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Health and wellbeing of kangaroos and other macropods in New South Wales

Report 11

October 2021

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Health and wellbeing of kangaroos and other macropods in New South Wales

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Terms of reference

1. That Portfolio Committee No 7 – Planning and Environment inquire into and report on the health and wellbeing of kangaroos, and other macropods, in New South Wales, and in particular:
 - (a) historical and long-term health and wellbeing indicators of kangaroos, and other macropods, at the local, bioregional and state levels, including the risk of localised extinction in New South Wales,
 - (b) the accuracy with which kangaroo, and other macropod, numbers are calculated when determining population size, and the means by which the health and wellbeing of populations is assessed,
 - (c) threats to kangaroo, and other macropod, habitat, including the impact of:
 - (i) climate change, drought and diversion and depletion of surface water sources,
 - (ii) bushfires,
 - (iii) land clearing for agriculture, mining and urban development,
 - (iv) the growing prevalence of exclusion fencing which restricts and disrupts the movement of kangaroos,
 - (d) current government policies and programs for kangaroo management, including:
 - (i) the method used for setting quotas for kangaroo culling,
 - (ii) the management of licences to cull kangaroos,
 - (iii) temporary drought relief policies and programs,
 - (e) current government policies and programs in regards to 'in pouch' and 'at foot joeys' given the high infant mortality rate of joeys and the unrecorded deaths of orphaned young where females are killed,
 - (f) regulatory and compliance mechanisms to ensure that commercial and non-commercial killing of kangaroos and other macropods is undertaken according to the Biodiversity Conservation Act 2016 and other relevant regulations and codes,
 - (g) the impact of commercial and non-commercial killing of kangaroos and other macropods, including the difficulty of establishing numbers killed by landholders since the removal of the requirement for drop tags, and
 - (h) current and alternative measures to provide an incentive for and accelerate public and private conservation of kangaroos and other macropods.
2. That the committee report by 15 October 2021.¹

The terms of reference were self-referred by the committee on 15 March 2021.²

¹ The original reporting date was the first sitting day in September 2021 (*Minutes*, NSW Legislative Council, 16 March 2021, pp 1995-1996). The committee resolved on 11 June 2021 to extend the date to 14 October 2021 (*Minutes*, NSW Legislative Council 22 June 2021, p 2329), then on 8 October 2021 the committee resolved to extend the date to 15 October 2021 (*Minutes*, NSW Legislative Council, 12 October 2021, p 2423).

² *Minutes*, NSW Legislative Council, 16 March 2021, pp 1995-1996.

Committee details

Committee members		
Ms Cate Faehrmann MLC	The Greens	<i>Chair</i>
The Hon Mark Pearson MLC	Animal Justice Party	<i>Deputy Chair</i>
The Hon Catherine Cusack MLC	Liberal Party	
The Hon Ben Franklin MLC	The Nationals	
The Hon Rose Jackson MLC**	Australian Labor Party	
The Hon Shayne Mallard MLC	Liberal Party	
The Hon Penny Sharpe MLC	Australian Labor Party	
Website	www.parliament.nsw.gov.au	
Email	portfoliocommittee7@parliament.nsw.gov.au	
Telephone	(02) 9230 3081	

** The Hon Rose Jackson MLC replaced the Hon Mark Buttigieg as a substantive member of the committee from 21 June 2021.

Chair's foreword

Kangaroos are an iconic native animal, integral to the landscape and ecosystems of New South Wales. Their cultural and spiritual importance to Aboriginal people is immemorial and continuing.

The NSW Government is charged with protecting and ensuring the survival of all macropod species and their habitat. The 2019-2020 bushfires, which caused devastating loss of wildlife, highlighted the risks of extinction faced by many native species, after years of land clearing and urban sprawl had already taken a toll on fragile ecosystems. Yet even after the fires, and the preceding drought which decimated some kangaroo populations, there continues to be a perception in some quarters that kangaroos are a 'pest'.

Management of kangaroos in New South Wales raises complex ethical and scientific questions as well as strong emotions from members of the community with different interests and ethical standpoints. Kangaroos are protected by law in New South Wales, yet those laws allow for government-licensed commercial and non-commercial killing. In the name of ensuring 'ecologically viable' kangaroo populations, the NSW Government licenses a commercial harvest industry to kill a proportion of 'common' species in western New South Wales each year.

The robustness of the science and population estimates behind setting quotas for how many kangaroos may be harvested has been called into question through this inquiry. Without independent oversight and greater transparency, we cannot have confidence that the government's kangaroo management program is not contributing to potentially devastating declines in some kangaroo populations.

The lack of effective checks and scrutiny of non-commercial culling of kangaroos is another issue of serious concern. Landholders are allowed to apply for a licence to shoot kangaroos to manage the condition of their land, however it is evident that there is lax monitoring and oversight of this across the board. If the government is set on allowing non-commercial killing of kangaroos, I urge them to act upon the recommendations contained in this report, including undertaking a full review of the systems for issuing licences and monitoring compliance, including by employing additional National Parks and Wildlife Services Compliance Officers.

This inquiry has also heard troubling evidence of inhumane, disrespectful practices that are not acceptable to many in the community, including the treatment of joeys. There are several recommendations that, if acted upon, will increase the transparency around the deaths of joeys that are occurring in both the commercial and non-commercial industries.

As Chair, I would like to thank the many individuals and organisations who gave evidence to this inquiry, both written submissions and in person. For some, the issues are sensitive and deeply felt, and I acknowledge the commitment of all participants to shed light on difficult issues.

I also thank my fellow committee members, who have engaged thoughtfully with these complex issues, and worked together respectfully even where consensus was not possible. While I am disappointed that the final report does not incorporate all conclusions and recommendations I proposed, I thank all committee members for arriving at a set of findings and recommendations that do address significant deficits in current systems for overseeing kangaroo harvesting, culling and animal welfare. I thank the committee secretariat for their assistance through the inquiry.

I urge the government to take these recommendations seriously, in good faith, and build systems we can all have confidence in to protect our precious ecosystems and wildlife.

A handwritten signature in blue ink, appearing to read 'Cate', with a long horizontal flourish extending to the right.

Cate Faehrmann MLC
Committee Chair

Findings

- Finding 1** **30**
That the draft *NSW Commercial Kangaroo Harvest Management Plan 2022-2026* makes reference to taking into account the interest of Aboriginal communities and the NSW Government should give greater focus to demonstrating how Aboriginal concerns about kangaroo welfare and spiritual importance are being addressed.
- Finding 2** **31**
That the use of exclusion fencing has the potential to cause disruption to kangaroo migration as well as access to habitat, food and water.
- Finding 3** **57**
That the current methodology used by the Department of Planning, Industry and Environment to produce estimates of New South Wales' macropod populations lacks transparency.
- Finding 4** **69**
That the National Parks and Wildlife Service does not have adequate systems to monitor compliance with licence conditions for the non-commercial culling of kangaroos, as evidenced by the fact that they could not provide accurate figures on how many kangaroos have been legally culled under non-commercial licences.
- Finding 5** **82**
That there is a lack of monitoring and regulation at the point-of-kill during both commercial and non-commercial killing of kangaroos.
- Finding 6** **91**
That the shooting of kangaroos has a profound impact on the mental health of some Aboriginal people, kangaroo carers and rescuers.

Recommendations

- Recommendation 1** **30**
That the NSW Government:
- undertake extensive and genuine consultation with Aboriginal peoples to seek their views regarding the commercial and non-commercial culling of kangaroos, and ensure these views are given serious consideration in the development of all future kangaroo management plans
 - incorporate the genuine involvement of Aboriginal peoples in the management of kangaroo populations.
- Recommendation 2** **31**
That the NSW Government conduct a review of the impact of exclusion fencing on macropod populations, and that the report be publicly released when complete.
- Recommendation 3** **31**
That the NSW Government examine the potential economic benefits of kangaroo eco-tourism and the economic value of commercial harvesting.
- Recommendation 4** **32**
That the Department of Planning, Industry and Environment amend planning policies to require assessment of the impact on kangaroos located within peri-urban developments when assessing development applications.
- Recommendation 5** **32**
That the National Parks and Wildlife Service:
- work with relevant local councils to identify local nature reserves and corridors for resident kangaroo populations on the peri-urban fringe
 - develop a plan for protecting further areas of kangaroo habitat in New South Wales through creation of reserves and national parks.
- Recommendation 6** **32**
That the Department of Planning, Industry and Environment commission research into the potential impacts of climate change on macropod populations in New South Wales.
- Recommendation 7** **57**
That the NSW Government request the Auditor-General to undertake a review of the Kangaroo Management Plan's objectives in regards to how they satisfy the requirements of the *Biodiversity Conservation Act 2016* and the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*.
- Recommendation 8** **57**
That the Department of Planning, Industry and Environment investigate new technologies for counting kangaroo populations such as the use of infra-red and other camera drone technology.

- Recommendation 9** **58**
That the Department of Planning, Industry and Environment use video imaging of kangaroo populations when surveying populations from aircrafts and make this footage publicly available on its website.
- Recommendation 10** **58**
That the Natural Resources Commission review the current methodology for estimating macropod populations in New South Wales.
- Recommendation 11** **58**
That the Natural Resources Commission establish an independent panel of ecologists to examine the scientific evidence for assumptions used in the Kangaroo Management Plan that refer to kangaroo 'abundance', annual population growth, the impact of migration on population counts and the attrition of kangaroos in drought.
- Recommendation 12** **59**
That the Department of Planning, Industry and Environment identify, and independently verify, the biological growth rate for each macropod species to better inform setting sustainable quotas under future Commercial Kangaroo Harvest Management Plans.
- Recommendation 13** **59**
That when setting population estimates and harvest quotas, the Department of Planning, Industry and Environment must take into consideration climatic factors such as drought. In times of declared drought, reassessment of quotas should be conducted based on changed conditions, rather than have quotas made on out of date population estimates.
- Recommendation 14** **60**
That the Minister for Energy and Environment not endorse the new *Commercial Kangaroo Harvest Management Plan* until the recommendations of this inquiry have been considered.
- Recommendation 15** **60**
That the Department of Planning, Industry and Environment produce plain English explanations of the methodology used in population surveys and the scientific rationale for setting harvest quotas and thresholds to be included in the *Commercial Kangaroo Harvest Management Plan 2022-2026*, and posted on its website.
- Recommendation 16** **60**
That the Department of Planning, Industry and Environment collect and publicly release data on all joey deaths occurring in the commercial kangaroo industry, including in-pouch, at-foot, and joeys at-foot who have fled.
- Recommendation 17** **60**
That the Department of Planning, Industry and Environment include in the *Commercial Kangaroo Harvest Management Plan 2022-2026* a requirement that commercial harvesters include the number of orphaned joeys when calculating the count for filling quotas.

- Recommendation 18** **70**
That the Department of Planning, Industry and Environment conduct a full review of the systems for issuing and compliance monitoring of licences to harm kangaroos. The review should aim to increase the rigour and transparency of the licensing and compliance monitoring processes, be conducted in consultation with stakeholders, and be made public.
- Recommendation 19** **70**
That the NSW Government review the 2018 changes to licences to harm kangaroos as a matter of urgency and provide a report to Parliament within 12 months.
- Recommendation 20** **82**
That the National Parks and Wildlife Service employ additional compliance officers to proactively monitor and investigate the non-commercial industry's compliance with the code of practice as well as specific cruelty allegations.
- Recommendation 21** **82**
That the National Parks and Wildlife Service work with RSPCA NSW to ensure the prompt reporting and investigation of breaches of regulatory compliance and cruelty allegations in regards to kangaroos and other wildlife.
- Recommendation 22** **90**
That the National Parks and Wildlife Service make it mandatory for persons licensed to harm kangaroos to notify their neighbours, as far as is reasonably practicable, before they commence shooting.
- Recommendation 23** **90**
That the Department of Planning Industry and Environment, specifically including the National Parks and Wildlife Service, and the NSW Police Force, work together to:
- clarify the current investigation and enforcement framework in dealing with complaints concerning kangaroo shooting
 - establish a central database to receive, handle or refer complaints to responsible government agencies
 - ensure more satisfactory responses to complaints relating to kangaroo shooting.

Conduct of inquiry

The terms of reference for the inquiry were self-referred by the committee on 15 March 2021.

The committee received 405 submissions and 18 supplementary submissions.

The committee held three public hearings: two at Parliament House in Sydney and one via videoconference.

Inquiry related documents are available on the committee's website, including submissions, hearing transcripts, tabled documents and answers to questions on notice.

Chapter 1 Background

This inquiry was instigated in the context of concerns from some quarters about the state of kangaroo populations in New South Wales, and the government's role in managing kangaroo populations. This chapter outlines the background to the inquiry, and the NSW Government's legislative and administrative arrangements relating to kangaroo populations in New South Wales. Noting that there has been a longstanding debate over management of kangaroo populations, and the commercial kangaroo harvest program in particular, this chapter also presents an overview of different perspectives on kangaroo populations in New South Wales that have informed this inquiry.

Background to the inquiry

- 1.1 There is a long history of debate on kangaroo management in New South Wales, and elsewhere in Australia. There are polarised points of view, often strongly held, and the debate reflects ethical and political differences, as well as changing scientific understandings of the role of kangaroos in Australia's ecology.³
- 1.2 In choosing to undertake an inquiry into the health and wellbeing of kangaroos and other macropods in New South Wales at this time, the committee is aware of a level of public concern about threats to kangaroo populations across the state from recent climate events, including the 2017-2020 drought and the 2019-2020 bushfires. We are also aware of concerns that changes to land use and agricultural practices have adversely impacted on kangaroo populations in different parts of the state, leading to the possibility of localised extinction and other negative impacts.
- 1.3 Alongside concerns about the impact of environmental changes on kangaroos, committee members had heard from people concerned that the NSW Government, through its licensing of both commercial and non-commercial killing of kangaroos, was exacerbating declining kangaroo numbers across the state, posing a direct threat to the survival of the species in some areas. Further, animal rights activists have argued that the state-sanctioned killing of kangaroos raises significant animal welfare concerns, causing unnecessary pain and suffering both to targeted animals and their dependent young.
- 1.4 Through this inquiry, the committee has heard a range of evidence on the impact of land use changes on kangaroos, whether population numbers are at risk, and, if so, whether that is due to man-made causes or a natural cycle of 'boom and bust' attributable solely to climatic conditions. These issues are considered in chapter 2.

Responsibility and legislative framework for managing kangaroo populations in New South Wales

- 1.5 Kangaroos, wallaroos and wallabies are protected in New South Wales under the *Biodiversity Conservation Act 2016* (the Act). The Act has a stated purpose 'to maintain a healthy, productive

³ Answers to supplementary questions, Dr Daniel Ramp, Associate Professor and Research Director, The Think Tank for Kangaroos (THINKK), 15 June 2021, p 1. References Boom et al 2012, Lunney 2020.

and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development.¹⁴ The Act classes all mammals, including kangaroos, as 'protected animals'.¹⁵ According to the Act, it is an offence to harm a protected animal except in certain circumstances where authorised under other legislation, regulation or under a biodiversity conservation licence.¹⁶ Dealing or attempting to deal in protected animals is also an offence under the Act.¹⁷

- 1.6 The NSW Government has a statutory obligation under the *Biodiversity Conservation Act 2016* to ensure ecologically viable populations of kangaroos in New South Wales.¹⁸ The NSW Government 'works to maintain ecologically viable populations through the commercial kangaroo management program, and management of non-commercial licences to cull kangaroos.'¹⁹
- 1.7 There have been a number of state government agencies involved in kangaroo management over the years. Currently, responsibility lies within different parts of the Department of Planning, Industry and Environment (DPIE). Representatives DPIE told this inquiry that the department's work is governed by a 'very tight legislative framework', including both state and national legislation.²⁰ In addition to the state *Biodiversity Conservation Act 2016*, the federal *Environment Protection and Biodiversity Conservation Act 1999* (Cth) sets out requirements to be met for a wildlife trade plan to be approved by the federal government in order for permits to be issued for commercial export of wildlife products.²¹ The *Prevention of Cruelty to Animals Act 1979* and *Firearms Act 1996* both have relevance for protection and management of kangaroos in New South Wales.²²
- 1.8 In addition to the legislative framework, there are a number of codes of practice, guidelines and plans related to the management of kangaroos. There are also a number of advisory bodies and other agencies that have responsibilities for aspects of kangaroo management.²³ This section outlines the key guiding documents for kangaroo management in New South Wales, and the responsibilities within government.

⁴ *Biodiversity Conservation Act 2016* s 1.3

⁵ *Biodiversity Conservation Act 2016*, Schedule 5.

⁶ *Biodiversity Conservation Act 2016*, s 2.1(1)(c) creates an offence for harming a protected animal. *Biodiversity Conservation Act 2016* Division 2 specifies defences for harming a native animal.

⁷ *Biodiversity Conservation Act 2016* s 2.5(c).

⁸ Submission 246, NSW Government, p 1.

⁹ Submission 246, NSW Government, p 1.

¹⁰ Evidence, Ms Sharon Molloy, Executive Director, Biodiversity and Conservation Division, Environment, Energy and Science, Department of Planning, Industry and Environment, 15 June 2021, p 52.

¹¹ NSW Government, Office of the Environment and Heritage (now DPIE), *NSW Commercial Kangaroo Harvest Management Plan 2017-2021*, p 1.

¹² Evidence, Ms Molloy, 15 June 2021, p 51.

¹³ Evidence, Ms Molloy, 15 June 2021, p 51.

Commercial kangaroo harvesting: the Kangaroo Management Program

- 1.9** The Kangaroo Management Program, which governs the commercial kangaroo harvesting industry, is guided by a plan, currently the *NSW Commercial Kangaroo Harvest Management Plan 2017-2021*. A new five-year *Commercial Kangaroo Harvest Management Plan 2022-2026* was under development, and subject to consultation, as this inquiry took place.¹⁴ The *Commercial Kangaroo Harvest Management Plan* is developed within the Biodiversity and Conservation Division of DPIE for approval by the state environment minister. In order for kangaroo products to be exported internationally, the plan also requires approval of the Commonwealth environment minister under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.
- 1.10** The *Commercial Kangaroo Harvest Management Plan* guides the commercial harvesting of four species of kangaroo: eastern grey, western grey, red and wallaroo. Population numbers for each of these species are monitored by DPIE, through annual or triennial aerial surveys that are carried out over private land where commercial killing occurs.¹⁵ The survey method used to estimate the kangaroo population was an issue of concern in this inquiry, as considered in chapter 3.
- 1.11** Population estimates produced by the annual surveys are used to set a quota for commercial killing of kangaroos. Annual quotas for each commercial harvesting zone are set out in an annual Quota Report, such as the *NSW Commercial Kangaroo Harvest Management Plan 2017-2021: 2021 Quota Report*. Quotas for each zone are set at a maximum of 15 per cent of the population estimate for wallaroos, eastern and western greys, and 17 per cent of the population estimate for red kangaroos in each zone, based on the previous year's population estimate. There is also a statistically calculated minimum population level per zone at which harvest quotas are reduced or suspended. The appropriateness of the harvest quotas, and minimum thresholds was another issue of concern considered in chapter 3.
- 1.12** The Kangaroo Management Program Team in DPIE is responsible for issuing and managing licences to harvest kangaroos commercially in New South Wales.¹⁶ To be granted a licence, a commercial harvester must meet certain requirements, such as holding a valid firearms licence and having completed an accreditation course. Harvesters must show written consent from a landholder to shoot kangaroos on their land, and must tag kangaroo carcasses with a tag purchased from DPIE. Licences are sold for specific kangaroo species in specific zones.¹⁷
- 1.13** As part of its management of the commercial kangaroo management program, DPIE convenes a Kangaroo Management Advisory Panel, which includes representatives of industry, animal welfare interest groups, Aboriginal communities, farmers, scientists and government.¹⁸

¹⁴ The committee learnt during this inquiry that the Department of Planning, Industry and Environment was developing a new *Commercial Kangaroo Harvest Management Plan 2022-2027*. Evidence, Ms Molloy, 19 August 2021, p 2. See also correspondence, Ms Sandra Harris, Director Ministerial Services, Officer of the Coordinator-General, Department of Planning, Industry and Environment to the secretariat, 11 July 2021.

¹⁵ Submission 246, NSW Government, p 1.

¹⁶ Submission 246, NSW Government, p 3.

¹⁷ Submission 246, NSW Government, pp 9-10.

¹⁸ Evidence, Ms Molloy, 19 August 2021, p 2.

Non-commercial culling

- 1.14** Where the Kangaroo Management Program within DPIE manages a commercial harvest program that operates in some parts of the state, there is also a licensing system through which licences to harm kangaroos can be issued to landholders to 'manage the impacts of kangaroos while maintaining ecologically viable kangaroo populations.'¹⁹ The National Parks and Wildlife Service (NPWS) is responsible for licensing non-commercial killing of kangaroos. According to the NSW Government submission, where kangaroos are damaging property, posing risks to safety or causing economic hardship, NPWS will first try to help landholders manage the problem through non-lethal methods, or engage with commercial harvesters. However, if other methods are not effective, or in non-commercial zones, landholders can apply to their local NPWS office for a non-commercial licence to harm kangaroos.²⁰
- 1.15** There are standard licence obligations for the non-commercial killing of kangaroos.²¹ They include keeping a register of shooters and producing this to NPWS on request, complying with the *National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Non-commercial Purposes*, providing records of animals harmed under the licence to NPWS, and allowing reasonable access to NPWS to inspect the property.²² In August 2018, several changes to licensing conditions were made to 'assist landholders manage the impact of kangaroos during the drought' by making it easier to obtain a permit and meet licensing requirements.²³ These changes are considered in chapter 4.
- 1.16** Several government agencies have a role in monitoring compliance with non-commercial licence conditions, including:
- NPWS, which is responsible for investigating breaches of the *Biodiversity Conservation Act 2016* and non-compliance with licence conditions
 - NSW Police Force, which as noted above investigates breaches of the *NSW Firearms Act 1996*, firearm safety laws and non-compliance with firearm licences, and has the power to enforce the *Biodiversity Conservation Act 2016* and *Prevention of Cruelty to Animals Act 1979*
 - As well as the NSW Police Force, RSPCA NSW and the Animal Welfare League can investigate breaches of the *Prevention of Cruelty to Animals Act 1979*.²⁴
- 1.17** The NSW Government submission noted the importance of multiple agencies being aware of and coordinating investigation and enforcement action, and suggested that NPWS local area offices maintain records of reported incidents and action taken and refer information to the agencies listed above. In doing this, they are guided by the Office of Environment and Heritage Compliance Policy and the NPWS Law Enforcement and Compliance Manual.²⁵ According to

¹⁹ Submission 246, NSW Government, p 9.

²⁰ Submission 246, NSW Government, p 10.

²¹ Submission 246, NSW Government, p 10, links to *Standard conditions for non-commercial licences to harm kangaroos* on DPIE website.

²² Submission 246, NSW Government, p 13.

²³ Submission 246, NSW Government, p 10.

²⁴ Submission 246, NSW Government, p 13.

²⁵ Submission 246, NSW Government, p 13. Note OEH refers to the Office of Environment and Heritage NSW, which was abolished in 2019 and its functions assumed by DPIE.

the NSW Government submission, the DPIE Special Investigations Unit is also notified of alleged serious offences, so it can lead an investigation, where appropriate.²⁶

- 1.18 Stakeholder views on the adequacy of the licensing system and oversight of non-commercial culling are considered in chapter 4.

Legislation on animal welfare and prevention of cruelty to animals

- 1.19 In addition to the *Biodiversity Conservation Act 2016*, as noted above, there are a number of pieces of legislation relevant to protection of kangaroos. The *Prevention of Cruelty to Animals Act 1979*, applies to kangaroos²⁷ and is enforced by the RSPCA NSW, the Animal Welfare League NSW and the NSW Police.²⁸
- 1.20 The New South Wales Police Force is responsible for monitoring and investigating breaches under the *Firearms Act 1996*, such as firearms safety breaches and non-compliance with firearm licences.²⁹
- 1.21 In relation to shooting of kangaroos, there are two different codes of practice, intended to promote humane practices when kangaroos are being shot. There is a *National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Non-commercial Purposes* (hereafter 'the non-commercial code'), endorsed by the Natural Resource Management Ministerial Council, which was produced to ensure that 'all persons intending to shoot free-living kangaroos or wallabies for non-commercial purposes undertake the shooting so that the animal is killed in a way that minimises pain and suffering'.³⁰
- 1.22 For commercial shooters, there is a *National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes* (hereafter 'the commercial code'), revised in 2020, published by AgriFutures Australia. According to its preface, the 2020 commercial code 'sets an achievable standard of humane conduct and is the minimum required of persons shooting kangaroos and wallabies for commercial purposes'.³¹ It sets criteria for humane shooting of kangaroos and wallabies for commercial purposes, and specifies the most appropriate euthanasia methods for pouch young and for minimising negative welfare impacts on 'at-foot' joeys.³²
- 1.23 The NSW Government submission notes that, as a condition of their licence under the *Biodiversity Conservation Act 2016*, all commercial kangaroo harvesters must comply with the

²⁶ Submission 246, NSW Government, p 13.

²⁷ Evidence, Ms Molloy, 19 August 2021, p 2.

²⁸ Submission 246, NSW Government, p 11.

²⁹ Submission 246, NSW Government, p 13; Evidence, Ms Molloy, 19 August 2021, p 2.

³⁰ Australian Government, Department of Agriculture, Water and Environment, *National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Non-commercial Purposes 2008*, p 5.

³¹ AgriFutures, *National Code of Practice for the Human Shooting of Kangaroos and Wallabies for Commercial Purposes 2020*, p 1.

³² AgriFutures, *National Code of Practice for the Human Shooting of Kangaroos and Wallabies for Commercial Purposes 2020*, p 2.

commercial code. For non-commercial culling, ensuring all kangaroos are harmed in accordance with the non-commercial code, is a standard licence condition.³³

- 1.24 Animal welfare issues, including in particular the treatment of pouch and 'at-foot' joeys according to these codes, has been a particular issue of concern in this inquiry, with issues raised in relation to both commercial and non-commercial shooting. These issues are considered in chapter 5.

Perspectives on management of kangaroos in New South Wales

- 1.25 The range of stakeholder evidence to this inquiry has demonstrated the complex, polarised and often emotive nature of the debate on kangaroos in New South Wales. Issues that have generated concern and controversy in this inquiry are often underpinned by deeply-held values and ethics, as well as interests, that it is important to acknowledge. This section outlines the different perspectives that witnesses have brought to this inquiry.

Indigenous perspectives

- 1.26 Recognising that Indigenous perspectives on kangaroos are not monolithic, the committee appreciated contributions from a number of Aboriginal witnesses to this inquiry. Evidence from Aboriginal elder Uncle Max Dulumunmun Harris and Aboriginal educator and advocate Aunty Ro Mudyin Godwin provided a strong counterpoint to the view that kangaroos are a 'problem' that need to be 'managed'. They highlighted the ancient presence of kangaroos in the land – well before colonists introduced farming and grazing animals, even before Indigenous culture – and spoke powerfully of the inherent right of kangaroos, as a native animal, to live without cruelty and exploitation.
- 1.27 They also highlighted the spiritual importance of kangaroos to Indigenous peoples. For some Aboriginal people, kangaroos are a sacred totem animal, part of their spiritual connection to country, and whose death is felt as a death of part of oneself. While some Aboriginal people did kill kangaroos, it was not done for profit, but done with ceremony, for food and medicine. This important perspective is considered further in chapter 2.³⁴

Animal rights advocates

- 1.28 This inquiry has heard from a range of organisations and individuals coming from an animal rights perspective. There is diversity in this group, but broadly speaking animal rights advocates start from the premise that kangaroos, as sentient beings, have intrinsic value, and deserve to be treated with compassion and respect, free from human exploitation or interference.³⁵ Many animal rights advocates point out that kangaroos are sensitive and emotional, as well as

³³ Submission 246, NSW Government, p 10, links to *Standard conditions for non-commercial licences to harm kangaroos* on DPIE website.

³⁴ Evidence, Uncle Max Dulumunmun Harrison, Aboriginal Elder, 15 June 2021, pp 13-14; Evidence, Aunty Ro Mudyin Godwin, Aboriginal Educator 15 June 2021, pp 12-14.

³⁵ For example, Evidence, Mr Farnham Seyedi, Volunteer Solicitor, Animal Defenders Office, 11 June 2021, p 33.

intrinsically social animals, and experience complex mental as well as physical suffering when their social network is affected by shooting.³⁶ Many animal rights activists stress the intrinsic rights of kangaroos to exist free from human interference, as wild animals in their native land. For example, prominent Australia philosopher Peter Singer has called for legal recognition of kangaroos' special status as original residents of Australia, arguing 'the only ethical approach is one that gives their interests equal consideration alongside similar human interests.'³⁷

- 1.29** There are different perspectives among animal rights advocates on whether killing a kangaroo is ever warranted. For some, killing of kangaroos may be acceptable, but only if done in a way that minimises suffering and is necessary to protect particular individuals, or other threatened species, and not for commercial purposes.³⁸
- 1.30** A range of perspectives on kangaroo management can be seen within the 'animal rights'-informed participants in this inquiry, which includes representatives of animal welfare organisations such as the RSPCA as well as researchers, filmmakers and individuals with an evident passion for protecting kangaroos.

Ecologists

- 1.31** Some ecologists approach the question of kangaroos from a different perspective, focusing not so much on the welfare of individual animals or mobs, but of whole species and ecosystems. Dr Benjamin Allen, Senior Research Fellow (Wildlife Management), University of Southern Queensland told the committee that, wildlife ecologists' perspectives encompass a broader time frame and a broader scale, focusing not on the welfare of individual animals, but of the species as a whole across time.³⁹
- 1.32** These ecologists are concerned with the functioning of whole ecosystems, and protecting all species in them, including managing threats to biodiversity when some species become a threat to biodiversity in a particular landscape.⁴⁰ Where human action has modified an ecosystem, in a way that advantages some species over others, ecologists may see human intervention (including killing of animals) as necessary to ensure biodiversity for all species.⁴¹

Farmers and pastoralists

- 1.33** The committee heard from a number of groups representing landholders in New South Wales, both farmers and pastoralists. In this history of the debate over kangaroos in New South Wales, landholders have tended to see kangaroos as pests who compete with crops and livestock, and

³⁶ For example, submission 273, Professor David Brooks, p 10.

³⁷ Cited in submission 235, Animal Defenders Office, p 17.

³⁸ Evidence, Dr Di Evans, Senior Scientific Officer, RSPCA Australia, 15 June 2021, p 23.

³⁹ Evidence, Dr Benjamin Allen, Senior Research Fellow (Wildlife Management), University of Southern Queensland, 11 June 2021, p 21.

⁴⁰ For example, evidence, Ms Heather Campbell, Chief Executive Officer, Bush Heritage Australia, 11 June 2021, p 22.

⁴¹ For example, evidence, Ms Campbell, 11 June 2021, p 22.

whose numbers need to be managed.⁴² Farmers contend that landscape changes associated with farming – such as introduction of artificial water points and the presence of food crops – have resulted in 'overabundance' of kangaroos, which puts strain both on farming and the environment.⁴³

- 1.34** Pastoralists have an interest in maintaining pastures through managing the grazing of herbivores.⁴⁴ From farmers' and pastoralists' perspective, culling of kangaroos is justified, indeed necessary, both to protect agricultural assets, and also to prevent mass animal suffering that occurs when drought makes existing population numbers unsustainable, resulting in kangaroos dying prolonged deaths *en masse* from starvation and dehydration.⁴⁵ According to this group, managing kangaroo numbers, including through culling may be necessary to achieve environmental, agricultural and social outcomes.⁴⁶

Kangaroo industry advocates

- 1.35** Advocates for the kangaroo industry point out that the commercial industry only targets four species of kangaroos whose numbers are regarded as 'abundant'.⁴⁷ They suggest that, even in the absence of a commercial industry, some individuals of these species would need to be culled in order to protect the wellbeing of the entire species, as well as the natural environment.⁴⁸ That being the case, industry representatives suggest the commercial harvesting of kangaroos is preferable to non-commercial culling, as meat and skins that would otherwise be discarded are turned into valuable products, representing a sustainable use of a natural resource.⁴⁹ It is also suggested that kangaroo products are more environmentally friendly than other meat and leather industries.⁵⁰
- 1.36** Commercial industry representatives argue that standards within the commercial industry ensure better animal welfare outcomes than non-lethal methods to control population, and is more humane than non-commercial culling due to higher standards of practice and competency required to be demonstrated by commercial shooters.⁵¹

⁴² Evidence, Ms Annabel Johnson, Head of Policy and Advocacy, NSW Farmers Association, 11 June 2021, p 41; Evidence, Ms Bronwyn Petrie, Conservation and Resource Management Chair, NSW Farmers Association, 11 June 2021, p 41; Evidence, Mr Lachlan Gall, Councillor and Kangaroo Management Representative, Pastoralists Association of West Darling, 11 June 2021, p 43; Submission 280 and 280a, Pastoralists Association of West Darling.

⁴³ Evidence, Ms Johnson, 11 June 2021, p 41.

⁴⁴ Answers to supplementary questions, Kangaroo Management Taskforce, 16 July 2021, p 6.

⁴⁵ Evidence, Ms Johnson, 11 June 2021, p 41.

⁴⁶ For example, evidence, Ms Petrie, 11 June 2021, p 41.

⁴⁷ Submission 256, Kangaroo Industry Association of Australia, pp 1, 4.

⁴⁸ Submission 256, Kangaroo Industry Association of Australia, p 6.

⁴⁹ Submission 256, Kangaroo Industry Association of Australia, pp 1, 3.

⁵⁰ Submission 256, Kangaroo Industry Association of Australia, p 3.

⁵¹ Submission 256, Kangaroo Industry Association of Australia, p 9.

Conclusion

- 1.37** Given the different perspectives and interests in kangaroo management in New South Wales, it is clear the NSW Government walks a difficult path to manage kangaroo populations in a way that all would find acceptable. Departmental representatives stressed to this inquiry that they work within a tight legislative framework, and engage with scientists and a wide range of stakeholder representatives in managing the commercial harvest of kangaroos. This committee has been keen to understand whether the balance being struck is one that is in the best interests of the long term health and wellbeing of macropod populations in New South Wales.

Chapter 2 Kangaroos in a changing landscape

At the heart of the debate over kangaroos in New South Wales are different perspectives on whether kangaroos need to be 'managed' to protect the broader ecosystem, or whether, as both sentient beings and a native species, they should be entirely protected from human interference. The debate takes place in a context where farming practices, spreading urban areas and changing weather patterns all impact on kangaroos' traditional habitat. This chapter addresses a number of issues raised during this inquiry about how kangaroos have been, and are continuing to be, affected by land-use changes. First, it considers the importance of Aboriginal perspectives on kangaroos in the landscape, noting the spiritual and cultural importance of kangaroos to Aboriginal peoples. It then outlines some different perspectives on how kangaroo populations have been impacted by farming, particularly in western New South Wales, and considers one current issue related to agriculture, namely the impact of exclusion fencing on kangaroo populations. Next, the chapter considers suggestions put forward by some stakeholders for alternative ways people could co-exist with kangaroos that recognise their value in the landscape. It then touches on issues associated with urbanisation, and the impacts on kangaroos as areas of traditional habitat are taken over by spreading towns. Finally, it notes the impact of drought on kangaroo populations, and explores what impact climate change may be expected to have on kangaroos.

Is there a need to cull kangaroos?

2.1 There has been a long debate over the vexed question of kangaroo numbers, and whether there are 'too many'.⁵² As can be seen from the many submissions to this inquiry, perspectives on kangaroos range from seeing them as a 'pest', which can reach a level of 'overabundance' in the landscape that threatens rural livelihoods, through to an iconic animal placed at risk from man-made changes, including agriculture and urbanisation. This section outlines some of the perspectives put to this inquiry on kangaroo numbers, and whether there is a need to cull kangaroos.

Indigenous perspectives: cultural and spiritual importance of kangaroos

2.2 Aboriginal people coexisted with kangaroos for thousands of years, and their perspectives and understanding of kangaroos in the landscape are important to this inquiry. Recognising that there are many Aboriginal communities in different parts of the state, the committee was grateful for the contributions of a number of Aboriginal elders, researchers and educators. While there may well be diversity of views among Aboriginal peoples in New South Wales, the importance of kangaroos in the cultural and spiritual lives, and ongoing relationship to the land, of Aboriginal people consistently stood out to the committee.

2.3 Uncle Max Dulumunmun Harrison, an Elder from the Yuin people, spoke powerfully of the rights of kangaroos, as a native species in this land. He told the committee: "The kangaroo preceded our Indigenous culture more than 80,000 years ago and deserves both the land and living rights above all other introduced species, the right to live without cruelty and exploitation."⁵³

⁵² For example, evidence, Dr David Croft, Representative, The Think Tank for Kangaroos, 15 June 2021, p 2.

⁵³ Evidence, Uncle Max Dulumunmun Harrison, Aboriginal Elder, 15 June 2021, p 13.

2.4 Uncle Max's testimony challenged European notions about environmental protection or management, suggesting even the concept of 'the environment' is alien: 'You talk about the environment. That word is not our word. It was introduced...Nature is the greatest teacher of all and people have got to understand that.'⁵⁴

2.5 Uncle Max challenged the idea that kangaroos need to be controlled to protect 'the environment', describing how Aboriginal people had lived alongside kangaroos for thousands of years, and proposed that it is humans that are the pest in kangaroos' space, not the other way around:

How long have those kangaroos been hopping on this land? They are not intruding on farmers, or developers, or roadways. It is humans invading the kangaroos' space and it is the kangaroo that is being disregarded.⁵⁵

My people have lived beside the kangaroo for thousands of years and we never considered them as a pest. So why do people want to control these wonderful animals?⁵⁶

2.6 Aunty Ro Mudyin Godwin, Aboriginal educator, similarly challenged the perspective underpinning the commercial harvesting industry, that kangaroos are a pest. She said this industry grows from the colonial system, in which 'the minority of the people causes the majority of the destruction across the country.' She told the committee, 'It is colonialism that sees country as only something to gain a financial profit from – to be used, to be abused – and that sees kangaroos as a pest'.⁵⁷

2.7 The committee heard powerful testimony about the spiritual significance of kangaroos to Aboriginal people. Uncle Max described how kangaroos have a spiritual importance as a totem animal, which deserves respect:

Kangaroos are a valuable totem to our people. They have been in Australia for millions of years. This is their land. They are the first Australians. Native animals, birds and reptiles have the highest respect in our Culture Totemic System.⁵⁸

2.8 Aunty Ro Mudyin Godwin also spoke of the importance of kangaroos as a sacred totem animal, which connects her to ancestors and culture.⁵⁹ Aunty Ro explained what it means to her to have kangaroos as her family totem:

The kangaroo is my family totem. A totem is a natural object, plant or animal that is inherited by a clan, individual or family as a spiritual emblem. We have caretaking and conservation responsibilities for our totems. Totem defines people's roles and responsibilities, our relationships with each other and creation. The kangaroo are my ancestors. They are my culture and my family's spiritual connection to country. Every time one of these totemic animals is gunned down a part of myself – my family – dies.

⁵⁴ Evidence, Uncle Max Dulumunmun Harrison, 15 June 2021, p 1.

⁵⁵ Submission 73, Uncle Max Dulumunmun Harrison, p 2.

⁵⁶ Submission 73, Uncle Max Dulumunmun Harrison, p 2.

⁵⁷ Evidence (unsworn), Aunty Ro Mudyin Godwin, Aboriginal Educator, 15 June 2021, p 12.

⁵⁸ Submission 73, Uncle Max Dulumunmun Harrison, p 1.

⁵⁹ Submission 9, Aunty Ro Mudyin Godwin, p 1.

Our cultural connections die. The interconnectedness of country dies, our creative spirit torn apart.⁶⁰

- 2.9** Aunty Ro told the committee that, as it is a totem animal, she would never kill a kangaroo. She gave powerful personal testimony of the emotional and spiritual impact that seeing callous killing and mistreatment of kangaroos, as well as racist abuse about her activism to protect kangaroos, has had on her and her family.⁶¹ This is considered further in chapter 6.
- 2.10** According to Uncle Max, while kangaroos were killed for food within cultural practice, this was always done respectfully, with ceremony, and according to need.⁶² Uncle Max advised, 'We can kill them, we kill them for meat, but there is always a ceremony – always a ceremony. The only ceremony of killing them today is the pull of a trigger, the sound of a rifle.'⁶³ Aunty Ro similarly expressed horror at the desecration and disrespectful treatment of kangaroos by shooters who have 'no respect for these ancient ones, no care'.⁶⁴
- 2.11** Both Uncle Max and Aunty Ro highlighted the broader cultural, spiritual and practical importance of the kangaroo within Aboriginal cultures. Kangaroos are also seen to play an important role in regeneration of Country, through aerating soils, dispersing seeds, and grazing patterns that mitigate bushfire impacts.⁶⁵ Uncle Max told the committee that kangaroos served an important role in culture, showing songlines and dreaming tracks.

For our Aboriginal people on the Eastern seaboard the kangaroo is a totem and a food source. It also leads us to our dreaming tracks and they're so important because we can follow those dreaming tracks and learn whatever the kangaroo is taking and eating on a particular track. The kangaroos are our explorers that are telling us what's on that land and what we can learn from that land like where the food and water sources are.⁶⁶

- 2.12** Aunty Ro also described kangaroos' role in the regeneration of songlines and dreaming tracks, and the importance this plays to maintaining connection to Country and ancestors:

Kangaroos are essential in the regeneration of Song Lines, Dreaming Tracks and they ensure the interconnectedness of Country. They ensure that The Dreaming remains alive and strong ... In areas where Kangaroos have been gunned down into localised extinctions, Culture is dying, as is our connection to Ancestors.⁶⁷

- 2.13** The question of whether current systems and practices to 'manage' kangaroos in the landscape adequately recognise the cultural and spiritual importance of kangaroos to Aboriginal people, and take account of the important knowledge and perspective on land management that Aboriginal people bring, is important to this inquiry.

⁶⁰ Evidence (unsworn), Aunty Ro Mudyin Godwin, 15 June 2021, p 12.

⁶¹ Evidence (unsworn), Aunty Ro Mudyin Godwin, 15 June 2021, pp 16-17.

⁶² Submission 73, Uncle Max Dulumunmun Harrison, p 2.

⁶³ Evidence, Uncle Max Dulumunmun Harrison, p 18.

⁶⁴ Evidence (unsworn), Aunty Ro Mudyin Godwin, 15 June 2021, pp 12-13.

⁶⁵ Submission 9, Aunty Ro Mudyin Godwin, p 1.

⁶⁶ Submission 73, Uncle Max Dulumunmun Harrison, p 1.

⁶⁷ Submission 9, Aunty Ro Mudyin Godwin, p 1.

- 2.14 The *NSW Commercial Kangaroo Harvest Management Plan 2017-2021* makes reference to the rights of Indigenous people to continue traditional use of areas for hunting, food gathering and ceremonial or religious purposes, and notes that the plan does not 'prevent Indigenous persons from carrying out traditional use of wildlife'.⁶⁸ It did not make any further reference to the value Aboriginal peoples place on kangaroos. The consultation draft *NSW Commercial Kangaroo Harvest Management Plan 2022-2026*, released during the course of this inquiry, contains an 'Acknowledgement of Aboriginal people and Connection to Country' in its opening pages, noting the cultural significance of kangaroos, wallaroos and wallabies to Aboriginal people, and that the very presence of kangaroos in the landscape recalls deep spiritual associations of personal and family connection to Country, creation and being.⁶⁹ The draft plan also notes that there is representation of Aboriginal communities on the Department of Planning, Industry and Environment's Kangaroo Management Advisory Panel.⁷⁰

Impact of human intervention on the ecological balance

- 2.15 A 'generally accepted' view, shared by many submissions to this inquiry, is that man-made changes to the landscape associated with farming since European settlement have changed the ecological balance in a way that has benefitted some kangaroos, leading to 'unnaturally' high numbers. According to many ecologists, as well as farmers and pastoralists, human intervention in the form of new water points and food crops has allowed some kangaroo populations to grow beyond the 'carrying capacity' of the natural environment.⁷¹ The view that there are 'too many' kangaroos due to human-induced landscape changes leads to the view that culling – whether commercial or non-commercial – is necessary to restore balance. While this is a dominant view, the committee also heard from researchers, ecologists and animal rights groups who have a different view both on whether human-induced changes have positively affected numbers of kangaroos, and on whether culling is needed or justified to maintain balance. This section considers some of the perspectives heard during this inquiry on this question.

