RSPCA Victoria

Inquiry into wildlife roadstrike in Victoria

RSPCA Victoria submission

About RSPCA Victoria

RSPCA Victoria is a non-government, community-based charity that works to prevent cruelty to animals by actively promoting their care and protection. Since its establishment in 1871, and as member of RSPCA Australia (the federation of eight state and territory organisations in Australia), the RSPCA has collectively become Australia's leading animal welfare charity.

Across the state, RSPCA Victoria's community services include work undertaken by our Inspectorate, Animal Care Centres, Clinics and Education teams. RSPCA Victoria operates Animal Care Centres across Victoria, providing refuge, care and new homes where possible to more than 8,600 animals every year. Our team of Inspectors works to protect animals from cruelty, receiving more than 9,900 complaints every year, prosecuting offenders and rescuing animals from dangerous situations. Our Education team contributes to prevention strategies by influencing over 7,200 young people each year about the value and importance of animals in our lives. Our Community Outreach team assists 2,164 pets each year by improving access to veterinary services.

RSPCA Victoria works to educate the community regarding animal welfare and works with government and industry to ensure the standard of animal welfare and care continues to improve.

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Executive Summary

Wildlife roadstrike is a serious problem that causes significant adverse animal welfare impacts, conservation concerns and human safety risks. There is an urgent need for effective solutions and investment to ameliorate this issue, however, there is unlikely to be a singular solution to this complex problem. Mitigation strategies must consider site- and species-specific factors to be effective, and a combination of strategies may be required to achieve reductions in roadstrike incidents. Emerging technologies show significant promise but must be scientifically and robustly evaluated in the Australian context before being implemented at scale. Traditional infrastructure such as fencing and crossing structures are effective, but costly and impractical for the majority of Victoria's roads, and may not have the desired outcome if they are not implemented correctly (e.g., fencing that is too short to cover the entire high-risk area), or are implemented based on historical data that is no longer accurate given roadstrike hotspots and influencing factors for wildlife collisions can be dynamic.

In summary, RSPCA Victoria urges the Victorian Government to:

- Release the Independent Panel's report into the review of the *Wildlife Act 1975* and the Government's response to this with a view to strengthening protections for our native wildlife
- Table the Animal Care and Protection Bill in Parliament in order to safeguard the welfare of all animals in the state
- Provide funding for the wildlife care and response sector, including veterinary services, to ensure responses to wildlife roadstrike are timely and meet expected standards of care
- Ensure a clear pathway for reporting and responding to roadstrike incidents to improve animal welfare outcomes
- Prioritise the avoidance and minimisation of impact on wild animals during planning stages for development projects
- Establish a cross-sectorial reference group that will guide the research and implementation of mitigation strategies, increase collaboration across states, and develop additional tools such as a centralised database and reporting application
- Invest in infrastructure (fencing, over- and under-passes) and research into emerging technologies to mitigate roadstrike incidents with appropriate consideration for site- and species-specific factors, acknowledging that multiple tools are likely required to adequately reduce incidents

RSPCA Victoria believes wildlife across our state deserves strong protection and action to address human-driven causes of adverse welfare outcomes, with solutions to wildlife roadstrike urgently required.

RSPCA Victoria recommendations

RSPCA Victoria has the following recommendations:

Improving legislation

1. Amend the *Road Safety Act 1986* to ensure people are required to render assistance to injured wildlife
2. Release the Independent Panel's report into the review of the *Wildlife Act 1975* and the government's response to this
3. Table the Animal Care and Protection Bill in Parliament and develop regulations under the new Act that promote best practice wildlife care and rehabilitation

Coordinating and funding the response to roadstrike

4. Coordinate standardised training and implementation of wildlife care and treatment across the volunteer and veterinary sectors, including adequate access to tools and training in humane euthanasia for Victoria Police
5. Fund the response to wildlife-vehicular collisions including rescue, treatment and rehabilitation efforts
6. Ensure there is a responsible agent for the humane euthanasia of non-native species involved in wildlife-vehicular collisions
7. Fully centralise response, triage and dispatch technology and infrastructure to ensure a single point for the reporting and recording of wildlife-vehicular collisions by members of the public

