0.9	0.0	0.0
Swamp Scrub/ Plains Sedgy Wetland Mosaic	733	8,985	1,276	14	N/A	0	2	0	0	1	3	87	0.2	0.0	0.0
Wet Heathland*	8	11,725	8,192	70	R	58	75	8	0	0	83	12	7.1	0.0	0.0