Conservation of habitats, impact on other species

- 2.16 It is not only farmers and pastoralists who suggest land use changes since white settlement have resulted in 'unnaturally' high numbers of kangaroos. Ecologists, concerned with ecological balance and protection of all species, also expressed concern about human alterations to the landscape advantaging some kangaroos to the cost of other native flora and fauna.
- 2.17 Bush Heritage Australia, a not-for-profit organisation which aims to protect ecologically important land 'for the benefit of nature and all Australians' sees unnaturally high kangaroo numbers as a threat to other species. Dr Graeme Finlayson, an ecologist with Bush Heritage

⁶⁸ NSW Government, Office of Environment and Heritage (now DPIE), *NSW Commercial Kangaroo Harvest Management Plan 2017-2021*, p 10.

⁶⁹ NSW Government, Department of Planning, Industry and Environment, *Draft NSW Commercial Kangaroo Harvest Management Plan 2022-2026*, p 5.

⁷⁰ NSW Government, Department of Planning, Industry and Environment, *Draft NSW Commercial Kangaroo Harvest Management Plan 2022-2026*, p 17.

⁷¹ For example, Submission 103, NSW Farmers Association, p 1; Submission 222, Professor Mike Letnic, p 1.

Australia, attributed unsustainably high numbers of kangaroos to human intervention, including installation of artificial water sources and removal of predators.⁷²

- 2.18** Bush Heritage Australia stated that it monitors 'total grazing pressure' throughout its reserves, and that macropods have been demonstrated to contribute significantly to this grazing pressure.⁷³ This leads to effects on kangaroo welfare, as populations swell to unsustainable levels before declining, and also to adverse outcomes for other species dependent on the same habitat.⁷⁴

Can there be 'too many' kangaroos?

- 2.19** Submissions from the NSW Government, farmers, pastoralists and some ecologists all suggested that certain species of kangaroos, particularly the larger species in western New South Wales, have benefited from agricultural development, leading to significant increases in their populations.⁷⁵ The NSW Government suggested:

The three largest species of kangaroos have benefited from habitat modification caused by agricultural development, particularly in rangeland regions, where the modification of vegetation communities by clearing for agriculture has favoured the growth of foods preferred by kangaroos such as grasses and forbs. Similarly the proliferation of artificial water points and the control of predation by dingoes and wild dogs has led to an increase in the populations of the larger kangaroo species.⁷⁶

- 2.20** Pastoralists and farmers both put the view that kangaroo numbers have swelled to unnaturally high levels due to human intervention. The Pastoralists Association of West Darling submission stated that the provision of water for livestock has 'exponentially increased' the area permanently habitable by kangaroos in western New South Wales.⁷⁷ Mr Lachlan Gall, Councillor and Kangaroo Management Representative, Pastoralists Association of West Darling, told the committee that, 'Over the course of European settlement pastoralists have observed how the four most common species of kangaroos found in western New South Wales have increased in number and range in response to predator control and the provision of artificial water points. Pastoralists have also observed how kangaroo numbers naturally rise and fall in response to seasonal conditions.'⁷⁸ NSW Farmers similarly said that landscape changes post European settlement, such as the presence of crops and dams, provide consistent food and water resources for kangaroos, and 'This has seen populations flourish beyond that which the natural environment would otherwise allow'.⁷⁹

⁷² Evidence, Dr Graeme Finlayson, South Australian Arid Rangelands Ecologist, Bush Heritage Australia, 11 June 2021, p 26.

⁷³ Submission 243, Bush Heritage Australia, p 2.

⁷⁴ Submission 243, Bush Heritage Australia, p 2.

⁷⁵ For example, Submission 246, NSW Government, p 6.

⁷⁶ Submission 246, NSW Government, p 6. Cites McLeod & Hacker 2019.

⁷⁷ Submission 280, Pastoralists' Association of West Darling, p 2.

⁷⁸ Evidence, Mr Lachlan Gall, Councillor and Kangaroo Management representative, Pastoralists' Association of West Darling, 11 June 2021, p 43.

⁷⁹ Submission 103, NSW Farmers Association, p 1.

- 2.21** There are also ecologists whose objective is to protect or restore native bushland to a more 'natural' state that see very high numbers of kangaroos as a problem, as it threatens other native species. Bush Heritage Australia, a not-for-profit organisation seeking to protect ecologically important natural bushland, also expressed the view that macropods can increase to unsustainably high numbers. Their submission noted, 'Some of Bush Heritage Australia's reserves are in mosaic landscapes where high nutrient availability and artificial water points can contribute to macropod population peaks that are not sustainable in the natural environment.'⁸⁰ Bush Heritage Australia expressed the view that 'artificial', extreme high density of macropods presents significant risk to the viability of landscapes by exerting unsustainable grazing pressure and thereby potentially compromising the conservation and welfare of all plants and animals.⁸¹
- 2.22** Witnesses from the NSW Government acknowledged that there has been a long, contested debate about whether kangaroo population densities are too high. Mr Robert Quirk, Executive Director, Park Programs, National Parks and Wildlife Service, Environment, Energy and Science, DPIE, told the committee that there have been a lot of 'conservation conversations' around the role of kangaroos in grassland habitats in particular and whether their population densities are too high. He noted that 'it is a very contested conversation', and has been a long-running one in certain parts of Australia.⁸²
- 2.23** Some kangaroo researchers challenge the view that kangaroos have benefitted from new water sources and land use changes since white settlement. Dr Daniel Ramp, Associate Professor and Research Director, The Think Tank for Kangaroos (THINKK), proposed that many stakeholders in this debate repeat 'myths' about kangaroos that do not stand up to scientific scrutiny.⁸³ Dr Ramp suggested instead that the landscape in New South Wales has been 'radically altered' to *disfavour* kangaroos.⁸⁴ He said that kangaroos are primarily a woodland species, which require trees, and the kind of farming practices since European settlement, which have included clearing land of trees, have not been to the benefit of kangaroos.⁸⁵
- 2.24** Some kangaroo advocates go so far as to say that kangaroo numbers have drastically declined from much higher numbers pre-colonisation to those seen today. Mr Ray Mjadwesch, consulting ecologist and long-time advocate for kangaroos, submitted that, 'Early explorer and settler journals, as well as other primary historical sources, describe kangaroos across most Australian landscapes, and often in terms of abundance that are never seen today.'⁸⁶ He suggested that raw data from kangaroo surveys show populations today are at critically low levels, and have become fragmented or depleted, to the point of local and regional extinction in many instances.⁸⁷

⁸⁰ Submission 243, Bush Heritage Australia, p 2.

⁸¹ Submission 243, Bush Heritage Australia, p 2.

⁸² Evidence, Mr Robert Quirk, Executive Director, Park Programs, National Parks and Wildlife Service, Department of Planning, Industry and Environment, 15 June 2021, p 67.

⁸³ Evidence, Dr Daniel Ramp, Associate Professor and Research Director, The Think Tank for Kangaroos, 15 June 2021, p 3.

⁸⁴ Evidence, Dr Ramp, 15 June 2021, p 10.

⁸⁵ Evidence, Dr Ramp, 15 June 2021, pp 10-11.

⁸⁶ Submission 270, Mr Ray Mjadwesch, p 1.

⁸⁷ Submission 270, Mr Ray Mjadwesch, p 1.

- 2.25 Kangaroo advocates go so far as to suggest that the view of kangaroos as pests, who become 'overabundant' is a distasteful part of Australia's history, with such attitudes continuing today because the public has been 'brainwashed' into thinking that 'we have to get rid of [kangaroos]' because 'farms are suffering'.⁸⁸

Do kangaroos compete with livestock for food?

- 2.26 As already noted, the view there can be 'too many kangaroos' is informed by an understanding that kangaroos are a pest that compete with livestock for the same pasture, leading to 'overgrazing'. The Kangaroo Management Taskforce (KMT), an organisation formed in 2016 to 'develop informed and collaborative approaches to kangaroo management'⁸⁹, exemplified many landholders' view that too many kangaroos cause harm to the land, as well as farmers' interests. The KMT's submission stated that even in good seasons pastures can be overgrazed, resulting in declining groundcover, increasing erosion, loss of plant diversity and a shift to unpalatable species dominance. According to the KMT, 'an overabundant kangaroo population exacerbates the overgrazing, especially as pastures are declining in transition to drought periods'.⁹⁰
- 2.27 The KMT cited research which found kangaroos consume on average 45 per cent of the forage produced on Australia's southern rangelands,⁹¹ and that 'unmanaged kangaroos and goats exert up to 50 percent of the grazing pressure on pastures' in Australia's southern rangelands.⁹² The KMT suggested 'the high total grazing pressure strongly influenced by irruptive kangaroo populations has a major adverse effect on the long-term health and persistence of a wide range of grassland-dependent native fauna species as well as other macropods and native flora'.⁹³
- 2.28 Kangaroo advocates, on the other hand, pointed to research showing that kangaroos do not compete with livestock for food, and argued that kangaroos do not have as great an impact on native pasture as they are blamed for. Dr Dror Ben-Ami, Co-Founder, The Think Tank for Kangaroos (THINKK) told the committee that research over a period of 10 years found that there is hardly any competition for resources between kangaroos and livestock.⁹⁴ Similarly, Kangaroos Alive cited research which concluded that 'kangaroos had no negative effect on native pasture cover or species richness' and that pasture degradation is perpetuated by rabbits.⁹⁵
- 2.29 Kangaroo researchers from THINKK proposed that kangaroos' contribution to grazing pressure is small compared to introduced species, as they have different anatomy and habits. According to THINKK, new information emerging over the last 25 years shows that kangaroo and livestock use different food resources, and only compete directly in times of drought.⁹⁶

⁸⁸ Evidence, Ms Nikki Sutterby, President, Australian Society for Kangaroos, 11 June 2021, p 19.

⁸⁹ Kangaroo Management Taskforce Website, <https://kangaroomanagementtaskforce.com.au/about/>, accessed 20 September 2021.

⁹⁰ Submission 249, Kangaroo Management Taskforce, p 14.

⁹¹ Submission 249, Kangaroo Management Taskforce, p 12.

⁹² Submission 249, Kangaroo Management Taskforce, p 13.

⁹³ Submission 249, Kangaroo Management Taskforce, p 16.

⁹⁴ Evidence, Dr Dror Ben-Ami, Co-Founder, The Think Tank for Kangaroos, 15 June 2021, p 5.

⁹⁵ Submission 189, Kangaroos Alive, p 25, citing Mutze et al, 2006.

⁹⁶ Submission 160, The Think Tank for Kangaroos, p 4.

THINKK researchers highlighted kangaroos' different dentition and tongue, and suggested they have different foraging patterns to exotic herbivores such as sheep and goats.⁹⁷

- 2.30** Ms Louise Boronyak, scientific adviser for Kangaroos Alive and Manager, the Think Tank for Kangaroos, suggested that kangaroos are the 'fall guy' for mismanagement of land in New South Wales, pointing to research that concluded kangaroos had no negative effect on native pasture cover or richness, while more degradation is done by rabbits. She noted that four million [introduced] goats, rabbits, deers and pigs also contribute to 'total grazing pressure', not just kangaroos.⁹⁸
- 2.31** Many submissions to this inquiry, particularly those from animal welfare advocates, asserted that kangaroos are increasingly threatened by human action, and that reports of overpopulation have been made to justify the commercial exploitation of kangaroos.⁹⁹

A different balance?

- 2.32** Animal welfare and kangaroo advocates underscored that it is possible to find ways to live in and manage the environment without seeing kangaroos as a threat to other species. For example, Dr Di Evans, Senior Scientific Officer, RSPCA Australia, declared that it is time to shift the perception of kangaroos and their place in the landscape, as well as to 'comprehensively evaluate the impact of human activities to improve our approach to kangaroo management'.¹⁰⁰ The Think Tank for Kangaroos pointed to the need to find strategies to overcome problems of land degradation caused by grazing of introduced livestock and existing farming practices, rather than consider killing kangaroos as 'necessary' to farmers' livelihoods. Dr Daniel Ramp put this in moral terms and offered a practical way forward:

The point here is that wildlife are constituents of the land that we share and hence we have a moral duty to find solutions that favour peaceful coexistence. Our recommendation is that this inquiry should establish the formation of an independent committee to identify solutions for that peaceful coexistence.¹⁰¹

- 2.33** These ideas are considered further below from paragraph 2.52.

Impact of exclusion fencing on kangaroos

- 2.34** A relatively new farming practice threatening to have a major impact on kangaroos in the landscape is use of exclusion, or cluster fencing. The committee heard conflicting evidence on the impact of exclusion fencing on kangaroo populations: for some, it 'fractures the land' in a way that harms kangaroos and other species, and has major implications for individual animal welfare. Others cite potential benefits for kangaroos of being protected from predators by

⁹⁷ Evidence, Dr Ramp, 15 June 2021, p 6; evidence, Dr Croft, 15 June 2021, p 7.

⁹⁸ Evidence, Ms Louise Boronyak, Scientific Adviser, Kangaroos Alive, 11 June 2021, p 38.

⁹⁹ For example, Submission 239, Australian Wildlife Protection Council Inc and Coalition for the Protection of Kangaroos, p 6.

¹⁰⁰ Evidence, Dr Di Evans, Senior Scientific Officer, RSPCA Australia, 15 June 2021, p 23.

¹⁰¹ Evidence, Dr Ramp, 15 June 2021, p 3.

exclusion fencing. This section outlines the evidence heard on the impact of exclusion fencing on kangaroos.

Use in New South Wales

- 2.35** 'Exclusion fencing' refers to a relatively new type of fencing that, in comparison with older forms of fencing, is higher, has tighter mesh, and often includes an apron to prevent animals from going under the fence.¹⁰² 'Cluster fencing' is a term used to describe exclusion fencing used over a large area, often encompassing several properties.
- 2.36** According to the NSW Government submission, exclusion fencing can be used to: separate agricultural or pastoral lands from pest animals (such as wild dogs, foxes and feral pigs); manage grazing pressure from 'unmanaged herbivores'; 'separate at-risk wildlife from key threatening processes such as predation by pest animals and competition from feral herbivores'.¹⁰³ The Kangaroo Management Taskforce likewise identified benefits to landholders of exclusion (and other types of fencing) to manage land inside the fence, including controlling pests and managing grazing pressure.¹⁰⁴
- 2.37** The NSW Government submission described exclusion fences as 'an important tool to help land managers control grazing pressure and provide public benefits.' Identified benefits include: improved biodiversity outcomes through improved herbivore control; improvements to regional socio-economic outcomes through better pastoral productivity and resilience to drought conditions; and improved regional biosecurity through increased capacity to contain emergency disease outbreaks and control spread of potential vectors or other pests.¹⁰⁵
- 2.38** The committee heard that exclusion fencing, first introduced in Queensland in 2013, is 'just creeping into' New South Wales now.¹⁰⁶ In Queensland, exclusion fences have mainly been used to protect grazing lands from predators.¹⁰⁷ In New South Wales, it seems exclusion fencing is being used to protect pasture and crops from non-domestic grazing animals, as well as to exclude predators. The NSW Farmers Association described exclusion fencing as 'an expensive outlay for many landholders, but extremely effective for preventing stock predation by wild dogs and overgrazing from feral deer and pigs and unmanaged goats'.¹⁰⁸ The Pastoralists' Association of West Darling suggested that pastoralists are turning to exclusion fencing as a control method for kangaroos because of 'ineffectiveness of commercial harvesting as a control measure'.¹⁰⁹

¹⁰² Submission 246, NSW Government, p 8; Submission 249, Kangaroo Management Taskforce, p 23.

¹⁰³ Submission 246, NSW Government, p 8.

¹⁰⁴ Submission 249, Kangaroo Management Taskforce, pp 19-20.

¹⁰⁵ Submission 246, NSW Government, p 8.

¹⁰⁶ Evidence, Dr Benjamin Allen, Senior Research Fellow (Wildlife Management), University of Southern Queensland, 11 June 2021, p 24.

¹⁰⁷ Evidence, Dr Allen, 11 June 2021, p 24.

¹⁰⁸ Submission 103, NSW Farmers Association, p 4.

¹⁰⁹ Submission 280, Pastoralists' Association of West Darling, p 3.

Benefits to the land?

- 2.39** Some evidence pointed to potential benefits of exclusion fencing for improving groundcover and thus biodiversity. Mr Grant, Natural Resource Management Representative, Kangaroo Management Taskforce, stated that exclusion fencing is a valuable tool for landholders to manage land condition.¹¹⁰ The KMT submitted that, in western New South Wales, exclusion fencing has delivered 'outstanding results in improving groundcover, increasing native species diversity and encouraging the recruitment of native perennial grasses across many landholdings over the past 15 years'. It cited anecdotal observations of increased numbers of small mammals, invertebrates and birds, associated with more abundant native grasses, within exclusion-fenced areas.¹¹¹
- 2.40** On the other hand, the committee also heard that the use of exclusion fencing – even to protect groundcover – does not come without downsides. Bush Heritage Australia noted that, in using exclusion fencing on a large scale, there are risks to other species, as well as to captive kangaroos. It cautioned that large scale use of exclusion fencing leads to 'unacceptable ecological outcomes associated with captive population of macropods', and 'unacceptable animal welfare outcomes associated with macropods and other species congregating along fences and experiencing greater stress or fatalities'.¹¹²

Benefits to kangaroos?

- 2.41** One view put to the committee is that kangaroos can actually benefit from exclusion fencing, which protects them from predators who are the targets of the fence. Dr Benjamin Allen, Senior Research Fellow, University of Southern Queensland, suggested that kangaroos are one of the 'winners' from exclusion fences. According to Dr Allen, while individual kangaroos may at times be hampered by encountering exclusion fencing, at a species level, kangaroos have benefitted, as the fencing protects kangaroos from predation by dingoes.¹¹³ Dr Allen said his data from Queensland indicates far greater density of kangaroos inside exclusion fences than outside.¹¹⁴ The RSPCA also cited possible welfare gains for kangaroos from protection from killing or maiming through predation.¹¹⁵
- 2.42** Both the Kangaroo Management Taskforce and the Pastoralists Association of West Darling indicated that they see exclusion fencing as a tool for kangaroo management – that is, to keep kangaroos out of areas in order to manage condition of the land.¹¹⁶ NSW Farmers also reported that exclusion fencing in New South Wales is being used to protect crops from kangaroos, and

¹¹⁰ Evidence, Mr Alexander Grant, Natural Resource Management Representative, Kangaroo Management Taskforce, 11 June 2021, p 49.

¹¹¹ Submission 249, Kangaroo Management Taskforce, p 24.

¹¹² Answers to supplementary questions, Ms Heather Campbell, CEO, Bush Heritage Australia, 14 July 2021, p 4.

¹¹³ Evidence, Dr Allen, 11 June 2021, pp 22-23.

¹¹⁴ Evidence, Dr Allen, 11 June 2021, pp 23.

¹¹⁵ Submission 237, RSPCA, p 4.

¹¹⁶ Evidence, Mr Grant, 11 June 2021, p 49; Submission 280, Pastoralists' Association of West Darling, p 3.

provided examples of benefits to farmers from preventing kangaroos grazing on cropped fields.¹¹⁷

Impact on movement and migration patterns?

- 2.43** Some witnesses gave evidence that exclusion or cluster fencing interrupts movement patterns that allow kangaroos to move across the landscape to seek food or water sources. As noted above, Aboriginal people spoke of kangaroos as having 'ancestral lines', patterns of movement that are passed down, and this understanding was repeated by other witnesses.¹¹⁸ Mr Greg Keightley suggested that, while kangaroos are not migratory, they do have movement patterns along specific areas which their ancestors have travelled, and which are fractured by cluster fencing.¹¹⁹ The RSPCA cited research showing exclusion fences can halt natural wildlife movement patterns and reduce genetic interchange between populations separated by the fence, affecting biodiversity and leading to other ecological impacts.¹²⁰
- 2.44** There was some debate among kangaroo advocates whether kangaroos are in fact migratory. Dr Ramp from THINKK contended that the idea kangaroos can move hundreds of kilometres is a myth. According to Dr Ramp, with the exception of red kangaroos, 'all the other kangaroos ... have very small home ranges, meaning they do not travel very much.'¹²¹ Nevertheless, researchers from THINKK describe cluster fencing as 'an ecological disaster' for kangaroos, as it impedes their movement across the landscape.¹²²
- 2.45** Professor David Brooks described fencing (not specifically exclusion fencing) as 'perhaps the greatest killer of kangaroos' not necessarily because it interrupts migration patterns, but because kangaroos are territorial, and fencing interferes with the range of the mob.¹²³
- 2.46** Interestingly, the Kangaroo Industry Association of Australia also expressed concern about use of exclusion fencing, and its potential impact on migratory patterns. Mr Dennis King, Executive Officer, told the committee the Association believes exclusion fencing is an issue of concern to all native species, and requires further investigation. The Association recommended 'a comprehensive study ... be done into the full impact of fencing on all species, including the migratory patterns.'¹²⁴

¹¹⁷ Submission 103, NSW Farmers Association, p 4.

¹¹⁸ For example, evidence, Mr Keightley, individual, 15 June 2021, p 38.

¹¹⁹ Submission 404b, Mr Greg Keightley and Ms Dianne Smith, p 21.

¹²⁰ Submission 237, RSPCA, p 4.

¹²¹ Evidence, Dr Ramp, 15 June 2021, p 8.

¹²² Submission 160, The Think Tank for Kangaroos, p 4

¹²³ Submission 273, Professor David Brooks, p 8.

¹²⁴ Evidence, Mr Dennis King, Executive Officer, Kangaroo Industry Association of Australia 15 June 2021, p 43.

Impact on animal welfare

- 2.47** Several witnesses raised concerns about the impact of fencing, exclusion fencing in particular, on individual animals, that can become trapped or cut off from food sources, or trapped into an area where they become 'problematic' and are exposed to shooting by farmers.
- 2.48** The RSPCA noted that there are welfare impacts on animals excluded by fencing, which can include injury, distress and prolonged death from starvation, thirst or exposure.¹²⁵ The Animal Defenders' Office contended that extensive cluster fencing could result in kangaroos being wounded, mutilated or maimed as they try to jump fences, or on the other hand, be trapped or deprived of food or water due to the fence.¹²⁶ Dr Di Evans of the RSPCA, proposed that when kangaroos are entrapped within a fenced area, grazing pressure in that space will increase over time, leading in all likelihood to farmers seeking to shoot them to control numbers.¹²⁷
- 2.49** Several witnesses suggested that being entrapped within exclusion fencing makes kangaroos easy prey for both commercial and non-commercial shooting. Witness B gave evidence that farmers seeking to deal with 'the problem' of kangaroos when farms have been fenced, 'get helicopters in, run them up against the fences and use quad runners where shooters with shotguns will shoot them along the fence'.¹²⁸ Mr Greg Keightley also spoke anecdotally of helicopter shoots on large properties where animals are fenced in.¹²⁹
- 2.50** The RSPCA gave evidence that there is currently little consideration or monitoring of animal welfare outcomes when exclusion fencing is installed. Dr Evans went so far as to say that she believed that 'animal welfare outcomes are generally disregarded in terms of exclusion fencing', despite observations of suffering that occurs when animals are entrapped. She also pointed out that there is no surveillance or monitoring in remote areas, so even if animals were in trouble, there would be little capacity to help them. She suggested that, in Queensland, where cluster fencing has been used for longer, 'there are certainly some very serious issues that are not being either acknowledged, quantified or addressed'.¹³⁰
- 2.51** There was concerning anecdotal evidence about the animal welfare impact of fences on kangaroos, whether they are included or excluded by fencing. Witness B spoke of red kangaroos' suffering when blocked by a fence from running toward rain: 'If there is a fence in their way that they cannot get through, they will just run up and down that fence until they get so exhausted they get too much adrenaline and they will actually drop dead'.¹³¹ Mr Greg Keightley spoke of kangaroos, caught outside of exclusion fencing between Moree and Lightning Ridge, having nowhere to go but the highway, and ending up as roadkill.¹³²

¹²⁵ Submission 237, RSPCA, p 4.

¹²⁶ Answers to supplementary questions, Animal Defenders Office, 19 July 2021, p 4.

¹²⁷ Evidence, Dr Evans, 15 June 2021, p 29.

¹²⁸ Evidence, Witness B, 11 June 2021, p 7.

¹²⁹ Evidence, Mr Keightley, 15 June 2021, p 38.

¹³⁰ Evidence, Dr Evans, 15 June 2021, p 28.

¹³¹ Evidence, Witness B, 11 June 2021, p 7.

¹³² Evidence, Mr Keightley, 15 June 2021, p 38.

Alternatives to culling: sustainable agriculture and eco-tourism

- 2.52 There was some discussion of alternatives to culling kangaroos during the inquiry. Several stakeholders argued that we need to shift our perception of kangaroos as a pest that interferes with farming and pastoralism, and value them for more than their hides and meat. Some participants suggested kangaroos should be valued for the ecological role they play, advocated for more wildlife-friendly agricultural practices and pointed to the business potential of eco-tourism focused on kangaroos. These are discussed in turn below.

Ecological role of kangaroos

- 2.53 Animal welfare groups and kangaroo advocates told this inquiry that all species, including kangaroos, play a specific ecological role in their environment, such as predator, prey, or seed disperser.¹³³ Researchers from THINKK pointed to a number of important roles that kangaroos play in ecosystems.¹³⁴ The Australian Wildlife Shelters Coalition (AWSC) cited a number of pieces of research highlighting different ways that kangaroos contribute to ecosystem health. According to AWSC, kangaroos function as 'ecosystem engineers', due to their ability to modify both their own habitat and that of other species.¹³⁵ AWSC suggested 'kangaroos play a central role in the health and persistence of grassy ecosystems across Australia.'¹³⁶ Even once dead, kangaroos are contributing to the ecosystem through their carcasses – Dr Ramp from THINKK equated removing the resources embodied in kangaroo carcasses for sale elsewhere as a process of 'slow mining'.¹³⁷
- 2.54 Several stakeholders, including THINKK, criticised the New South Wales Kangaroo Management Plan for not paying sufficient attention to the role of kangaroos as a species in an ecosystem.¹³⁸

Sustainable and 'wildlife-friendly' farming

- 2.55 Recognising the ecological role played by kangaroos, representatives of THINKK suggested that there are opportunities for co-existing with them, noting there is great interest in 'wildlife-friendly farming' around the world.¹³⁹ Wildlife-friendly farming is described as a global movement in which wildlife are tolerated and protected in production landscapes, and seen as a model for sustainable farming that better balances agricultural and conservation interests.¹⁴⁰ Dr Ramp proposed that wildlife-friendly farming creates sustainability that reinvigorates

¹³⁴ Answers to supplementary questions, Dr Daniel Ramp, Associate Professor and Research Director, The Think Tank for Kangaroos, 16 July 2021, p 9; Evidence, Dr Croft, 15 June 2021, p 7.

¹³⁵ Submission 241, Australian Wildlife Shelters Coalition, p 21.

¹³⁶ Submission 241, Australian Wildlife Shelters Coalition, p 21.

¹³⁷ Answers to supplementary questions, Dr Ramp, 16 July 2021, p 9.

¹³⁸ Answers to supplementary questions, Dr Ramp, 16 July 2021, p 9.

¹³⁹ Evidence, Dr Croft, 15 June 2021, p 7; Answers to supplementary questions, Dr Ramp, 16 July 2021, p 9.

¹⁴⁰ Evidence, Ms Boronyak, 15 June 2021, p 3.

important ecological relationships, and that farms investing in these practices are able to get a premium for their products because they are branded (in some cases certified) as 'green'.¹⁴¹

2.56 Researchers from THINKK identified a number of farming and grazing practices that would be more wildlife-friendly, such as:

- use of livestock guardian animals to deter kangaroos from grazing properties rather than lethal methods¹⁴²
- crop farmers fencing fields and planting crops 400 metres from property boundaries¹⁴³
- planting non-kangaroo favoured crops, or planting unpalatable crops in front of crops that kangaroos would eat.¹⁴⁴

Eco-tourism potential

2.57 A number of submissions and witnesses to this inquiry suggested more could be done to promote the eco-tourism value of kangaroos as an alternative industry to kangaroo harvesting.¹⁴⁵

2.58 Kangaroos Alive, makers of *Kangaroo: A Love-Hate Story* highlighted that the value kangaroos provide as a tourism drawcard is overlooked, arguing that returns from eco-tourism could be much greater than the employment and value of the commercial kangaroo harvesting industry.¹⁴⁶ It observed that Australia's unique wildlife is highly attractive to international visitors, however iconic kangaroos are being eliminated through commercial exploitation.¹⁴⁷ According to Kangaroos Alive, a kangaroo killed by the commercial industry is worth \$30, whereas the same kangaroo would be worth much more over its lifetime by bringing in tourists, creating income and jobs. Kangaroos Alive noted a contrast with Australia's treatment of whales, whose tourism potential is now recognised, and which Australia has been at the forefront globally of protecting.¹⁴⁸

2.59 The Animal Welfare Institute, a non-profit organisation based in Washington DC, criticised the NSW Government's Kangaroo Management Plan for failing to disclose the ecological role of kangaroos in Australia, or to consider the economic value of kangaroos from an ecotourism perspective. The Institute suggested that in many situations wildlife is 'far more valuable' alive than dead, as a living animal can provide a source of revenue (through ecotourism) across its lifetime, while a dead animal has a finite value obtainable only once.¹⁴⁹

¹⁴¹ Evidence, Dr Ramp, 15 June 2021, p 9.

¹⁴² Evidence, Ms Boronyak, 15 June 2021, p 5.

¹⁴³ Evidence, Dr Ben-Ami, 15 June 2021, p 6; Evidence, Ms Boronyak, 15 June 2021, p 8.

¹⁴⁴ Evidence, Dr Ben-Ami, 15 June 2021, p 6; Evidence, Ms Boronyak, 15 June 2021, p 8.

¹⁴⁵ For example, Submission 108, Animal Welfare Institute, p 5.

¹⁴⁶ Submission 189, Kangaroos Alive, p 28.

¹⁴⁷ Submission 189, Kangaroos Alive, p 28.

¹⁴⁸ Submission 189, Kangaroos Alive, pp 29-30.

¹⁴⁹ Submission 108, Animal Welfare Institute, p 5.

- 2.60** Numerous other inquiry participants contended that the state's pursuit of a kangaroo mitigation policy would reduce the appeal of Australia's tourism to international visitors¹⁵⁰ and prevent New South Wales from capitalising on eco-tourism which is more lucrative¹⁵¹ and beneficial to regional communities.¹⁵²
- 2.61** The economic and personal impact that killing of kangaroos has on people attempting to start an eco-tourism business around kangaroos is considered in chapter 6.

Impact of culling on kangaroo mobs and behaviour

- 2.62** People with experience living with and caring for kangaroos stressed that kangaroos are sentient, sensitive, gentle, loyal, family-oriented beings, that live in mobs and communicate. As they are deeply social beings, the death of individuals has a large impact not just to the individual but to the whole mob.¹⁵³
- 2.63** Dr Croft, a kangaroo researcher representing THINKK, told the committee that kangaroos are not only strong social creatures, but that they have different cultures within every mob, and pass this on within each group.¹⁵⁴ Highlighting the negative impact that shooting of kangaroos has on a whole mob, he described research that showed how, after some kangaroos in a mob are shot, juvenile kangaroos do not play, and there is a loss of relationships between mothers and daughters.¹⁵⁵
- 2.64** Professor David Brooks gave evidence that kangaroo mobs are deeply territorial, possessing a range whose features, uses and dangers they know, and they pass down knowledge of this range from generation to generation.¹⁵⁶ According to Professor Brooks, kangaroos are already suffering 'deracination' from being pushed off their traditional range by land clearing and fencing, and hunting is a particularly severe contributor to this displacement of kangaroos.¹⁵⁷
- 2.65** According to Professor Brooks, kangaroos suffer complex grief, and the impact of 'harvesting' on the physical and psychic health of animals is profound.¹⁵⁸ Professor Brooks pointed out that shooters tend to shoot the larger, alpha males first, which over time has an impact on the genetic

¹⁵⁰ Submission 51, Name suppressed, p 1; Submission 81, Name suppressed, p 1; Submission 127, Name suppressed, p 1; Submission 140, Name suppressed, p 1; Submission 148, Mrs Cienwen Hickey, p 4; Submission 206, Mr Malcolm Fisher, p 1; Submission 207, Mrs Pamela Engelder, p 1; Submission 255, Miss Jenny Elliott, p 1; Submission 288, Ms Ildi Ehsman, p 1; Submission 357, Ms Heather Barnes, p 2; Submission 366, Possumwood Wildlife, p 4; Submission 377, Ms Danijela Saric, p 1.

¹⁵¹ Submission 189, Kangaroos Alive, pp 28-29; Submission 214, Alyssa Wormald, p 2; Submission 239, Australian Wildlife Protection Council Inc and Coalition for the Protection of Kangaroos, p 20.

¹⁵² Submission 107, Name suppressed, p 1; Submission 117, Mrs Sylvia Cooper, p 1; Submission 239, Australian Wildlife Protection Council Inc and Coalition for the Protection of Kangaroos, p 21.

¹⁵³ Evidence, Ms Rae Harvey, Wild2Free, 15 June 2021, p 24; Evidence, Dr Croft, 15 June 2021, p 3.

¹⁵⁴ Evidence, Dr Croft, 15 June 2021, p 3.

¹⁵⁵ Evidence, Dr Croft, 15 June 2021, p 3.

¹⁵⁶ Submission 273, Professor David Brooks, p 8.

¹⁵⁷ Submission 273, Professor David Brooks, p 8.

¹⁵⁸ Submission 273, Professor David Brooks, p 10.

health of the mob.¹⁵⁹ Loss of alpha males also has consequences for behaviour of other kangaroos, leading to greater stress and violence within the mob.¹⁶⁰ According to Professor Brooks, the psychological health of kangaroo populations is suffering, and, with older kangaroos taken out, the quantum of life experience is reduced and mob culture suffers accordingly.¹⁶¹

Impact of spreading cities: kangaroos in peri-urban areas

- 2.66** Dr Di Evans, Senior Scientific Officer, RSPCA Australia, raised management of kangaroos in peri-urban areas as a significant issue that requires attention. She suggested that on the borderline of cities, whether central or regional, there has been insufficient planning to avoid numbers building up in peri-urban areas where land development is occurring.¹⁶²
- 2.67** There was evidence to this inquiry highlighting the animal welfare impacts of spreading urbanisation on kangaroos. Mr Ray Mjadwesch suggested that kangaroo populations in peri-urban areas are often in decline, with individual animals suffering severe trauma arising from urbanisation. According to Mr Mjadwesch's experience, kangaroos and wallabies in peri-urban areas suffer a range of hazards, such as vehicle collisions, dog attacks, falling into swimming pools, getting trapped in drains, mine-shafts and flood waters, burnt in bushfires and being shot at.¹⁶³ He also noted that urban development does sometimes provide a measure of short-term protection for kangaroos, that persist on the outskirts of town, finding shelter in bush reserves or vacant land, until they are eventually displaced by development.¹⁶⁴ Mr Mjadwesch told the committee that historic data shows kangaroos have been completely eliminated from many landscapes where they previously abounded, a process of local extinction that continues due to urban development.¹⁶⁵
- 2.68** The RSPCA advised that welfare issues in managing kangaroos in peri-urban areas are complex, involving prevention of harm to kangaroos while managing human-animal conflict situations. Many people living in peri-urban areas want to retain kangaroos, but this requires collaboration between government, developers, wildlife carers and animal welfare groups. The RSPCA advocated establishing natural wildlife corridors to encourage movement between natural habitats providing continuous feed and water access, as well as effective strategies to control fertility while population numbers are manageable.¹⁶⁶
- 2.69** The NSW Government submission observed that there are both 'positive and negative' human-wildlife interactions occurring as a result of urban development. It identified loss of habitat and reduced access to resources as potential threats to kangaroo, yet also suggested kangaroos are well suited for surviving within and exploiting resources in the peri-urban area as managed

¹⁵⁹ Submission 273, Professor David Brooks, p 9.

¹⁶⁰ Submission 273, Professor David Brooks, p 9.

¹⁶¹ Submission 273, Professor David Brooks, pp 9-10.

¹⁶² Evidence, Dr Evans, 15 June 2021, p 29.

¹⁶³ Submission 270, Mr Ray Mjadwesch, p 7.

¹⁶⁴ Submission 270, Mr Ray Mjadwesch, p 7.

¹⁶⁵ Submission 270, Mr Ray Mjadwesch, p 7.

¹⁶⁶ Submission 237, RSPCA, p 4.

vegetation such as parks and lawns overlap and provide links to more natural habitat in National Parks, state forests or rural grasslands.¹⁶⁷

- 2.70** As discussed in chapter 6, this committee heard some worrying evidence from people living in peri-urban areas about shooting of kangaroos, ostensibly for 'pest control' purposes, taking place close to neighbours and community buildings, thus potentially endangering human lives.

Impact of drought and climate change

- 2.71** It is clear on all accounts that kangaroos are severely affected by drought. Kangaroo numbers were hit hard in the 2017-2019 drought, and in many places numbers remain perilously low.
- 2.72** Many experts giving evidence to this inquiry have described a 'boom bust' cycle, where kangaroo populations flourish in good conditions only to crash during times of drought. There are different views on whether the boom-bust cycle is an entirely natural one, or due to human intervention. Views also differ on whether human intervention is necessary to mitigate the effect of problematically large kangaroo numbers in times of 'boom', in order to avert poor animal welfare outcomes in times of 'bust'. These are considered below, along with the further impact of climate change in exacerbating the effect of extreme weather patterns on kangaroo populations.

Drought and the 'boom-bust' cycle

- 2.73** A generally accepted view is that kangaroo populations fluctuate massively relative to seasonal conditions, with population 'booms' in wet periods followed by 'bust' in periods of prolonged drought.
- 2.74** Professor Mike Letnic of the Centre for Ecosystem Science, University of New South Wales, described a ten-year cycle of kangaroo numbers thriving in wet years and crashing as they starve during drought.¹⁶⁸ According to Professor Letnic, the crash in numbers in times of drought is not unusual, but a sign that 'basically the population is too high for the environment and eventually the environment cannot sustain them'.¹⁶⁹ Professor Letnic also noted that, while many kangaroos will starve during droughts, a large number will survive, and commence breeding soon afterwards.¹⁷⁰
- 2.75** Dr Stuart Cairns, a scientist whose work informs the department's management of kangaroos, also noted the major impact that drought has on kangaroo populations. He highlighted major climatic events that have shaped kangaroo populations in eastern Australia such as the 1982-83 drought, the millennium drought, and the 2017-19 drought, noting in between those droughts numbers increased substantially. He also stated that the harvesting of kangaroos has little impact on their number compared to climatic events.¹⁷¹

¹⁶⁷ Submission 246, NSW Government, p 6.

¹⁶⁸ Evidence, Professor Mike Letnic, 11 June 2021, p 25.

¹⁶⁹ Evidence, Professor Letnic, 11 June 2021, p 25.

¹⁷⁰ Submission 222, Professor Mike Letnic, p 4.

¹⁷¹ Evidence, Dr Stuart Cairns, Consultant scientist to Department of Planning, Industry and Environment, 19 August 2021, p 6.

- 2.76** A cycle of populations plummeting during drought, then recovering quickly thereafter is observed in the government's data set, as well as by landholders. Ms Sharon Molloy, Executive Director, Biodiversity and Conservation Division, Department of Planning, Industry and Environment, said that the department's data over 45 years clearly show periods of boom and bust following drought and floods. She told the committee, 'Immediately following a drought there is a period of boom and there is a period of bust obviously with a drought, and that is what kangaroos have gotten used to over millions of years.'¹⁷² The Kangaroo Management Taskforce suggested that residents of western New South Wales are used to seeing, over a decade or so, a sequence of dramatic decline in numbers followed by substantial increase in wetter seasons.¹⁷³
- 2.77** There are some who suggest that the 'boom-bust' cycle has been exacerbated by human intervention. Questioned whether the boom and bust is a 'natural' process, Dr Finlayson of Bush Heritage Australia proposed that it had 'become' a natural process, because of changes that have been made to certain landscapes. According to Dr Finlayson, changes in the provision of water and the removal of predators has had the effect that kangaroos are able to get beyond the carrying capacity of landscapes to a point that they get to really high numbers, and then, when there is nothing else to eat they die. He suggested that 'in a sense it is natural from an ecological process point of view', but it is also a distortion, because the human intervention means natural balances are 'all out of whack' and when numbers get unsustainably high, the bust period is 'more extreme than ideally what it should be.'¹⁷⁴
- 2.78** Researchers from THINKK also contended that the idea of 'drought' and its impact on farmers is not independent of farming practices. Dr Ramp asserted that: 'Drought was not something that just happened in the way it manifests now ... and it is not just down to climate change. It is down to the way we are altering the landscape ... and making it less resilient to those kinds of climate situations.'¹⁷⁵
- 2.79** The NSW Government submission identified some species of macropods as directly threatened by drought: the yellow-footed rock wallaby and the brush-tailed rock wallaby.¹⁷⁶ It also suggested that kangaroos can exacerbate the effect of drought on ecosystems and other species by contributing to grazing pressure.¹⁷⁷

Impact of climate change

- 2.80** While there was substantial discussion about the impact of drought and the 'boom-bust cycle', there was little direct evidence to this inquiry on the predicted impact of climate change on kangaroos. The NSW Government submission noted that 'impacts on kangaroos from climate change are not well understood.'¹⁷⁸ It further noted that the most important effects of climate

¹⁷² Evidence, Ms Molloy, 15 June 2021, p 55.

¹⁷³ Evidence, Mr Grant, 11 June 2021, p 52.

¹⁷⁴ Evidence, Dr Finlayson, 11 June 2021, p 26.

¹⁷⁵ Evidence, Dr Ramp, 15 June 2021, p 11.

¹⁷⁶ Submission 246, NSW Government, pp 4-5.

¹⁷⁷ Submission 246, NSW Government, pp 4-5.

¹⁷⁸ Submission 246, NSW Government, p 4.

change on kangaroo population dynamics will be those influencing the frequency and intensity of drought.¹⁷⁹

- 2.81** The NSW Government submission also observed that over coming decades, average temperatures are expected to increase, leading to increased evaporation. Rainfall patterns are expected to change, with less rain in winter and spring, and increased risk of drought.¹⁸⁰
- 2.82** The committee heard that there are a number of macropod species already listed as threatened, vulnerable or endangered that stand to be put at even greater risk by climate change. The Nature Conservation Council identified the long-nosed potoroo, long-footed potoroo, rufous bettong, brush tailed rock wallaby and yellow-footed rock wallaby as species whose existing habitat is already at risk in ways likely to be compounded by climate change.¹⁸¹
- 2.83** Participants also advised that climate change is likely to exacerbate the risks of bushfire to kangaroo populations. The Nature Conservation Council pointed out that climate change is causing fire seasons to commence earlier and last longer.¹⁸² According to the Council, bushfire is a direct threat to the viability of macropod populations through radiant heat, smoke and removal of trees that provide food and shelter. As vegetation can take months, years, even decades to recover, the Council suggested that in many areas local populations will become extinct, or take many decades to re-establish.¹⁸³
- 2.84** As noted above, landholders and researchers have observed historic patterns in which drought years are followed by wetter periods which allow time for kangaroo numbers to recover rapidly. Representatives of the Kangaroo Management Taskforce expressed the expectation that numbers will grow quickly after the recent drought, based on historic experience:

... anecdotally, as we come out of the drought we have very low numbers and that is where we are at right now. If we get a run of one or two or three better seasons, which is historically what happens, those kangaroos breed up very quickly and very prolifically.¹⁸⁴

- 2.85** The question arises as to whether predictions of quick recovery based on historic patterns will hold true in the face of climatic changes that increase the frequency and intensity of drought and bushfire seasons. Increasing intensity of drought is clearly occurring: the 2017-19 drought was described by government witnesses as 'the worst drought', leading to 'the greatest moisture deficit in terms of soil moisture and vegetation change that Australia has seen in its post-contact history.'¹⁸⁵ Whether it, and subsequent droughts, will be followed by enough 'good years' to enable kangaroo populations to recover is yet to be seen. The capacity of kangaroo populations to grow at a rapid rate in good years is an issue of some contention to this inquiry, as considered in chapter 3.