Mitigation strategies

8. Invest in infrastructure (fencing, over- and under-passes) and research into emerging technologies to mitigate roadstrike incidents with appropriate consideration for site- and species-specific factors, acknowledging that multiple tools are likely required to adequately reduce incidents
9. Establish a cross-sectorial reference group to build on the work already being undertaken across the nation, and to bring together experts to guide the research and implementation of strategies
10. Implement enhanced, dynamic signage and targeted messaging at identified hotspots during high-risk periods, paired with driver education
11. Include the risk of WVCs in speed safety zoning decisions, and, where appropriate, utilise traffic calming and dynamic reduced speed limits in identified hotspots
12. Implement a statewide education and awareness campaign to improve diver behaviour and awareness of high-risk periods and mitigation strategies being employed, e.g., dynamic signage

Addressing the impact of development

13. Release the government's response to the Inquiry into ecosystem decline in Victoria
14. Prioritise the avoidance and minimisation of impacts from development projects on wild animals, regardless of conservation status, over mitigation
15. Review current fauna-sensitive road design guidelines and investigate mechanisms to enhance the utilisation of these principles in planning at a local and landscape-level
16. Review the Living with Wildlife Action Plan and include actions on avoiding or mitigating wildlife-vehicular collisions

Centralised reporting

17. Develop a centralised reporting database to monitor wildlife roadstrike incidents and mitigation infrastructure and tools

Habitat protection and restoration

18. Protect and restore biodiverse habitat and support indigenous faunal communities across terrestrial ecosystems in the state

Introduction

RSPCA Victoria welcomes the opportunity to provide comments and contribute to the Economy and Infrastructure Committee's Inquiry into wildlife roadstrike in Victoria. Wildlife roadstrike is a serious problem that causes significant adverse animal welfare impacts, can contribute to the decline of vulnerable species, and is a serious risk to human safety. Incidents of wildlife roadstrike are increasing every year, [1] involving an estimated 4 million marsupials and 6 million birds across Australia,[2] and are causing an increasing number of injuries to people in Victoria.[3] Effective solutions to this complex problem are urgently required.

Image: deceased koala on the roadside after being hit by a car, western Victoria, May 2025

Colliding with a vehicle can cause an animal to experience significant fear, pain and distress, and in the majority of cases, death. For those animals who do not die immediately, they may suffer a painful and protracted period during which they may slowly succumb to their injuries, starve, or be predated on. Even those animals who are rescued and brought into care following a collision with a vehicle still have a poor prognosis of surviving and being returned to the wild,[4] and will experience

[1] Wildlife Victoria, 2024. Wildlife Road Toll Reduction Toolkit. Wildlife Victoria: Victoria.

[2] WSP, 2024. Using technology to reduce wildlife vehicle collisions: literature review and directions paper. New South Wales: Transport for New South Wales.

[3] Victoria Police Traffic Incident System (TIS) data as provided to RSPCA Victoria

[4] Kwok ABC, Haering R, Travers SK, Stathis P. 2021. Trends in wildlife rehabilitation rescues and animal fate across a six-year period in New South Wales, Australia. *PLoS ONE*. 16(9): e0257209. https://doi.org/10.1371/journal.pone.0257209

additional stress from transport and handling.[5] Finally, female marsupials may have pouch young or young-at-foot dependents who may also be injured during a collision, starve to death over days, be predated on, or collide with a vehicle themselves. Other animals may also leave young behind and unable to fend for themselves, for example, echidna puggles (babies) left in a den may starve to death if their mother is hit and killed by a car.

Importantly, the animal welfare consequences of being hit by a car are ubiquitous across all species groups; however, it is typically those species that are the most visible or cause the most risk to human safety that drive mitigation efforts and rescues (e.g., macropods such as kangaroos and wallabies), or those with threatened conservation status. Birds, reptiles and amphibians may be less likely to be noticed when hit, noticed on the side of the road if injured or dead, and may be scavenged more quickly by other wild animals, resulting in underreporting on the impact for smaller and more cryptic species. Furthermore, invasive species, such as deer or foxes, can also be hit by cars and suffer poor welfare.