¹⁷⁹ Submission 246, NSW Government, p 4.

¹⁸⁰ Submission 246, NSW Government, p 4.

¹⁸¹ Submission 402, Nature Conservation Council, pp 5-6.

¹⁸² Submission 402, Nature Conservation Council, pp 5-7; see also Submission 237, RSPCA, p 3.

¹⁸³ Submission 402, Nature Conservation Council, pp 6-7.

¹⁸⁴ Evidence, Mr Leon Zanker, Western Landcare Representative, Kangaroo Management Taskforce, 11 June 2021, p 52.

¹⁸⁵ Evidence, Mr Quirk, 15 June 2021, p 55.

Committee comment

- 2.86** The committee was moved to hear the testimony of Aboriginal elders and educators who made representations to this inquiry. They made clear the deep and ongoing cultural and spiritual importance of kangaroos to Australia's Aboriginal peoples, and the distressing impact that disrespectful treatment and killing of kangaroos has on their well-being. The committee notes that, while references are made to taking account of Indigenous people's interests in the latest consultation draft of the *NSW Commercial Kangaroo Harvest Management Plan 2022-2026*, we are unable to see how Aboriginal concerns about kangaroo welfare and spiritual importance have been addressed throughout the Kangaroo Management Program.

Finding 1

That the draft *NSW Commercial Kangaroo Harvest Management Plan 2022-2026* makes reference to taking into account the interest of Aboriginal communities and the NSW Government should give greater focus to demonstrating how Aboriginal concerns about kangaroo welfare and spiritual importance are being addressed.

- 2.87** Given the spiritual and cultural importance of kangaroos to Aboriginal people, and the unique perspective they bring, is imperative that the knowledge and perspective of Aboriginal people inform the approach to kangaroo management in New South Wales. The committee realises there are likely to be diverse perspectives on kangaroo management among Aboriginal people across New South Wales. The committee considers extensive, genuine consultation with Aboriginal peoples, which ensures their views are given serious consideration, should be a necessary step in the development of all future kangaroo management plans. The committee also considers there should be ongoing involvement of Aboriginal peoples in the management of kangaroo populations.

Recommendation 1

That the NSW Government:

- undertake extensive and genuine consultation with Aboriginal peoples to seek their views regarding the commercial and non-commercial culling of kangaroos, and ensure these views are given serious consideration in the development of all future kangaroo management plans
 - incorporate the genuine involvement of Aboriginal peoples in the management of kangaroo populations.
-

- 2.88** The committee notes the view put by many farmers, pastoralists and ecologists that changes to the landscape following the introduction of farming have led to increases in numbers of certain species of kangaroos.

- 2.89 The introduction and increasing use of exclusion and cluster fencing in New South Wales is an issue of concern to the committee. While the committee heard some arguments, based on the way exclusion fencing has been used in Queensland, that there can be benefits kangaroos due to protection from predation, there would appear to be many potential negative impacts on kangaroos and other species. The committee heard that exclusion fencing, by limiting kangaroos' mobility, can cause disruption to kangaroo migration as well as access to habitat, food and water.

Finding 2

That the use of exclusion fencing has the potential to cause disruption to kangaroo migration as well as access to habitat, food and water.

-
- 2.90 The committee is concerned at the growing use of exclusion and cluster fencing in New South Wales without adequate understanding of the full range of impacts, both on kangaroos and other wildlife. Research citing benefits of exclusion fencing appears to be mainly from Queensland, where fences are used to exclude predators, whereas the committee has heard evidence that fences are being used differently in New South Wales. In light of concerns about possible negative impacts, documented above, the committee recommends that the NSW Government conduct a review of exclusion and cluster fencing on macropod populations and share the review findings with the public.

Recommendation 2

That the NSW Government conduct a review of the impact of exclusion fencing on macropod populations, and that the report be publicly released when complete.

-
- 2.91 The committee believes more needs to be done to co-exist with kangaroos in the landscape. In particular, the committee considers that there should be more consideration to how kangaroos could support an eco-tourism industry. The committee recommends that the NSW Government examine the potential economic benefits of kangaroo eco-tourism and the economic value of commercial harvesting.

Recommendation 3

That the NSW Government examine the potential economic benefits of kangaroo eco-tourism and the economic value of commercial harvesting.

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- 2.92 The committee is concerned about the impact of urban sprawl on kangaroo populations, which can be pushed out of their traditional habitat, and forced to live in close proximity to humans, in pockets of land cut off from movement corridors, with poor animal welfare outcomes. We are further concerned at the prospect of kangaroo habitat becoming fragmented into parcels that are not viable to maintain genetically diverse mobs. Attention should be paid during the planning process to the impact on kangaroos of new peri-urban developments. Accordingly, we

recommend that DPIE amend planning policies to require assessment of the impact on kangaroos located within peri-urban developments when assessing development applications.

Recommendation 4

That the Department of Planning, Industry and Environment amend planning policies to require assessment of the impact on kangaroos located within peri-urban developments when assessing development applications.

2.93 As well as ensuring planning policies better provide for kangaroo protection, the committee considers the NSW Government must act to protect kangaroo habitat on the peri-urban fringe. To this end the committee recommends that NPWS work with relevant local councils to identify local nature reserves and corridors for resident kangaroo populations on the urban fringe.

2.94 Further, the committee believes that the NSW Government has a responsibility to ensure conservation of all kangaroo and macropod species in New South Wales. We recommend that NPWS develop a plan for protecting further areas of kangaroo habitat through creation of reserves and national parks.

Recommendation 5

That the National Parks and Wildlife Service:

- work with relevant local councils to identify local nature reserves and corridors for resident kangaroo populations on the peri-urban fringe
 - develop a plan for protecting further areas of kangaroo habitat in New South Wales through creation of reserves and national parks.
-

2.95 The committee is concerned that, despite evidence that climate change will significantly affect rainfall patterns, increase risk of drought and bushfire, and therefore affect kangaroo habitat and chance of survival, there appears to be little specific consideration of the potential impacts of climate change on kangaroo and other macropod populations in New South Wales. The committee recommends that DPIE conduct and commission research into the potential impacts of climate change on macropod populations in New South Wales.

Recommendation 6

That the Department of Planning, Industry and Environment commission research into the potential impacts of climate change on macropod populations in New South Wales.

Chapter 3 Commercial harvesting of kangaroos

The existence of a commercial kangaroo harvesting industry is strongly opposed by a section of the community, who see killing of kangaroos as inherently wrong. Advocates for the industry suggest that commercial harvesting is a useful way to manage an 'overabundance' of kangaroos, which simultaneously helps landholders manage a 'pest', makes sustainable use of a natural resource, and generates employment and economic opportunities in regional areas. This chapter looks at two main sets of concerns raised about the management of the commercial harvest industry. The first set of issues relate to how the kangaroo population of New South Wales is estimated for the purposes of setting harvest quotas, along with the integrity of the harvest quota system. The second set of issues relates to licensing and compliance monitoring of commercial killing.

Legitimacy of commercially harvesting kangaroo populations

- 3.1 At the centre of this inquiry was a debate about the legitimacy and impact of kangaroo harvesting, provided for under the *Biodiversity Conservation Act 2016* and managed by the Department of Planning, Industry and Environment (DPIE) under its Kangaroo Management Program.

The *Biodiversity Conservation Act 2016* and Kangaroo Management Program

- 3.2 As noted in chapter 1, the *Biodiversity Conservation Act 2016* classes kangaroos, and native mammals, as 'protected animals'.¹⁸⁶ According to the Act, it is an offence to harm a protected animal except in certain circumstances where authorised under other legislation, regulation or under a biodiversity conservation licence.¹⁸⁷ Dealing or attempting to deal in protected animals is also an offence under the Act.¹⁸⁸ DPIE has statutory obligations under the Act to ensure 'ecologically viable' populations of kangaroos in New South Wales.¹⁸⁹ The NSW Government told this inquiry it seeks to ensure ecologically viable populations of kangaroos through a commercial Kangaroo Management Program and management of non-commercial kangaroo licences.
- 3.3 The Kangaroo Management Program, managed by the Kangaroo Management Program Team in DPIE, is responsible for management of the commercial kangaroo harvest. The program is guided by a *Commercial Kangaroo Harvest Management Plan*, which 'must demonstrate how harvesting will be managed to ensure it is humane and the population remains ecologically viable'.¹⁹⁰ According to the NSW Government submission, the Harvest Plan must include

¹⁸⁶ *Biodiversity Conservation Act 2016*, Schedule 5.

¹⁸⁷ *Biodiversity Conservation Act 2016*, s 2.1(1)(c) creates an offence for harming a protected animal. *Biodiversity Conservation Act 2016* Division 2 specifies defences for harming a native animal; see also Submission 234, Animal Defenders Office, p 4.

¹⁸⁸ *Biodiversity Conservation Act 2016* s 2.5(1)(c).

¹⁸⁹ Evidence, Ms Sharon Molloy, Executive Director, Biodiversity and Conservation Division, Environment, Energy and Science, Department of Planning, Industry and Environment, 15 June 2021, p 51.

¹⁹⁰ Submission 246, NSW Government, p 1.

'conservative annual harvest quotas based on regular population monitoring, and include measures to mitigate, monitor and respond to any environmental impacts of harvest activities.'¹⁹¹

3.4 Several inquiry participants suggested that allowing killing of kangaroos, and trade in their parts, contravenes the core principles of the *Biodiversity Conservation Act 2016*. For example, the Think Tank for Kangaroos (THINKK) argued that the removal of kangaroos from their native landscapes contravenes the core values of the Act which include:

- to conserve biodiversity at bioregional and state scales, and
- to maintain the diversity and quality of ecosystems and enhance their capacity to adapt to change and provide for the needs for future generations.¹⁹²

3.5 Some stakeholders suggested there is an inherent conflict of interest between the department's role to uphold the *Biodiversity Conservation Act 2016* and its management of a commercial kangaroo harvest program, which is largely funded from harvesting licence fees.¹⁹³ In this vein, the Australian Wildlife Protection Council proposed that 'the welfare and conservation of kangaroos must be administered by an agency with a prime responsibility to conserve wildlife populations and not to destroy them'.¹⁹⁴ It argued that New South Wales is failing in its basic duty of care by having DPIE responsible for kangaroo conservation *and* kangaroo culling.¹⁹⁵ The Australian Wildlife Shelters Coalition similarly pointed to a risk of 'industry capture', suggesting that state wildlife agencies' management of kangaroo populations is disproportionately influenced by the industry's economic interests, leading to them regulating in ways that are inconsistent with animal welfare and ecological sustainability standards.¹⁹⁶

3.6 Inquiry participants expressed strong concerns that the commercial harvesting of kangaroos, already in decline due to drought, bushfire and other climatic factors, is risking the very survival of kangaroo populations, and breaching the imperative to maintain 'ecologically viable' populations. As discussed further below, some stakeholders fervently believe that the NSW Government, with its conflict of interest, is producing inflated population estimates to justify and service 'a commercial exploitative industry', in breach of its responsibilities under environmental protection legislation.¹⁹⁷ Several stakeholders raised the spectre of localised extinction of commercially harvested kangaroos in some areas, due to inflated population estimates leading to over-harvesting, effectively wiping out kangaroo populations in some zones.¹⁹⁸

3.7 Some animal rights advocates put the view that the *Biodiversity Conservation Act 2016* is in itself problematic, as it contains provisions legitimising killing in the name of 'conservation'. Professor

¹⁹¹ Submission 246, NSW Government, p 1.

¹⁹² Submission 160, The Think Tank for Kangaroos, p 3.

¹⁹³ For example, submission 239, Australian Wildlife Protection Council Inc and Coalition for the Protection of Kangaroos, p 14.

¹⁹⁴ Submission 239, Australian Wildlife Protection Council Inc and Coalition for the Protection of Kangaroos, p 14.

¹⁹⁵ Submission 239, Australian Wildlife Protection Council Inc and Coalition for the Protection of Kangaroos, p 14.

¹⁹⁶ Submission 241, Australian Wildlife Shelters Coalition, p 29.

¹⁹⁷ Submission 270, Mr Ray Mjadwesch, p 13.

¹⁹⁸ For example, Submission 299, Humane Society International, pp 3-8.

David Brooks considered that, 'The *Biodiversity Conservation Act 2016* and ... its 'sister' Act, the *NSW Biosecurity Act 2015*, are troublesome pieces of legislation, serving, amongst many other things to institutionalise *conservation killing* as the preferred mode of wildlife management, to promote the interests of *corporate conservation*, and to silence those who attempt to draw attention to institutionalised animal abuse in this country'.¹⁹⁹

Estimating kangaroo populations in the commercial harvest zones

- 3.8** The commercial Kangaroo Management Program manages commercial harvesting of four species of kangaroo: eastern grey, western grey, red and wallaroo. According to the NSW Government, the commercial program has consistently monitored population fluctuations of these four species since 1975. This is done through annual surveys, which are used to estimate kangaroo populations and determine 'conservative' quotas for the number of kangaroos that may be commercially harvested each year.²⁰⁰
- 3.9** A key issue in this inquiry has been the way kangaroo populations are estimated in order to set harvest quotas for the commercial kangaroo harvest. The NSW Government submission stated that kangaroo population sizes are estimated 'using sophisticated statistical methods that are acknowledged in the scientific community as the best available for broad-scale surveys of wildlife abundance'.²⁰¹ Witnesses from DPIE repeatedly said that the Kangaroo Management Program uses the 'best available science' in the way kangaroo populations are monitored, and harvest quotas set. The department contended the Kangaroo Management Program holds 'one of the best broadscale wildlife monitoring data sets in Australia or perhaps even the world'.²⁰²
- 3.10** Nevertheless, many submissions and inquiry participants raised strong concerns about the methodology underpinning the Kangaroo Management Program's population estimates. Several participants, coming from an animal welfare perspective, pointed to a lack of transparency in the survey methodology and modelling used to estimate populations. For these stakeholders, perceived deficits in the robustness and transparency of the data compromise the integrity of the entire Kangaroo Management Program. Some went so far as to allege that population numbers have been deliberately overestimated by the department, in order to mask a real decline in numbers and justify inflated harvest quotas for the commercial industry or to appease landholders who wish to eradicate kangaroos.²⁰³
- 3.11** In their critique of the department's population estimates, kangaroo advocates raised specific concerns about:
- changing survey methodology over time, or poor survey design²⁰⁴

¹⁹⁹ Submission 273, Professor Brooks, p 6.

²⁰⁰ Submission 246, NSW Government, p 1.

²⁰¹ Submission 246, NSW Government, p 3.

²⁰² Answers to supplementary questions, NSW Government, 23 July 2021, pp 16-17.

²⁰³ For example, Submission 189, Kangaroos Alive, pp 12-13; Submission 270, Mr Ray Mjadwesch, p 9; Evidence, Mr Ray Mjadwesch, Consulting Ecologist, 11 June 2021, p 3; Submission 273, Professor David Brooks pp 23-24.

²⁰⁴ Evidence, Mr Mjadwesch, 11 June 2021, p 2; Evidence, Mrs Claire Galea, Biostatistician and PhD candidate, 11 June 2021, p 10; Answers to supplementary questions, Dr Daniel Ramp, Associate Professor and Research Director, The Think Tank for Kangaroos, 16 July 2021, p 13.

- inconsistent and/or inappropriate use of correction factors to estimate total numbers from actual sightings²⁰⁵
 - reliance on aerial surveys, which have limitations in terms of sighting probability and visibility challenges, when more effective methods, such as use of drones or recorded images are available²⁰⁶
 - whether the population estimates for some areas are plausible, given figures showing year-on-year population growth rates of up to 400 per cent in some districts, which would appear to exceed the biologically possible growth rates for kangaroos²⁰⁷
 - lack of independent scrutiny or peer review of the survey methodology leading to the quota reports.²⁰⁸
- 3.12** On the other hand, some inquiry participants, representing landholders, voiced concerns that the population surveys *underestimate* the total. The Kangaroo Management Taskforce and NSW Farmers raised the following concerns:
- surveys do not include kangaroos in national parks or conservation areas²⁰⁹
 - surveys only count species that are harvestable within a particular zone.²¹⁰
- 3.13** As the accuracy of kangaroo population estimates is critical to the commercial kangaroo management program, the evidence heard on some of these issues is considered below.

Survey design

- 3.14** Kangaroo population surveys in New South Wales are done by air, as, according to the department, aerial surveys are considered the most cost-effective method for such a large area. The Western Plains populations are surveyed annually along 8,960 km of transects using fixed-wing aircraft. The NSW Tablelands are split into three regions, with one region surveyed along 1,600 km of transects each year using helicopter, hence each region is surveyed every three years.²¹¹ The committee heard that the survey design had changed several times since surveys began in the 1970s.
- 3.15** The department provided the table below, which summarises the different methodologies used over the years since 1974, the reasons for them, and the key pieces of research that informed the change.

²⁰⁵ Evidence, Mrs Galea, 11 June 2021, pp 2-3; Evidence, Mr Mjadwesch, 11 June 2021, p 4; Submission 189, Kangaroos Alive, p 12; Answers to supplementary questions, Dr Ramp, 16 July 2021, p 13.

²⁰⁶ Evidence, Mrs Galea, 11 June 2021, pp 4, 11; Answers to supplementary questions, Dr Ramp, 16 July 2021, p 13.

²⁰⁷ Evidence, Mr Mjadwesch, 11 June 2021, pp 3, 7.

²⁰⁸ Evidence, Mrs Galea, 11 June 2021, p 10; See also Submission 273, Professor David Brooks, p 23.

²⁰⁹ Submission 103, NSW Farmers Association, p 2; Answers to supplementary questions, Kangaroo Management Taskforce, 16 July 2021, p 2.

²¹⁰ Answers to supplementary questions, Kangaroo Management Taskforce, 16 July 2021, p 2.

²¹¹ Submission 246, NSW Government, p 3.

Table 1 Changes to kangaroo population survey methodology 1974-present

Period	Method	Reason	Key References
Pre-1974	Nil	Landholder driven commercial industry	Lunney (2010)
1974	First aerial transects are flown by Caughley with intent to use population estimates to guide management decisions.	Growth of industry prompts need to monitor populations	Fox (1974)
1975-1983	Annual surveys of six systematic-randomly selected blocks (16,000 km ² each) in the inland plains. Correction factors implemented	Formalise methodology and facilitate repeated measures. Correction factors developed to resolve observer bias (underestimation)	Caughley (1974, & 1977)
1984-2000	Fixed wing transects surveyed along the 15' and 45' parallels of each degree of latitude covering the entire western plains. That is, 15 transects were surveyed across the breadth of western NSW.	Commercial industry growth meant parts of inland were being under sampled.	Caughley et al. (1987)
2001-2016	Helicopter surveys implemented using line transect sampling in the tablelands.	Fixed-wing and walked-line not suitable for repeatable measures over large areas in the tablelands. Strip width reduction to reduce observer bias.	Cairns (1996); Cairns and Gilroy (2001); Cairns (1999)
2016	Implementation of mark-recapture distance-sampling (MRDS) using trained observers throughout the western plains.	Proactive step to refine methods. Use survey-specific detection probabilities (taking into account covariates) rather than use correction factors.	Fewster and Pople (2008)

Source: *Answers to questions on notice, DPIE, 23 July 2021, pp 2-3.*

Changing survey methodologies

- 3.16** The committee heard concerns that the department's long-term data on kangaroo populations cannot be relied on because the survey methods have changed over time. Mr Ray Mjadwesch, consulting ecologist, criticised the department for 'constantly changing' its survey methodologies since the 1970s. He noted in particular the change to mark-recapture distance

sampling (MDRS) methodology in 2016 and a change of survey transects in 2018 from state-wide 'strips' to blocks.²¹²

- 3.17** Mr Mjadwesch alleged that survey transects were changed with intent to mask a decline in population in some areas. He claimed that, 'as kangaroos disappear entirely from some districts survey transects have been progressively truncated'. As an example, he pointed out some transect segments that were surveyed in 2010 that were 'inexplicably' not sampled in 2011, and alleged that this was a strategy to subtly increase observed kangaroo density in the remaining area.²¹³ He asserted that the latest change to the survey methodologies in New South Wales, which he referred to as involving 'total abandonment of the methodology and survey transects used up to that point', leaves New South Wales 'without any valid population estimates for the period 1988-2015, or anything remotely resembling a long-term data series for New South Wales'.²¹⁴
- 3.18** Researchers from THINKK echoed concerns about changing survey methods. Dr Daniel Ramp outlined his reasoning for believing the department's method changes compromised the integrity of the surveys, leading to overestimation of numbers. One of these was the routine changing of correction formula, used to account for visibility limitations of kangaroos from the air.²¹⁵ Use of correction factors is considered below.
- 3.19** The department rejected the idea that changes to the survey methodology had compromised the integrity of the population estimates, but suggested rather that the Kangaroo Management Program operates within an adaptive management framework, which sees refinements to method as necessary to the long term monitoring program.²¹⁶ The department said:
- KMP methods have undergone several refinements since program inception, each with the intention of increasing certainty around the accuracy of the surveys and therefore the population estimates... While the methodology has been refined over the years, the validity of the data remains as true as it always has been...²¹⁷
- 3.20** In evidence to the committee, Mr Terry Brill, Senior Team Leader, Kangaroo Management, Department of Planning, Industry and Environment, explained the MDRS method that is now being used, and stated that this method gives a more accurate count, which the peer-reviewed science views as the 'best available science' at this time for calculating broadscale populations.²¹⁸ Dr McLeod, a scientist familiar with the surveys, said the change to MDRS was made to produce more accurate population estimates, as statistical methods have evolved and new methods of data collection have become available.²¹⁹

²¹² Evidence, Mr Mjadwesch, 11 June 2021; p 2. Submission 270, Mr Ray Mjadwesch, p 8.

²¹³ Submission 270, Mr Ray Mjadwesch, p 5.

²¹⁴ Submission 270, Mr Ray Mjadwesch, p 8.

²¹⁵ Answers to supplementary questions, Dr Ramp, 16 July 2021, p 6.

²¹⁶ Answers to questions on notice, Department of Planning, Industry and Environment, 23 July 2021, pp 2-3.

²¹⁷ Answers to questions on notice, Department of Planning, Industry and Environment, 23 July 2021, pp 2-3; See also Answers to supplementary questions, NSW Government, 23 July 2021, p 1.

²¹⁸ Evidence, Mr Terry Brill, Senior Team Leader, Kangaroo Management, Environment, Energy and Science, Department of Planning, Industry and Environment, 15 June 2021, p 64.

²¹⁹ Evidence, Dr Steve McLeod, Senior Research Scientist, Department of Primary Industries, 19 August 2021, p 7.

- 3.21** The department advised the committee that methods used for the aerial survey are regularly reviewed, and advances in data collection and analysis adopted as appropriate. It suggested that, while the change from strip transect sampling to MDRS has 'lessened bias and improved precision' in estimated population sizes of kangaroos, the strip transect methods used on the Western Plains prior to 2016 were the best methods for the circumstances at the time, given the statistical tools and aircraft then available. It further stated that the move to MDRS does not render the strip count data invalid.²²⁰
- 3.22** Regarding the change from 'strips' to 'blocks', Mr Brill said in 2016 the surveys began using 160 kilometre transects in 56 blocks of 50 by 20 kilometres in the western plains, instead of the state-wide strips flown previously. Mr Brill said the 56 survey blocks were randomly placed in each zone, and, other than a few tweaks in 2018 for safety reasons, the same blocks will continue to be surveyed. The area covered by the blocks makes up roughly 1 per cent of a zone, and approximately 9.6 per cent of each block is accurately surveyed.²²¹ The department advised on notice that the change from east-west transects to survey blocks was done to improve the occupational health and safety of the survey crew and the public.²²²

Sample selection

- 3.23** Another area of concern for many stakeholders was that the sampling method to select which areas are surveyed is not sufficiently transparent or justified, and therefore the survey results cannot be relied on to extrapolate results to an entire area.
- 3.24** As noted, concerns about the selection of transects surveyed were raised by Mr Mjadwesch, who suggested annual population estimates should be based on repeated survey transects flown annually, with data analysed spatially with consideration for the land uses and vegetation types sampled.²²³ His concerns about the sampling strategy were echoed by THINKK, which contended there is a problem with using densities calculated from a small sample area, and with assuming uniform density across whole regions with different terrain, ignoring vast areas where kangaroos are absent.²²⁴
- 3.25** Mrs Claire Galea, a biostatistician and PhD candidate, also challenged the selection of transects. She asserted that for a sample to be considered reflective of the entire population it needs to be chosen in a way that ensures the area of the sample can be extrapolated to the entire population. She argued that, as only 4.8 per cent of a zone is surveyed, this is statistically extremely small and justification is needed as to how the selected area represents the entire zone's heterogeneity. Mrs Galea argued that the location for each transect should be mathematically determined, and take into consideration:
- the type of macropod, including its movement, feed availability, water availability, and vegetation/coverage.
 - the climatic influences, that is, drought, floods, fires, etc
 - the impact of helicopter noise on the animal's movement

²²⁰ Answers to supplementary questions, NSW Government, 23 July 2021, pp 1, 35.

²²¹ Evidence, Mr Brill and Ms Errington, 15 June 2021, p 65.

²²² Answers to supplementary questions, NSW Government, 23 July 2021, p 1.

²²³ Submission 270, Mr Mjadwesch, pp 3-9.

²²⁴ Answers to supplementary questions, Dr Ramp, 16 July 2021, p 13.

- samples of the proportion of land covered by the specific transect and how the specific transect can then be applied to the total land area which matches it.²²⁵
- 3.26** In response to questioning, the department defended the sampling strategies as having been developed and refined over years by a global community of population ecologists and biostatisticians, and that the selected sampling strategies are the most appropriate given the available vehicles and terrain.²²⁶ It advised that the 2018 redesign of the survey was made after consultation with community groups and scientists who are considered experts in survey design and analysis.²²⁷
- 3.27** In answer to a question on how the survey design takes into account factors that mean kangaroos may be more likely to be present in some areas than others, Mr Brill said the survey blocks were randomly selected.²²⁸ On notice, the department provided further detail about how different land-use or vegetation types are accounted for in the survey design. It stated that the tablelands surveys are stratified on the basis of landscape characteristics, land use and gross macropod density, as explained in the reports, and that the western plains surveys multimodel inferences is used to determine covariates that contribute to improving the fit of the MDRS analysis.²²⁹

Use of correction factors

- 3.28** Several inquiry participants voiced serious concern about use of correction factors, and other modelling techniques, to estimate total populations out of the numbers actually sighted during surveys.
- 3.29** Recognising that in aerial surveys, only a proportion of animals present will be seen by observers from the air, correction factors have been used in some periods of the kangaroo population estimates to account for observer underestimation of the animals present. The NSW Government submission noted that counts of animals from the air along a survey transect are incomplete as some animals are missed, but said 'considerable effort has gone into standardising and correcting for these effects to ensure density estimates are repeatable and accurate.'²³⁰
- 3.30** The table provided by the department above suggests that correction factors were implemented between 1975 – 1983 to resolve underestimation issues from aerial surveys. The table notes the current MDRS methodology uses 'survey-specific detection probabilities' rather than correction factors.²³¹
- 3.31** Kangaroos Alive asserted that correction factors are used to 'systematically inflate' population estimates from which commercial shooting quotas are allocated and that changing correction

²²⁵ Submission 311, Mrs Galea, p 5; See also evidence, Mrs Galea, 11 June 2021, p 10. In answers to supplementary questions, Mrs Galea noted DPIE's evidence to the inquiry that less than 1 per cent of the Western Zone is surveyed. Answers to supplementary questions, Mrs Galea, 12 July 2021, p 8.

²²⁶ Answers to questions on notice, NSW Government, 23 July 2021, p 5.

²²⁷ Answers to supplementary questions, NSW Government, 23 July 2021, p 11.

²²⁸ Evidence, Mr Brill, 15 June 2021, p 66.

²²⁹ Answers to supplementary questions, NSW Government, 23 July 2021, p 15.

²³⁰ Submission 246, NSW Government, p 3.

²³¹ Answers to questions on notice, NSW Government, 23 July 2021, p 3.

factors have been used to mask actual decline in kangaroo numbers. Their submission stated, "The state government relies on aerial surveys that only spot a very small percentage of kangaroos in the landscape and then rely on correction factors which have been modified over the last 30 years to provide stable estimates of kangaroo populations."²³²

- 3.32** Dr Daniel Ramp, Associate Professor and Research Director, THINKK, voiced concerns about the use of correction formula, noting that these have been roundly criticised because they have been routinely changed, and have been increasingly used to predict unobserved kangaroos over time. He asserted that use of correction factors does not represent the best available science and remains unproven in scientific literature.²³³
- 3.33** Mrs Galea stressed that the use of correction factors can lead to serious bias, and result in inaccuracies that are a cause for concern when the estimates derived are used to determine management action (such as setting harvest quotas).²³⁴ She raised a particular concern about the correction factor applied to estimating wallaroo populations from an aerial survey.²³⁵ According to Mrs Galea, a correction factor of 1.85 (meaning that, for every one animal sighted during the survey, 1.85 are counted in the population estimate) for wallaroos was determined based on a single study done in 1997. Mrs Galea raised doubt about the justification for this correction factor being used across the board for wallaroo population estimates without validation in different conditions.²³⁶ She was also alarmed that this correction factor was not applied in 2008 and 2009, then applied retrospectively.²³⁷ Looking at the raw number of wallaroos actually seen during surveys compared to the population estimate produced by modelling, she said she could not explain how 508 wallaroos actually sighted could be accurately translated into a population estimate of 299,190, using any 'mathematically accurate methodology'.²³⁸
- 3.34** Asked to respond to these criticisms, Mr Brill said that helicopter surveys for wallaroos is the only situation where a correction factor is now used, and that is because of the 'relatively low detection rate for wallaroos from helicopter surveys.' According to Mr Brill, the 1.85 correction factor is the 'best available science', established by 'Clancy and his studies in Queensland'.²³⁹ The department advised that the correction factor was introduced in 2001 when the first helicopter surveys of the Northern Tablelands management zones were carried out. According to the department, each report has contained an explanation of its origin and use.²⁴⁰

Choice of technology

- 3.35** Some inquiry participants claimed that there are better technologies available for estimating wildlife populations, that would give more accurate and transparent results. Use of drones, along with photograph and video-imaging were put forward as suggestions.

²³² Submission 189, Kangaroos Alive, p 12.

²³³ Answers to supplementary questions, Dr Ramp, 16 July 2021, p 13.

²³⁴ Submission 311, Mrs Claire Galea, p 3.

²³⁵ Evidence, Mrs Galea, 11 June 2021, pp 2-3.

²³⁶ Evidence, Mrs Galea, 11 June 2021, pp 2-3; See also, Submission 311, Mrs Claire Galea, pp 3-4.

²³⁷ Evidence, Mrs Galea, 11 June 2021, pp 2-3.

²³⁸ Answers to supplementary questions, Mrs Galea, 12 July 2021, p 9; A similar concern was noted in Submission 299, Human Society International Australia, p 4.

²³⁹ Evidence, Mr Brill, 15 June 2021, p 61.

²⁴⁰ Answers to questions on notice, NSW Government, 23 July 2021, p 2.

- 3.36** As noted, aerial surveys in New South Wales are conducted using fixed wing aircraft for the Western Plains, and helicopters for the Northern Tablelands. The department said with confidence they are using the best available technology and systems for conducting wildlife surveys for an area the size of New South Wales.²⁴¹
- 3.37** Mrs Galea told the committee there is some research showing that drones, combined with mathematical modelling, are up to 96 per cent more accurate than humans, yet drones are not used in New South Wales.²⁴² She also gave an example of the Great Elephant Census in Africa which uses visual imagery from drones, suggesting this would be a more accurate way to do the kangaroo count.²⁴³
- 3.38** According to Mrs Galea's submission, research has demonstrated that use of imagery, either by way of airborne videos, remotely sensed or satellite photography, provides many benefits over the human-counted aerial helicopter method and subsequent correction currently used. Possible benefits would including having a permanent record of animal locations and abundance in time and space, better tracking patterns of animals across natural systems, better account taken of climatic and topographical factors, and observations based on unlimited land space rather than individual transects (which are subject to selection bias).²⁴⁴ She also suggested that use of visual imaging rather than human observers would decrease time and costs of conducting the surveys.²⁴⁵
- 3.39** Asked why the department does not use drones, departmental witnesses responded that, while the department is 'always looking for better ways to do things', drones would not be practical – or legal within current aviation regulations – to use on a statewide basis.²⁴⁶ The department also rejected the notion that use of imagery is more accurate than trained observers, pointing out that the human eye has greater resolution than any camera that could be deployed.²⁴⁷
- 3.40** Regarding whether use of cameras would be a more cost-effective method than use of human counters, the department said that use of cameras would not be cost-effective because it would require significant further investment into the technology and development of software to process the imagery, and still require a large amount of human effort to record the numbers post-capture. The department further said that humans outperform cameras when surveying multiple species, and current camera technology cannot differentiate between red and grey kangaroos.²⁴⁸ In reference to developing technologies that are being trialled for use in fauna surveys the department stated that 'many of these technologies sound useful and appealing, but there are always practical constraints and trade-offs associated with the adoption of new technology that must be closely considered as part of the decision-making process in any adaptive management framework.'²⁴⁹

²⁴¹ Evidence, Ms Molloy, 15 June 2021, p 59.

²⁴² Evidence, Mrs Galea, 11 June 2021, p 11.

²⁴³ Evidence, Mrs Galea, 11 June 2021, p 11.

²⁴⁴ Submission 311, Mrs Claire Galea, p 5.

²⁴⁵ Submission 311, Mrs Claire Galea, p 5.

²⁴⁶ Evidence, Mr Brill, 19 August 2021, p 14.

²⁴⁷ Answers to supplementary questions, NSW Government, 23 July 2021, p 24.

²⁴⁸ Answers to supplementary questions, NSW Government, 23 July 2021, p 24.

²⁴⁹ Answers to supplementary questions, NSW Government, 23 July 2021, p 24.

Kangaroo population growth rates

- 3.41** A highly significant issue for this inquiry, that affects both whether the department's population estimates can be believed and whether the method of setting harvest quotas is sustainable, was the question of how fast kangaroo populations can actually increase, biologically speaking.
- 3.42** Mr Ray Mjadwesch, among others, asserted that the maximum biologically-possible population growth rate for grey kangaroos is around 10 per cent per annum, and 14 per cent for red kangaroos and wallaroos.²⁵⁰ Despite this apparent constraint, some of the department's quota reports show population increases of as much as 400 per cent in a year for some species in some zones. According to Mr Mjadwesch, the implausible jumps in population estimates are indicative of a flawed system, which leads to inflated population estimates and hence to an over-allocation of quotas to kill kangaroos.²⁵¹
- 3.43** The question of whether 10 to 14 per cent is the maximum biologically possible growth rate for kangaroos became an issue of high concern for this committee, given harvest quotas are set at up to 17 per cent of the population for red kangaroos, and 15 per cent for the other species. If 10 or 14 per cent per year are maximum possible growth rates for the relevant species, questions arise both about the plausibility of some of the population estimates on which the harvest quotas are based, and also about the sustainability of setting harvest quotas that are above the natural rate of population increase.
- 3.44** Asked to explain the basis for asserting a 10 per cent population growth rate is a biological limit for grey kangaroos, Mr Mjadwesch took the committee through the underlying assumptions. They included:
- a stable population, with 70 per cent female kangaroos, 30 per cent males
 - in any year 65 per cent of females will produce a joey (young females produce their first young at about 3 years old, and stop breeding after 12 or 13 years)
 - 30 per cent of joeys are likely to survive (normal rate of mortality for young joeys is 70 per cent)
 - normal mortality for kangaroos is 5-20 per cent per year.²⁵²
- 3.45** According to Mr Mjadwesch's example, taking a population of 1,000 kangaroos, adding 150 joeys that survive, and subtracting (at the 5 per cent level of mortality) 50 adults that died, leaves 1,100 kangaroos, a 10 per cent increase from the start. Mr Mjadwesch noted that these assumptions apply for grey kangaroos, but red kangaroos and wallaroos can breed slightly quicker because they have a shorter pouch time; hence they can get up to a 14 per cent per annum growth rate.²⁵³ Ms Mjadwesch insisted the 10 per cent population growth rate for grey kangaroos is 'not contested' and has been found to be the case by detailed field studies.²⁵⁴

²⁵⁰ Submission 270, Mr Ray Mjadwesch, p 9; Evidence, Mr Mjadwesch, 11 June 2021, p 7.

²⁵¹ Submission 270, Mr Ray Mjadwesch, p 9.

²⁵² Evidence, Mr Mjadwesch, 11 June 2021, p 7.

²⁵³ Evidence, Mr Mjadwesch, 11 June 2021, p 7.

²⁵⁴ Evidence, Mr Mjadwesch, 11 June 2021, p 7.

- 3.46** Scientists working with the department challenged the assumptions underpinning Mr Mjadwesch's assertion that 10 per cent is the maximum possible population increase. Dr McLeod, Senior Research Scientist, Department of Primary Industries, noted the shorter pouch times for some species, but particularly suggested the survival rate of joeys can be much higher in good conditions than the 30 per cent assumed by Mr Mjadwesch's calculation, even up to 80 or 90 per cent.²⁵⁵ Dr Cairns, consultant scientist to DPIE, similarly said that up to 90 per cent survival was possible in a good year.²⁵⁶ In written answers, the department made references to the literature that demonstrates higher survival rates for some kangaroo species.²⁵⁷ Moreover, Dr McLeod said there is substantial empirical evidence from a large number of studies that has shown that the maximum rate of increase of many kangaroo populations and over a range of species is substantially higher than 10 per cent.²⁵⁸
- 3.47** Evidence from a number of other witnesses addressed the question of the biologically possible maximum growth rate for kangaroos. Researchers from the THINKK advised that there are sophisticated biological models of population growth readily available, and the reproductive biology of the four kangaroo species is well known.²⁵⁹
- 3.48** Dr Benjamin Allen, Senior Research Fellow (Wildlife Management), University of Southern Queensland, pointed to a range of scholarly literature that has investigated reproductive patterns of different species of kangaroo, noting that there are over 50 species of macropods in Australia who breed at different rates depending on place and conditions. Dr Allen said the scholarly research indicates that kangaroo populations can increase quite rapidly under the right conditions, such as after rain.²⁶⁰
- 3.49** When asked about the breeding rate of kangaroos, landholder representatives suggested that the 10 per cent did not fit with their experience. Mr Zanker, Western Landcare representative, Kangaroo Management Taskforce, suggested that a 10 per cent rate may be an average, taking into account there are bad years when populations are under severe stress, but in good seasons the breeding rates are extremely high.²⁶¹ He pointed to the department's graphs showing population trends over time, which show peaks and crashes in populations occurring over 30 or 40 years, as evidence that in some years population growth well exceeds 10 per cent.²⁶²
- 3.50** The department responded in detail to the issue of the population growth rate of kangaroos. It noted that its data on kangaroo populations comes from regular broad-scale surveys, which enable rates of population increase to be calculated based on empirical data. According to survey data, scientists have estimated maximum population growth rate increases well above 10 per cent per annum for different species of kangaroo, with highest rates observed following drought

²⁵⁵ Evidence, Dr McLeod, 19 August 2021, p 4.

²⁵⁶ Evidence, Dr Stuart Cairns, Consultant scientist to Department of Planning, Industry and Environment, 19 August 2021, p 5.

²⁵⁷ Answers to supplementary questions, NSW Government, 15 September 2021, p 3.

²⁵⁸ Evidence, Dr McLeod, 19 August 2021, p 4.

²⁵⁹ Answers to supplementary questions, Dr Ramp, 16 July 2021, p 6.

²⁶⁰ Answers to supplementary questions, Dr Benjamin Allen, Senior Research Fellow (Wildlife Management), University of Southern Queensland, 2 July 2021, p 1.

²⁶¹ Evidence, Mr Leon Zanker, Western Landcare Representative, Kangaroo Management Taskforce, 11 June 2021, p 49.

²⁶² Evidence, Mr Zanker, 11 June 2021, pp 50-51.

breaking rains.²⁶³ The department suggested that hypothetical maximum rates based on assumptions about theoretical populations, estimates and sources of data derived from numerous sources are likely to be highly inaccurate.²⁶⁴ It stated that claims that the maximum rate of increase of around 10 per cent asserted by witnesses to this inquiry are not supported by empirical data.²⁶⁵

Anomalies in population estimates

- 3.51** A significant focus of kangaroo advocates' critique of the Kangaroo Management Program was to pinpoint implausible or anomalous-looking figures in the annual quota reports. As noted above, some of the quota reports contain year on year population increases that look impossible given biological constraints on reproduction.
- 3.52** Some of the examples raised as implausible by inquiry participants included:
- a 426 per cent increase to the grey kangaroo population recorded in the Tibooburra zone between 2014-2015, suggested by Mrs Claire Galea to be 'mathematically impossible'.²⁶⁶
 - a rise of 504 per cent in the Cobar zone eastern grey kangaroo population in 2020.²⁶⁷
 - an increase of 269 per cent to the wallaroo population estimate in the Northern Tablelands between 2013 and 2016, despite there being a drought.²⁶⁸
- 3.53** Questioned on the improbably high population growth figures seen in some of its quota report tables, the department noted that borders of kangaroo management zones (for which population estimates are produced) do not correlate with natural boundaries, and, with the exception of fenced areas, kangaroos can move freely between zones. According to the department, 'large changes in abundance between years within a zone, that exceed the observed maximum rates of increase described above, have sometimes been observed. These are not unexpected and are most likely associated with changes in the availability of food resources within a zone'.²⁶⁹
- 3.54** Mrs Galea raised particular concern about the Northern Tablelands wallaroo population as an example where the mathematical modelling of populations based on triennial survey data may be leading to dangerously inaccurate estimates. She charted the department's estimates of wallaroo populations on the Northern Tablelands against a precipitation index used to measure drought, showing that the department recorded a rapidly increasing population of wallaroos (269 per cent over three years, which Mrs Galea equated to 90 per cent per annum) even while there was a drought. She claimed this is not statistically or biologically possible, as wallaroos

²⁶³ Answers to supplementary questions, NSW Government, 23 July 2021, p 3.

²⁶⁴ Answers to supplementary questions, NSW Government, 23 July 2021, p 3.

²⁶⁵ Answers to supplementary questions, NSW Government, 23 July 2021, p 3.

²⁶⁶ Evidence, Mrs Galea, 11 June 2021, p 8.

²⁶⁷ Submission 273, Professor David Brooks, p 17.

²⁶⁸ Submission 311, Mrs Claire Galea, p 6.

²⁶⁹ Answers to supplementary questions, NSW Government, 23 July 2021, p 5.

breed at approximately 8-10 per cent a year in normal conditions, and stop breeding in times of drought.²⁷⁰

- 3.55** Asked about its figures for the wallaroo population in the Northern Tablelands, the department provided an answer noting that the most recent drought in the Northern Tablelands was in 2017-2018, and that drought was not as severe in the Northern Tablelands as further south and west. The department stated that the 269 per cent increase over three years, which represents a 39 per cent increase each year, was not unfeasible in a non-drought period. It also noted that the precision of the wallaroo estimates is not as high as it is for eastern grey estimates because the surveys are specifically designed for surveying the much more abundant eastern grey kangaroos.²⁷¹
- 3.56** Regarding the 426 per cent population growth rate of grey kangaroos in Tibooburra, the department provided a written answer noting that Tibooburra is at the natural limit of the range for both eastern and western greys, with typically low numbers of both species. It suggested that the animals are likely to move away from the area during drought, and move there and breed in better conditions. It suggested the high population growth figure coincided with a period of better conditions following drought.²⁷²
- 3.57** The department acknowledged that there had been some cases in the past of mistakes in the numbers in the quota report. It stated that 'occasionally yielding increased error in ecological survey data is a reality of working with ecological data. The Kangaroo Management Program has no misconceptions about this and openly provides statistically derived measures of precision through publicly available quota and population reports annually.'²⁷³ It rejected the idea that a mistake in a report amounted to deceit, noting that 'The Kangaroo Management Program transparently reports any such instance as soon as it arises.'²⁷⁴

Tracking population trends

- 3.58** Another significant concern for some inquiry participants was that, because of changes to survey methods over time, the department's 45 year data set is not reliable enough to understand long term population averages and trends.²⁷⁵
- 3.59** A graph is included in the *NSW Commercial Kangaroo Harvest Management Plan 2017-2021* that shows estimated kangaroo populations over time, relative to numbers killed in the commercial harvest. It also indicates when there were 'wet' and 'dry' periods, and what survey method was being used to estimate kangaroo populations at the time. The graph is used in the Plan to show

²⁷⁰ Submission 311, Mrs Claire Galea, p 6.

²⁷¹ Answers to questions on notice, NSW Government, 23 July 2021, p 22.

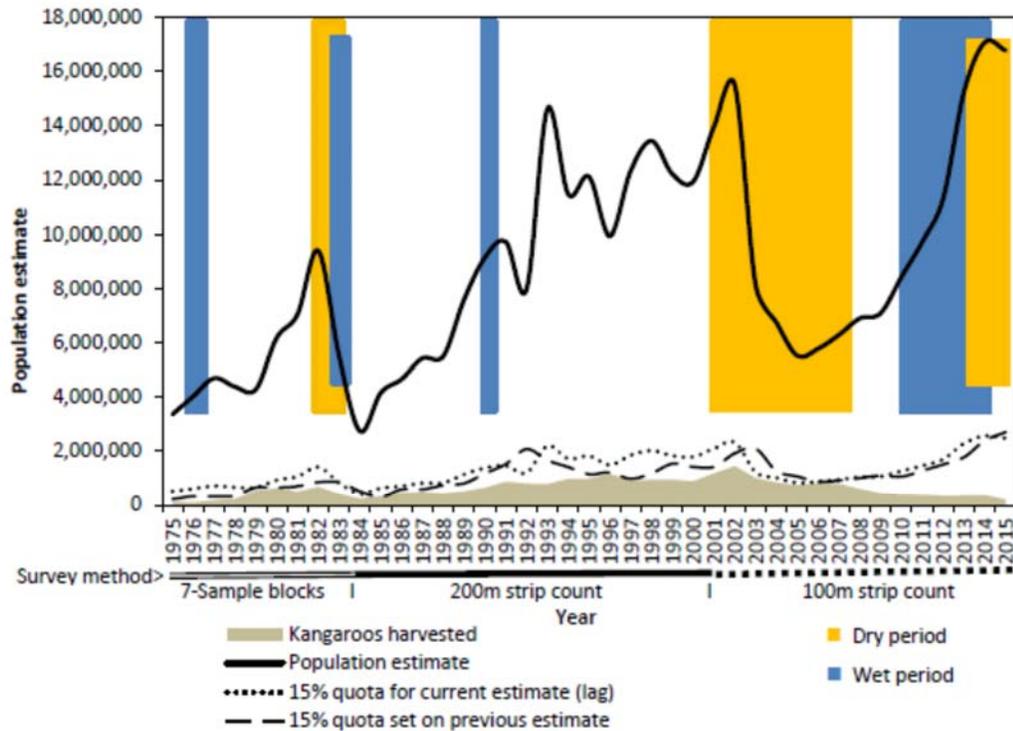
²⁷² Answers to questions on notice, NSW Government, 23 July 2021, p 16.

²⁷³ Answers to questions on notice, Department of Planning, Industry and Environment, 23 July 2021, p 3.

²⁷⁴ Answers to questions on notice, Department of Planning, Industry and Environment, 23 July 2021, p 3.

²⁷⁵ For example, answers to supplementary questions, Mrs Galea, 12 July 2021, pp 10-11; Answers to supplementary questions, Dr Ramp, 16 July 2021, p 6.

that kangaroo populations are much more impacted by environmental conditions than the kangaroo harvest.²⁷⁶



Source: NSW Commercial Kangaroo Harvest Management Plan 2017-2021, p 8.

3.60 The graph drew criticism from Mr Mjadwesch for: misrepresenting 'wet' and 'dry' periods, compared to Bureau of Meteorology data; failing to indicate that kangaroo numbers from new zones had been added; and including 'biologically impossible' rates of increase.²⁷⁷ He claimed that the 'wet' and 'dry' periods had been deliberately misrepresented to make increasing population in times of drought look plausible.²⁷⁸

3.61 On the issue of whether the graph misrepresents wet and dry periods, the department noted that rainfall conditions vary across the state, and years that have been wet on the coast have been dry inland. It further, stated that the seasonal indicators are only provided to assist the reader interpret the graph, and do not affect the population estimates, which are based on annual or triennial survey data and can be read independently of the seasonal indicators.²⁷⁹

3.62 In relation to whether the graph was misleading because the population of new zones had been added to the count, Mr Brill acknowledged that the graph needed to be standardised to account

²⁷⁶ NSW Government, Office of the Environment and Heritage (now DPIE), *NSW Commercial Kangaroo Harvest Management Plan 2017-2021*, p 8.

²⁷⁷ Answers to supplementary questions, Mr Mjadwesch, 23 July 2021, p 12, resolved to be published in part by the committee.

²⁷⁸ Answers to supplementary questions, Mr Mjadwesch, 23 July 2021, pp 9-12, resolved to be published in part by the committee.

²⁷⁹ Answers to questions on notice, NSW Government, 15 September 2021, p 19.

for addition of extra zones, although suggested the numbers involved were small. He observed that it would be more appropriate to present the graph using population densities rather than total numbers, as that would be less misleading, and undertook to do this for the next iteration of the plan.²⁸⁰

- 3.63** The department emphatically rejected the suggestion that changes to survey methodology over time had impacted on the validity of the kangaroo population trend data. Witnesses from the department stated on several occasions that the methodology had changed over time, as more accurate survey methods were developed, but this does not affect the usefulness of the trend data.²⁸¹ The department stated in answer to a question about the move to MDRS that it did not make previous survey data invalid, but that 'the population estimates are all valid population estimates that have been determined using the most appropriate technique at the time. Therefore, it is valid to use the estimate from each year in the long-term average calculations.'²⁸²
- 3.64** Witnesses from the department also explained that this long term trend graph, which combines kangaroo counts from all zones, is not relevant to the setting of harvest quotas. Harvest quotas are set by zone, based on the individual estimate for that zone.²⁸³

Independent scrutiny of the population estimates

- 3.65** Responding to general concerns about the rigor and transparency of its methods for monitoring the macropod population in New South Wales, the department stressed that it uses 'well established, independently peer-reviewed and best practice' methods that are widely used globally in fauna and flora monitoring programs, and provided an extensive bibliography of references.²⁸⁴
- 3.66** Nevertheless, several inquiry participants suggested the science behind the quota reports is insufficiently transparent, and that the annual surveys should be subject to independent scrutiny through peer review.²⁸⁵ Pointing to apparent anomalies in the government's population figures, Professor David Brooks suggested that government estimations of NSW kangaroo populations are 'inherently and systematically inflated' and need to be 'meticulously and independently interrogated' to investigate whether the real population is lower and more fragile than official estimates suggest.²⁸⁶ Mrs Galea highlighted that the quota reports are not peer reviewed, and suggested the mathematical and statistical methods used should be 'urgently investigated' to 'ensure survival of the species'.²⁸⁷ Dr Ramp from THINKK said his organisation had 'been

²⁸⁰ Evidence, Mr Brill, 19 August 2021, p 18.

²⁸¹ For example, evidence, Mr Brill and Dr McLeod, 19 April 2021, pp 18-19.

²⁸² Answers to supplementary questions, NSW Government, 23 July 2021, p 35.

²⁸³ Evidence, Dr McLeod, 19 August 2021, p 19.

²⁸⁴ Answers to questions on notice, Department of Planning, Industry and Environment, 23 July 2021, p 1.

²⁸⁵ For example, evidence, Mrs Galea, 11 June 2021, p 2; See also Submission 273, Professor David Brooks, p 23.

²⁸⁶ Submission 273, Professor David Brooks, p 23.

²⁸⁷ For example, evidence, Mrs Galea, 11 June 2021, and answers to supplementary questions, Mrs Galea, 12 July 2021, p 8.

dismayed at the unwillingness of those responsible for the population surveys and the setting of quotas to take independent advice.¹²⁸⁸

- 3.67** Asked about whether the DPIE quota reports should be subject to a peer review process, Dr Stuart Cairns told the committee that he works on the Northern Tablelands helicopter surveys, the results of which were last peer reviewed in 2009 or 2010, and were found to have no problems. He said the helicopter surveys have used the same method since 2003, and further peer review would not be necessary.²⁸⁹
- 3.68** In response to suggestions that there is no independent scrutiny or peer review of the survey method or its data, DPIE stated, "The department is willing to consider independent review of the survey methodology by appropriately skilled scientists that are published in the contemporary peer reviewed literature in the field of broadscale wildlife population survey."²⁹⁰

Setting harvest quotas

- 3.69** The accuracy of the kangaroo population estimate is critically important for the way quotas are set for the commercial harvest. According to the *NSW Commercial Kangaroo Harvest Management Plan 2017-2021*, the commercial harvest uses a 'proportional threshold harvest system' whereby quotas are set as a percentage of the estimated population. For red kangaroos, the maximum quota is 17 per cent, for grey kangaroos and wallaroos, the maximum quota is 15 per cent. There are also population density thresholds below which quotas are reduced to a lower percentage of the population, or even to zero. This is outlined in an annex to the plan drafted by scientists. According to the annex, harvest thresholds lower the risk of overharvesting by reducing harvest mortality at times of low population size.²⁹¹ Directly linked to the methodology for setting population estimates, this aspect of the kangaroo management program was also a focus for significant debate in the inquiry.

Are the harvest quotas sustainable?

- 3.70** Many witnesses to this inquiry questioned the rationale for the 15 and 17 per cent harvest quota for kangaroos. Those challenging the 15 and 17 per cent quotas tended to suggest that there is insufficient transparency around the rationale for these quotas, and that they appear to ignore biological constraints on kangaroo population growth rates, discussed above. Dr Daniel Ramp, THINKK, went so far as to suggest that there can be no confidence that the current setting of 'sustainable yields' meets the precautionary principle of preventing population collapse.²⁹²
- 3.71** THINKK researchers highlighted the following further issues with the quota setting system:

²⁸⁸ Answers to supplementary questions, Dr Ramp, 16 July 2021, p 7.

²⁸⁹ Evidence, Dr Cairns, 19 August 2021, p 9.

²⁹⁰ Answers to questions on notice, Department of Planning, Industry and Environment, 23 July 2021, p 5.

²⁹¹ NSW Government, Office of Environment and Heritage (now DPIE), *NSW Commercial Kangaroo Harvest Management Plan 2017-2021*, p 10; Appendix 1, p 24.

²⁹² Answers to supplementary questions, Dr Ramp, 16 July 2021, p 6.

- reliance on populations surveys that are subject to significant error, and with correction factors that have changed over time
- increasing size of kangaroo management zones, which have potentially masked population decline
- quotas based on annual trends in population estimates rather than by biological and ecological information.
- quotas not taking into account age and sex of kangaroos killed
- a six month lag between when estimates are made and when quotas are enforced, ignoring the possibility of harsh summer conditions impacting on kangaroo populations.²⁹³

3.72 Asked to explain the 15 per cent quota for grey kangaroos, Mr Brill said: 'The science tells us. There has been historical science done that calculates that the sustainable harvest rate can be around 15 per cent and that is how that is set, based on the best available science'.²⁹⁴ Questioned further on 'the science', the department responded by providing the references upon which it relies: 'The original derivation of the 15 per cent quota was described in Caughley (1987) and subsequently confirmed by other researchers (eg Hacker et al 2003, Hacker et al 2004 and McLeod et al 2004).²⁹⁵ On the question of whether the harvest threshold exceeded the biologically possible population growth rate for kangaroos, the department referred to evidence, quoted above, showing that, in good conditions, kangaroo population growth rates can be much higher than 10 per cent, as demonstrated by empirical data.²⁹⁶

3.73 In response to calls from stakeholders to establish what it sees as a 'desired', 'sustainable' number of kangaroos, the department said it is not aware of any scientific research determining an acceptable baseline that balances the needs of kangaroo populations to be ecologically viable with the needs of agriculture and expectations of the community. It noted that there are many stakeholders with different perspectives and expectations regarding the number of kangaroos that 'should' be in the landscape. It also noted that a baseline would not be a single value, but would need to be a range that considers fluctuations in seasons and other factors, such as land productivity and competing land uses.²⁹⁷

Minimum density thresholds

3.74 As noted, according to a 'proportional threshold harvest system' kill quotas are set as a percentage of the total population, however there are also population density thresholds below which quotas are reduced or suspended. An annex to the plan describes the statistical methods on which the thresholds are set.²⁹⁸

²⁹³ Answers to supplementary questions, Dr Ramp, 16 July 2021, pp 6-8.

²⁹⁴ Evidence, Mr Brill, 15 June 2021, p 59.

²⁹⁵ Answers to supplementary questions, NSW Government, 23 July 2021, p 34; also Answers to questions on notice, NSW Government, 23 July 2021, p 14 (cites references).

²⁹⁶ Answers to questions on notice, NSW Government, 23 July 2021, p 14.

²⁹⁷ Answers to questions on notice, NSW Government, 23 July 2021, p 18.

²⁹⁸ NSW Government, Office of Environment and Heritage (now DPIE), *NSW Commercial Kangaroo Harvest Management Plan 2017-2021*, Appendix 1, p 24.

- 3.75** Several inquiry participants suggested there is insufficient transparency around the thresholds at which harvest quotas are reduced or scrapped, as there is no public explanation of how the thresholds are determined, and what they actually are for each species.²⁹⁹
- 3.76** Kangaroos Alive went so far as to suggest that the methods of setting thresholds are not in line with the department's obligations under the *Biodiversity Conservation Act 2016* to ensure ecologically viable populations in New South Wales.³⁰⁰ They highlighted the lack of public information on what science the thresholds are based on and lack of specified target densities for each species in each zone. Without out this element of transparency, they suggested that it is not possible to evaluate whether the department is meeting its obligations with respect to protection of kangaroo populations under the Act.³⁰¹
- 3.77** In noting the lack of an accepted 'carrying capacity' of the ecosystem for kangaroos, Kangaroos Alive cited research suggesting that harvesting that results in long-term density of less than ten kangaroos per square kilometre should be rejected as it is likely to lead to minimum densities below a critical level of two kangaroos per square kilometre, at which point that population is considered to be at risk of local extinction.³⁰² They expressed concern that harvest quotas have been set even in areas where population densities are low, pointing to an example in the 2021 Quota Report where harvest quotas have been set in a zone even though the population density was below 1.9 animals per square kilometre.
- 3.78** In answer to questions about how thresholds are set, the department provided the following further information specifying that the thresholds are set based on -1.5 and -2.0 standard deviations from the mean population:
- The thresholds for each kangaroo management zone are based on statistical properties of the time series of kangaroo abundances within each zone. Specifically, two thresholds are set at -1.5 and -2.0 standard deviations (SD) below the mean of the distribution of abundances. If the population size falls below the -1.5 SD level, the harvest rate is reduced to 10 per cent of the estimated population size. If the population size falls below the -2.0 SD level, commercial harvesting within the zone is stopped until the population recovers, and abundance exceeds the lower level.³⁰³
- 3.79** The department also provided, on notice, population threshold summary tables showing the actual numbers for the mean, 1.5 and 2 standard deviations below the mean for the four kangaroo species in relevant zones.³⁰⁴ These tables are included at appendix 3.
- 3.80** The RSPCA raised a concern that, while these thresholds may be observed for the commercial program, meaning the commercial harvest will cease for a particular species and zone until the next annual cycle, it is unclear whether landholder permits to shoot kangaroos non-commercially may still be issued in such zones.³⁰⁵

²⁹⁹ For example, Submission 189, Kangaroos Alive, p 6.

³⁰⁰ Submission 189, Kangaroos Alive, p 6.

³⁰¹ Submission 189, Kangaroos Alive, p 6.

³⁰² Submission 189, Kangaroos Alive, pp 7-9; See also Submission 270, Mr Ray Mjadwesch, p 3.

³⁰³ Answers to supplementary questions, NSW Government, 15 September 2021, p 11.

³⁰⁴ Answers to supplementary questions, NSW Government, 23 July 2021, p 33.

³⁰⁵ Submission 237, RSPCA, p 2.

Quotas based on previous year's population

- 3.81** A further issue of concern to some inquiry participants is that harvest quotas are set based on population estimates from a survey done in June or July of the previous year. This means that, in times of drought, when the population may be rapidly declining, a 15-17 per cent quota of the previous year's population may be a much higher proportion of the actual population.³⁰⁶ For example, Kangaroos Alive noted that commercial harvest quotas for 2020 were based on 2019 populations, even though the impact of severe drought, bushfires and then flooding was not calculated.³⁰⁷ Mrs Claire Galea gave the example of red kangaroos in Cobar, where she suggests that the number of red kangaroos harvested in 2018 came 'perilously close' to causing local extinction of the species in 2018, as there was a population decline of 81 per cent between 2017 (when the quota was set) and 2018.³⁰⁸
- 3.82** Asked about how the statement in the 2017-2021 Management Plan - that 'if there is any concern about kangaroo population trends the quota can be reduced or suspended' - is applied, DPIE responded by restating the 'proportional threshold harvesting' description contained in an annex to the plan, outlined above.³⁰⁹
- 3.83** One example discussed at length regarding population was the Tibooburra zone, where several witnesses suggested there were particular problems with the population estimate and quota setting.³¹⁰ At a time of declining population due to drought in 2017-2019, quotas for commercial harvest were being set, which by the following year (for which the quota applied) amounted to a much higher proportion of the current population than the 15 or 17 per cent.³¹¹ For grey kangaroos, this appeared to mean that a quota of 6,782 kangaroos was set for 2020, based on a 2019 population of 48,502. If fully utilised, participants argued that this would have all but wiped out the estimated 2020 population of 6,859 grey kangaroos. By 2019, population levels of red kangaroos in the Tibooburra Zone had fallen to a point that no commercial quotas were issued.³¹²
- 3.84** Asked why kangaroo quotas were still being given during a drought in Tibooburra when, in all likelihood, the population was going to plummet, Mr Brill said: 'Clearly no-one knew that the drought was going to be as severe as it was. The way the quota setting works is that we look at the long-term mean and then we look at the variation away from the mean. If it is a large

³⁰⁶ See, for example, Submission 270, Mr Mjadwesch, p 11; Answers to supplementary questions, Dr Ramp, 16 July 2021, pp 6-8; Submission 273, Professor David Brooks, pp 12-17.

³⁰⁷ Submission 189, Kangaroos Alive, p 19.

³⁰⁸ Answers to supplementary questions, Mrs Claire Galea, 12 July 2021, p 6.

³⁰⁹ Answers to supplementary questions, NSW Government, 15 September 2021, p 11.

³¹⁰ For example, evidence, Mr Mjadwesch, 11 June 2021, pp 11-13; evidence, Mrs Galea, 11 June 2021, p 6.

³¹¹ *NSW Kangaroo Management Program 2021 Quota Report*, pp 19-20, discussed in evidence, 15 June 2021, pp 52-53.

³¹² Industry representatives confirmed that the Tibooburra zone was closed 'because of the population counts and other factors'. Evidence, Mr Douglas Jobson, Chief Executive Officer, Macro Meats Group and Kangaroo Industry Association of Australia Operations Committee Members, 15 June 2021, p 46.

variation away from the mean, then the quota is set at zero ... So the proportional quota system reacts to the falling quota but it does not pre-empt it.³¹³

3.85 In written answers to questions, the department said:

It is not valid to compare 2020 quotas with 2020 population estimates. Quotas for 2020 are set in late 2019 (based on 2019 population estimates) approximately 8-9 months prior to the 2020 surveys commencing and approximately 10-11 months before the 2020 population estimates are available. There was no allocation and harvest in the Tibooburra zone. The Department was monitoring allocation (and harvest) levels through the year.³¹⁴

3.86 In further answers, the department suggested that a decline in population such as that seen in Tibooburra is consistent with the boom-and-bust population cycles that kangaroos experience, particularly in lower rainfall semi-arid areas. It suggested the major contributor to the kangaroo population decline in Tibooburra from 2016-2018 was drought, noting the red kangaroo harvest in the Tibooburra zone as a proportion of the population in those years ranged from 1.5 to 2.8 per cent.³¹⁵

3.87 Questioned on whether there was research investigating the impact of commercial harvesting on kangaroo populations generally, the department indicated it had commissioned research modelling the effect of harvesting on kangaroo populations during drought in 2003. According to the department: 'this research showed that undertaking an additional survey in February during drought was approximately equivalent to setting quotas in the first instance at around 8-10 per cent of the winter survey population estimate with no adjustment.'³¹⁶

Licensing and compliance monitoring of commercial harvesting

3.88 Some participants in this inquiry raised questions about the adequacy of the NSW Government's role in licensing and monitoring compliance within the commercial kangaroo industry. Many concerns related to monitoring of animal welfare outcomes, examined in chapter 3. Other concerns were raised about whether there is sufficient monitoring of numbers of kangaroos killed, especially given joeys are not counted, and whether compliance inspectors are sufficiently independent, or have a conflict of interest.

3.89 NSW Government representatives expressed strong confidence in the governance of the commercial kangaroo management program, noting that it is assisted by a Kangaroo Management Advisory Panel, with representatives from a wide range of stakeholders including animal welfare groups, and that there is a modern and up to date compliance program.³¹⁷ The NSW Government submission to this inquiry outlined the licensing and oversight arrangements for commercial kangaroo harvesting.³¹⁸ Ms Molloy pointed to the quota system, the licensing

³¹³ Evidence, Mr Brill, 15 June 2021, p 53.

³¹⁴ Answers to supplementary questions, NSW Government, 23 July 2021, p 20.

³¹⁵ Answers to supplementary questions, NSW Government, 23 July 2021, p 20.

³¹⁶ Answers to supplementary questions, NSW Government, 23 July 2021, p 32.

³¹⁷ For example, evidence, Ms Molloy, 19 August 2021, p 2.

³¹⁸ Submission 246, NSW Government, pp 9-10.

conditions, the tagging system as ensuring the harvest is kept to sustainable levels. She also said there is a strong compliance process, through chiller inspections and licence checks.³¹⁹

3.90 In addressing questions about the department's monitoring of animal welfare outcomes, the department provided the following outline of the regulatory framework.

The regulatory framework that ensures high level animal welfare outcomes in the commercial kangaroo management program includes:

- firearms licensing and accuracy accreditations
- rigorous harvester and animal dealer licence conditions
- the National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes (the Code)
- regular compliance inspections of chillers and processing works
- independent veterinary inspections at human consumption processing works
- animal dealer reporting requirements
- rigorous compliance processes that follow up notifications of the supply of any animals that have not been shot in the head.³²⁰

3.91 The department further highlighted the following aspects of the regulatory framework:

- All harvesters must hold an appropriate firearms licence and must complete firearms accuracy and accreditation through a registered training organisation before they can be granted a harvester licence, then must be accredited every five years thereafter.
- Licence conditions for harvesters include the requirement to comply with the commercial code of practice, to not possess or sell any kangaroo that is not headshot, and to tag and leave in the field any animals that were not headshot.
- Licence conditions for dealers require that the dealer may not buy, possess, sell, import or export a kangaroo carcass or skin containing a bullet wound to the body, and if a dealer does receive a kangaroo carcass containing a bullet wound in the body they must complete and submit a NSW Animal Welfare Report and subsequently destroy the carcass.
- Departmental compliance officers conduct regular inspections of chillers and processing works, and, among other things, examine carcasses for bullet wounds to the body or other evidence of licence condition breaches.
- Australian government veterinary officers are required to be present at all human consumption processing works, and in situations where there are non-headshot carcasses the veterinary officers report this to the department for follow up.
- Animal dealer licence conditions require a dealer to report to the department any carcasses they receive which contain a bullet wound to the body.
- All reports of carcasses with non-headshot wounds include the tag details, name and licence number of the harvester that supplied the carcass and the details of the wound, These reports are followed up by the departmental compliance officers, and appropriate action taken.³²¹

³¹⁹ Evidence, Ms Molloy, 15 June 2021, p 64.

³²⁰ Answers to questions on notice, NSW Government, 15 September 2021, p 22.

³²¹ Answers to questions on notice, NSW Government, 15 September 2021, pp 22-23.

Adequacy of compliance monitoring

- 3.92** Several inquiry participants suggested that DPIE's monitoring of the commercial harvest program is inadequate because there is no monitoring at point of kill. Animal welfare aspects of this are considered in chapter 5.
- 3.93** The Animal Defenders Office highlighted research from 2013 on the role of inspections in the commercial kangaroo industry, which, in addition to finding gaps in monitoring from animal welfare perspective, also found significant gaps in the reporting system. According to the Animal Defenders Office, researchers suggested 'the ability and resolve of the agencies to inspect, charge and prosecute offenders may have been impeded by conflicts of interest between operating a kangaroo management program and ensuring the welfare of kangaroos'.³²²
- 3.94** The Kangaroo Industry Association presented a different picture of the compliance mechanisms. It stressed the large number of codes and regulations that the commercial industry is subject to, which set conservation, animal welfare and food safety standards it described as 'some of the strictest in the world'.³²³ In particular, it highlighted the mandatory licensing and tagging systems that allow the commercial industry to be closely monitored, and the auditing processes and penalties that ensure compliance. It pointed out the greater rigour not just of the requirements, but also of the NSW Government's compliance monitoring processes for the commercial industry, as opposed to the non-commercial licensing.³²⁴
- 3.95** In evidence to the committee, the department was confident in the quality of its compliance monitoring. Ms Molloy highlighted the range of management strategies the department undertakes throughout the year, including setting quotas, handing out tags, following up reports, undertaking inspections of chillers and checking licences. She noted there are regular 'returns' (reports from licensees).³²⁵ Mr Brill explained that harvesters have to submit monthly returns for each batch of tags they purchase, chillers have to report weekly, and processors report quarterly. He said the standards of returns are very good, with only around 1.5 per cent not submitted by the end of the last year, but he would like to see compliance get to 100 per cent.³²⁶

No reporting on joeys killed

- 3.96** As noted above, DPIE witnesses were confident in the reporting they receive from commercial shooters and processors on the number of kangaroos killed in the commercial harvest. Although numbers of kangaroos killed are reported to DPIE, there is no requirement to report the number of joeys killed, or number of joeys that were not killed and fled, as the department does not collect that information.³²⁷

³²² Submission 234, Animal Defenders Office, p 9. Citing research by K Boom, D Ben Ami, L Boronyak and S Riley, 'The Role of Inspections in the Commercial Kangaroo Industry', *International Journal of Rural Law and Policy*, 2013.

³²³ Submission 256, Kangaroo Industry Association of Australia, p 13.

³²⁴ Submission 256, Kangaroo Industry Association of Australia, pp 13-16.

³²⁵ Evidence, Ms Molloy, 15 June 2021, p 64.

³²⁶ Evidence, Mr Brill, 15 June 2021, p 67.

³²⁷ Evidence, Mr Brill, 19 August 2021, p 16.

- 3.97** Departmental witnesses rejected the suggestion that lack of reporting on numbers of joeys means the department does not know what happens to them. Mr Brill pointed to the commercial code of practice, that sets out in detail what action should be taken in regard to joeys and said 'we know in the vast majority of cases that is exactly what happens'. Mr Brill said the code of practice, which was 'reviewed in 2020 by experts in the animal welfare field', is very comprehensive and based on the 'best available science'.³²⁸
- 3.98** In answer to a question on why DPIE does not record the number of joeys killed, the department responded that:
- The department does not collect data on the number of dependent young euthanised by kangaroo harvesters, but does collect data on the gender of kangaroos harvested, which shows that typically less than one third of kangaroos harvested are female.
 - The commercial code of practice, which underpins regulation of the industry, specifies that dependent young must be euthanised quickly and humanely according to the most appropriate methods.
 - A 2020 review of the code gathered extensive input from animal welfare and kangaroo harvesting experts, state and federal governments, kangaroo and pastoral industries, harvesters and animal welfare groups – revisions removed ambiguity and addressed the minimisation of harm to dependent young.
 - In NSW, a hard copy of the revised code and factsheets were distributed to all harvesters licensed in 2021 to ensure that they are aware of their obligations under the code.³²⁹

Committee comment

- 3.99** At the heart of this inquiry was a question about whether the NSW Government should be allowing commercial harvesting of kangaroos under the auspices of 'biodiversity conservation'. The committee has heard that the NSW Government has a responsibility to maintain 'ecologically viable' populations of kangaroos, and notes that managing a commercial killing operation is seen as a way to discharge that responsibility.
- 3.100** It is unarguable that kangaroo numbers in New South Wales have been severely impacted by the 2017-2019 drought. The committee is concerned that during the last drought the government continued issuing harvest quotas based on the previous year's population estimates and this may have been inaccurate given declining numbers.
- 3.101** Noting that the legislative environment is complex, the committee believes its concerns about compatibility of a commercial kangaroo management program with the objectives of the *Biodiversity Conservation Act 2016* are serious enough to warrant independent investigation. For this reason, it recommends that the NSW Auditor-General be requested to undertake a review of the Kangaroo Management Plan's objectives in regards to how they satisfy the requirements of the *Biodiversity Conservation Act 2016* and the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999*.

³²⁸ Evidence, Mr Brill, 19 August 2021, p 16.

³²⁹ Answers to supplementary questions, NSW Government, 15 September 2021, p 8.

Recommendation 7

That the NSW Government request the Auditor-General to undertake a review of the Kangaroo Management Plan's objectives in regards to how they satisfy the requirements of the *Biodiversity Conservation Act 2016* and the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*.

- 3.102** The committee is concerned by evidence it has heard from a number of organisations and individuals about the methods for estimating kangaroo populations in New South Wales. Legitimate questions have been raised, many of which have not been able to be answered by publicly accessible information. Through this inquiry, the committee has endeavoured to understand the science behind the population estimates, and notes the quantity of written and verbal answers provided by DPIE and the scientists involved in the population surveys. While this has put more information into the public arena, it has not fully dispelled doubts about whether the methods used are producing accurate enough population counts. The committee considers that the current methodology used by DPIE to produce estimates of New South Wales' macropod populations lacks transparency.
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Finding 3

That the current methodology used by the Department of Planning, Industry and Environment to produce estimates of New South Wales' macropod populations lacks transparency.

- 3.103** The committee has heard evidence suggesting that there are more effective methods for surveying wildlife, such as use of infra-red and other camera drone technology, and use of photograph imaging. Despite the department's assertions that the current methods are the best available for the wide area and terrain, the committee believes that new technologies should be investigated.
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Recommendation 8

That the Department of Planning, Industry and Environment investigate new technologies for counting kangaroo populations such as the use of infra-red and other camera drone technology.

- 3.104** As a matter of transparency, and to build public confidence as well as the accuracy of the counts, the committee recommends that DPIE use video imaging of kangaroo populations when surveying populations from aircrafts, and that this footage be made publicly available on the department's website.
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Recommendation 9

That the Department of Planning, Industry and Environment use video imaging of kangaroo populations when surveying populations from aircrafts and make this footage publicly available on its website.

- 3.105** The committee notes strong concerns among several participants in this inquiry that changing survey methods over time mean that the different estimates of kangaroo populations over time are not comparable. While noting DPIE's confidence in the long term data set on kangaroo populations, and its explanation for the changes, the committee has heard enough doubts raised about the accuracy of various aspects of the methods to support an independent review of the long term trend data of kangaroo populations.
- 3.106** Given the importance of setting accurate population estimates, which inform harvest quotas, the committee is particularly keen to see independent, informed scrutiny of the survey methodology and data that goes into the annual quota reports. Such scrutiny needs to come from appropriately qualified scientists independent of the department and without any vested interests. The committee suggests the Natural Resources Commission would be an appropriate body, and recommends that the Commission review the current methodology for establishing New South Wales' macropod populations.
- 3.107** Further, the committee suggests that the Natural Resources Commission would be well placed to examine the scientific evidence underpinning assumptions made in the Kangaroo Management Plan about kangaroo population growth, migration patterns, and attrition in drought. The committee therefore recommends that the Natural Resources Commission establish an independent panel of ecologists to examine the scientific evidence for assumptions used in the Kangaroo Management Plan that refer to kangaroo 'abundance', annual population growth, the impact of migration on population counts and the attrition of kangaroos in drought.
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Recommendation 10

That the Natural Resources Commission review the current methodology for estimating macropod populations in New South Wales.

Recommendation 11

That the Natural Resources Commission establish an independent panel of ecologists to examine the scientific evidence for assumptions used in the Kangaroo Management Plan that refer to kangaroo 'abundance', annual population growth, the impact of migration on population counts and the attrition of kangaroos in drought.

- 3.108** The question of what is the maximum biologically possible population growth rate for kangaroos has been of significant interest in this inquiry. The committee notes conflicting evidence on whether 10 per cent is a maximum possible growth rate for grey kangaroos, or an average which is significantly exceeded in good conditions. It also notes different perspectives on whether it is useful to consider hypothetical 'maximum population growth rates' based on

theoretical assumptions, as opposed to the use of empirical evidence derived from survey data over time, which show significantly greater population increases in some years. As noted above, the committee has concerns about the long term trend data held by DPIE as a basis for calculating population increases, as changes to methodology over time raise doubts over whether year-on-year population estimates are comparable.

- 3.109** In order to instil confidence in the sustainability of the harvest quotas set, it is essential that the department provide greater transparency in the scientific rationale for the harvest quotas for each commercially harvested species. As part of that, the committee recommends, for future iterations of the Commercial Kangaroo Harvest Management Plan, that DPIE identify the biological growth rate for each macropod species to better inform setting sustainable quotas.

Recommendation 12

That the Department of Planning, Industry and Environment identify, and independently verify, the biological growth rate for each macropod species to better inform setting sustainable quotas under future Commercial Kangaroo Harvest Management Plans.

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- 3.110** The committee was particularly concerned by evidence that harvest quotas continue to be issued based on the previous year's population estimate even in times of drought, when it can be expected that population numbers will be declining, very rapidly in some cases. It recommends that, when setting population estimates and harvest quotas, DPIE must take into consideration climatic factors such as drought. In times of declared drought, reassessment of quotas should be conducted based on changed conditions, rather than have quotas made on out of date population estimates.

Recommendation 13

That when setting population estimates and harvest quotas, the Department of Planning, Industry and Environment must take into consideration climatic factors such as drought. In times of declared drought, reassessment of quotas should be conducted based on changed conditions, rather than have quotas made on out of date population estimates.

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- 3.111** The committee was particularly concerned by evidence suggesting that the current Kangaroo Management Plan is flawed in regards to its assessment of wallaroo populations. It notes with concern explanations provided by the department for rates of year-on-year population growth. However, it remains concerned that these estimates are relied upon as a basis for setting harvest quotas.
- 3.112** The committee is also particularly concerned that a new draft *NSW Commercial Kangaroo Harvest Management Plan 2022-2026* was in process, and is due to be sent to the Commonwealth Environment Minister for approval, to a timeline that does not allow for the findings of this inquiry to inform the final plan. The committee considers it vitally important that the findings in this report inform the next *Commercial Kangaroo Harvest Management Plan*. We therefore

recommend that the Minister for Energy and Environment not endorse the new *Commercial Kangaroo Harvest Management Plan* until the recommendations of this inquiry have been considered.

- 3.113** The committee has heard significant concerns about lack of information about the methodology used in population surveys, and the rationale for setting harvest quotas and thresholds, and suggests that the lack of clear communication to non-specialist stakeholders is an issue for public confidence in the system. The committee therefore recommends that DPIE produce plain English explanations of the methodology used in population surveys, and of the rationale for setting both harvest quotas and thresholds, to be included in the next *Commercial Kangaroo Harvest Management Plan* and posted to its website.

Recommendation 14

That the Minister for Energy and Environment not endorse the new *Commercial Kangaroo Harvest Management Plan* until the recommendations of this inquiry have been considered.

Recommendation 15

That the Department of Planning, Industry and Environment produce plain English explanations of the methodology used in population surveys and the scientific rationale for setting harvest quotas and thresholds to be included in the *Commercial Kangaroo Harvest Management Plan 2022-2026*, and posted on its website.

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- 3.114** Finally, the committee is concerned about lack of reporting on joeys killed by the commercial industry. For the sake of transparency, the committee recommends that DPIE collect and publicly release data on all joey deaths occurring in the commercial kangaroo industry, including in-pouch, at-foot and at-foot joeys who have fled. Further, to ensure integrity of the population estimation and quota systems, the committee recommends that DPIE include in the 2022-2026 Kangaroo Harvest Management Plan a requirement that commercial harvesters include the number of orphaned joeys when calculating the count for filling quotas.

Recommendation 16

That the Department of Planning, Industry and Environment collect and publicly release data on all joey deaths occurring in the commercial kangaroo industry, including in-pouch, at-foot, and joeys at-foot who have fled.

Recommendation 17

That the Department of Planning, Industry and Environment include in the *Commercial Kangaroo Harvest Management Plan 2022-2026* a requirement that commercial harvesters include the number of orphaned joeys when calculating the count for filling quotas.

Chapter 4 Non-commercial culling of kangaroos

While much of the evidence and time taken by this inquiry focused on the commercial harvesting industry, there were also significant issues raised about the licensing and oversight of non-commercial kangaroo culling for 'damage mitigation' in New South Wales. Evidence suggested that the arrangements for non-commercial culling are more lax than for the commercial harvest, and that there is insufficient oversight and monitoring to ensure licensing conditions are met, and acceptable animal welfare outcomes achieved. This chapter outlines evidence received on the licensing and oversight of culling of kangaroos for non-commercial purposes.

Licensing of non-commercial kangaroo culling

- 4.1 As a protected native species under the *Biodiversity Conservation Act 2016*, kangaroos cannot be harmed without a licence. However, New South Wales has a licensing system to enable kangaroos to be managed as a pest by landholders to 'mitigate impacts on agricultural enterprises, landscapes, human health and safety, and infrastructure'.³³⁰ As noted in chapter 1, licensing and oversight of non-commercial culling of kangaroos falls within the responsibility of the National Parks and Wildlife Service (hereafter NPWS).
- 4.2 Farmers and pastoralists who gave evidence to the committee maintain that non-commercial culling is necessary to enable landholders to manage kangaroo numbers on their land. They suggest that availability of regulated, legal non-commercial culling when numbers exceed the capacity of land to support them is preferable to unregulated, illegal culling that would otherwise occur, or the likelihood that large numbers of kangaroos would die through starvation or in vehicle collisions.³³¹
- 4.3 According to the NSW Government submission, killing of kangaroos should be a last resort option for landholders seeking to manage kangaroo numbers on their land. The submission stated that NPWS tries to help landholders find alternative solutions before issuing a non-commercial culling licence:

If kangaroos are damaging property, posing risks to safety, or causing economic hardship, NPWS tries to help the landholder solve their problem without harming kangaroos. If lethal control is necessary, NPWS recommends landholders provide consent to licensed commercial harvesters to operate on their property ... If non-lethal controls and commercial harvesting aren't enough to manage the impacts, the landholder can apply to their local NPWS office for a non-commercial licence to harm kangaroos.³³²

³³⁰ Local Land Services NSW Website, <https://www.lls.nsw.gov.au/help-and-advice/growing,-grazing-and-land/kangaroo-management>, accessed 6 September 2021.

³³¹ For example, Submission 280, Pastoralists Association of West Darling, p 4. See also Supplementary Submission 280a, Pastoralists Association of West Darling.

³³² DPIE Website, <https://www.environment.nsw.gov.au/licences-and-permits/wildlife-licences/licences-to-control-or-harm/licences-to-harm-kangaroos>, referred to by Submission 246, NSW Government, p 10.

Non-commercial culling licensing system

- 4.4 According to the Department of Planning Industry and Environment (hereafter DPIE) website, landholders applying for a licence to harm kangaroos can do so either by through an application form or by phone. A licence will specify the maximum number of animals that may be legally harmed.³³³ Maximum cull limits for the four species subject to commercial harvesting are set according to the property size, and these are revised each year using the latest kangaroo population survey data. For 2021, DPIE's website states that maximum limits are based on updated kangaroo population estimates and commercial harvest quotas, as published in the 2021 Quota Report.³³⁴ DPIE's website also states that in some circumstances, such as on smaller properties, bushfire-affected properties or species not commercially harvested, licence applications are assessed on a case by case basis, and will only be granted where the landholder provides evidence of kangaroo-related damage.³³⁵
- 4.5 There is a standard set of licence conditions for a licence to harm kangaroos. The conditions include requirements to ensure shooters have a valid firearms licence and comply with the *Firearms Act 1996*. There are also certain record keeping requirements, including a requirement to keep accurate record of the species and number of animals harmed, and to report this to the issuing NPWS office within seven days of licence expiry. According to the *Biodiversity Conservation Act 2016*, licences are listed on a public register, although this does not contain personal information of licensees.³³⁶
- 4.6 There were several calls from stakeholders for more rigour in licensing and oversight of non-commercial culling. Notably, the Kangaroo Industry Association of Australia, representing the commercial industry, called for a review of the current system, suggesting there needs to be a framework that puts more conditions around non-commercial culling.³³⁷

Setting quotas

- 4.7 Inquiry participants criticised a lack of transparency on how quotas for licences to harm kangaroos are set. The RSPCA noted that, while it understands that culling numbers are capped to ensure ecological sustainability, the method to determine this is not clear.³³⁸ The RSPCA pointed out that, while for the commercial program there are density thresholds below which harvest quotas are reduced for a zone, it is not clear that these same thresholds influence whether or not licences for non-commercial culling are issued.³³⁹
- 4.8 There are also concerns that NPWS may issue a licence without any physical evidence or inspection to check if kangaroos are causing damage. Both the RSPCA and Kangaroos Alive suggested there are not enough checks to make sure killing kangaroos is actually necessary, as

³³³ Department of Planning, Industry and Environment Website, referred to in Submission 246, NSW Government, p 10.

³³⁴ Referred to in Submission 246, NSW Government, p 10.

³³⁵ Referred to in Submission 246, NSW Government, p 10.

³³⁶ Referred to in Submission 246, NSW Government, p 10.

³³⁷ Submission 256, Kangaroo Industry Association of Australia, p 16.

³³⁸ Answers to supplementary questions, Dr Di Evans, Senior Scientific Officer, RSPCA Australia, 13 July 2021, p 1.

³³⁹ Submission 237, RSPCA, p 2.

the system relies on land-holders to self-report impact with no requirement to provide evidence that damage is attributable to kangaroos, and no on-the-ground checks before a licence is issued.³⁴⁰ The Kangaroo Industry Association voiced a related concern, recommending that the system put more onus on landholders to explore whether the commercial industry should be used first to control kangaroo numbers, as this would deliver greater transparency and higher animal welfare outcomes.³⁴¹

- 4.9 DPIE advised that the NPWS takes a very conservative approach to allowing non-commercial culling. The Minister for Energy and the Environment advised the committee that, 'when assessing applications NPWS aims to authorise harm to the smallest number of animals possible to mitigate the impacts of kangaroos. The number authorised does not exceed the set cull limits.'³⁴²

Culling permitted after bushfires

- 4.10 There were concerns put to this inquiry that kangaroos were killed under non-commercial licences even in 2020, when the widespread 2019-2020 bushfires were known to have caused catastrophic loss of wildlife. The Animal Defenders Office highlighted that 76,463 kangaroos were publicly reported as having been killed on a non-commercial basis in 2020, with an unknown number of licensees not yet having submitted reports.³⁴³
- 4.11 Mr Robert Quirk, Executive Director, Park Programs, National Parks and Wildlife Service, advised the committee that the NPWS is taking a very cautious approach to non-commercial permit requests in fire-affected areas in the east of New South Wales, and all are being subjected to site inspection and checking.³⁴⁴

Compliance monitoring and oversight

- 4.12 Several inquiry participants suggested that there is insufficient monitoring of non-commercial culling, to know whether licensees are actually observing licence conditions. These concerns relate to firearm safety and to monitoring of numbers actually killed, as well as animal welfare.³⁴⁵ The animal welfare concerns are considered in chapter 5. This section relates to monitoring of other licence conditions, such as adherence to maximum cull quotas and reporting.
- 4.13 Ms Sharon Molloy, Executive Director, Biodiversity and Conservation Division, Department of Planning, Industry and Environment, stated that the department takes a risk-based approach to compliance, including administrative and operational compliance. She noted that there are a

³⁴⁰ Submission 189, Kangaroos Alive, p 24; Evidence, Dr Evans, 15 June 2021, p 23.