In addition to the animal welfare concerns, wildlife-vehicular collisions (WVCs) can have conservation consequences. For example, it is estimated that over an average summer, more than 40,000 frogs are killed along a 4km span of road in New South Wales that crosses known frog habitat, with two threatened frog species accounting for 60% of those killed.[6] Roads themselves, irrespective of roadstrike incidents, cause fragmentation of habitat and create barriers to wildlife movement and gene flow.[7] The development of peri-urban and rural areas and the parallel fragmentation and loss of suitable habitat and essential resources for wild animals further exacerbates the negative impacts of roads and cars on wildlife.

WVCs also pose significant risk to human health and safety, and responding to incidents of roadstrike places a substantial emotional and financial burden on wildlife rescuers and carers, the majority of which are volunteers.[8] There are welfare consequences to not being able to respond to incidents of roadstrike in a timely manner, and a lack of standardised training or readily available professional expertise can compound poor welfare outcomes for animals involved in these incidents. There are also costs involved to veterinarians, wildlife rescue organisations such as Wildlife Victoria, members of the public, insurers, local council, and government departments such as police, who may be involved with cases of wildlife roadstrike, exemplifying the far-reaching and multi-sectorial consequences and costs that wildlife roadstrike can have.

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[5] Schlagloth R, Santamaria F, Harte M, Keatley MR, Geddes C, Kerlin DH. 2024. Landscape Homogeneity May Drive the Distribution of Koala Vehicle Collisions on a Major Highway in the Clarke-Connors Range in Central Queensland, Australia. *Animals (Basel).* 14(19):2902. doi: 10.3390/ani14192902

[6] Goldingay R, Taylor B. 2006. How many frogs are killed on a road in North-east New South Wales? *Australian Zoologist*. 33 (3): 332–336. https://doi.org/10.7882/AZ.2006.006

[7] Goldingay R, Taylor B. 2009. Roads and wildlife: impacts, mitigation and implications for wildlife management in Australia. *Wildlife Research.* 37(4) 320-331. https://doi.org/10.1071/WR09171

[8] Englefield B, Candy S, Starling M, McGreevy P. 2019. The Demography and Practice of Australians Caring for Native Wildlife and the Psychological, Physical and Financial Effects of Rescue, Rehabilitation and Release of Wildlife on the Welfare of Carers. *Animals.* 9(12), 1127. https://doi.org/10.3390/ani9121127

Wildlife roadstrike therefore represents a problem that spans human health, animal health and welfare, and environmental health. It is a complex and multi-factorial issue that will require cross-sectorial collaboration, investment in both time and resources, location-specific research and tailored, long-term solutions to effectively address and achieve better animal welfare outcomes across the state.

RSPCA Policy

The RSPCA supports the implementation of humane strategies which are effective in reducing the risk of road accidents involving wild animals, including the use of speed restrictions, warning signs, appropriate animal crossing points (e.g. bridges, tunnels, overhead passageways) and appropriate fencing.

The driver of a vehicle involved in an accident with a wild animal has a moral responsibility, to take reasonable steps to obtain appropriate, timely and humane care for the animal (e.g. seek advice from a veterinarian or wildlife rescue organisation).

The RSPCA believes that humans have a moral responsibility to seek assistance, wherever possible, for individual wild animals who are found suffering for any reasons.

The RSPCA advocates for the implementation of strategies to avoid adverse welfare impacts on local populations of wild animals and/or their habitat caused by human activities.

Terms of Reference

(1) The scope, application, and enforcement of relevant legislation and regulatory frameworks, and their ability to monitor wildlife road strike, promote driver education and raise public awareness

There is a current lack of legislative and regulatory mechanisms available to adequately address wildlife roadstrike in Victoria. For example, current road safety laws in Victoria require motorists to stop and render assistance in an accident where persons are injured, or property, including animals, is damaged or destroyed. However, as wildlife is not considered property in Victoria, there is no explicit requirement for motorists to stop and call for assistance when they hit a wild animal, unless the struck animal creates a hazard that is likely to cause injury, damage or obstruct the pathway of other users.[9] RSPCA Victoria believes that people have a moral responsibility to seek assistance where a wild animal is suffering for any reason, and there should be legislative or regulatory mechanisms in place that direct people to take appropriate action in such circumstances.