³⁴¹ Submission 256, Kangaroo Industry Association of Australia, p 16.

³⁴² Correspondence from the Hon Matt Kean, Minister for Energy and Environment, to Chair, 7 September 2021.

³⁴³ Submission 234, Animal Defenders Office, p 14.

³⁴⁴ Evidence, Mr Robert Quirk, Executive Director, Park Programs, National Parks and Wildlife Service, Department of Planning, Industry and Environment, 15 June 2021, p 55.

³⁴⁵ For example, Submission 237, RSPCA, pp 6-7.

range of actions that can be taken for people who breach legislation, such as advisory warning letters and penalty infringement notices.³⁴⁶

Monitoring of numbers killed

- 4.14** As noted above in paragraph 4.4, standard conditions for a licence to harm kangaroos state that the licence only authorises harm to the number of animals of each species stated on the licence (excluding dependent young). There is also a requirement that the licensee must provide the issuing NPWS office with records of all animals harmed under the licence within seven days of the licence expiring.³⁴⁷
- 4.15** Evidence to the committee from several stakeholders was that there is insufficient monitoring of non-commercial culling to know whether licence conditions are being met. Witnesses to this inquiry highlighted:
- a lack of on-the-ground monitoring, meaning there is no-one checking whether the permitted quota is exceeded³⁴⁸
 - a gap in NPWS data on numbers killed, because 'returns for animals culled are not always submitted to the local NPWS Area Office'³⁴⁹
 - a lack of transparency and accountability, because numbers reported by landholders as actually being killed are not made publicly available.³⁵⁰
- 4.16** The Animal Defenders Office asserted that, given the 'acknowledged unreliability of the reported numbers', the true number of kangaroos killed on a non-commercial bases is not known, and, most probably, will never be known.³⁵¹
- 4.17** The Kangaroo Industry Association of Australia called for greater scrutiny of the number of kangaroos killed non-commercially, proposing that, 'rangers should be able to inspect carcasses and take appropriate action for animals found without tags. There needs to be more rigour in checking for illegal activity and setting up a framework that puts more conditions around non-commercial culling'.³⁵²

³⁴⁶ Evidence, Ms Sharon Molloy, Executive Director, Biodiversity and Conservation Division, Department of Planning, Industry and Environment, 15 June 2021, p 52.

³⁴⁷ *Licence to Harm Kangaroos standard licence conditions*, DPIE website, referred to in Submission 246, NSW Government, p 10. This condition is also stated in the application form accessed from the department's website: *Application for a Licence to Harm Kangaroos*, <https://www.environment.nsw.gov.au/licences-and-permits/wildlife-licences/licences-to-control-or-harm/licences-to-harm-kangaroos#:~:text=All%20people%20authorised%20to%20shoot,for%20the%20firearm%20being%20used>, accessed 9 September 2021.

³⁴⁸ Answers to supplementary questions, Dr Evans, 13 July 2021, p 1; Submission 234, Animal Defenders Office.

³⁴⁹ Submission 234, Animal Defenders Office, p 14.

³⁵⁰ Submission 237, RSPCA, p 5; Answer to supplementary questions, Dr Evans, 13 July 2021, p 1.

³⁵¹ Submission 234, Animal Defenders Office, p 14.

³⁵² Submission 256, Kangaroo Industry Association of Australia, p 16.

- 4.18 Even the Kangaroo Management Taskforce, with a large representation from landholder interests, pointed to a need for greater scrutiny of non-commercial culling licences, in order to ensure public confidence in lethal management of kangaroos under the *Biodiversity Conservation Act 2016*.³⁵³
- 4.19 Representatives of NPWS were unable to provide this committee with exact figures on how many kangaroos are killed through non-commercial culling, noting that numbers fluctuate depending on the species and the zone.³⁵⁴ On notice, NPWS was able to provide a range, but not an exact number of kangaroos killed under non-commercial licences over the past five years. The range stated as a minimum 'the number reported as harmed by licensees', and a maximum including 'the number authorised to be harmed for licences for which reports (or 'returns') have not been received'.³⁵⁵ There is a substantial difference between the minimum and maximums in some cases: for example, the minimum total (across all species and zones) for 2020 was 68,017, while the maximum was 120,348.³⁵⁶

Complaints handling

- 4.20 The adequacy of complaints investigation emerged as another important issue in respect of non-commercial culling.
- 4.21 The committee learnt there are different arrangements for handling different types of complaints to NPWS:
- breach of licence complaints are a matter for NPWS staff
 - firearms-related offences are referred to the NSW Police Force
 - animal welfare complaints (although also a breach of licence condition) are passed on to the RSPCA or Animal Welfare League for investigation (as considered in chapter 5).³⁵⁷
- 4.22 The committee was keen to understand the level of resourcing and processes within NPWS to investigate complaints about kangaroo licensing compliance. As noted in chapter 3, as at July 2021, NPWS had over 130 rangers approved as 'authorised officers' to investigate and undertake compliance action across the whole of NPWS responsibilities.³⁵⁸ However, information on the number of complaints and the amount of resources dedicated to handling them is much less clear from NPWS than from the Biodiversity Conservation and Science Directorate in DPIE. As noted in chapter 3, NPWS does not have a central compliance case management database to track the total number of complaints received and actions taken.³⁵⁹ Complaints received by NPWS officers are recorded locally, and referred to relevant compliance staff and other authorities for appropriate action. Witnesses from NPWS noted they do not use the same

³⁵³ Submission 249, Kangaroo Management Taskforce, p 28,

³⁵⁴ Evidence, Mr Richard Kingswood, Director, Conservation Branch, National Parks and Wildlife Service, Department of Planning, Industry and Environment, 15 June 2021, p 56.

³⁵⁵ Answers to questions on notice, NSW Government, 23 July 2021, p 25.

³⁵⁶ Answers to questions on notice, NSW Government, 23 July 2021, p 31.

³⁵⁷ Evidence, Mr Quirk, 15 June 2021, p 59.

³⁵⁸ Answers to questions on notice, NSW Government, 23 July 2021, p 11.

³⁵⁹ Answers to questions on notice, NSW Government, 23 July 2021, p 10.

database for tracking complaints that is used within the Biodiversity, Conservation and Science Directorate of DPIE, but said 'we probably should.'³⁶⁰

Public safety concerns

- 4.23** The committee heard troubling evidence from a number of landholders who felt unsafe on their own property due to shooting taking place on neighbouring properties. In some instances inquiry participants reported being threatened and shot at by neighbours in response to voicing concerns about kangaroo shooting.³⁶¹ Several felt their complaints had not been taken seriously by police. The human impact of these incidents is considered in chapter 6. Given some of these reported instances took place in peri-urban areas, in proximity to community facilities, the committee was concerned to understand what procedures are in place to protect public safety and ensure firearms are not misused in the name of culling kangaroos. The committee wrote to relevant ministers to seek information on how firearms related complaints are handled.
- 4.24** The Minister for Energy and the Environment, the Hon Matt Kean MP, noted that under section 93 of the *Crimes Act 1900*, the responsibility for safe shooting lies with the firearm user, and that this act is administered by the NSW Police, not by NPWS.³⁶² He also noted that NPWS have the option to impose licence conditions that require licensees to notify neighbours and local police before they commence culling operations, for properties where shooting could pose a safety risk.³⁶³
- 4.25** The Minister for Police and Emergency Services, the Hon David Elliott MP, confirmed that it is the responsibility of a firearm licence holder to possess a firearm safely. He advised that the prerequisite for obtaining the relevant licence is successful completion of safety awareness qualifications, which are currently co-regulated by the NSW Firearms Registry and the Department of Primary Industries.³⁶⁴
- 4.26** In response to questions about the effectiveness of police investigation and follow-up of complaints relating to kangaroo shooting, the Minister for Police and Emergency Services stated that the NSW Police Force investigates alleged breaches of firearms licences irrespective of what type of licence an individual holds, and that misconduct is identified by reference to what licence conditions have been breached. He advised that local police districts and police area commands attend and investigate complaints, and work with the Rural Crime Prevention Taskforce to address the issues.
- 4.27** In respect of how complainants are treated and kept informed, the Minister advised that the NSW Police Force is guided by the Charter of Victims' Rights and the NSW Police Force Customer Service Guidelines in responding to those affected by crime. He noted that, in informing complainants of the outcomes of an investigation, the possibility of jeopardising an investigation and privacy issues surrounding each individual matter are considered. He further

³⁶⁰ Evidence, Mr Quirk, 15 June 2021, p 58.

³⁶¹ For example, evidence, Witness A, 11 June 2021, pp 1-5; Evidence, Mr Greg Keightley and Ms Dianne Smith, 15 June 2021, pp 34-36.

³⁶² Correspondence from the Hon Matt Kean to Chair, 7 September 2021.

³⁶³ Correspondence from the Hon Matt Kean to Chair, 7 September 2021.

³⁶⁴ Correspondence from the Hon David Elliott MP, Minister for Police and Emergency Services, to Chair, 7 September 2021.

noted that there is no requirement to inform neighbouring landholders on outcomes of investigations into the use of firearms, although police would generally canvass those properties as part of the investigation.³⁶⁵

2018 changes to licensing conditions

4.28 In August 2018, the NSW Government changed licensing conditions to make it easier for landholders to obtain a permit to shoot kangaroos. According to the NSW Government submission, these changes were made to 'assist landholders manage the impact of kangaroos during the drought.' These changes reduced the administrative burden on landholders seeking to shoot kangaroos on their property, and included:

- removing a previous requirement to tag carcasses with 'drop tags' (which showed that the killing was licensed, discussed below from paragraph 4.33)
- setting 'ecologically viable' limits on the number of kangaroos that may be culled based on property size
- allowing previous and current licence holders to apply for licences over the phone
- the landholder registering shooter details and providing them to NPWS after culling, rather than with the licence application
- allowing carcasses to be used by landholders or registered shooters for non-commercial purposes (as opposed to a previous 'shoot and let lie' policy, discussed below at 4.33³⁶⁶)
- Local Land Services assist landholders by facilitating connections with licensed harvesters and experienced volunteer recreational shooters.³⁶⁷

4.29 The committee noted distinctly different views across stakeholders to this inquiry on the impact and desirability of the 2018 changes.

4.30 Farmers and pastoralist groups both indicated support for the 2018 changes, and recommended they continue, despite the drought being declared over. The NSW Farmers Association indicated support for the greater ease with which landholders can now get licences to perform kangaroo management, along with the relaxed 'shoot and let lie' requirements.³⁶⁸ The Pastoralists Association of West Darling also welcomed changes to non-commercial culling licensing, suggesting that, by making it easier for landholders to comply with licence conditions, they increased the probability of compliance.³⁶⁹

4.31 Other stakeholders, including the commercial kangaroo industry, suggested that the changes have made it too easy to get licences to shoot kangaroos, and taken away critical protections. The Kangaroo Industry Association of Australia specifically called for a full review of the 2018

³⁶⁵ Correspondence, the Hon David Elliott MP, Minister for Police and Emergency Services, to the chair, 7 September 2021.

³⁶⁶ Evidence, Ms Annabel Johnson, Head of Policy and Advocacy, NSW Farmers Association, 11 June 2021, p 41; Submission 234, Animal Defenders Office, p 5.

³⁶⁷ Submission 246, NSW Government, p 10.

³⁶⁸ Submission 103, NSW Farmers Association, p 2.

³⁶⁹ Submission 280, Pastoralists' Association of West Darling, p 4.

changes to non-commercial culling.³⁷⁰ There was also criticism from animal welfare groups that the changes, brought in as part of a NSW Drought Strategy 'to assist stricken farmers', were introduced 'through the back door' of policy and licensing changes, without parliamentary scrutiny, and have remained in place well after the drought was declared over.³⁷¹

- 4.32** Specific criticisms of the changes included that they made it too easy to get a licence, as licences can be obtained over the phone with minimal checking;³⁷² that it is now more difficult to monitor whether people engaged to shoot kangaroos are 'fit and proper persons';³⁷³ and that removal of the requirement for 'drop tags' and the shoot and let lie policies have made it harder, if not impossible, to check that licence conditions on maximum numbers killed are being adhered to.³⁷⁴ Concerns about the latter are explored below.

Drop tags and 'shoot and let lie' requirements

- 4.33** Before the 2018 changes, non-commercial shooters were required to obtain tags, known as 'drop-tags', and attach these to every kangaroo shot. Tags were issued by NPWS according to species, location and year. The purpose of this system was to enable tracking of kangaroos killed against quotas, according to species.³⁷⁵ Under a 'shoot and let lie' rule, landholders were required to leave the carcass in place, and could not use it for other purposes.
- 4.34** Several witnesses suggested these changes have had a deleterious effect on the monitoring of non-commercial culling. The Animal Defenders Office suggested the removal of the drop tag requirement has made it much harder to know if a kangaroo was killed in breach of the law.³⁷⁶ The Animal Defenders Office expressed the view that allowing removal of carcasses equates to removal of evidence: if a carcass is removed, there is no way of checking whether the kangaroo was shot within the quota, and whether it was a victim of animal cruelty.³⁷⁷
- 4.35** Removal of the drop tag requirements was among the commercial kangaroo industry's concerns about lax oversight of non-commercial culling. The Kangaroo Industry Association of Australia called for the reintroduction of drop tags, and greater policing and compliance action for animals found without tags, to prevent illegal activity.³⁷⁸
- 4.36** Farmer and pastoralist stakeholders on the other hand were opposed to reintroduction of drop tags. The NSW Farmers Association said it had consistently objected to the tagging and 'shoot and let lie' requirements as based on a 'flawed premise' that allowing use of the carcass would create an incentive to increase kangaroo management activities.³⁷⁹ Ms Bronwyn Petrie,

³⁷⁰ Submission 256, Kangaroo Industry Association of Australia, p 16.

³⁷¹ Submission 234, Animal Defenders Office, p 4.

³⁷² Submission 270, Mr Ray Mjadwesch, p 12.

³⁷³ Submission 234, Animal Defenders Office, p 6; Submission 270, Mr Ray Mjadwesch.

³⁷⁴ Submission 237, RSPCA, p 6.

³⁷⁵ Submission 234, Animal Defenders Office, p 5.

³⁷⁶ Evidence, Ms Tara Ward, Volunteer Managing Solicitor, Animal Defenders Office, 11 June 2021, p 37.

³⁷⁷ Submission 234, Animal Defenders Office, pp 5-6.

³⁷⁸ Submission 256, Kangaroo Industry Association of Australia, pp 6, 16.

³⁷⁹ Submission 103, NSW Farmers Association, p 2.

Conservation and Resource Management Committee Chair, NSW Farmers Association, suggested that leaving carcasses in situ can be a biosecurity hazard, encouraging feral animal such as wild pigs to come on to a property, creating other issues.³⁸⁰

- 4.37** Mr Lachlan Gall, Councillor and Kangaroo Management Representative, Pastoralists Association of West Darling, contended that drop tags actually decrease compliance with the regulations, because they create an extra task for shooters or the farmer to undertake. He noted that farmers still need to apply for a licence, fill out a return and provide that to NPWS at the end of the licence period.³⁸¹ Pastoralists also rejected the idea that use of drop tags increase the likelihood that animal welfare requirements will be met. Mr Gall, emphasised that, 'tag or no tag', the provisions in the code of practice, such as killing in an appropriate manner and checking the pouch for young, still apply and must be followed.³⁸²
- 4.38** The NSW Government submission defended the removal of the drop-tag system for non-commercial licences as having had no impact on counting the numbers harmed. It suggested that, even when the drop tag requirement was in place, drop tags were in practice rarely used, or were indecipherable, making this an ineffective system for monitoring. It said that, under the drop-tag system, instances of exceeding cull limits were only likely to be detected through self-reporting, eye-witness accounts or site inspections noting a larger number of carcasses than that authorised.³⁸³

Committee comment

- 4.39** The committee is concerned about the apparent lack of checks before non-commercial culling licences are granted, and lack of oversight and compliance action in respect of licensees.
- 4.40** The fact that NPWS could not provide accurate numbers of kangaroos killed under non-commercial licences is of grave concern. It is evident from data provided by NPWS to this committee that significant numbers of licensees have not lodged reports on how many kangaroos have been killed. There does not seem to have been any follow up or compliance action taken for this breach of licence conditions. The committee views this inability to report on something as important as numbers actually killed as indicative of lax monitoring and oversight across the board.

Finding 4

That the National Parks and Wildlife Service does not have adequate systems to monitor compliance with licence conditions for the non-commercial culling of kangaroos, as evidenced by the fact that they could not provide accurate figures on how many kangaroos have been legally culled under non-commercial licences.

³⁸⁰ Evidence, Ms Bronwyn Petrie, Conservation and Resource Management Committee Chair, NSW Farmers Association, 11 June 2021, p 45.

³⁸¹ Evidence, Mr Lachlan Gall, Councillor and Kangaroo Management Representative, Pastoralists Association of West Darling, 11 June 2021, p 43.

³⁸² Evidence, Mr Gall, 11 June 2021, pp 43, 55.

³⁸³ Submission 246, NSW Government, p 14.

- 4.41** The committee agrees with multiple witnesses to this inquiry that there needs to be more rigour in the licensing of non-commercial culling. This should include a requirement for a landowner to provide evidence that lethal control on their property is necessary before a licence is granted. There needs to be greater scrutiny of the competency of shooters, to ensure animal welfare and public safety outcomes are met. There also needs to be greater and more proactive oversight to ensure that licence conditions are adhered to. For this reason, the committee is recommending that DPIE conduct a full review of the licensing and compliance checking systems for non-commercial kangaroo culling, in consultation with stakeholders, with the results of the review to be made public. The review should aim to increase the rigour and transparency of the licensing and compliance monitoring processes.

Recommendation 18

That the Department of Planning, Industry and Environment conduct a full review of the systems for issuing and compliance monitoring of licences to harm kangaroos. The review should aim to increase the rigour and transparency of the licensing and compliance monitoring processes, be conducted in consultation with stakeholders, and be made public.

- 4.42** In light of the lack of rigorous oversight and compliance checking of non-commercial culling, it is the committee's view that the 2018 changes to licences to harm kangaroos need to be reviewed as a matter of urgency.

Recommendation 19

That the NSW Government review the 2018 changes to licences to harm kangaroos as a matter of urgency and provide a report to Parliament within 12 months.

Chapter 5 'Humane' killing and animal welfare

As discussed in previous chapters, there are polarised views on whether kangaroos should be allowed to be killed – commercially or non-commercially – for any reason. For certain stakeholders, killing some kangaroos in the interest of protecting the species, or other species, may be justified, as long as animals are killed 'humanely', causing as little suffering as possible. Other stakeholders, in particular those who object to all killing of animals, consider that there is no humane way to kill kangaroos. Many inquiry participants objected to standards of animal welfare in both the commercial kangaroo industry, and in the non-commercial culling of kangaroos. This chapter examines the standards of animal welfare stipulated for both commercial and non-commercial kangaroo killing. It then looks at the issue of euthanasia of joeys that is an arguably necessary, but ugly part of the commercial and non-commercial killing of kangaroos. Finally, it explores the issues raised about animal welfare complaints management, particularly with respect to the non-commercial killing of kangaroos.

Can killing kangaroos be humane? Animal welfare issues in kangaroo culling

- 5.1 In chapter 2 the committee documented the evidence before the inquiry that kangaroos are sentient beings and social animals (see paragraphs 2.62-2.65). As individuals, they are sensitive, emotional creatures and they feel pain. Further, as social animals they suffer trauma and cultural disruption when members of their mob are killed.
- 5.2 Killing of kangaroos is abhorrent to many in the community. Even if killing some kangaroos is considered necessary for maintaining ecological balance, there are standards of animal welfare that still apply. As noted in chapter 1, the *Prevention of Cruelty to Animals Act 1979*, which creates offences for animal cruelty, applies to the treatment of kangaroos. Where killing of kangaroos is licensed, 'humane' methods of killing have been codified in separate codes of practice for the commercial and non-commercial killing of kangaroos. These codes specify standards of practice when shooting kangaroos to prevent unnecessary suffering, and are part of the regulatory environment, as adherence to the codes forms a condition of licences to shoot kangaroos. This section considers the adequacy of these codes of practice at ensuring humane standards in the commercial and non-commercial killing of kangaroos. It considers in particular the treatment of joeys under these codes.

Animal welfare in the commercial harvesting industry

- 5.3 For commercial killing (discussed in chapter 3), the relevant code is the *National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes* (hereafter 'the commercial code') published by AgriFutures Australia.³⁸⁴ The commercial code is said by the NSW Government to 'set an expected standard for the commercial industry that is backed by evidence-based policy and reinforces the commitment of all parties to the welfare of kangaroos and wallabies.'³⁸⁵ The NSW Government submission states that the revised code, published in

³⁸⁴ AgriFutures, *National Code of Practice for the Human Shooting of Kangaroos and Wallabies for Commercial Purposes* 2020.

³⁸⁵ Submission 246, NSW Government, p 12.

2020, was informed by a wide reference group including animal welfare scientists with expertise in humane killing, and was subject to wide public consultation.³⁸⁶

The commercial code and licensing requirements

- 5.4 The commercial code of conduct was generally regarded by witnesses to this inquiry as more stringent than the non-commercial code. The committee heard that commercial shooters must demonstrate a certain level of training and competency, including in 'humane' shooting of kangaroos, and methods of euthanising dependent young, to gain accreditation.
- 5.5 Some witnesses suggested the commercial industry is held to very high standards of animal welfare, or at least higher than those for non-commercial shooting. They highlight that commercial shooters are required to kill with a shot to the head, and kangaroos killed with a shot to the body cannot be accepted by commercial processors.³⁸⁷ The Kangaroo Industry Association of Australia, for example, underlined the higher standard required of harvesters, telling the committee, 'Commercial shooters have a higher skill level and are, therefore expected to make head shots. Non-commercial shooters are less skilled and, therefore, given the larger target of the chest.'³⁸⁸
- 5.6 Discovered Wildfoods, a company that markets wild game including kangaroo meat, pointed to 'rigorous accreditation' processes that commercial shooters must undergo, including training in ethical treatment of animals, sharpshooting tests, protocols on tagging and food safety. Once accredited, harvesters must demonstrate they meet certain standards (for example, headshot only, harvested from a property with an open quota) or risk being unable to sell the animals.³⁸⁹
- 5.7 Farmers and pastoralists both suggested the commercial kangaroo industry is held to a very high standard, and contended that the regulation of the commercial industry, such as requirements for licensed harvesters to be accredited shooters and undergo competency training every five years, ensures kangaroo harvesters can shoot humanely, consistent with the code of practice.³⁹⁰
- 5.8 Not all stakeholders agreed that the commercial code sets appropriate standards. For example, Kangaroos Alive contended the newly revised code 'significantly weakens standards and welfare protections for kangaroos', by reducing the standard required for accurate shooting, weakening protections for female kangaroos and their dependent young, and claiming that unfurred joeys are not 'sentient', therefore unable to feel pain, to justify less humane methods of killing.³⁹¹
- 5.9 Further, several inquiry participants asserted that, even if the headshot requirement would lead to a quick or instantaneous death, it is not likely to be achieved in a real-world scenario. Kangaroos Alive argued that the actual circumstances of kangaroo shooting (done at night, at a

³⁸⁶ Submission 246, NSW Government, p 12.

³⁸⁷ Submission 256, Kangaroo Industry Association of Australia, p 10; see also Submission 171, Discovered Wildfoods, p 3.

³⁸⁸ Submission 256, Kangaroo Industry Association of Australia, p 8.

³⁸⁹ Submission 171, Discovered Wildfoods, p 3.

³⁹⁰ For example, Submission 103, NSW Farmers Association, p 3.

³⁹¹ Submission 189, Kangaroos Alive, p 21.

distance, with use of spotlights) mean the ability of shooters to consistently achieve a headshot is questionable.³⁹²

- 5.10** Evidence to the committee on the extent to which harvested kangaroos are actually being killed with a headshot, as required by the code, is mixed. Witnesses from the Department of Planning, Industry and Environment (hereafter DPIE) expressed confidence in the ability of commercial shooters, claiming that, 'these shooters are highly professional ... They don't miss.'³⁹³ In answer to a question on how the department can be sure kangaroos are being killed humanely, the department responded that monitoring of compliance with the code is done by inspection of carcasses. It pointed to two audits of the incidence of cruelty to kangaroos during commercial and non-commercial culling conducted by the RSPCA in 1985 and 2002, which found compliance with the head shot requirement to be 95 per cent in New South Wales in 1985, increasing to 99 per cent in 2002.³⁹⁴
- 5.11** Kangaroo advocates dismissed the RSPCA studies' findings. The 'Think Tank for Kangaroos' (THINKK) submission suggested that, although the RSPCA assessment of shooters showed 98 per cent accuracy, this was affected by observer bias, whereas some research by individuals that has involved sampling of carcasses has found as many as 40 per cent of animals may have been miss-shot.³⁹⁵

Monitoring of licensees

- 5.12** The NSW Government stated that compliance monitoring of licensees and industry activity is performed continuously by regional compliance and regulation officers, in part to ensure methods of harvesting kangaroos for commercial use are humane. The NSW Government pointed to the following compliance measures:
- compliance officers inspect carcasses, harvesters' vehicles, equipment and paperwork, chiller premises and processors for compliance with licence conditions (which include humane killing in accordance with the commercial code)
 - compliance officers follow up and investigate reports of possible non-compliance, including those reported by the public
 - a range of enforcement measures are used, including warning letters, penalty infringement notices, licence suspensions and prosecution.³⁹⁶

No monitoring at point of kill

- 5.13** Several inquiry participants raised concerns about lack of monitoring at point of kill in the harvesting industry. For example, the Animal Defenders Office submitted that, 'failing to inspect or monitor shooting locations, or 'point of kill', is a serious flaw in the kangaroo killing compliance regime, as this is where pain and suffering is inflicted on animals. It is also where

³⁹² Submission 189, Kangaroos Alive, p 21; Evidence, Mr McIntyre, 11 June 2021, p 37.

³⁹³ Evidence, Mr Terry Brill, Senior Team Leader, Kangaroo Management, Department of Planning, Industry and Environment, 19 August 2021, p 15.

³⁹⁴ Answers to supplementary questions, NSW Government, 15 September 2021, p 6.

³⁹⁵ Submission 160, The Think Tank for Kangaroos, p 6. References research by Dr Dror Ben-Ami, and Ms Dianne Smith and Mr Greg Keightley, Submission 404a.

³⁹⁶ Submission 246, NSW Government, p 12.

evidence of non-compliance with animal welfare laws and codes will be most readily available.³⁹⁷ Representatives of the Think Tank for Kangaroos similarly noted a lack of oversight at point of kill to ensure prescribed animal welfare standards are adhered to by commercial harvesters.³⁹⁸

- 5.14** The Animal Defenders Office submitted that monitoring the prevalence of body shots at chillers or animal processing works is inadequate from a welfare compliance perspective, because it will 'never reflect the true number of mis-shot animals'.³⁹⁹ It pointed out that commercial shooters are not paid for body-shot kangaroos, and therefore do not bring them to processing facilities, and wounded animals that escape will not be tagged and therefore not counted.⁴⁰⁰ (The commercial harvest program uses a tagging system as part of its licensing arrangements, as outlined in chapter 3.) The RSPCA similarly argued that the current system does not allow verification of whether all kangaroos have been killed with a head shot, because kangaroos that are injured and escape may not be reported, and heads are removed in the field, sometimes very low, meaning that accidental neck shots may be concealed.⁴⁰¹
- 5.15** Some inquiry participants, including the RSPCA, called for body cameras to be worn by kangaroo shooters, so the industry can demonstrate compliance with the commercial code, given limited resources to physically monitor shooting locations at night.⁴⁰²

Shooting females with dependent young

- 5.16** As well as reporting a lack of monitoring to ascertain whether kangaroos are in fact killed 'humanely' through a fatal head shot, some inquiry participants argued that animal cruelty is inherent to the industry when female kangaroos are targeted, as there is no time of year at which female kangaroos are not going to have dependent young.
- 5.17** The Australian Society for Kangaroos cited findings of a 2014 study into the 'humaneness' of the kangaroo industry to say that:

...despite claims by industry representatives that females are no longer targeted by the kangaroo 'harvest' industry, hundreds of thousands of lactating female kangaroos continue to be slaughtered annually by this industry leaving their pouch young to die a barbaric, slow and painful death and their at-foot young abandoned and left to die alone from stress, starvation, dehydration, predation and exposure.⁴⁰³

- 5.18** The Australian Society for Kangaroos reported that, according to field research, there are significant instances of mistreatment of young animals, resulting in prolonged pain and suffering, and that 99 per cent of dependent at-foot joeys are being left to die alone after their mother is shot by the industry. The Society expressed concern at the 2020 update to the commercial code, proposing that it declared 'open season' on female kangaroos, resulting in

³⁹⁷ Submission 234, Animal Defenders Office, p 11.

³⁹⁸ Evidence, Dr Keely Boom, Research Fellow, The Think Tank for Kangaroos, 15 June 2021, p 4.

³⁹⁹ Submission 234, Animal Defenders Office, p 12.

⁴⁰⁰ Submission 234, Animal Defenders Office, p 12.

⁴⁰¹ Submission 237, RSPCA, p 7.

⁴⁰² For example, Submission 237, RSPCA, p 6; answers to supplementary questions, RSPCA, 13 July 2021, pp 4-5.

⁴⁰³ Submission 238, Australian Society for Kangaroos, p 1.

more suffering of young kangaroos when their mother is killed.⁴⁰⁴ The welfare of joeys in respect of commercial and non-commercial shooting is discussed in detail later in this chapter.

Animal welfare in the non-commercial culling of kangaroos

- 5.19** Animal welfare in non-commercial culling is regulated by the *National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Non-commercial Purposes* (hereafter 'the non-commercial code') endorsed by the Natural Resource Management Ministerial Council.⁴⁰⁵ This code was written in 2008, and has not since been updated. Monitoring of the non-commercial culling of kangaroos rests with the National Parks and Wildlife Service (hereafter NPWS), which, although now part of the DPIE portfolio, is administratively separate and has different monitoring systems to the commercial Kangaroo Management Program, as discussed in chapter 4.
- 5.20** Although kangaroo activists tend to focus on the commercial harvest of kangaroos, various sources of evidence before this committee suggested that there are more animal welfare issues associated with non-commercial shooting than commercial shooting. The department itself acknowledged that commercial harvesting of kangaroos may generally lead to better animal welfare outcomes, and noted it had changed its advice to landholders in 2020 to consider allowing commercial harvesting as a preferable option to non-commercial culling.⁴⁰⁶
- 5.21** The Animal Defenders Office claimed that there is no information available on DPIE's website, or in the kangaroo management program annual reports, about how compliance with the code by non-commercial shooters is monitored or enforced.⁴⁰⁷ Without any information available in relation to inspections, surveillance or any kind of compliance activity, the Animal Defenders Office concluded that 'it is impossible to determine whether the code is being implemented effectively if at all.'⁴⁰⁸
- 5.22** As well as lack of monitoring of non-commercial culling, there are differences in the standards required of shooters as set out in the codes of practice. Many inquiry witnesses suggested that the standards of competency required to be demonstrated for non-commercial culling are insufficient.
- 5.23** Animal welfare groups underscored that the non-commercial code is out of date and overdue for a review.⁴⁰⁹ The RSPCA proposed that a review is needed to ensure that the same standards of operator training, competency and education apply to non-commercial and commercial shooters. Its submission set out issues that should be considered in a review of the non-commercial code, including:
- greater focus on shooter responsibility and competency requirements

⁴⁰⁴ Submission 238, Australian Society for Kangaroos, p 2.

⁴⁰⁵ Australian Government, Department of Agriculture, Water and Environment, *National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Non-commercial Purposes 2008*.

⁴⁰⁶ Answers to questions on notice, NSW Government, 15 September 2021, p 16.

⁴⁰⁷ Submission 234, Animal Defenders Office, p 15.

⁴⁰⁸ Submission 234, Animal Defenders Office, p 15.

⁴⁰⁹ Submission 234, Animal Defenders Office, p 15; Submission 237, RSPCA, pp 12-13.

- a need for standard operating procedures
 - clearer terminology or better definition of acceptable methods to kill young humanely
 - further information on humaneness principles.⁴¹⁰
- 5.24** The RSPCA expressed serious concern that there is no requirement to demonstrate shooting accuracy or competency for non-commercial licences, leading to major animal welfare issues.⁴¹¹ They suggested non-commercial shooters should have to pass the same competency test as commercial harvesters.⁴¹² Mr Ray Mjadwesch, consulting ecologist, suggested the 2018 changes to the non-commercial licensing regime (discussed in chapter 4) had made things much worse for kangaroos, making it possible for city shooters to link up with farmers to 'shoot kangaroos for entertainment'.⁴¹³
- 5.25** As with commercial killing, lack of monitoring at 'point of kill' was raised as an issue. Several witnesses suggested that the lack of tagging requirements in respect of culling (discussed in chapter 4) make this an even bigger problem, as there is no way of knowing how many animals are falling victim to inaccurate shooters. Ms Tara Ward, Volunteer Managing Solicitor, Animal Defenders Office, suggested lack of 'point of kill' monitoring means there is nothing to stop a shooter mis-shooting an animal and moving on, leading it to suffer a slow and painful death.⁴¹⁴
- 5.26** Representing pastoralists, Mr Lachlan Gall, Councillor and Kangaroo Management Representative, Pastoralists Association of West Darling, appeared to reject the idea that monitoring and standards of non-commercial culling are insufficient. He referred to provisions in the non-commercial code of practice specifying appropriate ways to dispatch an animal, and the requirement to check the pouch for dependent young. He suggested that these are followed regardless of whether tagging requirements or compliance checking are in place.⁴¹⁵
- 5.27** Ms Bronwyn Petrie, Conservation and Resource Management Committee Chair, NSW Farmers Association, rejected the idea that farmers are 'cowboy rabid killers', 'driving up and shooting willy-nilly at animals'. Speaking for farmers, she said, 'We do not want to see the animal starving to death. We work humanely. We do not like killing things.' She spoke of the stress caused to farmers having to put down kangaroos as well as their own animals.⁴¹⁶ Ms Petrie expressed the view that non-commercial culling is appropriately regulated by NPWS, and that farmers are 'very much under the spotlight' when it comes to treatment of kangaroos. She insisted that 'if anyone is doing the wrong thing you can guarantee someone will report them'.⁴¹⁷ The adequacy of systems for investigating complaints is considered below from paragraph 5.36)

⁴¹⁰ Submission 237, RSPCA, pp 12-13.

⁴¹¹ Evidence, Dr Di Evans, Senior Scientific Officer, RSPCA Australia, 15 June 2021, p 23.

⁴¹² Submission 237, RSPCA, p 14.

⁴¹³ Submission 270, Mr Ray Mjadwesch, p 12.

⁴¹⁴ Evidence, Ms Tara Ward, Volunteer Managing Solicitor, Animal Defenders Office, 11 June 2021, p 37.

⁴¹⁵ Evidence, Mr Lachlan Gall, Councillor and Kangaroo Management Representative, Pastoralists' Association of West Darling, 11 June 2021, p 45.

⁴¹⁶ Evidence, Ms Bronwyn Petrie, Conservation and Resource Management Committee Chair, NSW Farmers Association 11 June 2021, p 45.

⁴¹⁷ Evidence, Ms Petrie, 11 June 2021, p 46.

- 5.28** Several different stakeholders shared a view that, if kangaroo killing is necessary for pest management, it would be preferable to have the killing done by commercial harvesters, as they have to meet higher standards of practice. The Kangaroo Management Taskforce exemplified this position, noting 'the predominance of non-professional shooters undertaking non-commercial culls', and a problematically low awareness of and compliance with licensing conditions, including the non-commercial code of practice.⁴¹⁸
- 5.29** Witnesses representing landholders suggested that farmers and pastoralists would prefer to be able to engage professional kangaroo shooters for pest control purposes, but in many instances they are not able to find professional shooters available or willing to do the work, due to regulatory reasons.⁴¹⁹ The Pastoralists Association of West Darling suggested that use of commercial harvesters as the only method of pest control would be viable if numbers harvested commercially are enough to limit kangaroo numbers to sustainable levels.⁴²⁰ The Kangaroo Management Taskforce similarly considered that using commercial shooters is preferable, but noted that in recent years the commercial industry has not been able to take the full quota, so landholders have had to resort to non-commercial culling.⁴²¹

Treatment of joeys

- 5.30** A requirement of both the commercial and non-commercial codes is that, when female kangaroos with dependent young (both in-pouch and at foot) are killed, the orphaned young should be tracked down and killed also. This requirement is in place to prevent vulnerable orphan joeys dying a slow and painful death. According to several inquiry participants, due to the breeding cycle of kangaroos, there is not likely to be a time of year when female kangaroos do not have dependent young, such that the killing of joeys is an almost inevitable consequence of kangaroo shooting.⁴²²
- 5.31** It is clear from many submissions to this inquiry that the treatment of joeys raises strong public sentiment, and is abhorrent to many individuals. The Australian Society for Kangaroos, for example, pointed to the treatment of joeys killed and orphaned by the kangaroo industry as 'blatant and legalised cruelty'. It pointed out the discrepancy in treatment of kangaroos and domestic animals: while people have been jailed for bashing puppies to death, in the case of kangaroos, inflicting blunt force trauma to kill joeys is not only legal, but a requirement.⁴²³
- 5.32** Evidence from entities associated with the commercial harvest industry indicated that they see the current guidelines for euthanasia of dependent young as appropriate. The Kangaroo Industry Association Australia said it is widely accepted that the most humane course of action for dependent young who have lost their mother is euthanasia to prevent prolonged suffering and death. It noted the commercial code includes prescriptive standard operating procedures

⁴¹⁸ Submission 249, Kangaroo Management Taskforce, pp 26.

⁴¹⁹ For example, evidence, Ms Petrie, 11 June 2021, p 46.

⁴²⁰ Submission 280, Pastoralists Association of West Darling, p 4.

⁴²¹ Evidence, Mr Leon Zanker, Western Landcare Representative, Kangaroo Management Taskforce 11 June 2021, p 49.

⁴²² For example, evidence, Ms Nikki Sutterby, President, Australian Society for Kangaroos, 11 June 2021, p 17.

⁴²³ Submission 238, Australian Society for Kangaroos, p 2.

for euthanasia of young at different stages of development, which 'ensure the best-practice application of euthanasia methods, leading to more humane harvesting practices'.⁴²⁴

- 5.33** The Kangaroo Management Taskforce similarly expressed confidence that the current guidelines for treatment of in-pouch joeys and at-foot young are informed by research-based veterinary advice, and are appropriate to ensuring that culling 'is managed in the most humane way possible'.⁴²⁵ The KMT argued that the periodic death through starvation of millions of kangaroos during drought represents a worse animal welfare issue than 'the emphasis placed on joey welfare in emotive interest group publicity'.⁴²⁶ Mr Gall, Pastoralists Association of West Darling, similarly asked 'why there is so much concern about how the commercial industry deals with joeys but not a word is said when female kangaroos dealing with drought conditions turn their pouch young out onto the ground to die'.⁴²⁷
- 5.34** Not all stakeholders agreed that the current codes of practice ensure the most humane outcomes possible for orphaned young. The Animal Defenders Office submitted that the minimum standards specified in both codes for welfare of young kangaroos affected by shooting is 'unacceptably low'.⁴²⁸
- 5.35** A particular issue arose with the recommendation of blunt force trauma as a 'humane' way to kill a young joey. Several inquiry participants, representing the Australian Society for Kangaroos and RSPCA, suggested that, while a quick, fatal blow to the head may be achieved in controlled, laboratory scenarios, it is unlikely to be achieved in a humane way by an unskilled shooter managing a struggling joey.⁴²⁹ Dr Di Evans, Senior Scientific Officer, RSPCA Australia, said shooters are often unable to locate the dependent young-at-foot, and that as there is no mandatory training or competency assessment of shooters in humanely killing dependent young or confirming death, welfare is compromised.⁴³⁰ On this basis she concluded that, 'The manner in which macropod shooting is currently conducted poses arguably insurmountable risks to the welfare of orphan joeys'.⁴³¹

Animal welfare complaints management

- 5.36** It is clear from submissions to this inquiry that seeing animals mistreated and suffering causes significant distress for many people in the community. Regardless of whether animal welfare issues are caused in the process of a commercial harvest or non-commercial shooting, members of the community want to know there is a system wherein animal welfare complaints are taken seriously and issues addressed. This committee heard evidence from a number of sources that suggests a degree of dissatisfaction with current systems and processes for managing animal welfare complaints associated with the killing of kangaroos.

⁴²⁴ Submission 256, Kangaroo Industry Association of Australia, p 10.

⁴²⁵ Submission 249, Kangaroo Management Taskforce, p 27.

⁴²⁶ Submission 249, Kangaroo Management Taskforce, p 27.

⁴²⁷ Evidence, Mr Gall, 11 June 2021, p 43.

⁴²⁸ Submission 234, Animal Defenders Office, p 6.

⁴²⁹ Evidence, Ms Sutterby, 11 June 2021, p 16.

⁴³⁰ Evidence, Dr Evans, 15 June 2021, p 23.

⁴³¹ Evidence, Dr Evans, 15 June 2021, p 23.

- 5.37** As noted above and in Chapter 1, the *Prevention of Cruelty to Animals Act* is the primary piece of legislation for animal welfare in New South Wales. According to the NSW Government submission, it applies to all animals regardless of whether they are being harvested or culled.⁴³² The *Prevention of Cruelty to Animals Act* provides a defence against a cruelty offence for killing or preparing an animal for destruction for the purpose of human consumption 'if it is done in a manner that inflicted no unnecessary pain upon the animal.'⁴³³ According to the NSW Government submission, the *Prevention of Cruelty to Animals Act* is enforced by RSPCA NSW, the Animal Welfare League and the NSW Police.⁴³⁴
- 5.38** There are potentially multiple different agencies who could be involved in instigating and enforcing different aspects of the regulatory framework for kangaroo welfare:
- DPIE is responsible for overseeing compliance with licensing conditions for commercial harvesting (including adherence to the commercial code of practice).
 - NPWS is responsible for overseeing compliance with licensing conditions for non-commercial harvesting (including adherence to the non-commercial code of practice).
 - The RSPCA and/or Animal Welfare League are responsible for animal welfare offences under the *Prevention of Cruelty to Animals Act 1979*.
 - The NSW Police Force are responsible for investigating firearms offences.
- 5.39** Several inquiry participants noted that animal protection legislation is mostly aimed at protection of domestic animals, and, while the *Prevention of Cruelty to Animals Act 1979* does apply to kangaroos, it is rarely monitored or enforced in the same way. As considered in chapter 6, the committee heard from a number of individuals who witnessed animal suffering associated with shooting, and tried to approach police, NPWS and other agencies to have their complaints heard. These would appear not to be isolated incidents: Ms Ward, Animal Defenders Office, told the committee they receive complaints from people who come to them desperate, having tried on multiple occasions to contact 'the authorities', but not getting a satisfactory response.⁴³⁵
- 5.40** The committee was keen to understand what happens to animal welfare complaints received by DPIE and NPWS. Ms Sharon Molloy, Executive Director, Biodiversity and Conservation Division, Department of Planning, Industry and Environment, said any calls in through the department's Environment Line or to any departmental officer is acted on, and put in a database.⁴³⁶ DPIE's Biodiversity and Conservation Division has a compliance staff of approximately 37 full time employees working across all issues within the Division's remit. There are, in addition, specialist investigators and legal staff from the Department's Legal Service Division who can provide advice.⁴³⁷ In the 2020-21 financial year, the NSW Environment Line received 556 complaints across all compliance areas, of which 76 related to the commercial

⁴³² Submission 246, NSW Government, p 11.