[9] Rule 293, Road Safety Road Rules 2017, Victoria

There are small amendments that could be made to current legislation to better protect wildlife to this end, for example, Section 61 of the *Road Safety Act 1986* could be amended to include wildlife more clearly by altering the wording:

If an accident occurs whereby any person or animal is injured or any property ~~(including any animal)~~ is damaged or destroyed, the driver of the motor vehicle – (a) must immediately stop the motor vehicle; and (b) must immediately render such assistance as he or she can.

This small change would clearly communicate to motorists a requirement to render assistance regardless of the ownership status of the animal, and overtly recognises the sentience of animals and their ability to experience pain and suffering.

Additional road rules that could be considered for amendments to give greater protections to wildlife include rules 402 and 403 of the Road Safety Rules 2017, which require motorists to give way to stock, follow directive road signs, and travel at a safe speed. Transport Victoria's website states "when a 'give way to stock' sign is displayed on the road, you must slow down to a speed where you can give way or stop to avoid hitting an animal."[10] These rules could be amended or replicated to include a directive to follow wildlife road signs, and to require motorists to legally travel at a safe speed in known wildlife areas or identified roadstrike hotspots.

There are currently no references to WVCs in the primary legislation that is intended to protect wildlife, the *Wildlife Act 1975*. The Act is now 50 years old and is no longer reflective of contemporary science and community expectations and does not address the emerging and compounding challenges facing wild animals across the state. RSPCA Victoria recommends that the independent review into the Wildlife Act be released and calls on the government to publicly respond to this review so that there is transparency and accountability in the review process. At minimum, amendments to current legislation could replicate the ACT's *Animal Welfare Act 1992*, Section 10, which requires people to assist if they injure an animal, including calling for assistance within 2 hours if they are unable to assist themselves, and specifically discusses obligations regarding when a car hits a mammal.[11]

Finally, to ensure that wildlife welfare is protected, the Animal Care and Protection Bill must be progressed through parliament, with regulations developed under the new Act that promote best practice wildlife care and rehabilitation. The current Code of Practice for the Welfare of Wildlife During Rehabilitation is an advisory code made under the *Prevention of Cruelty to Animals Act 1986,* which provides guidance to wildlife rehabilitators and can be used as a defence to an offence under the Act. RSPCA Victoria believes there should be enforceable minimum standards for wildlife care and rehabilitation, which could be developed under the new Act which has proposed minimum standards (the equivalent of a duty of care). This should include clarity on best

[10] Transport Victoria. Animals and driving. Accessed February 2025. Available at: https://transport.vic.gov.au/road-rules-and-safety/animals-and-driving

[11] Australian Capital Territory, *Animal Welfare Act 1992* https://www.austlii.edu.au/cgi-bin/viewdoc/au/legis/act/consol_act/awa1992128/s10.html

practice regarding wildlife roadstrike cases. For example, it is known that hand-reared animals have a higher death rate when released into the wild, and rearing orphaned animals whose mother may have been killed by a vehicle may not be the most humane course of action if they are released back near a road and have become habituated to human activity and noise, potentially increasing their risk of being involved with a WVC themselves.

Recommendations

1. Amend the *Road Safety Act 1986* to ensure people are required to render assistance to injured wildlife
2. Release the Independent Panel's report into the review of the *Wildlife Act 1975* and the government's response to this
3. Table the Animal Care and Protection Bill in Parliament and develop regulations under the new Act that promote best practice wildlife care and rehabilitation

(2) The involvement, training and expenditure of paid and volunteer rescue and rehabilitative organisations and individuals in attending to, and managing, road strike incidents

Understanding the scale of wildlife roadstrike is important to quantify the adverse animal welfare outcomes that are occurring, and the concurrent demand that is being placed on the time and resources of paid and volunteer organisations and individuals. For context, the Conservation Regulator is authorised under the *Prevention of Cruelty to Animals Act 1986* and the *Wildlife Act 1975* and is the lead agency responsible for wildlife protection and cruelty investigations in Victoria. While RSPCA Victoria does not attend wildlife roadstrike incidents, the community does bring wildlife into our clinics for assessment and treatment for various reasons. Between July 2023 – June 2024, we admitted and provided veterinary assistance for 650 wild animals. The reason for admission to our veterinary clinics is often unknown, however, it is estimated that vehicular trauma, other trauma and predation make up 82% of wildlife cases brought into veterinary clinics across Australia.[12]

Data from Wildlife Victoria, the largest wildlife rescue organisation in Victoria, shows the number of animals reported to the organisation as killed or injured by a vehicle has surged in the past four years, with 15,206 wildlife "hit by a vehicle" in the 2023-24 financial year alone. Eastern grey kangaroos were by far the most common native wildlife reported to be hit by a vehicle during this period, with 8,756 recorded incidents, followed by swamp wallabies (1,020 reports), bare-nosed wombats (634), ringtail possums (594), and brushtail possum (410). [13] Other common wildlife

[12] Orr B, Tribe A. 2018. Animal welfare implications of treating wildlife in Australian veterinary practices. *Aust Vet J.* 96(12) 475-480. doi: 10.1111/avj.12765

[13] Royal Automobile Club of Victoria, 2024. How to drive safely around wildlife and minimise injuries. Accessed December 2024. Available at: https://www.racv.com.au/royalauto/news/animals-hit-by-cars-in-victoria.html

species reported include magpies, sulphur-crested cockatoos, koalas, galahs and echidnas, and one study in Phillip Island found 62 different species killed on roadsides in the study area over just 86 days.[14] Table 1 summarises the available information on reported roadstrike incidents in Victoria as reported to relevant organisations.

Table 1. Incidents of Animal / Wildlife Vehicular Collisions (WVCs) as reported to different organisations

Year	WVC reports involving injury to a person to Victoria Police	WVC rescue reports to Wildlife Victoria (FY)	Animal collisions insurance claims to RACV**	Animal collisions insurance claims to AAMI (all of Australia)**
2019	-	6,894	-	>21,000 (Victoria 2nd most dangerous state)
2020*	132	5,865	-	-
2021	190	7,387	-	>15,500 (Victoria most dangerous state, responsible for almost a third of claims)
2022	154	9,225	-	>17,000 (Victoria most dangerous state)
2023	236	10,643	-	>21,000 (29% of WVC claims from Victoria, 2nd most dangerous state following NSW (30%))
2024	208	15,206	6,969	-

Note. Data for WVC involving injury to a person provided by Victoria Police using their Traffic Incident System, for RACV and Wildlife Victoria provided by: https://www.racv.com.au/royalauto/news/animals-hit-by-cars-in-victoria.html, for AAMI provided by annual media releases (available at: 2023, 2022, 2021, 2019). *Covid-19 restrictions in place **Note that RACV and AAMI's data includes all animal collisions, with wildlife accounting for more than 94% of AAMI's major claims in 2019, and for more than 87% of all claims in 2021.

The outcomes for wildlife struck by cars are poor. Car strike was the most common reason for admission across major wildlife hospitals in Queensland from 2006-2017 and was the second

[14] Rendall AR, Webb V, Sutherland DR, White JG, Renwick L, Cooke R. 2021. Where wildlife and traffic collide: Roadkill rates change through time in a wildlife-tourism hotspot. *Global Ecology and Conservation*. 27. https://doi.org/10.1016/j.gecco.2021.e01530

leading cause of mortality.[15] A New South Wales review found incidents of wildlife roadstrike were increasing every year from 2013-14 to 2018-19, and was the leading cause for a rescue required for mammals, and the second leading cause after being found orphaned/abandoned for birds and following being found in unsuitable habitat for reptiles. 87.8% of mammals, 67.4% of reptiles, and 67.8% of birds reported for rescue after a WVC died.[16]