⁴³³ Submission 246, NSW Government, p 11. Cites *Prevention of Cruelty to Animals Act 1979* s 24(b).

⁴³⁴ Submission 246, NSW Government, p 11.

⁴³⁵ Evidence, Ms Ward, 11 June 2021, p 38.

⁴³⁶ Evidence, Ms Sharon Molloy, Executive Director, Biodiversity and Conservation Division, Department of Planning, Industry and Environment, 15 June 2021, p 57.

⁴³⁷ Answers to questions on notice, NSW Government, 23 July 2021, p 9.

kangaroo management program.⁴³⁸ There were 432 complaints of alleged breaches specifically relating to the commercial kangaroo management program over the past five financial years.⁴³⁹

5.41 Unlike DPIE, NPWS was initially unable to provide figures on the number of complaints received relating to kangaroo welfare issues.⁴⁴⁰ This is because NPWS does not have a central compliance case management database (although advised the committee, when questioned, that it was 'exploring options' for a central database).⁴⁴¹

5.42 On notice, NPWS provided the following information about its animal welfare monitoring processes:

- NPWS does not observe culls to monitor compliance.
- As at July 2021 there were more than 130 NPWS rangers who are 'authorised officers' to investigate and undertake compliance actions across the whole range of services and regulatory instruments administered by NPWS.
- The most serious enforcement matters are referred to DPIE's specialist investigations section.
- Licence conditions require the licensee to provide reasonable access to the property specified in the licence for inspection by NPWS. Inspections may be undertaken in response to concerns raised by the public or other information suggesting potential non-compliance.
- Licence conditions state it is the licence holder's responsibility to ensure they are familiar with any other statutory or regulatory provisions relevant to the licence, such as local council requirements, the *NSW Firearms Act 1996* and *Prevention of Cruelty to Animals Act 1979*.
- Complaints about matters regulated by other authorities, such as animal welfare or firearms safety, are referred to the relevant authorities, including the Royal Society for the Prevention of Cruelty to Animals and the NSW Police, for action.⁴⁴²

5.43 NPWS also advised that complaints to it about animal welfare issues related to the non-commercial kangaroo licensing process are 'relatively infrequent'. It said NPWS area offices maintain records of reported incidents and actions taken, including referrals to other agencies and outcomes of any further inquiries or investigations. According to NPWS, over the last 10 years, 10 cases relating to harming kangaroos (not necessarily related to non-commercial licensing) had been investigated by DPIE's Specialist Investigations Section, of which one case was taken to court and five warning letters issued.⁴⁴³

5.44 The committee tried to understand what interaction the NPWS has with the RSPCA over complaints that are referred there. Once referred to the RSPCA, it does not appear that NPWS

⁴³⁸ Answers to questions on notice, NSW Government, 23 July 2021, p 10.

⁴³⁹ Answers to questions on notice, NSW Government, 23 July 2021, p 10.

⁴⁴⁰ Evidence, Mr Robert Quirk, Executive Director, Park Programs, National Parks and Wildlife Service, Department of Planning, Industry and Environment, 15 June 2021, p 57.

⁴⁴¹ Answers to questions on notice, NSW Government, 23 July 2021, p 11.

⁴⁴² Answers to questions on notice, NSW Government, 15 September 2021, p 15.

⁴⁴³ Answers to questions on notice, NSW Government, 15 September 2021, p 15.

is routinely informed of the result of the investigation. Asked to provide information on action taken by NPWS related to breaches of the non-commercial code for the past ten years, and whether any complaints had been made to the RSPCA, NPWS responded that:

- Revenue NSW holds the data on the number of NPWS issued penalty notices for breach of licence conditions. This data is not searchable by animal type and could not be interrogated to provide the requested information.
- According to data held by NPWS (2018-20), there were six penalties issued for breach of licence conditions, however it is not certain whether any of these breaches related to non-compliance with the code of practice.
- NPWS Wildlife Team's tracker shows seven incidents referred to the RSPCA, however this may not include incidents referred locally from NPWS staff to the RSPCA after their own investigations, which are recorded locally.
- RSPCA's website says it has 'approximately 30 inspectors in NSW at any time', including team leaders, regional and Sydney metropolitan inspectors.
- NPWS is not routinely provided with data from the RSPCA on matters related to kangaroo reports.⁴⁴⁴

Committee comment

- 5.45** As outlined in previous chapters of this report, kangaroos are sensitive, social animals, deserving of respect and humane treatment. Significant evidence before this inquiry show that the killing of kangaroos is anathema to sections of the community, and the suffering caused in that process violates what many see as acceptable standards. Even if killing kangaroos is believed necessary for the sake of the wider species or the environment, any killing should be done humanely, to avoid unnecessary suffering.
- 5.46** The committee appreciates that codes of practice have been developed based on veterinary science research in an attempt to prescribe 'humane' methods of killing kangaroos. Nevertheless, we are concerned that the prescribed method of killing with a single head shot is sometimes not achievable in a real world scenario, where kangaroos are shot in the dark at a distance. The committee notes evidence that some kangaroos, even those killed by commercial shooters, are not being killed with a fatal head shot. Further, the committee is concerned that the standard set by the non-commercial code is too low and needs urgent review.
- 5.47** The treatment of joeys whether under the commercial or non-commercial code is an emotive issue and shocking to many people. The codes of conduct require shooters to 'euthanise' dependent young, including in pouch and 'at-foot' joeys, to prevent a lingering death in the case that their mother is shot. Given that the breeding cycle of kangaroos means many females shot would have dependent young at any time of the year, it is readily apparent that the killing of otherwise healthy young animals is the reality of the kangaroo industry.
- 5.48** The committee notes the processes outlined by DPIE and NPWS for monitoring kangaroo culling. It appreciates that DPIE was able to provide more data on commercial killing, but still notes there are not currently any in-person inspections of actual shooting. We accept the view

⁴⁴⁴ Answers to questions on notice, NSW Government, 23 July 2021, pp 11-12.

put by several witnesses that chiller inspections alone are inadequate for monitoring for possible animal cruelty in the industry. Further, it is clear from DPIE's own evidence that NPWS data and reporting systems for monitoring non-commercial culling and investigating complaints are less developed than for the commercial kangaroo program. The committee is particularly concerned about lack of any site inspections or point-of-kill monitoring of non-commercial culling.

Finding 5

That there is a lack of monitoring and regulation at the point-of-kill during both commercial and non-commercial killing of kangaroos.

- 5.49** The committee is concerned by reports of animal cruelty going unexamined, leading to lack of confidence in the management of both commercial and non-commercial kangaroo killing. The committee understands that NPWS staff, while 'authorised' to undertake investigations, are also responsible for a range of other priorities. The committee was also concerned by the difficulty NPWS apparently experienced providing information on numbers and management of complaints regarding cruelty to kangaroos, which suggest its information management and complaint handling systems are seriously under-developed. The committee would like to see a greater, proactive focus on protecting kangaroos from illegal and cruel acts. For this reason, the committee recommends that NPWS employ additional compliance officers to proactively monitor and investigate the non-commercial industry's compliance with the code of practice as well as specific cruelty allegations.
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Recommendation 20

That the National Parks and Wildlife Service employ additional compliance officers to proactively monitor and investigate the non-commercial industry's compliance with the code of practice as well as specific cruelty allegations.

- 5.50** Even with an enhanced internal complaints handling and investigation function, NPWS will need to engage with the RSPCA, as the main organisation responsible for investigating breaches of the *Prevention of Cruelty to Animals Act 1979*. To address this, the committee recommends that the NPWS work with RSPCA NSW to ensure prompt reporting and investigation of breaches of regulatory compliance and cruelty allegations in regards to kangaroos and other wildlife.
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Recommendation 21

That the National Parks and Wildlife Service work with RSPCA NSW to ensure the prompt reporting and investigation of breaches of regulatory compliance and cruelty allegations in regards to kangaroos and other wildlife.

Chapter 6 Human impacts of shooting kangaroos

While this inquiry is focused on the management of kangaroos and their welfare, some inquiry participants spoke of how kangaroo shooting has affected them in a very significant way. In this chapter, the committee documents these human impacts, ranging from offence caused to people who have a strong connection to their cultural, spiritual or ethical beliefs, to landowners losing their chosen lifestyles, financial losses for current and future tourism operators, neighbours living in fear of harm, and linked to many of these impacts, substantial mental health effects.

Cultural, spiritual and ethical harms

- 6.1** During this inquiry, several participants spoke of harm they experienced because of their deeply rooted cultural, spiritual or ethical beliefs about kangaroos. These are explored below.
- 6.2** First Nations witnesses told the committee that shooting kangaroos can cause substantial cultural and spiritual harms to them because in their culture, kangaroos are spiritual creatures to be treated with respect.⁴⁴⁵ Their people can only kill kangaroos for ‘what was needed’⁴⁴⁶ or ‘on a survival basis’.⁴⁴⁷ Hunting kangaroos for profit, in their culture, is offensive.⁴⁴⁸
- 6.3** Uncle Max Dulumunmun Harrison, an Aboriginal Elder, referred to Aboriginal people’s cultural practice of burying killed kangaroos (as opposed to kangaroo shooters tossing away body parts) to illustrate cultural differences in the treatment of kangaroos. He told the committee that killing kangaroos for profit and without showing respect made him and his people angry.⁴⁴⁹
- 6.4** The committee heard that to First Nations peoples, kangaroos have a spiritual and generational significance. Aunty Ro Mudyin Godwin, an Indigenous educator and writer whose family totem is the kangaroo, told the committee about how kangaroos lay at the foundation of her spiritual beliefs and how shooting them has caused her and her people immense harm:⁴⁵⁰

I was taught at a very young age about the creator spirit being the kangaroo. I am Palawa. I was taught that this kangaroo moved across Tasmania and created river systems, mountains and the country which we see. They are my ancestors. If I did not have kangaroo, then I would not have ancestors. They are my creator spirit. I think the distress comes when—and I am just trying to think how I can put it in to sort of a white perspective. Basically it is like having your entire family gunned down every night—and extended family gunned down every night—and their bodies dissected, butchered, cut up, sold off, taken overseas and dressed up as a commodity for profit. It causes immense distress because our future generations—my nieces, my nephews. I want to be able to take them out on country and say, “Look here. This was created by the kangaroo. This

⁴⁴⁵ Submission 73, Uncle Max Dulumunmun Harrison, pp 2, 17.

⁴⁴⁶ Submission 73, Uncle Max Dulumunmun Harrison, p 2.

⁴⁴⁷ Evidence (unsworn), Aunty Ro Mudyin Godwin, Indigenous educator and writer, 15 June 2021, p 14.

⁴⁴⁸ Submission 239, Australian Wildlife Protection Council Inc and Coalition for the Protection of Kangaroos, p 6; Evidence, Uncle Max Dulumunmun Harrison, Aboriginal Elder, 15 June 2021, and Evidence, Aunty Ro Mudyin Godwin, 15 June 2021,

⁴⁴⁹ Evidence, Uncle Max Dulumunmun Harrison, 15 June 2021, pp 13-14.

⁴⁵⁰ Evidence, Aunty Ro Mudyin Godwin, 15 June 2021, p 16.

valley here, these rivers, these creeks—all this area, created by the kangaroo.” Every time these animals bound across the country, all the vibrations from the thudding of their feet and their tails—sending vibrations out, regenerating. When these animals are taken and slaughtered then a part of us is missing. I cannot do that anymore.⁴⁵¹

6.5 When asked whether she had raised her concerns about the cultural appropriateness of killing kangaroos with any government agency, Aunty Ro told the committee that she had done so for many years and had found their responses 'completely [and] utterly dismissive [and] appalling, in its disconnected arrogant, smugness'.⁴⁵²

6.6 In expressing the harm she felt, Aunty Ro went as far as to compare the killing of kangaroos as the killing of First Nations peoples in Australia’s early history:

Since Invasion these Sacred Totem Animals have been indiscriminately gunned down by those who themselves have no place on Country. The Unsustainable Farming Sector like the current NSW Government are not just environmental vandals but they are engaging in the very same genocide upon Kangaroos that was instigated upon we Indigenous people, the Thylacine & indeed the Koala. This is THEIR [and] MY Ancestral Home ... not yours.⁴⁵³

6.7 Similarly, some inquiry participants spoke of experiencing kangaroo shooting as deeply morally offensive. This evidence suggested to the committee the idea of ethical harm arising from people's moral beliefs that kangaroos are sentient beings capable of feeling pain, fear, love and grief. In the words of one individual, 'I find our treatment of joeys an absolute national disgrace. It causes me great distress to know mothers and babies are being slaughtered and left to suffer'.⁴⁵⁴

6.8 The sentiment that killing of kangaroos is ethically wrong is also shared beyond Australia.⁴⁵⁵ Some inquiry participants from overseas criticised Australian governments for the brutality of kangaroo shootings⁴⁵⁶ and for making a profit out of a national icon.⁴⁵⁷

Loss of chosen lifestyles

6.9 People's loss of chosen lifestyle is another human impact of shooting kangaroos that emerged in the inquiry. The case study below illustrates the effects on landowners who opposed kangaroo shooting but were forced to either live with it or to give up their chosen way of life.

⁴⁵¹ Evidence, Aunty Ro Mudyin Godwin, 15 June 2021, p 16.

⁴⁵² Answers to supplementary questions, Aunty Ro Mudyin Godwin, 29 June 2021, p 2.

⁴⁵³ Submission 9, Aunty Ro Mudyin Godwin, p 1.

⁴⁵⁴ Submission 214, Alyssa Wormald, p 1.

⁴⁵⁵ Submission 76, Miss Angela Kirton, p 1; Submission 81, Name suppressed, p 1; Submission 100, Name suppressed, p 1; Submission 201, Mrs Sue Abbott, p 1.

⁴⁵⁶ Submission 124, Name suppressed, p 1; Submission 206, Mr Malcolm Fisher, p 1.

⁴⁵⁷ Submission 276, Name suppressed, p 1; Submission 282, Name suppressed, p 1; Submission 284, Name suppressed, p 1; Submission 302, Name suppressed, p 2; submission 318, Name suppressed, p 1.

Case study : A chosen lifestyle shattered by the shooting of kangaroos

Greg and Diane dreamt of owning a parcel of bushland to conserve and share knowledge with others about kangaroos. In 2006, upon receiving a favourable report on the conservation value of the land he was interested in, Greg purchased a property, aiming to turn it into a kangaroo sanctuary. But six months after the purchase, their neighbours started shooting kangaroos. Since then, Greg and Diane have endured the brutality of kangaroo killing, social isolation, threats to their safety and financial hardship.

According to Greg, 'Kangaroo killing fields smell like death'. Often, he and Diane would find wounded, dying or dead kangaroos on their property that had escaped the shooting the night before. They would find kangaroo remains next to their fence lines while introduced species like foxes and wild dogs feasted on them. They had even seen a shooter 'pushing kangaroos up against [their] fence, shooting, mis-shooting, bludgeoning, cutting legs, cutting hands, cutting throats, [and] leaving [joeys] behind'. Never had they imagined this for their life of conservation.

To find a way of protecting kangaroos, Greg and Diane began documenting evidence. They visited butchering sites to count kangaroo heads to ascertain whether they were shot humanely with a single, fatal bullet to the head. This became their daily routine.

Another part of their new life was threats, intimidation and abuse from the shooters. Greg and Diane told the committee 'We also had rifles levelled at us while being tracked by shooter's spotlights as we move around on our own property. We have seen kangaroos shot directly in front of us, our house, our vehicle where, if the kangaroo moved, the bullet meant for [it] would have hit one of us'.

Reporting their experiences to the police, National Parks and Wildlife Service and RSPCA was fruitless. Officers from these authorities would ask them to collect evidence, but when Greg and Diane provided it, they would respond with aggression, patronisingly dismissive replies or silence. Some even questioned 'why [they were] watching people going about their business' or stated that 'it's dangerous to stand anywhere near your neighbour while they are shooting'. Greg and Diane had no one to turn to.

In addition to the emotional toll, the kangaroo shooting cost Greg and Diane financially. To purchase the land, Greg took out a loan of \$500,000 with six other investors. He also had businesses lined up to hire facilities on his property and provide him with an income. However, as the shooting showed no sign of stopping and the threats and intimidation continued, investors and potential clients withdrew. With licences to harm kangaroos continuously issued to his neighbours, the fate of Greg's investment was sealed.

Twelve years on, Greg and Diane continue to suffer from the psychological and financial damage caused by the kangaroo killing. However, they continue to expose the shortcomings of kangaroo management policies, including what they see as the under-regulated cruelty against kangaroos and the lack of consideration given to landowners who prefer kangaroos alive, not dead. They told the committee that '[they are] not going to stop until [the shooting of kangaroos] stops'.

* Source: Submission 404a, Ms Diane Smith and Mr Greg Keightley; Evidence, Ms Diane Smith and Mr Greg Keightley, private landowners, 15 June 2021.

Financial losses

- 6.10** Inquiry participants also pointed to economic losses that they experienced as an impact of the kangaroo shooting by other people, particularly their neighbours.
- 6.11** As noted in the above case study, Ms Diane Smith and Mr Greg Keightley, landowners and animal carers, told the committee that the government's decision to allow kangaroo shooting had made their property unfit for eco-tourism. As a result, they lost their investors, customers and, ultimately, their income.⁴⁵⁸ Having reported their financial circumstances to the authorities many times to no avail, they are convinced that the government did give equal consideration to their interests compared to those of their neighbours.⁴⁵⁹

Living in fear of harm

- 6.12** One of the most common impacts of kangaroo shooting raised with the committee was the fear of harm experienced by landowners who live next to someone who allows kangaroos to be shot on their property. For some, that fear was made worse when police did not respond. Some examples are listed below:
- 'We have been terrorised by the noise, bright spotlights in windows, the obvious danger and proximity and the real possibility of being shot either deliberately or accidentally by shooting this close. It is of course totally illegal to shoot so close to a residence and a fence line but complaints to police were ignored and complaints to the neighbours were met with derision and direct threats of personal harm'⁴⁶⁰
 - 'During the night, shooters would shine their torches in my bedroom windows spotlighting for kangaroos. I had to visit the neighbour and ask him not to allow them on his property because I feared for my family's safety. I would cry at night horrified at the gun shots and the thought of kangaroo mobs being torn apart and murdered in the dark.'⁴⁶¹
 - '...a lady from the Goulburn area ... [was] terrified as there were a bunch of drunken shooters on the property next door. They were shooting kangaroos, birds, anything that moved. [She called] the police but [had] no result.'⁴⁶²
 - 'The rescuer lived on the other side of the Blue Mountains. He said shooters would break into his property and kill any kangaroos in the sanctuary.'⁴⁶³
 - 'She relocated to find nature and instead, is faced with the sound of gunfire as kangaroos are shot on the property next door to her. In response to a complaint she made regarding this trauma, a shot dead kangaroo was left impaled on her fence.'⁴⁶⁴

⁴⁵⁸ Submission 404a, Ms Diane Smith and Mr Greg Keightley, pp 45-54.

⁴⁵⁹ Submission 404a, Ms Diane Smith and Mr Greg Keightley, p 45.

⁴⁶⁰ Submission 357, Ms Heather Barnes, p 2.

⁴⁶¹ Submission 263, Name suppressed, p 1.

⁴⁶² Submission 51, Name suppressed, p 1.

⁴⁶³ Submission 51, Name suppressed, p 1.

⁴⁶⁴ Submission 271, Wild 2 Free Inc., p 5.

- 6.13** The following case study illustrates how one inquiry participant had her right to live safely at home violated by her neighbours' shooting of kangaroos.

Case study: Right to feel safe at home violated

Mary had lived a peaceful life in a semi-urban area of New South Wales for decades. As her property is close to a national park and is part of a wildlife corridor, she is often met by kangaroos passing by looking for a rest or some grass to eat on her property. Her peace, however, was broken in 2018 when her neighbours started shooting kangaroos.

Mary's neighbours would shoot kangaroos three or four days a week, in the night or morning, often without warning. It was like living in 'the Wild West', she said, where people were out 'shooting, guns going off, and spotlights [shone on] trees [and] everywhere'.

But there wasn't just noises and spotlights on trees. The shooters would verbally abuse her, direct multiple vehicle spotlights at her and her property, fly drones in circuits above her home and shoot kangaroos when she and her family were visible on their property. In one instance, a shooter fired a bullet in her direction which landed within metres of her. Since then, she has had difficulty sleeping and is always on alert, fearing that something might happen.

Because of the shootings and intimidation, Mary did not let her grandchild stay at her property for four years. She didn't want to subject a young child to shootings and fear. Keeping her loved ones away for their safety meant that she experienced social isolation.

Hoping to restore her peaceful life and protect herself and her loved ones, Mary contacted the Police, National Parks and Wildlife Service, local Councillors, a journalist and many others, trying to revoke her neighbour's licence to shoot kangaroos, to no avail. Mary told the committee that, '[Her] life will never be the same and [that] if there had been more checks and balances [then] a licence to cull kangaroos would never have been granted' to her neighbour.

* Source: Submissions nos 376 and 376a; Evidence, Witness A, individual, 11 June 2021. Note: Mary is pseudonym to protect the identity of the inquiry participant.

Impact on mental health

- 6.14** Numerous inquiry participants, affected deeply by kangaroo shooting because of their cultural, spiritual or ethical beliefs or because of a genuine fear for their safety, reported having suffered from mental health concerns such as distress and anxiety. Mental health concerns were very real for a number of participants, including wildlife rescuers, who told the committee that they were traumatised because of ongoing exposure to the killing of, and cruelty towards, kangaroos.⁴⁶⁵ For example:

⁴⁶⁵ Submission 136, Name suppressed, p 1; Submission 340, Name suppressed, p 5;

- 'I am personally traumatised because of the photos and footage I have viewed that show kangaroos being shot, baby joeys being slammed against a bull bar and the poor kangaroos hanging in the back of dirty vehicles often in the open and next to wild pigs.'⁴⁶⁶
- 'Kangaroos obviously have feelings and are highly social beings like we are. It's not possible for many people, including myself, in rural communities like Culburra Beach and Inverell to witness such events without suffering emotional pain, anxiety and distress. The harmful experiences cause negative psycholog[ical] impacts which have consequences for the mental wellbeing of people.'⁴⁶⁷
- 'There is also no monitoring of the disposal of carcasses with numerous photos freely available from neighbouring residents posting on social media, including severed heads, paws, tails and intestines left fully exposed. This is extremely distressing for anyone who feel even the slightest compassion towards kangaroos, and will definitely have an impact on both the mental health and potential suicide rates of wildlife carer and animal activists alike.'⁴⁶⁸
- 'After each shooting session, which could be multiple times per week and at any time from sunset to sunrise, we were responding to the cries of orphaned baby joeys left after their mothers were shot. We were finding and having to capture mis-shot kangaroos that had escaped the shooters. The stress and anxiety not only from the effects of the shooting and killing, but the rescue of injured and orphaned survivors was debilitating.'⁴⁶⁹

Wildlife rescuers

6.15 A number of wildlife carers or rescuers also gave evidence that their mental health is severely affected by having to worry about their rescued kangaroos being shot after their release. Some of their evidence is reproduced below.

- 'One of the kangaroos I raised and released came back to my property with a gunshot wound. She had a large joey in her pouch. I was unable to catch and found her dead several days later by following the flies and the smell of her rotting body. Her joey was also dead. It was after this incident that I began to experience panic attacks and made the decision to leave the property. This particular animal had been in my care for almost 2 years from a tiny furless animal of 450g until she was released at two years of age and weighing over 20kg.'⁴⁷⁰
- 'I am constantly living in a state of trauma. Every time I hear a gunshot, I run outside to see if it's people shooting roos. I call for the roos I know to come home. I fret constantly if a roo I know isn't around after shooting. I have known many roos to not come past again because they've been shot or run over. I sit by the roadside and cry when I see a roo dead on the road near my place.'⁴⁷¹

⁴⁶⁶ Submission 136, Name suppressed, p 1.

⁴⁶⁷ Submission 178, Mr Bryce Martin, p 3.

⁴⁶⁸ Submission 340, Name suppressed, p 5.

⁴⁶⁹ Submission 404a, Ms Diane Smith and Mr Greg Keightley, p 9.

⁴⁷⁰ Submission 107, Name suppressed, p 1.

⁴⁷¹ Submission 48, Name suppressed, p 1.

- ‘After months of raising and caring for joeys, one of the biggest problems is the lack of safe release properties for these new little mobs to be released into. There can be quite a bottle neck amongst carers where they can’t take any new joeys until the older ones have a safe place to go.’⁴⁷²

6.16 The case study below provides a wildlife carer’s perspective on how kangaroo shooting has affected her at a very deep level.

Case study: Mental health impacts on wildlife rescuers

Rae is an authorised carer for macropods. She raises joeys who lost their mothers for reasons including shooting. As a wildlife carer, she is worried that the kangaroos she has cared for and has released to the bush may be shot one day.

Rae works around the clock to feed and play with these young, dependent animals, until they are old enough to join the mob at approximately 18 months old. Having spent a significant amount of time with the animals in her care, she recognises each one of them and understands their individual needs. She considers kangaroos her ‘family’ and speaks of them as her ‘entire reason for living’.

In considering the government’s kangaroo management strategy, Rae cannot understand why the government that imposes strict rules and regulations on the wildlife rescuers to protect the wildlife can authorise the killing. For her, the killing of kangaroos undermines, if not completely disregards, her rescue efforts. She recalled an incident when she felt the deep impact of the shooting:

In June 2020 I received a text from a friend “12 souls lost tonight”. It referred to the 12 kangaroos shot at a reserve in Canberra as part of the annual cull. It cut me to the bone. Kangaroo orphans require round-the-clock care and are very sensitive and fragile with changes to the environment, which can lead to death, so we only raise what we can handle. That same year, I worked 365 days a year raising 11 orphans. Can you imagine the trauma of learning that the equivalent of your entire year’s work, is lost in just one night? That’s what it felt like to me.

* Source: Submissions nos 265, Rae Harvey, and 271 Wild 2 Free Inc; Evidence, Ms Rae Harvey, individual, 15 June 2021; Answers to supplementary questions, Ms Rae Harvey, Wild2Free, 14 July 2021.

Committee comment

6.17 The committee thanks all individuals, particularly those who told us their stories under difficult circumstances, for sharing the personal impact that kangaroo shooting has on them, whether cultural, spiritual or ethical, losing a chosen lifestyle, or having to live in fear of harm. We note the common accounts of significant mental health effects that were linked to those other impacts.

6.18 The committee believes that the evidence has raised important questions about the adequacy of responses to complaints by people who are personally impacted by the kangaroo shooting of their neighbours. It must be profoundly upsetting and disempowering to live peacefully on a

⁴⁷² Submission 330, Ms Kathleen O’Connor, p 4.

property and then find oneself surrounded by shooting and the death of animals that one genuinely wishes to protect. We further empathise with those who told us that the authorities to whom they complained treated them with disrespect.

- 6.19** Second, in light of some landowners' fears for their safety, as well as their strong personal views, it seems there is a gap under the current regulatory framework that it is not mandatory for a landowner to notify neighbours when applying for a licence to harm kangaroos. Therefore, the committee recommends that the NPWS make it mandatory for persons licensed to shoot kangaroos to notify neighbours, as far as is reasonably practicable, before they commence shooting.

Recommendation 22

That the National Parks and Wildlife Service make it mandatory for persons licensed to harm kangaroos to notify their neighbours, as far as is reasonably practicable, before they commence shooting.

- 6.20** Third, the committee notes that people have a fundamental right to feel safe at home. It is not acceptable that some New South Wales residents live in fear of harm because of kangaroo shooting, nor that persons responsible for instilling fear are not being held to account. While the committee appreciates the government's multi-agency approach to complaints associated with kangaroo killing (see paragraphs 4.20 to 4.27), it considers the current framework unsatisfactory, especially as firearms are involved.

- 6.21** Therefore, the committee urges each of the agencies responsible within the NSW Government to work together to clarify and consolidate the current investigation and enforcement framework and establish a central database to receive, handle and ensure more satisfactory responses to complaints relating to kangaroo shooting. This work should be directed towards ensuring more satisfactory responses to complaints relating to kangaroo shooting.

Recommendation 23

That the Department of Planning Industry and Environment, specifically including the National Parks and Wildlife Service, and the NSW Police Force, work together to:

- clarify the current investigation and enforcement framework in dealing with complaints concerning kangaroo shooting
 - establish a central database to receive, handle or refer complaints to responsible government agencies
 - ensure more satisfactory responses to complaints relating to kangaroo shooting.
-

- 6.22** Fourth, based on the evidence received, the committee observes that the shooting of kangaroos has a profound impact on the mental health of some Aboriginal people, kangaroo carers and rescuers.

Finding 6

That the shooting of kangaroos has a profound impact on the mental health of some Aboriginal people, kangaroo carers and rescuers.

Appendix 1 Submissions

No.	Author
1	Name suppressed
2	Name suppressed
2a	Name suppressed
3	Mrs Lyn McDonald
4	Mrs Laura Lumachini
5	Miss Laetitia Blanc
5a	Miss Laetitia Blanc
6	Confidential
7	Ms Marguerite Morgan
7a	Ms Marguerite Morgan
8	Mr Karl Augustine
9	Aunty Ro Mudyin Godwin
10	Mrs Vandra Mellers
11	Ms Sarah Avery
12	Confidential
13	Ms Katherine Stewart
14	Confidential
15	Ms Melanie Barsony
16	Confidential
17	Ms Patricia Hoelmer
18	Ms Janina Price
18a	Ms Janina Price
19	Ms Jemma Meecham
19a	Ms Jemma Meecham
19b	Ms Jemma Meecham
20	Ms Alison Barker
21	Mr Mark Baker
22	Confidential
23	Mr Matthew Morris
24	Dr Jane Siddall
25	Mrs Pat Daykin

No.	Author
25a	Mrs Pat Daykin
26	Ms Tatiana Chaschina
27	Jennifer Moore
28	Mrs Doreen Mann
29	Mrs Ji Montgomery
30	Mr Carlos Acosta
31	Mrs Lyn Chalmers
32	Eurogroup for Animals
33	Confidential
34	Mrs Kim McDonald
35	Mrs Deanna Rudd
36	Mrs Valerie Le Bihan
37	Mr Michael Cuming
38	Mr Raymond Brookes
39	NSW Young Lawyers Animal Law Committee
40	Miss Maryellen Flynn
41	Mr Richard Stanford
42	Dr Hedy Bryant
43	Ms Annie Nielsen
44	Miss Lorraine Holmes
45	Name suppressed
46	Name suppressed
47	Name suppressed
48	Name suppressed
49	Name suppressed
50	Confidential
51	Name suppressed
52	Name suppressed
53	Name suppressed
54	Name suppressed
55	Name suppressed
56	Name suppressed
57	Name suppressed
58	Name suppressed
59	Name suppressed

No.	Author
60	Name suppressed
61	Name suppressed
62	Name suppressed
63	Mr Les Amos
64	Name suppressed
65	Mr Robert Nowak
66	Aly Brown
67	Tina Maddison
67a	Tina Maddison
68	Mrs Inge Rheinberger
69	Ms Janet Wickens
70	Ms Maria Bradley
71	Pat Daley
72	Ms Katherine Love
73	Uncle Max Dulumunmun Harrison
74	Name suppressed
75	Mr Stephen Powley
75a	Mr Stephen Powley
76	Miss Angela Kirton
77	Ingrid Broecker
78	Mr Fawaz Al-Fayez
79	Ms Cheryl Milloss
80	Name suppressed
81	Name suppressed
82	Confidential
83	Name suppressed
84	Name suppressed
85	Name suppressed
86	Name suppressed
87	Name suppressed
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89	Name suppressed
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91	Name suppressed
92	Name suppressed

No.	Author
93	Name suppressed
93a	Name suppressed
94	Name suppressed
95	Name suppressed
95a	Name suppressed
96	Confidential
97	Name suppressed
98	Name suppressed
99	Name suppressed
100	Name suppressed
101	Name suppressed
102	Mrs Olivia da Silva
103	NSW Farmers' Association
104	Name suppressed
105	Stefanie Klockow
106	Confidential
107	Name suppressed
108	Animal Welfare Institute
109	Name suppressed
110	Name suppressed
111	Confidential
112	Name suppressed
113	Australian Wildlife Society
114	A.O A'Beckett
115	Name suppressed
116	Ms Robyn Hayes
117	Mrs Sylvia Cooper
118	Sonia Bakhshi
119	Confidential
120	Miss Amanda Groves
121	Miss Stefania Pedersen
122	Amanda Vanderaa
123	Confidential
124	Name suppressed
125	Name suppressed

No.	Author
126	Mihaela Kozman
127	Name suppressed
128	Name suppressed
129	Name suppressed
130	Name suppressed
131	Name suppressed
132	Name suppressed
133	Confidential
134	Name suppressed
135	Name suppressed
136	Name suppressed
137	Confidential
138	Name suppressed
139	Name suppressed
140	Name suppressed
141	Confidential
142	Confidential
143	Name suppressed
144	Confidential
145	Name suppressed
146	Name suppressed
147	Ms Deborah Huish
148	Mrs Cienwen Hickey
149	Mrs Clare Gallagher
150	Northern Tablelands Wildlife Carers
151	Mrs Jacquie Maisey
152	Ms Alexis Cross
153	Mrs Helen Coy
154	Ms Louise Taylor
155	Mr Christopher Lehmann
156	Name suppressed
157	Ms Arielle Schechter
158	Mr Shaun Adams
159	Mr James Shore

No.	Author
160	THINKK NSW (The Think Tank for Kangaroos, Centre for Compassionate Conservation, University of Technology Sydney)
161	Mrs Ramona Headifen
162	Mrs Jennifer Graham
163	Ms Samantha Hayden
164	Ms Helen Stephens
165	Ms Kimberley Fenton
166	Ms Michele Mitchell
167	Ms Christine Whalan
168	Mrs Beverley Grant
169	Mrs Lyn Aspinall
170	Mr Robert Armstrong
171	Discovered Wildfoods
172	Miss Michelle Cotterill
173	Ms Anna Drain
174	Mrs Christine Fenwick
175	Name suppressed
176	Miss Tanya ODonoghue
177	Miss Emily Walsh
178	Mr Bryce Martin
179	Fee Sievers
180	Mr Charles Davis
181	Miss Judith Ann Carter
182	Mr Gregory Taylor
183	Mr Phillip Hawkes
184	Ms Leah Thraves
185	Ms Jan Kendall
186	Ms Jan O'Leary
187	Ms Nicole Ford
188	Mr Rod Kerkhoven
189	Kangaroos Alive
190	Mrs Simone Lea Home
191	Miss Claire Culliford
192	Mr Phillip Parkes
193	Mrs Natalie Faulkner

No.	Author
194	Mr Daniel Dunstan
195	Ms Maria Mura
196	Ms Frances Blane
197	Mr Roderick MacNally
198	Ms Elizabeth Cayzer
199	Ms Cheryl Maurice
200	Ms Justine Curatolo
201	Mrs Sue Abbott
202	Patrick Loonen
203	Second Nature Films
204	Laura Arias
205	Mr Patrick Murphy
206	Mr Malcolm Fisher
207	Mrs Pamela Engelande
208	Mrs Carla Sluiter
209	LAV - LEGA ANTI VIVISIONE
210	Ms Kay Podmore
211	Ms Sue McKellar
212	Miss Hannah Bellamy
213	Mr Lindsay Peak
214	Alyssa Wormald
215	Ms Diane Kastel
216	Mr Carey Theil
217	Mr Simon Validzic
218	Ms Sarah Hughes
219	AI Topper
220	Miss Angelice Breviario
221	Kathleen Amyotte
222	Professor Mike Letnic
223	Ms Elizabeth Gentle
224	Mr Van Howell
225	Ms Suellen Delahunt
226	Dianne Clegg
227	Cheryle Allison
228	Mr Harry Kremetis

No.	Author
229	Mrs Caroline Bugden
230	Mr Jordan Phillips
231	Rachel Sussman
232	Mr Eli Catto
233	Mr Hayden Roberts
234	Animal Defenders Office
235	Confidential
236	Animal Protectors Alliance
237	RSPCA Australia
238	Australian Society for Kangaroos
239	Australian Wildlife Protection Council Inc and Coalition for the Protection of Kangaroos
240	Animal Liberation
241	Australian Wildlife Shelters Coalition
242	Animal Justice Party
243	Bush Heritage Australia
244	Queensland Wildlife Rehabilitation Council
245	Animal Wellness Action
246	NSW Government
247	Center for a Humane Economy
248	Animals Australia Inc.
249	Kangaroo Management Taskforce
250	Friends of Mother Earth Incorporated
251	Sentient - The Veterinary Institute for Animal Ethics
252	Ms Patricia Campbell
253	GAIA
254	Australian Centre for Climate and Environmental Law (ACCEL) and the Sydney Environment Institute
255	Miss Jenny Elliott
256	Kangaroo Industry Association of Australia Inc
257	Badgerys Creek Wildlife Sanctuary Inc
258	Animal Liberation ACT
259	WIRES
260	Mrs Zoe Law
261	Ms Francisa Miller
262	Name suppressed

No.	Author
263	Name suppressed
264	Katherine Toka
265	Ms Rae Harvey
266	Confidential
267	Confidential
268	Mr Darren Brollo
269	Name suppressed
270	Mr Raymond Mjadwesch
270a	Mr Raymond Mjadwesch
271	Wild 2 Free Inc.
272	Name suppressed
273	Professor David Brooks
274	Mrs Nikki Hansen-Medwell
275	Confidential
276	Name suppressed
277	Name suppressed
278	Name suppressed
279	Name suppressed
280	Pastoralists' Association of West Darling
280a	Pastoralists' Association of West Darling
281	Tree of Compassion
282	Name suppressed
283	Name suppressed
284	Name suppressed
285	Name suppressed
286	Name suppressed
287	Name suppressed
288	Ms Ildi Ehsman
289	World Animal Protection Australia
290	Ms Marilyn Mills
291	Dr Benjamin Allen
292	Confidential
293	Confidential
294	FOUR PAWS Australia
295	Mr Paul Azzopardi

No.	Author
296	Confidential
297	Name suppressed
298	Name suppressed
299	Humane Society International Australia
300	Ms Lyn Gynther
301	Confidential
302	Name suppressed
303	Mr Christopher O'Donnell
304	Ms Faye Pritchard
305	Name suppressed
306	Ms Peta Russell
307	Name suppressed
308	Mr Stephen Morris
309	Ms Carlie Smith
310	Ms Stella Savvas
311	Mrs Claire Galea
312	Ms Lana Williams
313	Name suppressed
314	Ms Rosemary Fox
315	Mrs Sandra Trinder
316	Name suppressed
317	Ms Madhuri Pillai
318	Name suppressed
319	Name suppressed
320	Ms Kim Dutton
321	Mrs Janine Shields
322	Name suppressed
323	Ms Marie-Eve Boisclair
324	Ms Janice Haviland
324a	Ms Janice Haviland
325	Ms Lisa Doyle
326	Mrs Patricia Mathers
327	Mrs Carolyn Baldwin
328	Name suppressed
329	Confidential

No.	Author
330	Ms Kathleen O'Connor
331	Ms Samantha Sharp
332	Name suppressed
333	Anne Marks
334	Name suppressed
335	Ms Sally Higgs
336	Ms Sharon Church
337	Name suppressed
338	Name suppressed
338a	Name suppressed
338b	Name suppressed
339	Name suppressed
340	Name suppressed
341	Ms Lindy Stacker
342	Mrs Sonia Parker
343	Mr Chris Parker
344	Name suppressed
345	Miss Wanda Gordon
346	Mr David MacDonald
347	Name suppressed
348	Name suppressed
349	Name suppressed
350	Ms Simone Cooper
351	Mr Ian MacDougall
352	Confidential
353	Name suppressed
354	Name suppressed
355	Ms Dianne Lane
356	Ms Zeri Hudaverdi
357	Ms Heather Barnes
358	Miss Jessica Beehag
359	Mr Philip Machin
360	Ms Rahime Mine Aragon
361	Name suppressed
362	Name suppressed

No.	Author
363	Professor George Wilson
364	Name suppressed
365	Name suppressed
366	Possumwood Wildlife
367	Ms Lisa Siciliano
368	Name suppressed
369	Mr Christopher Coy
370	Mr Albert Martin
371	Name suppressed
372	Name suppressed
373	Mr Geoff Wise
374	Miss Hailey Durham
375	Mrs Christie Jarrett
376	Name suppressed
376a	Name suppressed
377	Ms Danijela Saric
378	Ms Sita Parsons
379	Ms Meaghan Hughes
380	Name suppressed
381	Name suppressed
382	Name suppressed
383	Name suppressed
384	Name suppressed
385	Name suppressed
386	Ms Leonie Schween
387	Mr Lloyd Kennedy
388	Ms Aoiffe O'Kelly
389	Ms Petra Jones
390	Name suppressed
391	Name suppressed
392	Name suppressed
393	Name suppressed
394	Ms Mary Ann Gourlay
395	Mrs Avtar Kaur
396	Name suppressed

No.	Author
397	Name suppressed
398	Name suppressed
399	Ms Susie Header
400	Mrs Amy Blackmore
401	Collective Fashion Justice
402	Nature Conservation Council of NSW
403	Ms Anne Greenaway
404	Confidential
404a	Ms Dianne Smith and Mr Greg Keightley
405	Ji Montgomery

Appendix 2 Witnesses at hearings

Date	Name	Position and Organisation
Friday, 11 June 2021 Macquarie Room Parliament House, Sydney	Mr Ray Mjadwesch	Consulting Ecologist
	Mrs Claire Galea	Biostatistician
	Ms Nikki Sutterby <i>via videoconference</i>	President Australian Society for Kangaroos
	Ms Heather Campbell <i>via videoconference</i>	Chief Executive Officer Bush Heritage Australia
	Dr Graeme Finlayson <i>via videoconference</i>	South Australian Arid Rangelands Ecologist Bush Heritage Australia
	Professor Michael Letnic,	Centre for Ecosystem Science University of New South Wales
	Dr Benjamin Allen	Senior Research Fellow (Wildlife Management) University of Southern Queensland
	Mr Farnham Seyedi	Volunteer solicitor, Animal Defenders Office
	Ms Tara Ward	Volunteer managing solicitor Animal Defenders
	Mr Mick McIntyre	Director, Kangaroos Alive Director, Second Nature Films
	Ms Kate Clere	Director, Kangaroos Alive Director, Second Nature Films
	Ms Louise Boronyak	Scientific Advisor Kangaroos Alive
	Ms Annabel Johnson	Head of Policy and Advocacy NSW Farmers Association
Ms Bronwyn Petrie <i>via videoconference</i>	Conservation and Resource Management Committee Chair NSW Farmers Association	
Mr Lachlan Gall <i>via videoconference</i>	Councillor and Kangaroo Management Representative of the Pastoralists Association of West Darling	

Date	Name	Position and Organisation
	Dr Geoffrey Wise <i>via videoconference</i>	Independent Chair Kangaroo Management Task Force
	Mr Alexander Russell Grant <i>via videoconference</i>	Natural Resource Management representative Kangaroo Management Task Force
	Mr Leon Zanker <i>via videoconference</i>	Western Landcare representative Kangaroo Management Task Force
	Witness A	Aboriginal Elder
	Witness B <i>via videoconference</i>	Individual and commercial harvester
Tuesday 15 June 2021		
Macquarie Room		
Parliament House, Sydney	Dr Dror Ben Ami <i>via videoconference</i>	Co-Founder, The Think Tank for Kangaroos (THINKK)
	Dr Keely Boom <i>via videoconference</i>	Research fellow THINKK
	Ms Louise Boronyak	THINKK Manager THINKK
	Dr Daniel Ramp	Research Director THINKK
	Dr David Croft <i>via videoconference</i>	Representative THINKK
	Uncle Max Dulumunmun Harrison	Aboriginal Elder
	Aunty Ro Mudyin Godwin <i>via teleconference</i>	Aboriginal Educator
	Professor David Brooks	Individual Honorary Associate Professor University of Sydney
	Dr Di Evans <i>via videoconference</i>	RSPCA Australia and RSPCA NSW
	Ms Rae Harvey	Wild2Free
	Mr Greg Keightley	Individual
	Ms Dianne Smith	Individual
	Ms Tara Medina	Director Discovered Wildfoods

Date	Name	Position and Organisation
	Mr Dennis King	Executive Officer Kangaroo Industry Association Australia (KIAA)
	Mr Douglas Jobson	Chief Executive Officer, Macro Meats and KIAA operations committee member, KIAA
	Ms Sharon Molloy	Executive Director, Biodiversity Conservation Division, Environment, Energy and Science Group (EES) NSW Department of Planning, Industry & Environment (DPIE)
	Ms Sonya Errington	Acting Director Environmental Solutions, Environment Protection Authority, DPIE
	Mr Terry Brill	Senior Team Leader, Kangaroo Management, EES, DPIE
	Mr Robert Quirk	Executive Director, Park Programs, National Parks and Wildlife Service, EES, DPIE
	Mr Richard Kingswood	Director, Conservation Branch, National Parks and Wildlife Service, EES, DPIE
Thursday 19 August 2021 via videoconference	Ms Sharon Molloy	Executive Director, Biodiversity Conservation Division, Environment, Energy and Science Group (EES) NSW Department of Planning, Industry & Environment (DPIE)
	Mr Terry Brill	Senior Team Leader, Kangaroo Management, EES, DPIE
	Dr Steve McLeod	Senior Research Scientist, Department of Primary Industries
	Dr Stuart Cairns	Consultant
	Dr Anthony Pople	Senior Principal Scientist and Manager, Invasive Plants and Animals Research Queensland Department of Agriculture and Fisheries

Appendix 3 Population threshold summary tables for 2021 quota calculations

The following tables, provided by DPIE, present the long term mean population, 1.5 standard deviations below the mean and two standard deviations below the mean of each commercially harvested species in each kangaroo management zone for the 2021 quota calculations.