While roadstrike incidents are increasing, the number of volunteers who are able to rehabilitate wildlife have fallen drastically across the state, from 449 registered carers in 2019/20 to 172 in 2023/24.[17] Grief, burnout, a lack of support financially and socially, and a lack of recognition are all factors which may have led to the decline.[18] Wildlife Victoria currently has over 1,200 volunteers, who in 2024 attended to more than 97,000 native animals requiring assistance with calls to the organisation increasing annually. There are animal welfare consequences to not being able to provide timely, adequate and appropriate assessment when an animal is injured, and if a rescue occurs, that the animal receives adequate and appropriate rehabilitation and care that is context-appropriate and considers the likelihood of survival. The rescue and rehabilitation of wildlife is thus an important service for protecting wildlife welfare that is undertaken mainly by volunteers who give up substantial time, resources and energy to ensure wild animals do not suffer. It has been estimated that the resources contributed by wildlife volunteers to wildlife rescue and rehabilitation across Australia amounts to $6 billion.[19] Wildlife Victoria incurs significant costs funding its emergency response hotline and training and supporting volunteers to provide these services. In addition to this, the veterinary care of wildlife is generally privately funded by veterinary clinics and businesses, with 90% of Australian veterinary clinics never recuperating costs incurred with treating wildlife.[20] RSPCA Victoria does not consider the current approach to be a sustainable model of providing assistance to wildlife, as it is not achieving expected standards of care, and the risk of worsening wildlife welfare is extremely high if available resources continue to erode.

Further, wildlife rescue, care and rehabilitation is a highly specialised field, that requires expertise and extensive training to achieve positive health and welfare outcomes for the animals. Wildlife Victoria provides training and support for volunteers in wildlife rescue, however, not all volunteers

[15] Taylor-Brown A, Booth R, Gillett A, Mealy E, Ogbourne SM, Polkinghorne A, et al. 2019. The impact of human activities on Australian wildlife. *PLoS ONE.* 14(1) e0206958. https://doi.org/10.1371/journal.pone.0206958

[16] Kwok ABC, Haering R, Travers SK, Stathis P. 2021. Trends in wildlife rehabilitation rescues and animal fate across a six-year period in New South Wales, Australia. *PLoS ONE.* 16(9) e0257209. https://doi.org/10.1371/journal.pone.0257209

[17] Forsberg, C. 22 April 2025. Wildlife carers want funding to help rising number of injured animals. ABC News. https://www.abc.net.au/news/2025-04-22/wildlife-carers-funding-needed-increasing-injured-animals/104881812

[18] Englefield B, Candy S, Starling M, McGreevy P. 2019. The Demography and Practice of Australians Caring for Native Wildlife and the Psychological, Physical and Financial Effects of Rescue, Rehabilitation and Release of Wildlife on the Welfare of Carers. *Animals.* 9(12) 1127. https://doi.org/10.3390/ani9121127

[19] Englefield B, Starling M, McGreevy P. 2018. A review of roadkill rescue: who cares for the mental, physical and financial welfare of Australian wildlife carers? *Wildlife Research*. 45(2) 103-118 https://doi.org/10.1071/WR17099

[20] Orr B, Tribe A. 2018. Animal welfare implications of treating wildlife in Australian veterinary practices. *Aust Vet J.* 96(12) 475-480. doi: 10.1111/avj.12765

in the state are registered with Wildlife Victoria. RSPCA Victoria believes that wildlife rescuers, carers, shelter workers and volunteers should be required to undergo compulsory standardised training to ensure animals' welfare needs are met and that best practice care is occurring. At minimum, wildlife carers should be required to demonstrate competency prior to being issued with a licence and their facilities should be required to meet minimum standards. In the veterinary sector, there should be adequate opportunities for the training of veterinarians in wildlife care and treatment, to ensure that professional advice and assessment is readily available for wildlife rescuers and carers and to improve the veterinary care that wildlife receive. RSPCA Victoria recommends that the government provide adequate funding to upskill and consolidate the workforce involved in wildlife care and to ensure that volunteers, including veterinarians who provide free labour and treatment, are supported with the knowledge and financial resources to attend to and care for injured, orphaned and displaced wildlife. To fund this, we are aware of a proposal to add a $2 levy on every car registration, and this would be supported by RSPCA Victoria. This could raise in excess of $12 million per year, based on the approximate 6.5 million registered vehicles in Victoria.[21] This source of funding could also contribute to the centralisation of the reporting of and responding to roadstrike, and research into localised mitigation strategies.