Table 1. Red Kangaroo population threshold summary

KMZ	Population Mean (PM)	PM - 1.5 SD	PM - 2 SD
Bourke	323,648	136,082	101,948
Broken Hill	1,069,999	635,714	534,427
Cobar	159,353	58,944	42,313
Coonabarabran	283,531	139,582	110,214
Griffith	378,128	191,467	152,609
Lower Darling	285,551	128,482	98,453
Narrabri	331,132	136,877	101,963
Tibooburra	623,418	211,749	147,741

Table 2. Eastern Grey Kangaroo population threshold summary

KMZ	Population Mean (PM)	PM 0 1.5 SD	PM - 2 SD
Bourke	147,322	39,547	25,511
Broken Hill	150,548	72,706	57,043
Cobar	106,342	19,776	11,288
Coonabarabran	1,134,423	547,185	429,128
Griffith	730,181	371,186	296,241
Lower Darling	89,392	44,716	35,497
Narrabri	802,273	361,140	276,774
Tibooburra	68,794	17,694	11,252
Armidale	233,917	119,579	95,614
C. Tbl. North	842,852	372,090	283,322
C. Tbl. South	585,765	321,945	263,715
Glen Innes	306,456	144,880	112,864
South East NSW	729,939	266,987	190,937
Upper Hunter	127,350	64,270	51,170

Table 3. Western Grey Kangaroo population threshold summary

KMZ	Population Mean (PM)	PM - 1.5 SD	PM - 2 SD
Bourke	90,294	24,239	15,636
Broken Hill	207,900	100,404	78,774
Cobar	146,854	27,310	15,588
Coonabarabran	85,387	41,186	32,300
Griffith	149,555	76,026	60,676
Lower Darling	198,970	99,530	79,009
Narrabri	8,104	3,648	2,796
Tibooburra	17,198	4,423	2,813

Table 4. Wallaroo population threshold summary

KMZ	Population Mean (PM)	PM - 1.5 SD	PM - 2 SD
Armidale	61,856	26,095	19,571
Glen Innes	65,913	25,502	18,582
Upper Hunter	49,279	16,729	11,670

Source for all tables: Answers to supplementary questions, NSW Government, 23 July 2021, pp 33-34.

Appendix 4 Minutes

Minutes no. 46

Monday 15 March 2021

Portfolio Committee No. 7 – Planning and Environment

Room 1043 and WebEx, 9.33 am

1. Members present

Ms Faehrmann, *Chair*

Mr Pearson, *Deputy Chair*

Mr Buttigieg

Ms Cusack

Mr Franklin

Mr Mallard

Ms Sharpe

2. Correspondence

The committee noted the following items of correspondence:

Received:

- 8 February 2021 – Email from Mr Ross Leddra, President, Darling River Action Group containing letters from the Stakeholder Advisory Committee regarding the Menindee Lakes Water Savings Project
- 11 February 2021 – Email from Mr Gordon Turner containing additional information and pictures of the lower Lachlan following the committee's site visit and fly over
- 12 February 2021 – Email from Mr Ross Leddra, President, Darling River Action Group, containing a media article regarding the Menindee Lakes Water Savings Project (*attached*)
- 14 February 2021 - Email from Mr Ross Leddra, President, Darling River Action Group, regarding the Darling River
- 15 February 2021 – Email from Ms Jane MacAllister, Nature Conservation Council of NSW, containing information from Mr Wayne Smith, a resident of the Lower Darling
- 17 February 2021 – Email from the Hon Mark Pearson MLC, forwarding an email from Ms Kate Boyd, Mole River Protection Alliance, regarding the Mole River Dam business case
- 18 February 2021 – Email from Ms Jane MacAllister, Nature Conservation Council of NSW, containing information from Mr Paul Buttigieg
- 24 February 2021 - Email from Mr Ross Leddra, President, Darling River Action Group, containing a report from Slattery & Johnson regarding floodplain water harvesting in Northern NSW

Sent:

- 2 March 2021 – Chair to Mr Andrew George, A/CEO, WaterNSW, requesting additional information on the Menindee Lakes Water Savings Project
- 2 March 2021 – Chair to Mr Jim Bentley, Deputy Secretary, Water, NSW Department of Planning, Industry and Environment, requesting additional information on the Menindee Lakes Water Savings Project

3. Consideration of terms of reference

Resolved, on the motion of Mr Pearson: That the committee adopt the following terms of reference:

1. That Portfolio Committee No 7 – Planning and Environment inquire into and report on the health and wellbeing of kangaroos, and other macropods, in New South Wales, and in particular:

- (a) historical and long-term health and wellbeing indicators of kangaroos, and other macropods, at the local, bioregional and state levels, including the risk of localised extinction in New South Wales,
- (b) the accuracy with which kangaroo, and other macropod, numbers are calculated when determining population size, and the means by which the health and wellbeing of populations is assessed,
- (c) threats to kangaroo, and other macropod, habitat, including the impact of:
 - i. climate change, drought and diversion and depletion of surface water sources,
 - ii. bushfires,
 - iii. land clearing for agriculture, mining and urban development,
 - iv. the growing prevalence of exclusion fencing which restricts and disrupts the movement of kangaroos,
- (d) current government policies and programs for kangaroo management, including:
 - v. the method used for setting quotas for kangaroo culling,
 - vi. the management of licences to cull kangaroos,
 - vii. temporary drought relief policies and programs,
- (e) current government policies and programs in regards to 'in pouch' and 'at foot joeys' given the high infant mortality rate of joeys and the unrecorded deaths of orphaned young where females are killed,
- (f) regulatory and compliance mechanisms to ensure that commercial and non-commercial killing of kangaroos and other macropods is undertaken according to the Biodiversity Conservation Act 2016 and other relevant regulations and codes,
- (g) the impact of commercial and non-commercial killing of kangaroos and other macropods, including the difficulty of establishing numbers killed by landholders since the removal of the requirement for drop tags, and
- (h) current and alternative measures to provide an incentive for and accelerate public and private conservation of kangaroos and other macropods.

2. That the committee report by the first sitting day in September 2021.

4. Conduct of the inquiry into the health and wellbeing of kangaroos and other macropods in New South Wales

4.1 Closing date for submissions

Resolved, on to the motion of Mr Pearson: That the closing date for submissions be Monday 26 April 2021.

4.2 Stakeholder list

Resolved, on the motion of Mr Buttigieg: That the secretariat circulate to members the Chairs' proposed list of stakeholders to provide them with the opportunity to amend the list or nominate additional stakeholders, and that the committee agree to the stakeholder list by email, unless a meeting of the committee is required to resolve any disagreement.

4.3 Advertising

The committee noted that all inquiries are advertised via Twitter, Facebook, stakeholder letters and a media release distributed to all media outlets in New South Wales.

4.4 Hearing dates

Resolved, on the motion of Mr Pearson: That the committee hold two hearings in May/June/July 2021, the dates of which are to be determined by the Chair after consultation with members regarding their availability.

5. Inquiry into the rationale for, and impacts of, new dams and other water infrastructure in NSW

6. Adjournment

The committee adjourned at 11.48 am until Monday 3 May 2021, Public Hearing in the Jubilee Room.

Madeleine Dowd

Clerk to the Committee

Minutes no. 52

Tuesday 1 June 2021

Portfolio Committee No. 7 – Planning and Environment

Macquarie Room and via videoconference, 11.02 am

1. Members present

Ms Fachrmann, *Chair*

Mr Pearson, *Deputy Chair*

Mr Buttigieg

Ms Cusack (*via videoconference*)

Mr Franklin from 11.45

Mr Mallard until 12.45

Ms Sharpe

2. Inquiry into Waste Avoidance and Resource Recovery Amendment (Plastics Reduction) Bill 2021

3. Inquiry into the health and wellbeing of kangaroos and other macropods

3.1 Public submissions

The committee noted that the following submissions were published by the committee clerk under the authorisation of the resolution appointing the committee: submissions nos 3, 4, 5, 5a, 7, 7a, 8-11, 13, 15, 17, 18, 19, 19a, 19b, 20, 21, 24, 25, 25a, 26-32, 34-44, 63, 65-67, 67a, 68-73, 75, 75a, 76-79, 102, 103, 105, 108, 113, 114, 116-118, 120-122, 126, 147-151, 153-155, 157-174, 176, 177, 179-234, 236-251, 253, 254, 256-261, 264, 268, 270, 273, 274, 280, 281, 288-291, 294, 295, 299, 300, 303, 304, 306, 308-310, 312, 314, 315, 317, 320, 321, 323, 324a, 325-327, 330, 331, 333, 335, 336, 341-343, 345, 346, 350, 351, 356-360, 363, 366, 367, 369, 370, 373-375, 377-379, 386-389, 394, 395 and 399-403.

The committee noted a revised version of submission 270 had been circulated.

3.2 Partially confidential submissions (name suppressed)

The committee noted that the following submissions were partially published by the committee clerk under the authorisation of the resolution appointing the committee: submissions nos 1, 2, 2a, 45-49, 51, 53-62, 64, 74, 80, 81, 83, 85-93, 93a, 94, 95, 95a, 97-101, 104, 107, 110, 112, 115, 124, 125, 127-132, 134-136, 138-140, 143, 145, 146, 156, 175, 178, 262, 263, 269, 272, 276-279, 282-287, 297, 298, 302, 305, 307, 311, 316, 318, 319, 322, 328, 332, 334, 337, 338a, 338b, 339, 340, 344, 347-349, 353-355, 361, 362, 364, 365, 368, 371, 372, 380-385, 390-393 and 396-398.

Resolved, on the motion of Ms Sharpe: That the committee keep the following information confidential, as per the request of the author: names and/or identifying and sensitive information in submissions nos 1, 2,

2a, 45-49, 51, 53-62, 64, 74, 80, 81, 83, 85-93, 93a, 94, 95, 95a, 97-101, 104, 107, 110, 112, 115, 124, 125, 127-132, 134-136, 138-140, 143, 145, 146, 156, 175, 178, 262, 263, 269, 272, 276-279, 282-287, 297, 298, 302, 305, 307, 311, 316, 318, 319, 322, 328, 332, 334, 337, 338a, 338b, 339, 340, 344, 347-349, 353-355, 361, 362, 364, 365, 368, 371, 372, 380-385, 390-393 and 396-398.

3.3 Partially confidential submissions (identifying and/or sensitive information)

The committee noted that the following submissions were partially published by the committee clerk under the authorisation of the resolution appointing the committee: 18a, 23, 52, 84, 109, 152, 252, 255, 265, 271, 313, 338, 324 and 384.

The committee noted that the authors of submissions nos 52, 84, 109, 313, 338 and 384 also requested their names be redacted.

Resolved, on the motion of Ms Sharpe: That the committee:

- keep the following information confidential, as per the recommendation of the secretariat: identifying and sensitive information in submissions nos 18a, 23, 52, 84, 109, 152, 252, 255, 265, 313, 338, 324 and 384; and
- keep the following information confidential, as per the request of the authors: names and identifying information in submission nos 52, 84, 109, 313, 338 and 384
- keep the following information confidential, as per the request of the author: identifying and sensitive information in submission 271.

3.4 Confidential submissions

Resolved, on the motion of Mr Pearson: That the committee keep submissions nos 6, 12, 14, 16, 22, 33, 50, 82, 96, 106, 111, 119, 123, 133, 137, 141, 142, 144, 235, 266, 267, 275, 292, 293, 296, 301, 329, 352, 376 and 404 confidential, as per the request of the author.

The Committee noted that at the request of the author, submission no. 270 had been updated and replaced.

4. Inquiry into Protection of the Environment Operations Amendment (Clean Air) Bill 2021

The Chair advised that Ms Boyd would be substituting for Ms Faerhmann, and Mr Martin would be substituting for Mr Franklin for the duration of the inquiry into the Protection of the Environment Operations Amendment (Clean Air) Bill 2021.

The Chair noted that Mr Pearson would take the Chair for the duration of the inquiry into the Protection of the Environment Operations Amendment (Clean Air) Bill 2021.

The committee discussed extending the reporting date to 10 September, noting that this would require a resolution of the House.

The committee noted the proposed dates for a public hearing on 19 July, and report deliberative on 1 September, and that the secretariat would canvass availability on those dates.

5. Adjournment

The committee adjourned at 4.05 pm, until Friday 11 June 2021.

Peta Leemen
Committee Clerk

Minutes no. 53

Friday 11 June 2021

Portfolio Committee No. 7 – Planning and Environment

Macquarie Room and via videoconference, 9.48 am

1. Members presentMs Faehrmann, *Chair*Mr Pearson, *Deputy Chair*

Mr Buttigieg

Ms Cusack (*via video conference from 1.45 pm*)

Mr Franklin

Mr Mallard

Ms Sharpe

2. Previous minutes

Resolved on the motion of Mr Pearson: That draft minutes nos 51 and 52 be confirmed.

3. Correspondence

The committee noted the following items of correspondence:

Received:

- 1 June 2021 – Letter from Mr Ian Overton, Chief Executive Green Industries SA, to Chair, providing information on South Australia's waste management and resource recovery legislation, including single-use plastics ban
- 3 June 2021 – Letter from Ms Alison Playford, Director-General, Transport Canberra and City Services to Chair, providing information on the ACT's plastics reduction legislation
- 4 June 2021 – Email from Mr Justin Bonsey, Southern Sydney Regional Organisation of Councils, to secretariat, offering committee members a briefing on recommended legal and policy reforms to achieve a circular economy and attaching a briefing note subsequently replaced (see correspondence received 8 June 2021 below)
- 6 June 2021 – Email from Mr Geoffrey Rutledge, Deputy Director-General, Environment, Water and Emissions Reduction, ACT Environment, Planning and Sustainable Development Directorate, to secretariat, declining invitation to give evidence to the kangaroo inquiry
- 8 June 2021 – Email from Mr Justin Bonsey, Southern Sydney Regional Organisation of Councils, to the secretariat, attaching a) a confidential briefing note for committee members, and b) a publishable position statement on legal and policy reforms needed to achieve a circular economy, relating to the inquiry into the waste avoidance (plastics reduction) bill.

Resolved, on the motion of Mr Pearson: That the committee:

- authorise publication of the letters from Mr Ian Overton, Chief Executive, Green Industries SA, received 1 June 2021 and Ms Alison Playford, Director-General, Transport Canberra and City Services, received 3 June 2021
- authorise the publication of the position statement from the Southern Sydney Regional Organisation of Councils on legal and policy reforms needed to achieve a circular economy, received 8 June 2021
- keep the briefing note marked 'confidential' from the Southern Sydney Regional Organisation of Councils confidential, as per the request of the author.

4. Inquiry into Waste Avoidance and Resource Recovery Amendment (Plastics Reduction) Bill 2021

The committee noted the offer of a briefing from the Southern Sydney Regional Organisation of Councils on recommended legal and regulatory reforms to achieve a circular economy.

5. Inquiry into the health and wellbeing of kangaroos and other macropods in NSW

5.1 Public submissions

The committee noted that it agreed via email to publish submission no. 311 (previously published as 'partially confidential – name suppressed') with the author's name.

Resolved, on the motion of Mr Buttigieg: That the committee authorise publication of submission no. 404a

5.2 Extension of reporting date

Resolved, on the motion of Mr Buttigieg: That the committee:

- extend the reporting date in the terms of reference to 14 October 2021
- advise the House of this extension to the reporting date.

5.3 ***

5.4 *In camera* hearing

Resolved, on the motion of Mr Franklin: That the committee agree to the request of the author of confidential submission no. 376 (Witness A) that a support person be permitted to attend and observe the *in camera* hearing.

Resolved, on the motion of Mr Franklin: That the committee take evidence *in camera* from Witnesses A and B.

5.5 Public hearing

Witnesses, the public and the media were admitted.

The Chair made an opening statement regarding the broadcasting of proceedings and other matters.

The following witnesses were sworn and examined:

- Mr Ray Mjadwesch, Consulting ecologist
- Mrs Claire Galea, Biostatistician.

Mr Mjadwesch tendered the following document:

- 'Supplementary notes to the inquiry into the health and wellbeing of kangaroos in NSW'.

Mrs Galea tendered the following documents:

- Research article, 'Drones count wildlife more accurately and precisely than humans'
- Research article, 'Continent-wide survey reveals massive decline in African savannah elephants'.

The evidence concluded and the witnesses withdrew.

The following witnesses were sworn and examined:

- Ms Nicole Sutterby, President, Australian Society for Kangaroos (via videoconference).

The evidence concluded and the witnesses withdrew.

The following witnesses were sworn and examined:

- Ms Heather Campbell, Chief Executive Officer, Bush Heritage Australia (*via videoconference*)
- Dr Graeme Finlayson, South Australia Arid Rangelands Ecologist, Bush Heritage Australia (*via videoconference*)
- Professor Michael Letnic, Centre for Ecosystem Science, University of NSW
- Dr Benjamin Allen, Senior Research Fellow (Wildlife Management), University of Southern Queensland.

The evidence concluded and the witnesses withdrew.

The following witnesses were sworn and examined:

- Mr Farnham Seyedi, Volunteer Solicitor, Animal Defenders Office
- Ms Tara Ward, Volunteer Managing Solicitor, Animal Defenders Office
- Mr Mick McIntyre, Director, Kangaroos Alive and Director, Second Nature Films
- Ms Kate Clere, Director, Kangaroos Alive and Director, Second Nature Films

- Ms Louise Boronyak, Scientific Advisor, Kangaroos Alive.

Mr McIntyre tendered the following document:

- DVD, 'Kangaroo: A Love Hate Story'.

The evidence concluded and the witnesses withdrew.

The following witnesses were sworn and examined:

- Ms Annabel Johnson, Head of Policy and Advocacy, NSW Farmers Association
- Ms Bronwyn Petrie, Conservation and Resource Management Committee Chair, NSW Farmers Association (*via videoconference*)
- Mr Lachlan Gall, Councillor and Kangaroo Management Representative, Pastoralists Association of West Darling (*via videoconference*).

The evidence concluded and the witnesses withdrew.

The public and the media withdrew.

5.6 ***

5.7 Public hearing

Witnesses, the public and the media were readmitted.

The following witnesses were sworn and examined:

- Dr Geoffrey Wise, Independent Chair, Kangaroo Management Task Force (*via videoconference*)
- Mr Alexander Russell, Natural Resource Management Representative, Kangaroo Management Taskforce (*via videoconference*)
- Mr Leon Zanker, Western Landcare Representative, Kangaroo Management Taskforce (*via videoconference*).

The evidence concluded and the witnesses withdrew.

The public and the media withdrew.

5.8 *In camera* hearing

The committee proceeded to take *in camera* evidence.

Persons present other than the committee: Merrin Thompson, Peta Leemen, Shu-fang Wei, Angeline Chung, Hansard reporters, support person of Witness A.

The Chair made an opening statement regarding the *in camera* proceedings and other matters.

Witness A was sworn and examined.

Witness A tendered the following document:

- Photograph showing location and property boundaries of Witness A's place of residence.

The *in camera* evidence concluded and Witness A and support person withdrew.

Witness B was sworn and examined (*via videoconference*)

The *in camera* evidence concluded and Witness B withdrew.

The *in camera* hearing concluded at 5.16 pm.

5.9 Tended documents

Resolved on the motion of Ms Sharpe: That the committee accept and publish the following documents tendered during the public hearing:

- 'Supplementary notes to the inquiry into the health and wellbeing of kangaroos in NSW', tendered by Mr Mjadwesch
- Research article, 'Drones count wildlife more accurately and precisely than humans', tendered by Mrs Galea

- Research article, 'Continent-wide survey reveals massive decline in African savannah elephants', tendered by Mrs Galea
- DVD, 'Kangaroo: A Love Hate Story', tendered by Mr McIntyre.

Resolved, on the motion of Ms Sharpe: That the committee accept and keep confidential the following document tendered during the *in camera* hearing:

- Photograph showing location and property boundaries of Witness A's place of residence, tendered by Witness A.

6. Adjournment

The committee adjourned at 5.18 pm, until 9am, Tuesday 15 June 2021 (second public hearing).

Peta Leemen

Committee Clerk

Minutes no. 54

Tuesday 15 June 2021

Portfolio Committee No. 7 – Planning and Environment

Macquarie Room and via videoconference, 9.02 am

1. Members present

Ms Faehrmann, *Chair*

Mr Pearson, *Deputy Chair*

Mr Buttigieg

Ms Cusack (*via video conference*)

Mr Franklin

Ms Sharpe

2. Apologies

Mr Mallard

3. Inquiry into the health and wellbeing of kangaroos and other macropods in NSW

3.1 Public hearing

Witnesses, the public and the media were admitted.

The Chair made an opening statement regarding the broadcasting of proceedings and other matters.

The following witnesses were sworn and examined:

- Dr Daniel Ramp, Associate Professor and Research Director, Think Tank for Kangaroos, University of Technology Sydney (THINKK)
- Ms Keely Boom, Research Fellow, THINKK (*by videoconference*)
- Mr David Croft, Representative, THINKK (*by videoconference*)
- Dr Dror Ben-Ami, Co-Founder, THINKK and Research Associate, University of Technology Sydney (*by videoconference*).

The following witness was examined on her former oath:

- Ms Louise Boronyak, Manager, THINKK.

The evidence concluded and the witnesses withdrew.

The following witness was sworn and examined:

- Uncle Max Dulumunmun Harrison, Aboriginal Elder.

The following witness was examined without being sworn:

- Auntie Ro Mudyin Godwin, Aboriginal educator (by teleconference).

The evidence concluded and the witnesses withdrew.

The following witness was sworn and examined:

- Professor David Brooks, Individual, Honorary Associate Professor, University of Sydney.

The evidence concluded and the witness withdrew.

The following witnesses were sworn and examined:

- Dr Di Evans, Senior Scientific Officer, RSPCA Australia (*via videoconference*)
- Ms Rae Harvey, Wild2Free.

Ms Rae tendered the following document:

- Photographs accompanying opening statement.

The evidence concluded and the witnesses withdrew.

The following witnesses were sworn and examined:

- Mr Greg Keightley, Individual
- Ms Dianne Smith, Individual.

Mr Keightley tendered the following document:

- Report published by DPIE, 'NSW Kangaroo Management Program 2020 Quota Report'

The evidence concluded and the witnesses withdrew.

The following witness was sworn and examined:

- Ms Tara Medina, Director, Discovered Wildfoods (by videoconference).

The evidence concluded and the witnesses withdrew.

The following witnesses were sworn and examined:

- Mr Dennis King, Executive Officer, Kangaroo Industry Association Australia (KIAA)
- Mr Douglas Jobson, Chief Executive Officer, Macro Meats Group and KIAA Operations Committee Member, KIAA.

Mr King tendered the following document:

- Brochure, 'Facts about the Australian commercial kangaroo industry'

The evidence concluded and the witnesses withdrew.

The following witnesses were sworn and examined:

- Ms Sharon Molloy, Executive Director, Biodiversity Conservation Division, Environment, Energy and Science Group (EES), NSW Department of Planning, Industry and Environment (DPIE)
- Ms Sonya Errington, Acting Director Environmental Solutions, Environment Protection Authority, DPIE (appearing in substantive capacity as Director, Compliance and Licensing, Biodiversity and Conservation Division, EES, DPIE)
- Mr Terry Brill, Senior Team Leader, Kangaroo Management, EES, DPIE
- Mr Robert Quirk, Executive Director, Park Programs, National Parks and Wildlife Service, EES, DPIE
- Mr Richard Kingswood, Director, Conservation Branch, National Parks and Wildlife Service, EES, DPIE.

The public hearing concluded at 5.01 pm.

The witnesses, media and public withdrew.

4. Inquiry into rationale for, and impacts of, new dams and other water infrastructure in NSW

5. Inquiry into the Waste Avoidance and Resource Recovery (Plastics Reduction) Bill 2021

6. Inquiry into the health and wellbeing of kangaroos and other macropods in NSW

The committee noted that it would consider possible actions regarding matters raised in *in camera* evidence taken on 11 June 2021 at a future meeting, once the transcript for that hearing was available.

Resolved, on the motion of Ms Cusack: That the secretariat summarise concerns raised by stakeholders during the hearings about the methodology used by the NSW Government to estimate kangaroo populations, and draft additional questions for the Department of Planning, Industry and the Environment for the committee to consider via email.

6.1 Tendered documents

Resolved on the motion of Mr Pearson: That the committee accept and publish the following documents tendered during the public hearing:

- Report, 'NSW Kangaroo Management Program 2020 Quota Report' tabled by Mr Keightley
- Brochure, 'Facts about the Australian commercial kangaroo industry' tabled by Mr King
- Photographs accompanying opening statement, provided by Ms Harvey.

7. Adjournment

The committee adjourned at 5.15 pm, until Monday 19 July, public hearing for Clean Air Bill inquiry.

Peta Leemen
Committee Clerk

Minutes no. 56

Wednesday 7 July 2021

Portfolio Committee No. 7 – Planning and Environment

Via videoconference at 11.33 am

1. Members present

Ms Fachrmann, *Chair*
Mr Pearson, *Deputy Chair*
Ms Cusack
Mr Franklin
Ms Jackson
Mr Mallard
Ms Sharpe

2. Apologies

Mr Pearson, *Deputy Chair*
Ms Cusack

3. Inquiry into Budget Estimates 2021-2022 – procedural resolutions

4. Inquiry into the health and wellbeing of kangaroos and other macropods in NSW

4.1 Draft correspondence to Minister Kean

Resolved, on the motion of Ms Sharpe: That:

- the secretariat contact the Department of Planning, Industry and Environment to ascertain any likely impacts, were the new five year NSW kangaroo management plan to be delayed until after the committee reports in October 2021
- the committee consider draft correspondence to Minister Kean, in light of this information, via email.

5. Inquiry into the NSW Biodiversity Conservation Scheme

Resolved, on the motion of Ms Sharpe: That the inquiry title and terms of reference be amended by omitting any reference to 'NSW Biodiversity Conservation Scheme' and inserting instead 'NSW Biodiversity Offsets Scheme'.

6. Adjournment

The committee adjourned at 11.47 am, until Friday 16 July 2021, Macquarie Room, Parliament House, (Environmental Planning Assessment Bill – Hearing).

Emma Rogerson
Committee Clerk

Minutes no. 57

Friday 16 July 2021

Portfolio Committee No. 7 – Planning and Environment
Jubilee Room and via videoconference, 8.46 am

1. Members present

Ms Fachrmann, *Chair*
Mr Pearson, *Deputy Chair (from 9.02 am)*
Ms Cusack (*from 8.48 am*)
Mr Franklin
Ms Jackson
Mr Latham (*participating, from 8.50 am*)
Mr Mallard (*from 8.56 am*)
Mr Searle

2. Provision of documents to participating member

The committee noted the correspondence from Ms Nella Hall, Assistant to Hon Mark Latham MLC, to Chair, advising that Mr Latham will be participating for the duration of the inquiry into the Environmental Planning and Assessment Bill.

Resolved, on the motion of Mr Searle: That Mr Latham, who has advised the committee that he intends to participate for the duration of the inquiry into the Environmental Planning and Assessment Amendment (Infrastructure Contributions) Bill 2021, be provided with copies of inquiry related documents.

3. Draft minutes

Resolved, on the motion of Mr Franklin: That draft minutes nos. 53, 54 and 55 be confirmed.

4. Correspondence

The committee noted the following items of correspondence:

Received:

- 24 June 2021 – Email from Kelda Murray, Distribution Manager, Indieville to the secretariat, requesting footage of the kangaroos hearings on 11 and 15 June 2021

- 2 July 2021 – Email from Ms Sandra Harris, Director Ministerial Services, Office of the Coordinator-General, requesting an extension to providing post hearing responses following the kangaroos hearings to Friday 23 July 2021
- 6 July 2021 – Email from Ms Rachel Walmsley, Head of Policy & Law Reform, Environmental Defenders Office, to secretariat, advising that they currently do not have capacity to engage in the inquiry into the Environmental Planning and Assessment Bill at this time
- 8 July 2021 – Email from Ms Liz Crosby, Executive Assistant to the CEO, Infrastructure NSW, to secretariat, declining the invitation to attend the hearing for the Environmental Planning and Assessment Bill
- 8 July 2021 – Email from Ms Anna Bacik, Director Policy and Research, NSW Council of Social Service, advising that they currently do not have capacity to engage in the inquiry into the Environmental Planning and Assessment Bill at this time
- 9 July 2021 – Email from Hon Mark Buttigieg MLC, Opposition Whip in the Legislative Council, to secretariat, advising that the Hon Adam Searle MLC will substituting for the Hon Penny Sharpe MLC for the duration of the Environmental Planning and Assessment Bill inquiry
- 12 July 2021 – Email from Mr Jarrad Tulloch, Manager, Government Services, Department of Planning, Industry and Environment, advising that the NSW Government will not be providing a submission to the inquiry into the Environmental Planning and Assessment Bill
- 12 July 2021 – Email from Ms Liz Crosby, Executive Assistant to the CEO, Infrastructure NSW, providing the reasons for declining the invitation to appear at the hearing for the inquiry into the Environmental Planning and Assessment Bill
- 12 July 2021 – Email from Ms Nella Hall, Assistant to Hon Mark Latham MLC, to Chair, advising that Mr Latham will be participating for the duration of the inquiry into the Environmental Planning and Assessment Bill
- 13 July 2021 – Email from Mr David Barrow, Sydney Alliance, to secretariat, declining the invitation to attend the hearing for the Environmental Planning and Assessment Bill as Shelter NSW will speak on their behalf
- 13 July 2021 – Email from an individual, to committee, in relation to a case with the Environmental Protection Authority
- 14 July 2021 – Email from Mr Kit Hale, Office Assistant, Urban Development Institute of Australia (NSW), to secretariat, declining the invitation to attend the hearing for the inquiry into the Environmental Planning and Assessment Bill inquiry
- 14 July 2021 – Email from Mr Marc Stears, Professor and Director, Sydney Policy Lab, to secretariat, declining the invitation to attend the hearing for the Environmental Planning and Assessment Bill as Mr Cameron Murray has already been invited and would be the best contributor from the university
- 15 July 2021 – Email from Mr John Brockhoff, National Policy Manager, Planning Institute Australia, to committee, providing two documents their organisation has prepared and released in relation to the development contributions reform process.

Sent:

- 30 June 2021 – Email to Sandra Harris, Director Ministerial Services, Office of the Coordinator-General, Environment, Energy and Science Group, Department of Planning, Industry and Environment, attaching a summary of concerns raised in evidence to the kangaroo inquiry about the department's kangaroo counting methodology and requesting responses to additional questions by Friday 16 July 2021
- 8 July 2021 – Email to Ms Emma Lowder, Developer Contributions Planner, Lake Macquarie City Council, from secretariat, approving the request for an extension to make a submission to the Environmental Planning Bill inquiry.

Resolved, on the motion of Mr Franklin: That the committee keep the correspondence dated 13 July 2021 from an individual, to committee, in relation to a case with the Environmental Protection Authority, confidential, as per the recommendation of the secretariat, as it contains identifying and/or sensitive information.

5. **Inquiry into the Waste Avoidance and Resource Recovery Amendment (Plastics Reduction) Bill 2021**

6. **Inquiry into the Health and wellbeing of kangaroos and other macropods in New South Wales**

6.1 Answers to questions on notice

The committee noted that the following answers to questions on notice and supplementary questions were published by the committee clerk under the authorisation of the resolution appointing the committee:

- Aunty Ro Mudyin Godwin
- Dr Benjamin Allen

6.2 Request for an extension to provide answers to post hearing questions

The committee noted that it agreed via email to the Department of Planning, Industry and Environment's request for an extension for its post hearing responses from 16 July 2021 to 23 July 2021, due to COVID restrictions and limited staff availability.

6.3 Request for hearing footage

The committee noted that it agreed via email to the request from Indievillage that it be provided with all video footage from the 11 and 15 June hearings, for use in a documentary film as a follow up to 'Kangaroo - A love hate story.'

7. **Inquiry into the Environmental Planning and Assessment Amendment (Infrastructure Contributions) Bill 2021**

8. **Adjournment**

The committee adjourned at 5.18 pm, until 9.30 am Wednesday 21 July 2021 (report deliberative for the rationale for, and impacts of, new dams and other water infrastructure in NSW).

Sarah Dunn
Committee Clerk

Minutes no. 60

Monday 9 August 2021

Portfolio Committee No. 7 – Planning and Environment
via video conference, at 10.02 am

1. **Members present**

Ms Faehrmann, *Chair*
Mr Pearson, *Deputy Chair*
Ms Cusack
Mr Franklin
Ms Jackson
Mr Mallard
Ms Sharpe v

2. **Correspondence**

The committee noted the following items of correspondence:

Received:

- 11 July 2021 – Email from Sandra Harris, Director Ministerial Services, Office of the Coordinator-General, Department of Planning, Industry and Environment, providing information about the approval process for the NSW Kangaroo Management Plan 2022-2026
- 16 July 2021 – Email from Laura Timmins, Senior Director, Wildlife Trade Office, Heritage, Reef and Wildlife Trade Division, Australian Department of Agriculture, Water and Environment, to the secretariat, responding to an email from the secretariat dated 14 July 2021, regarding the Department's assessment and approval process for NSW Kangaroo Management Plan 2022 – 2026
- 28 July 2021 – Email from Witness B, an *in-camera* witness of the kangaroo inquiry, agreeing to partial publication of confidential evidence given
- 22 July 2021 – Letter from the Hon Matt Kean, Minister for Energy and the Environment, to the Chair, providing information on the NSW Plastics Action Plan
- 5 August 2021– Email from Witness A, an *in-camera* witness of the kangaroo inquiry, agreeing to partial publication of confidential evidence given

Sent:

- 24 June 2021 – Letter from the Chair to the Hon Matt Kean, Minister for Energy and the Environment, seeking information on the NSW Government's Plastics Plan
- 14 July 2021 – Email from the secretariat to Laura Timmins, Senior Director, Wildlife Trade Office, Heritage, Reef and Wildlife Trade Division, Australian Department of Agriculture, Water and Environment, seeking information regarding the Department's assessment and approval process for NSW Kangaroo Management Plan 2022 – 2026.

Resolved, on the motion of Mr Pearson: That the committee authorise the publication of:

- correspondence from the Hon Matt Kean, Minister for Energy and Environment, regarding the NSW Plastics Action Plan
- correspondence from Ms Sandra Harris, Department of Planning, Industry and Environment, regarding the approval process for the NSW Kangaroo Management Plan 2022-2026
- correspondence from Ms Laura Timmins, Department of Agriculture, Water and Environment, regarding the approval process for the NSW Kangaroo Management Plan 2022-2026.

3. Recording the deliberative meeting

Resolved, on the motion of Mr Pearson: That the meeting be recorded through WebEx for the purposes of the secretariat cross-checking amendments following the meeting only, with the recording deleted after this use.

4. Inquiry into the Waste Recovery and Resource Amendment (Plastics Reduction) Bill 2021

5. Inquiry into the health and wellbeing of kangaroos and other macropods in NSW**5.1 Public submission**

Resolved, on the motion of Mr Pearson: That the committee authorise the publication of supplementary submission no. 270a.

5.2 Partially confidential submissions

Resolved, on the motion of Mr Franklin: That the committee authorise:

- the partial publication of submission no. 376, previously accepted as confidential, with the exception of identifying and/or sensitive information which is to remain confidential, as per the request of the author
- the publication of supplementary submission no. 376a, with the exception of identifying and/or sensitive information which are to remain confidential, as per the request of the author.

5.3 Answers to questions on notice and supplementary questions

The committee noted that the following answers to questions on notice and supplementary questions were published by the committee clerk under the authorisation of the resolution appointing the committee:

- Mrs Claire Galea, received 12 July 2021
- RSPCA, including documents providing additional information, received 13 and 15 July 2021
- Ms Rae Harvey, Wild2Free, received 14 July 2021
- Dr David Brooks, received 14 July 2021
- Bush Heritage Australia, received 14 July 2021
- Professor Mike Letnic, received 15 July 2021
- Australian Society for Kangaroos, received 16 July 2021
- Kangaroo Industry Association Australia (KIAA), received 16 July 2021
- Kangaroos Alive, received 16 July 2021
- NSW Farmers, received 16 July 2021
- Kangaroo Management Task Force (KMT), received 16 July 2021
- The Thank Tank for Kangaroos (THINKK) and Associate Professor Daniel Ramp, received 16 July 2021
- Animal Defenders Office, received 19 July 2021
- Department of Planning, Industry and Environment, received 23 July 2021
- Pastoralists Association of West Darling, received 1 August 2021.

5.4 Answers to questions on notice and supplementary questions received from Mr Ray Mjadwesch

Resolved, on the motion of Mr Pearson: That the committee authorise the publication of answers to questions on notice, received 23 July 2021, from Mr Ray Mjadwesch.

Resolved, on the motion of Mr Franklin: That the committee:

- keep confidential the answers to supplementary questions received from Mr Ray Mjadwesch on 25 July 2021 for the time being
- write to DPIE, with a confidential copy of the answers, seeking a reply to the allegations
- once a reply is received, consider what material will be published
- write to Mr Mjadwesch advising that as the committee has resolved to keep his answers to supplementary questions confidential they should not be distributed until such time as they are made public.

5.5 Partial publication of *in camera* transcripts

Resolved, on the motion of Mr Pearson: That the committee authorise the publication of the *in camera* transcript of:

- Witness A, dated 11 June 2021, with the exception of identifying information, which is to remain confidential, as per the request of the author
- Witness B, dated 11 June 2021, with the exception of identifying information, which is to remain confidential, as per the request of the author.

5.6 Letters to the Minister for Police and Minister for Energy and the Environment

Resolved, on the motion of Mr Pearson: That the committee write to the Minister for Police expressing concern at the evidence received during the inquiry alleging inadequate police responses to complaints regarding the actions of individuals linked to kangaroo shooting and seeking a response.

Resolved, on the motion of Mr Pearson: That the committee write to the Minister for Energy and Environment, seeking information on the kangaroo culling licensing system.

5.7 Consultation draft of the NSW Commercial Kangaroo Harvest Management Plan 2022-2026

Resolved, on the motion of Mr Pearson: That the committee conduct a two hour hearing with Department of Planning, Industry and Environment representatives as part of the kangaroos inquiry, at the earliest opportunity, subject to technological, logistical and COVID restrictions.

6. Adjournment

The committee adjourned at 10.37 am, *sine die*.

Peta Leemen
Committee Clerk

Minutes no. 62

Thursday 19 August 2021
Portfolio Committee No. 7 – Planning and Environment
via videoconference, at 10.49 am

1. Members present

Ms Faehrmann, *Chair*
Mr Pearson, *Deputy Chair*
Ms Cusack
Mr Franklin
Ms Jackson
Mr Mallard
Ms Sharpe

2. Previous minutes

Resolved, on the motion of Mr Pearson: That draft minutes nos 59, 60 and 61 be confirmed.

3. Correspondence

The committee noted the following items of correspondence:

Received:

- 12 August 2021 – Email from Mauricio Tapia, Coordinator Strategic Planning, Canterbury Bankstown Council, outlining the Council's concerns about the proposed Environmental Planning and Assessment (Infrastructure Contributions) Bill 2021.

Sent:

- 16 August 2021 – Letter from Chair to Dr Paul Grimes, Coordinator-General, Environment, Energy & Science, Department of Planning, Industry and Environment, requesting response to serious allegations raised in evidence received by the committee.

4. Inquiry into the health and wellbeing of kangaroos and other macropods in NSW

4.1 Live streaming and recording of hearing

Resolved, on the motion of Ms Cusack: That the hearing be live steamed via the Parliament's YouTube channel and recorded, and that the recordings be made publicly available online.

Ms Jackson joined the meeting at 10.51 am.

4.2 Answers to questions on notice and supplementary questions

Resolved, on the motion of Mr Pearson: That witnesses be requested to return answers to questions on notice and/or supplementary questions from members within 14 days of the date on which questions are forwarded to the witnesses by the committee clerk.

Mr Mallard and Ms Sharpe joined the meeting at 10.52 am.

4.3 Advice for members on adverse mention and confidentiality issues that may arise in the hearing

The secretariat briefed the committee on advice from the Clerk Assistant – Committees regarding the approach to questioning, where questions may relate to material the committee has resolved to keep confidential.

4.4 Fully virtual hearing

The Chair noted some practicalities to ensure the smooth running of the hearing.

4.5 Public hearing

The witnesses were admitted via videolink.

The committee proceeded to take evidence in public.

The Chair made an opening statement regarding the broadcasting of proceedings, virtual hearing etiquette and other matters.

The Chair reminded the following witnesses that they did not need to be sworn, as they had been sworn before the committee at a previous hearing for this inquiry:

- Ms Sharon Molloy, Executive Director, Biodiversity Conservation Division, Environment, Energy and Science Group (EES), NSW Department of Planning, Industry & Environment (DPIE)
- Mr Terry Brill, Senior Team Leader, Kangaroo Management, EES, DPIE.

The following witnesses were sworn:

- Dr Steve McLeod, Senior Research Scientist, Department of Primary Industries
- Dr Stuart Cairns, Consultant.

The witnesses were examined by the committee.

Dr Cairns withdrew at 12.03 pm.

Dr Tony Pople, Senior Principal Scientist and Manager, Invasive Plants and Animals Research, Queensland Department of Agriculture and Fisheries, was admitted and sworn.

The committee continued examining the witnesses.

The evidence concluded and the witnesses withdrew.

The public hearing concluded at 1.01 pm.

5. Adjournment

The committee adjourned at 1.08 pm, *sine die*.

Peta Leemen
Committee Clerk

Draft minutes no. 63

Friday 8 October 2021

Portfolio Committee No. 7 – Planning and Environment

Via videolink, 10.04 am

1. Members present

Ms Faehrmann, *Chair*

Mr Pearson, *Deputy Chair*

Ms Cusack

Mr Franklin

Ms Jackson
Mr Mallard
Ms Sharpe

2. Previous minutes

Resolved, on the motion of Mr Pearson: That draft minutes no. 62 be confirmed.

3. Correspondence

The committee noted the following items of correspondence:

Received

- 26 June 2021 – Email from Ji Montgomery, asking to ban the slaughter of kangaroos
- 24 August 2021 – Email from Mr Andrew Remnant, A/Director Ministerial Services, Office of the Coordinator-General, Energy, Environment and Science, Department of Planning, Industry and Environment, to secretariat, seeking an extension to a response regarding population estimates that underpin the commercial and non-commercial harvesting of kangaroos
- 7 September 2021 – Letter from the Hon David Elliott MP, Minister for Police and Emergency Services, to Chair, responding to the committee's correspondence dated 26 August 2021 concerning the adequacy of police investigation and enforcement in relation to kangaroo culling and associated firearms incidents
- 7 September 2021 – Letter from the Hon Matt Kean MP, Minister for Energy and Environment, to Chair, providing information on the licensing system for non-commercial culling of kangaroos
- 7 September 2021 – Email from Dr Meg Montgomery, Executive Director, Northern Sydney Regional Organisation of Councils, to committee, providing an updated report on the 'Impacts of Local Government Rates and Infrastructure Contributions Reforms' for the inquiry into the Environmental Planning and Assessment (Infrastructure Contributions) Bill 2021
- 10 September 2021 – Letter from Dr Paul Grimes, Co-ordinator General, Energy, Environment and Science, Department of Planning, Industry and Environment, to Chair, responding to the letter dated 16 August 2021 regarding population estimates that underpin the commercial and non-commercial harvesting of kangaroos
- 15 September 2021 – Email from Ji Montgomery providing information on kangaroo slaughter
- 5 October 2021 – Email from Witness A attaching a research article on lead poisoning in bullets.

Sent

- 16 August 2021 – Letter from Chair to Dr Paul Grimes, Co-ordinator General, Energy, Environment and Science, Department of Planning, Industry and Environment, to Chair, seeking a response regarding population estimates that underpin the commercial and non-commercial harvesting of kangaroos
- 26 August 2021 – From the Chair to the Hon David Elliott MP, Minister for Police and Emergency Services, seeking a response to the evidence received by the committee regarding the adequacy of the police investigation and enforcement in relation to kangaroo culling and associated firearms incidents
- 26 August 2021 – From the Chair to the Hon Matt Kean MP, Minister for Energy and Environment, seeking advice on matters concerning the issuing of the kangaroo culling licences
- 31 August 2021 – Email from the secretariat to Ms Sandra Harris, Department of Planning, Industry and Environment, providing additional data related to questions on notice from the kangaroos inquiry hearing on 19 August 2021
- 9 September 2021 – Email from secretariat, to Dr Meg Montgomery, Executive Director, Northern Sydney Regional Organisation of Councils, advising that the inquiry into the Environmental Planning and Assessment (Infrastructure Contributions) Bill 2021 has now finalised and the committee are not able to update their supplementary submission with the updated report on the 'Impacts of Local Government Rates and Infrastructure Contributions Reforms'.

Resolved, on the motion of Ms Sharpe: That the committee authorise the publication of:

- Letter from the Hon David Elliott MP, Minister for Police and Emergency services, regarding adequacy of police investigation and enforcement of firearms incidents related to kangaroo shooting, received 7 September 2021
- Letter from the Hon Matt Kean, Minister for Energy and Environment, regarding the licensing system for non-commercial culling of kangaroos, received 7 September 2021
- Letter from Dr Paul Grimes, Co-ordinator General, Energy, Environment and Science, Department of Planning, Industry and Environment, to Chair, responding to the letter dated 16 August 2021 regarding population estimates that underpin the commercial and non-commercial harvesting of kangaroos, received 10 September 2021.

Resolved, on the motion of Mr Pearson: That the committee authorise the publication of the email from Witness A, received 5 October 2021, and its attachment, with the exception of identifying information which is to remain confidential, as per the recommendation of the secretariat.

4. Inquiry into the integrity of the NSW biodiversity offsets scheme

4.1 Provision of documents to participating member

Resolved, on the motion of Ms Sharpe: That Mr Field, who has advised the committee that he intends to participate for the duration of the inquiry into the integrity of the NSW Biodiversity Offsets Scheme, be provided with copies of all inquiry related documents including meeting papers and unpublished submissions.

4.2 Hearing dates

Resolved, on the motion of Mr Mallard: That the committee hold an additional 1.5 hearing days, with dates to be determined based on member availability.

5. Inquiry into the health and wellbeing of kangaroos and other macropods in New South Wales

5.1 Public submissions

The committee noted that the following supplementary submission was published by the committee clerk under the authorisation of the resolution appointing the committee:

- Supplementary submission 280a, Pastoralists Association of West Darling.

Resolved, on the motion of Mr Pearson: That the committee authorise the publication of submission no. 405.

5.2 Confidential submission

Resolved, on the motion of Ms Sharpe: That submission 405a be kept confidential, unless the author is able to provide a version of the linked video that removes identifying information of third parties.

5.3 Answers to questions on notice and supplementary questions

The committee noted that the following answers to questions on notice and supplementary questions were published by the committee clerk under the authorisation of the resolution appointing the committee:

- Department of Planning, Industry and Environment, answers to questions on notice, received 15 September 2021
- Department of Planning, Industry and Environment, answers to supplementary questions, received 15 September 2021

5.4 Answers to supplementary questions by Mr Ray Mjadwesch

Resolved, on the motion of Mr Pearson: That the committee authorise the publication of answers to supplementary questions provided by Mr Ray Mjadwesch on 23 July 2021, with the exception of potential adverse mention which is to remain confidential, as per the recommendation of the secretariat.

5.5 Extension of reporting date

Resolved, on the motion of Mr Pearson: That:

- the committee extend the reporting date in the terms of reference to 15 October 2021

- the Chair advise the House of this extension.

5.6 Recording the deliberative meeting

Resolved, on the motion of Ms Sharpe: That the meeting be recorded through WebEx for the purposes of the secretariat cross-checking amendments following the meeting only, with the recording deleted after this use.

5.7 Consideration of Chair's draft report

The Chair submitted her draft report entitled *Health and wellbeing of kangaroos and other macropods in New South Wales* which, having been previously circulated, was taken as being read.

Chapter 1

Mr Franklin moved: That paragraph 1.10 be amended by omitting 'issue of significant concern' and inserting instead 'issue of concern'.

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved: That paragraph 1.11 be amended by omitting 'issue of substantial concern' and inserting instead 'issue of concern'.

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved: That paragraph 1.15 be amended by omitting 'a matter of some concern in this inquiry, as' after 'These changes were'.

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Chapter 2

Resolved, on the motion of Mr Franklin: That paragraph 2.42 be amended by omitting: 'However, evidence to this committee suggests, unlike in Queensland, fences are being used in New South Wales to exclude kangaroos from pasture and crops, rather than primarily to protect livestock from predators.'

Mr Pearson moved: That a new recommendation be inserted after paragraph 2.55:

'Recommendation X

That the NSW Government promote data driven and systematic long-term research on transitioning to coexistence farming practices.'

The committee divided.

Ayes: Mr Pearson.

Noes: Ms Cusack, Ms Faehrmann, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Question resolved in the negative.

Resolved, on the motion of Mr Franklin: That paragraph 2.86 be amended by omitting 'the shocking impact' and inserting instead 'the distressing impact.'

Resolved, on the motion of Mr Franklin: That Finding 1 be amended by omitting 'but the Department of Planning, Industry and Environment was unable to demonstrate' and inserting instead 'and the NSW Government should give greater focus to demonstrating'.

Resolved, on the motion of Mr Franklin: That paragraph 2.87 be amended by omitting 'utmost consideration' and inserting instead 'serious consideration'.

Resolved, on the motion of Mr Franklin: That the first dot point of Recommendation 1 be amended by omitting 'utmost consideration' and inserting instead 'serious consideration.'

Resolved, on the motion of Mr Franklin: That the second dot point of Recommendation 1 be amended by omitting 'prioritise the involvement of Aboriginal peoples in the management of kangaroo populations' and inserting instead 'incorporate the genuine involvement of Aboriginal peoples in the management of kangaroo populations.'

Mr Franklin moved: That paragraph 2.88 be amended by omitting 'While this is a commonly-held view, the committee also notes evidence put to it that kangaroo habitat has generally been adversely impacted by agriculture, and that kangaroos' preferred foods are not the same as those preferred by cows and sheep.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Fachrmann, Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved: that paragraph 2.89 and Finding 2 be omitted:

'Overall, the committee is concerned that kangaroo numbers are in serious decline in New South Wales, with mobs becoming marginalised and fragmented across the state's landscape. The committee believes that, notwithstanding the impact of drought on kangaroo populations, land clearing and licensed killing for agricultural interests and the commercial harvesting industry are major factors in this decline.'

Finding 2

That kangaroo numbers are in serious decline in New South Wales, with mobs becoming marginalised and fragmented throughout the landscape. Further, that notwithstanding the impact of drought on kangaroo populations, land clearing and licensed killing for agricultural interests and the commercial harvesting industry are major factors in this decline.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Fachrmann, Mr Pearson.

Question resolved in the affirmative.

Resolved, on the motion of Ms Sharpe: That paragraph 2.90 and Finding 3 be amended by omitting 'significant' before 'disruption to kangaroo migration'.

Mr Franklin moved: That paragraph 2.91 be amended by omitting:

'The committee is seriously concerned at the growing use of exclusion and cluster fencing in New South Wales without adequate understanding of the full range of impacts, both on kangaroos and other wildlife. Research citing benefits of exclusion fencing appears to be mainly from Queensland, where fences are used to exclude predators, whereas the committee has heard evidence that fences are being used differently in New South Wales. In light of concerns about possible negative impacts, documented above, the committee recommends that the NSW Government conduct a review of exclusion and cluster fencing on macropod populations and share the review findings with the public.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Mr Mallard.

Noes: Ms Faehrmann, Ms Jackson, Mr Pearson, Ms Sharpe.

Question resolved in the negative.

Resolved, on the motion of Mr Franklin: That paragraph 2.91 be amended by omitting 'The committee is seriously concerned' and inserting instead 'The committee is concerned'.

Mr Franklin moved: 'That paragraph 2.91 be amended by omitting the final sentence: 'Further, the committee calls for a moratorium on construction of exclusion fences until such time as the review is finalised and recommendations made.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved: 'That Recommendation 2 be omitted: 'That the NSW Government conduct a review of the impact of exclusion fencing on macropod populations, and that the report be publicly released when complete.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Mr Mallard.

Noes: Ms Faehrmann, Ms Jackson, Mr Pearson, Ms Sharpe.

Question resolved in the negative.

Mr Franklin moved: 'That Recommendation 2 be amended by omitting at the end: 'Further, that a moratorium be placed on the construction of exclusion fences until such time as the review is finalised and recommendations made.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved: 'That paragraph 2.92 and Finding 4 be omitted:

'The committee has heard through this inquiry that kangaroos are sensitive, social animals, with unique cultures that are passed down through mobs. The committee accepts the evidence from a number of witnesses about the severe impact that shooting of kangaroos has not just on the welfare of individual animals and their dependent young, but also on the entire mob of kangaroos to which they belong. We are also concerned that behaviour changes can be seen across generations of macropods, and that unique kangaroo cultures that have enabled kangaroos to survive in diverse ecosystems are being lost.

Finding 4

'That the shooting of kangaroos has a profound impact on the emotional, physical, social and cultural lives of individual macropods and entire mobs, with changes in behaviour noted in subsequent generations of macropods.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Resolved, on the motion of Mr Franklin: That paragraph 2.93 be amended by:

- a) omitting 'rather than treating them as a threat to livestock or the environment. The committee would like to see greater attention given to management practices that value kangaroos for more than their meat and hides, or at least don't involve shooting kangaroos.' after 'The committee believes more needs to be done to co-exist with kangaroos in the landscape.'
- b) omitting 'as well as how farming practices could be adapted to exist alongside kangaroos' after 'more consideration to how kangaroos could support an eco-tourism industry.'

Mr Franklin moved: That paragraph 2.93 and Recommendation 3 be amended by omitting 'versus' before 'the economic value of commercial harvesting' and inserting instead 'and'.

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Resolved, on the motion of Mr Franklin: That paragraph 2.94 be amended by omitting 'It seems to the committee that there is insufficient attention paid during the planning process to the impact on kangaroos of new peri-urban developments' and inserting instead 'Attention should be paid during the planning process to the impact on kangaroos of new peri-urban developments.'

Resolved, on the motion of Ms Sharpe: That paragraph 2.94 be amended by omitting 'In addition, planning policies should stipulate that proponents of major projects in peri-urban areas must develop a kangaroo management plan.'

Resolved, on the motion of Mr Franklin: That Recommendation 4 be amended by omitting the second dot point:

- 'stipulate that a kangaroo management plan must be developed by proponents of major projects in peri-urban areas.';

and moving the first dot point into the body of the recommendation.

Resolved, on the motion of Mr Franklin: That paragraph 2.95 be amended by omitting 'to ensure kangaroos survive in viable numbers' after 'As well as ensuring planning policies better provide for kangaroo protection, the committee considers the NSW Government must act to protect kangaroo habitat on the peri-urban fringe.'

Chapter 3

Resolved, on the motion of Mr Franklin: That the introductory paragraph in chapter 3 be amended by omitting:

'During this inquiry, opponents of the industry were unanimous in their critique of the government's oversight of the industry, in particular its role in generating estimates of kangaroo populations in New South Wales and determining quotas on how many kangaroos may be killed by commercial harvesters.'

Mr Franklin moved: That paragraph 3.10 be amended by omitting:

'Some went so far as to allege that population numbers have been deliberately overestimated by the department, in order to mask a real decline in numbers and justify inflated harvest quotas for the commercial industry or to appease landholders who wish to eradicate kangaroos.'

Ayes: Ms Cusack, Mr Franklin, Mr Mallard.

Noes: Ms Faehrmann, Ms Jackson, Mr Pearson, Ms Sharpe.

Question resolved in the negative.

Resolved, on the motion of Mr Franklin: That paragraph 3.16 be amended by omitting:

'He suggested that changing the survey methodology is 'not what you're supposed to do in science', and is akin to 'shifting the goal posts', whereas 'good science relies on repeated and replicated methodologies.'

Resolved, on the motion of Mr Franklin: That paragraph 3.24 be amended by omitting 'implied that there has been deliberate manipulation of which areas are surveyed in order to exclude areas where kangaroos are at very low density or have become absent. Mr Mjadwesch' after 'As noted, concerns about the selection of transects surveyed were raised by Mr Mjadwesch, who'.

Resolved, on the motion of Mr Pearson: That paragraph 3.25 be amended by inserting:

[FOOTNOTE: In answers to supplementary questions, Mrs Galea noted DPIE's evidence to the inquiry that less than 1 per cent of the Western Zone is surveyed. Answers to supplementary questions, Mrs Galea, 12 July 2021, p 8]

Resolved, on the motion of Mr Franklin: That paragraph 3.28 be amended by omitting 'suspicion' before 'about use of correction factors' and inserting instead 'serious concern'.

Resolved, on the motion of Mr Franklin: That paragraph 3.65 be omitted:

'Many of the methodological points canvassed above come from stakeholders who are concerned there may be a conflict of interest affecting the department's approach to estimating kangaroo populations. This led to calls for greater transparency and independent peer review of the science.'

Resolved, on the motion of Mr Franklin: That paragraph 3.91 be amended by omitting 'In the face of questioning' before 'about the department's monitoring of animal welfare outcomes' and inserting instead 'In addressing questions'.

Resolved, on the motion of Mr Franklin: That paragraph 3.100 be amended by omitting 'but notes with concern' before 'that managing a commercial killing operation' and inserting instead 'and notes'.

Mr Franklin moved: That paragraph 3.101 be omitted:

'It is unarguable that kangaroo numbers in New South Wales have been severely impacted by the 2017-2019 drought. What concerns this committee is that, even as the drought was killing kangaroos in large numbers, the government continued issuing harvest quotas based on the previous year's population estimates. The committee is alarmed by evidence from many witnesses who, based on the department's own quota reports, point to areas where kangaroo population densities have fallen so low they may be at risk of localised extinction. The committee finds that the commercial harvesting industry has exacerbated the decline in macropod numbers in New South Wales.'

Ayes: Ms Cusack, Mr Franklin, Mr Mallard.

Noes: Ms Faehrmann, Ms Jackson, Mr Pearson, Ms Sharpe.

Question resolved in the negative.

Ms Sharpe moved: That paragraph 3.101 be amended by:

- a) omitting 'What concerns this committee is that, even as the drought was killing kangaroos in large numbers, the government continued issuing harvest quotas based on the previous year's population estimates. The committee is alarmed by evidence from many witnesses who, based on the department's own quota reports, point to areas where kangaroo population densities have fallen so low they may be at risk of localised extinction. The committee finds that the commercial harvesting industry has exacerbated the decline in macropod numbers in New South Wales.'
- b) inserting instead 'The committee is concerned that during the last drought the government continued issuing harvest quotas based on the previous year's population estimates and this may have been inaccurate given declining numbers'.

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved: That Finding 5 be omitted:

'That the commercial harvesting industry has exacerbated the decline in macropod numbers in New South Wales.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved: That paragraph 3.102 and Finding 6 be omitted:

'The committee recognises the inherent tension in the commercial harvesting of kangaroos: as a native species, they are classed as protected under the *Biodiversity Conservation Act 2016*, and it is an offence under that Act to harm a kangaroo or trade in its parts; yet the NSW Government manages a program that enables their commercial exploitation. The committee shares stakeholder concerns that being simultaneously responsible for protection of native wildlife, including kangaroos, while overseeing a commercial kangaroo harvest presents a real conflict of interest for the Department of Planning, Industry and Environment. In the view of the committee, facilitating the commercial exploitation of wildlife is not compatible with the aims and objectives of the *Biodiversity Conservation Act 2016*.

Finding 6

'That facilitating the commercial exploitation of kangaroos creates a conflict of interest for the Department of Planning, Industry and Environment, which is not compatible with the aims and objectives of the *Biodiversity Conservation Act 2016*.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved:

a) That paragraph 3.104 be amended by omitting 'The committee considers that the current methodology used by DPIE to produce estimates of New South Wales' macropod populations lacks transparency and rigour, and suffers from poor levels of precision.'

b) That Finding 7 be omitted:

'That the current methodology used by the Department of Planning, Industry and Environment to produce estimates of New South Wales' macropod populations lacks transparency and rigour, and suffers from poor levels of precision.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Mr Mallard.

Noes: Ms Faehrmann, Ms Jackson, Mr Pearson, Ms Sharpe.

Question resolved in the negative.

Mr Franklin moved:

a) That paragraph 3.104 be amended by omitting 'and rigour, and suffers from poor levels of precision' after 'lacks transparency'.

b) That Finding 7 be amended by omitting 'and rigour, and suffers from poor levels of precision' after 'lacks transparency'.

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Resolved, on the motion of Mr Franklin:

a) That paragraph 3.105 be amended by:

- omitting at the end 'The committee considers that the current methodology used by DPIE for establishing New South Wales' macropod populations does not meet international best practice standards such as the use of infra-red drone technology to conduct counts.'
- inserting 'and other camera' before 'drone technology'.

b) That Finding 8 be omitted:

'That the current methodology used by the Department of Planning, Industry and Environment for establishing New South Wales' macropod populations does not meet international best practice standards such as the use of infra-red drone technology to conduct counts.' and the following new recommendation be inserted instead:

Recommendation X

'That the Department of Planning, Industry and Environment investigate new technologies for counting kangaroo populations such as the use of infra-red and other camera drone technology.'

Mr Franklin moved:

a) That paragraph 3.109 be amended by:

- being moved to immediately before 3.108
- omitting 'to have its own concern that the data is not adequate to provide a long term indicator of population. The committee considers that the changing methodology used over the last twenty years of Kangaroo Management Plans makes it impossible to have confidence in the long-term trend data on kangaroo populations' after 'the committee has heard enough doubts raised about the accuracy of various aspects of the methods' and inserting instead 'to support an independent review of the long term trend data of kangaroo populations.'

b) That Finding 9 be omitted:

'That the changing methodology used over the course of the last twenty years of Kangaroo Management Plans makes it impossible to have confidence in the long-term trend data on kangaroo populations.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved: That paragraph 3.110 be amended by omitting 'the committee does not have confidence' and inserting instead 'the committee has concerns'.

The committee divided.

Ayes: Ms Cusack, Ms Faehrmann, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved: That paragraph 3.110 be amended by omitting 'Although the department provided material to justify its numbers, for the committee, sufficient doubt remains' at the end.

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Resolved, on the motion of Ms Sharpe: That paragraph 3.111 be amended by omitting 'as a baseline for setting sustainable quotas' and inserting instead 'to better inform setting sustainable quotas'.

Resolved, on the motion of Ms Sharpe: That Recommendation 11 be amended by omitting 'as a baseline for setting sustainable quotas' and inserting instead 'to better inform setting sustainable quotas'.

Mr Pearson moved: That the following new finding be inserted before Recommendation 11:

'Finding X

That DPIE has failed to consider the limitations on the biological growth rates of macropods when setting quotas for harvesting. In particular, its estimates of future kangaroo numbers fail to take account of the reproductive limits of kangaroos and thus produce population estimates that are biologically impossible, leading to harvesting quota decisions based on overestimates of the kangaroo population.'

The committee divided.

Ayes: Ms Faehrmann, Mr Pearson.

Noes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Question resolved in the negative.

Resolved, on the motion of Ms Sharpe: That paragraph 3.113 be amended by:

- a) omitting 'It notes explanations provided by the department for implausible-looking rates of year-on-year population growth. However, it remains concerned that the precision of the estimates is insufficient to be relied on as a basis for setting harvest quotas.'
- b) inserting instead 'It notes with concern explanations provided by the department for rates of year-on-year population growth. However, it remains concerned that these estimates are relied upon on as a basis for setting harvest quotas.'

Mr Franklin moved: That Finding 10 be omitted:

'That the current methods used by the Department of Planning, Industry and Environment to estimate the wallaroo population lack sufficient precision to be relied on as a basis for setting harvest quotas.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved: That paragraph 3.114 and recommendation 13 be omitted:

'As well as concerns about the count of wallaroos in the Northern Tablelands, the committee heard enough evidence of anomalies in population estimates for red kangaroos in the Western Plains to doubt whether these figures should be relied on to set harvest quotas. We recommend that, as a matter of urgency, DPIE introduce a moratorium on harvesting wallaroos in the Northern Tablelands and red kangaroos in the Western Plains until new population surveys are conducted. The survey methodology must be independently peer reviewed, and primary data (including photographic evidence) must be made available for public, independent scrutiny.'

Recommendation 13

That, as a matter of urgency, the Department of Planning, Industry and Environment introduce a moratorium on harvesting wallaroos in the Northern Tablelands and red kangaroos in the Western Plains, until new population surveys are conducted. The survey methodology must be independently peer reviewed, and primary data (including photographic evidence) must be made available for public, independent scrutiny.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved: 'That paragraph 3.117 be amended by omitting 'transparency and' after 'The committee heard significant concerns about lack of'.

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Resolved, on the motion of Ms Sharpe: That Recommendation 14 be omitted: 'That the Minister for Energy and Environment extend the current *Commercial Kangaroo Harvest Management Plan 2016-2021* into 2022, or only authorise the first year of the proposed *Commercial Kangaroo Harvest Management Plan 2023-2026*, to allow time for reviews to be undertaken and reported on in order to develop a revised 2023-2026 plan' and the following new recommendation be inserted instead:

Recommendation X

'That the Minister for Energy and Environment not endorse the new *Commercial Kangaroo Harvest Management Plan* until the recommendations of this inquiry have been considered.'

Mr Franklin moved: That Recommendation 15 be omitted:

'That the Department of Planning, Industry and Environment revise the harvest quota system outlined in the *Commercial Kangaroo Harvest Management Plan 2022-2026* to ensure that:

- quotas are based on recent, accurate population estimates
- threshold setting does not rely on long-term averages that may be inaccurate, and
- there is adequate adjustment in times of adverse environmental conditions, such as drought to account for natural population decline.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Chapter 4

Resolved, on the motion of Mr Franklin: That the introductory paragraph be amended by omitting 'Multiple sources of' before 'evidence that the arrangements for non-commercial culling are more lax than for the commercial harvest'.

Mr Franklin moved: That paragraph 4.39 be amended by omitting the word 'seriously' before 'concerned about the apparent lack of checks'.

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved: That Recommendation 19 be amended by omitting the words 'place an immediate moratorium on the non-commercial culling of kangaroos, and' before 'conduct a full review of the systems for issuing and compliance monitoring of licences to harm kangaroos'.

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved: That paragraph 4.42 and Recommendation 20 be omitted:

'In light of the lack of rigorous oversight and compliance checking of non-commercial culling, it is disturbing that the 2018 changes to the licensing system were designed to make it easier for farmers to get and meet licence conditions for non-commercial culling for 'pest control'. Even more disturbing is that these changes, brought in to help landholders manage during a drought, have continued despite the drought being long declared over. In the committee's view, these changes are not in the interest of effective monitoring and transparency of the non-commercial kangaroo culling licensing system. For these reasons, the committee recommends that the NSW Government reverse the 2018 changes made to licences to harm kangaroos by reintroducing permits and drop tags to enable better monitoring of the numbers of kangaroos killed.

Recommendation 20

That notwithstanding the moratorium and review envisaged in recommendation 19 [above], the NSW Government reverse the 2018 changes made to licences to harm kangaroos by reintroducing permits and drop tags to enable better monitoring of the numbers of kangaroos killed.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Mr Mallard.

Noes: Ms Faehrmann, Ms Jackson, Mr Pearson, Ms Sharpe.

Question resolved in the negative.

Resolved, on the motion of Ms Sharpe: That paragraph 4.42 be amended by omitting the existing paragraph [above] and inserting instead: 'In light of the lack of rigorous oversight and compliance checking of non-commercial culling, it is the committee's view that the 2018 changes to licences to harm kangaroos need to be reviewed as a matter of urgency.'

Resolved, on the motion of Ms Sharpe: That Recommendation 20 be amended by omitting the existing recommendation [above] and inserting instead:

'Recommendation 20

That the NSW Government review the 2018 changes to licences to harm kangaroos as a matter of urgency and provide a report to Parliament within 12 months.'

Chapter 5

Resolved, on the motion of Mr Franklin, that the introductory paragraph be amended by omitting 'Significant numbers of' and inserting instead 'Many' before 'inquiry participants objected to standards of animal welfare'.

Resolved, on the motion of Mr Franklin, that paragraph 5.45 be amended by:

- a) omitting 'volumes of' before 'evidence before this inquiry'

- b) omitting 'large' before 'sections of the community'.

Resolved, on the motion of Mr Franklin, that paragraph 5.46 be amended by:

- a) omitting 'not necessarily' and inserting instead 'sometimes not' before 'achievable in a real world scenario'
- b) omitting 'The committee understands that significant numbers of kangaroos,' before 'even those killed by commercial shooters,' and inserting instead 'The committee notes evidence that some kangaroos,'.

Resolved, on the motion of Mr Franklin, that paragraph 5.47 be amended by omitting 'most' and inserting instead 'many' before 'females shot would have dependent young'.

Mr Franklin moved: That paragraph 5.47 be amended by deleting 'brutal' before 'reality of the kangaroo industry'.

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved: That:

- a) Paragraph 5.47 be amended by omitting 'The committee accepts evidence from animal welfare groups that current practices around killing joeys are not acceptably humane'
- b) The paragraph 5.48 be omitted:
'Given these issues, and as a key finding of this inquiry, the committee does not believe there is a humane method of killing kangaroos and their joeys for commercial or non-commercial purposes.'
- c) Finding 12 be omitted:

Finding 12

That there is currently no humane method of killing macropods and their joeys for either commercial or non-commercial purposes.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved: That paragraph 5.49 and Recommendation 21 be omitted:

'Consistent with this key finding, the committee considers it unacceptable that the NSW Government manages an industry where inhumane treatment of animals is the standard practice. The committee recommends the commercial killing of kangaroos should cease, until such time as the industry is able to devise a humane method for killing in pouch young and locating and killing at-foot joeys, and provide evidence that adult kangaroos are killed humanely.

Recommendation 21

That the Department of Planning, Industry and Environment suspend the commercial harvesting of kangaroos until such time as the industry is able to:

- devise a humane method for killing in pouch young and locating and killing at-foot joeys
- provide evidence that adult kangaroos are killed humanely.'

The committee divided.

Ayes: Ms Cusack, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Ms Faehrmann, Mr Pearson.

Question resolved in the affirmative.

Mr Franklin moved: That paragraph 5.50 be amended by omitting 'Monitoring at point of kill is needed to provide incentive to comply with the animal welfare standards set out in the commercial code' after 'We accept the view put by several witnesses that chiller inspections alone are inadequate for monitoring for possible animal cruelty in the industry'.

The committee divided.

Ayes: Ms Cusack, Ms Faehrmann, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Mr Pearson.

Question resolved in the affirmative.

Resolved, on the motion of Mr Franklin, that paragraph 5.50 be amended by omitting the word 'even' before 'less developed than for the commercial kangaroo program'.

Resolved, on the motion of Mr Franklin, that paragraph 5.51 be amended by omitting the last sentence: 'For this reason, the committee recommends that NPWS employ identified kangaroo compliance officers dedicated to working in the field to proactively monitor and investigate compliance with codes and cruelty allegations for both the commercial and non-commercial industries.'

Resolved, on the motion of Ms Sharpe, that:

- a) a new final sentence to paragraph 5.51 be inserted: 'For this reason, the committee recommends that NPWS employ additional compliance officers to proactively monitor and investigate the non-commercial industry's compliance with the codes of practice as well as specific cruelty allegations.'
- b) Recommendation 22 be amended by:
 - omitting 'identified kangaroo' before 'compliance officers' and inserting instead 'additional'
 - omitting 'dedicated to working in the field' before 'to proactively monitor and investigate', and
 - omitting 'both the commercial and non-commercial industries' and inserting instead 'the non-commercial industry's' before 'compliance with the codes of practice'.

Chapter 6

Resolved, on the motion of Ms Sharpe, that paragraph 6.19 be amended by:

- a) omitting 'seek the consent of, or even' before 'to notify neighbours when applying for a licence to harm kangaroos'
- b) omitting 'require a person applying for a licence to harm kangaroos to produce evidence of support for their application from their adjacent landholders, and' before 'make it mandatory for persons licensed to shoot kangaroos'
- c) inserting ', as far as is reasonably practicable,' before 'before they commence shooting'.

Resolved, on the motion of Ms Sharpe, that Recommendation 24 be amended by

- a) omitting the first dot point 'require the applicant to produce evidence of support for their application from adjacent landholders before issuing a licence to harm kangaroos, and'
- b) inserting ', as far as is reasonably practicable,' before 'before they commence shooting'.

Resolved, on the motion of Mr Franklin, that paragraph 6.20 be amended by omitting 'highly' before 'unsatisfactory'.

Resolved, on the motion of Ms Sharpe, that paragraph 6.22 be amended by

- a) omitting 'many people, including, but not limited to' and inserting instead 'some' before 'Aboriginal peoples, kangaroo carers and rescuers'

- b) omitting ', and landholders living next to a property where kangaroo shooting takes place, and others who have witnessed or been exposed to the killing of kangaroos.' after 'rescuers'.

Resolved, on the motion of Ms Sharpe, that Finding 14 be amended by:

- a) omitting "That the shooting of kangaroos has a profound impact on the emotional lives and mental health of people who witness their deaths and/or subsequent impacts, particularly Aboriginal people, kangaroo carers and rescuers, and landholders in kangaroo shooting zones."
- b) inserting instead "That the shooting of kangaroos has a profound impact on the mental health of some Aboriginal people, kangaroo carers and rescuers."

Mr Franklin moved: That paragraph 6.23 and Recommendation 26 be omitted:

'Last, the committee recognises the futility of rescuing animals, only to have them face danger again, and the distress that this causes to wildlife carers. The committee notes that animal carers from wildlife sanctuaries frequently report that orphaned joeys and injured kangaroos are rescued, raised then released into local bushland, only to be killed by commercial or non-commercial shooters. To address this, we recommend that the government legislate to establish 10 kilometre 'no-shooting' zones around registered wildlife sanctuaries to enable the soft release of kangaroos into local habitat. Aside from protecting the wellbeing of the kangaroos, this will benefit the mental health of those who work to conserve them.

Recommendation 26

'That the NSW Government establish 10 kilometre safe release 'no-shooting' zones around registered wildlife sanctuaries to enable the soft release of kangaroos into local habitat.'

The committee divided.

Ayes: Ms Cusack, Ms Faehrmann, Mr Franklin, Ms Jackson, Mr Mallard, Ms Sharpe.

Noes: Mr Pearson.

Question resolved in the affirmative.

Resolved, on the motion of Ms Sharpe, that:

- a) The draft report as amended be the report of the committee and that the committee present the report to the House;
- b) The transcripts of evidence, submissions, tabled documents, answers to questions on notice and supplementary questions, and correspondence relating to the inquiry be tabled in the House with the report;
- c) Upon tabling, all unpublished attachments to submissions be kept confidential by the committee;
- d) Upon tabling, all unpublished transcripts of evidence, submissions, tabled documents, answers to questions on notice and supplementary questions, and correspondence relating to the inquiry, be published by the committee, except for those documents kept confidential by resolution of the committee;
- e) The committee secretariat correct any typographical, grammatical and formatting errors prior to tabling;
- f) The committee secretariat be authorised to update any committee comments where necessary to reflect changes to recommendations or new recommendations resolved by the committee;
- g) Dissenting statements be provided to the secretariat within 24 hours after receipt of the draft minutes of the meeting;
- h) The secretariat is tabling the report on 15 October 2021;
- i) The Chair to advise the secretariat and members if they intend to hold a press conference, and if so, the date and time.

6. Adjournment

The committee adjourned at 1.42 pm until Friday, 15 October 2021, 9.15 am (*Clean Air Bill inquiry hearing*).

Peta Leemen and Madeleine Dowd
Committee Clerks

Appendix 5 Dissenting statements

Ms Cate Faehrmann MLC, The Greens

While this inquiry did serve to expose some of the serious issues around the commercial and non-commercial killing of kangaroos, particularly with regards to animal welfare and the modelling used to determine kangaroo quotas, it is disappointing that a number of stronger recommendations and findings were not supported.

Whilst I support the report in its entirety, including the recommendations and findings contained herein, I wish to provide some of the committee comment, recommendations and findings from the Chair's draft report which were not supported by Government and Opposition members and unfortunately therefore did not make the final report.

I was convinced by the evidence presented by stakeholders that the kangaroo industry is unnecessary, unsustainable and cruel and I did not find the evidence provided by the NSW Government in response to these assertions convincing.

Kangaroos in Serious Decline

The chair's draft report contained the following draft committee comment:

Overall, the committee is concerned that kangaroo numbers are in serious decline in New South Wales, with mobs becoming marginalised and fragmented across the state's landscape. The committee believes that, notwithstanding the impact of drought on kangaroo populations, land clearing and licensed killing for agricultural interests and the commercial harvesting industry are major factors in this decline.

And Finding:

That kangaroo numbers are in serious decline in New South Wales, with mobs becoming marginalised and fragmented throughout the landscape. Further, that notwithstanding the impact of drought on kangaroo populations, land clearing and licensed killing for agricultural interests and the commercial harvesting industry are major factors in this decline.

These were omitted.

Exclusion Fencing

I was convinced by the evidence received by the committee that exclusion fencing is impacting kangaroo mobs and individuals and warranted calls for a moratorium until a review has been undertaken. Unfortunately this recommendation was not supported.

Exclusion fencing is a growing threat to kangaroos and other wildlife, with thousands of kilometres of 6 metre high mesh fencing blocking the movement of, and killing, kangaroos. With more and more fencing being erected by big agribusiness in western parts of the state, the Government cannot continue to ignore the obvious threats that this fencing poses to all wildlife.

Impact on kangaroo mobs

This paragraph in the Chair's draft report was removed:

The committee has heard through this inquiry that kangaroos are sensitive, social animals, with unique cultures that are passed down through mobs. The committee accepts the evidence from a number of witnesses about the severe impact that shooting of kangaroos has not just on the welfare of individual animals and their dependent young, but also on the entire mob of kangaroos to which they belong. We are also concerned that behaviour changes can be seen across generations of macropods, and that unique kangaroo cultures that have enabled kangaroos to survive in diverse ecosystems are being lost.

As was this finding:

That the shooting of kangaroos has a profound impact on the emotional, physical, social and cultural lives of individual macropods and entire mobs, with changes in behaviour noted in subsequent generations of macropods.

I fail to see how shooting kangaroos does not have a profound impact on these animals, though if this is acknowledged as a finding it makes it harder to justify the entire industry so little wonder it was omitted from the final report.

Impact of the Commercial Harvesting Industry

I firmly believe that the evidence received from multiple stakeholders was overwhelming that 'the commercial harvesting industry has exacerbated the decline in macropod numbers in New South Wales'. It is disheartening therefore that this was not supported as a finding.

Wallaroo population

Despite a number of attempts to get answers to the impossible increase in macropod population numbers that harvest quotas were based upon, particularly for wallaroos in the Northern Tablelands.

As well as concerns about the count of wallaroos in the Northern Tablelands, the committee heard enough evidence of anomalies in population estimates for red kangaroos in the Western Plains to doubt whether these figures should be relied on to set harvest quotas.

The following recommendation was also in the draft Chair's report but was removed by a majority vote of committee members:

That, as a matter of urgency, the Department of Planning, Industry and Environment introduce a moratorium on harvesting wallaroos in the Northern Tablelands and red kangaroos in the Western Plains, until new population surveys are conducted. The survey methodology must be independently peer reviewed, and primary data (including photographic evidence) must be made available for public, independent scrutiny.'

Moratorium on non-commercial culling kangaroos

While the recommendation to ‘review the 2018 changes to licences to harm kangaroos as a matter of urgency and provide a report to Parliament within 12 months’, is very welcome, it is disappointing that the call for an immediate moratorium on the non-commercial killing of kangaroos while this review was undertaken was rejected by opposition and government members.

Killing of Joeys

Evidence received by the committee about the shocking and brutal reality that the commercial and non-commercial killing of kangaroos requires joey kangaroos to also be killed by those who shoot them was extremely distressing. The draft report contained the following comments and finding which were removed by the government with the support of the opposition:

The committee accepts evidence from animal welfare groups that current practices around killing joeys are not acceptably humane.

Finding

That there is currently no humane method of killing macropods and their joeys for either commercial or non-commercial purposes.

I wish to thank the many passionate individuals and organisations who continue to raise awareness about the plight of the kangaroo and contributed to this inquiry.

The Hon Mark Pearson MLC, Animal Justice Party

There are significant omissions in the findings and recommendations of the report such that they have the effect of downplaying the apprehension expressed about the health and wellbeing of macropods as detailed in so many of the written submissions and in the oral evidence given before the inquiry. In particular, there were strong concerns raised about the commitment of the Department of Planning Industry and Environment to prioritise the management of kangaroos in a way that ensured not only their individual welfare but also the sustainability of populations throughout New South Wales.

Observations of the reduction in kangaroo numbers was a common theme in many submissions and in particular Mr Ray Mjadwesch and Humane Society International noted the serious population decline in New South Wales, with mobs becoming marginalised and fragmented throughout the landscape. Land clearing and licensed killing for agricultural interests and the commercial harvesting industry were identified as major factors in this decline. The Humane Society noted that the commercial industry is risking the very survival of kangaroo populations with DPIE breaching the imperative to maintain 'ecologically viable' populations.⁴⁷³

The facilitation of the commercial exploitation of kangaroos creates a conflict of interest for DPIE, which is required to ensure all of its programs are compatible with the aims and objectives of the *Biodiversity Conservation Act 2016*. Kangaroos are a native species and are classed as protected under the *Biodiversity Conservation Act 2016*. It is an offence under that Act to harm a kangaroo or trade in their parts; yet the NSW Government manages a program that enables commercial exploitation by hunting and killing them, including females with pouch joeys.

A number of stakeholders gave evidence that the NSW Government, with its conflict of interest, is producing inflated population estimates to justify and service a commercial exploitative industry in breach of its responsibilities under environmental protection legislation.⁴⁷⁴ Several stakeholders raised the spectre of localised extinction of commercially harvested kangaroos in some areas, due to inflated population estimates leading to over-harvesting, effectively wiping out kangaroo populations in some zones.⁴⁷⁵ Evidence from many witnesses who, based on the department's own quota reports, point to areas where kangaroo population densities have fallen so low they may be at risk of localised extinction.

The current methodology used by DPIE to produce estimates of New South Wales' macropod populations lacks not merely transparency but also rigour, and suffers from poor levels of precision.⁴⁷⁶ Professor David Brooks stated that government estimations of NSW kangaroo populations are 'inherently and systematically inflated' and need to be 'meticulously and independently interrogated' to investigate whether the real population is lower and more fragile than official estimates suggest.⁴⁷⁷

⁴⁷³ Submission 270, Mr Ray Mjadwesch, p 13. Submission 299, Humane Society, pp 3-8.

⁴⁷⁴ Submission 270, Mr Ray Mjadwesch, p 13.

⁴⁷⁵ Submission 299, Humane Society International, pp 3-8.

⁴⁷⁶ For example, evidence, Mrs Galea, 11 June 2021, p 10; See also Submission 273, Prof David Brooks, p 23.

⁴⁷⁷ Submission 273, Prof David Brooks, p 23.

Biostatistician Mrs Galea highlighted that the quota reports are not peer reviewed, and proposed that the statistical methods used should be 'urgently investigated' to 'ensure survival of the species'.⁴⁷⁸ Dr Ramp from THINKK said his organisation had 'been dismayed at the unwillingness of those responsible for the population surveys and the setting of quotas to take independent advice'.⁴⁷⁹

The current methodology used by DPIE for establishing New South Wales' macropod populations does not meet international best practice standards. There are more effective methods for surveying wildlife, such as use of infra-red drone technology and photograph imaging, which should be investigated.

The changing methodology used over the last twenty years of Kangaroo Management Plans makes it impossible to have confidence in the long-term trend data on kangaroo populations. There were strong concerns among inquiry participants that changing survey methods over time renders estimates of kangaroo populations incomparable.

The current methods used by DPIE to estimate the Northern Tablelands wallaroo population lack sufficient precision to be relied on as a basis for setting harvest quotas. Anomalies in population estimates for Western Plains red kangaroos also raised concerns about whether these figures should be relied on to set harvest quotas. DPIE must introduce a moratorium on killing Northern Tablelands wallaroos and Western Plains red kangaroos until new population surveys are conducted.

The shooting of kangaroos has a profound impact on the emotional, physical, social and cultural lives of individual macropods and entire mobs, with changes in behaviour noted in subsequent generations of macropods. According to Professor Brooks, kangaroos suffer complex grief, and the impact of the killing on the physical and emotional health of animals is profound.⁴⁸⁰ Professor Brooks noted that shooters tend to shoot the larger, alpha males first, which over time has an impact on the genetic health of the mob.⁴⁸¹

Loss of alpha males also has consequences for other macropods' behaviour, leading to greater stress and violence within the mob.⁴⁸² The psychological health of kangaroo populations is suffering, and, with older kangaroos being killed, the quantum of life experience is reduced and mob culture suffers accordingly.⁴⁸³

Finally, there is no way of knowing whether kangaroos have been killed instantaneously by a direct shot to the brain given that there are no field inspections by compliance officers. Further, there is currently no humane method of killing orphaned joeys, including those abandoned to die of exposure and predation.

There must be a moratorium on the killing of kangaroos, including the implementation of the new Kangaroo Management Plan until such time as the recommendations of this report are able to be assessed and implemented by the government.

⁴⁷⁸ For example, evidence, Mrs Galea, 11 June 2021, and answers to supplementary questions, Mrs Galea, 12 July 2021, p 8.

⁴⁷⁹ Answers to supplementary questions, Dr Daniel Ramp, THINKK 16 July 2021, p7.

⁴⁸⁰ Submission 273, Professor David Brooks, p 10.

⁴⁸¹ Submission 273, Professor David Brooks, p 9.

⁴⁸² Submission 273, Professor David Brooks, p 9.

⁴⁸³ Submission 273, Professor David Brooks, pp 9-10.