It is important to note that there is a gap in terms of responsibility regarding non-native wild animals who may be hit by a car and require euthanasia. Native wildlife rescue organisations typically do not have the resources to attend to non-native animal cases. However, the animal welfare consequences remain the same regardless of the native or non-native status of an animal and this must be adequately addressed. Currently, this gap may be filled by local police officers or stretched volunteers who may be called to attend, lest non-native wild animals be left to suffer. There is also a dearth of reporting on invasive species involved in collisions as there are no dedicated organisations attending to these incidents.[22] The Victorian Government must ensure that there is a clearly responsible agent who is responsible for euthanasing non-native species who are suffering following a roadstrike incident. Further, police officers responding to incidents of WVCs, regardless of native or non-native status, must receive appropriate training on humane euthanasia and how to select the most appropriate technique and tools depending on the species, and they must be provided with the most appropriate tools to act in line with best practice euthanasia standards.

Overall, the response to, and recording of, incidents of wildlife roadstrike is decentralised and disjointed. While Wildlife Victoria is the primary place that roadstrike is reported to by the public, it is also currently possible to report to or involve local councils, police, wildlife rescue organisations other than Wildlife Victoria, a wildlife shelter or carer, a veterinarian, the Department of Energy, Environment, and Climate Action's help for injured wildlife tool, VicRoads, and the various numbers that may be found on wildlife signage located across the state (many of which are redirected to Wildlife Victoria). Given that WVCs will continue to occur, and are in fact, rising, there is an urgent

[21] VicRoads. About Us. Accessed April 2025. Available at: https://www.vicroads.vic.gov.au/about-vicroads/about-us

[22] Davies C, Wright W, Hogan F, Visintin C. 2019. Predicting deer–vehicle collision risk across Victoria, Australia. *Australian Mammalogy.* 42(3) 293-301. https://doi.org/10.1071/AM19042

need to streamline how we respond to animals who need assistance. As many members of the public currently may not report WVCs, or know how to, it is imperative that an easy, accessible way for them to do this exists in order to improve welfare outcomes for wildlife. This is additionally important if the law is amended to require people to render assistance to any injured animal. RSPCA Victoria recommends fully centralising response, triage and dispatch technology and infrastructure, ensuring a single point where members of the public can report and record a WVC incident, and which simultaneously sends out alerts to local responders (e.g., local wildlife shelters, local police, local government). For example, the State Government's current 'help for injured wildlife' tool requires users to enter details of a required rescue but only provides the user with a list of local phone numbers they then have to call – this reporting tool could be automated to record roadstrike cases and send assistance requests to the appropriate avenue so that it is not a multiple step process for users.

Market research collected by Verian for RSPCA Victoria indicates that 78% of Victorian's would support a wildlife roadstrike reporting application, indicating widespread support in the community for an avenue to report these incidents. The Victorian Government also has an application to report injured wildlife specifically during emergencies. RSCPA Victoria suggests that there should only be one injured wildlife reporting application to avoid confusion.

Recommendations

4. Coordinate standardised training and implementation of wildlife care and treatment across the volunteer and veterinary sectors, including adequate access to tools and training in humane euthanasia for Victoria Police

5. Fund the response to wildlife-vehicular collisions, including rescue, treatment and rehabilitation efforts

6. Ensure there is a responsible agent for the humane euthanasia of non-native species involved in wildlife-vehicular collisions

7. Fully centralise response, triage and dispatch technology and infrastructure to ensure a single point for the reporting and recording of wildlife-vehicular collisions by members of the public

(3) New and emerging technologies and infrastructure used to prevent road strikes

Road ecology and the study of mitigation strategies for wildlife roadstrike are evolving research areas. Options to mitigate roadstrike vary from more traditional approaches like physical infrastructure (fencing, over- and underpasses) and static signage, to animal detection systems employed within vehicles, on apps, or on roadsides, to deterrent systems that may utilise noise, light, or electric shock. It is acknowledged that while physical infrastructure like fencing and

crossing structures are the most effective tools at reducing roadstrike currently available,[23] [24] it is not practical or even possible to implement this infrastructure across all of Victoria's road networks. Mitigation strategies that are effective and able to be implemented at a local scale and with reasonable resource allocation are therefore important to elucidate. However, RSPCA Victoria stresses that while mitigation strategies for roadstrike are urgently needed for existing roads, mitigation must not replace initial planning considerations that work to avoid or minimise the impact of roads and car traffic on wildlife and existing habitat in the first instance (see Section (5)).[25]

As it stands, most emerging technologies are not ready for immediate implementation and further scientific research will be required to reach viable, practical solutions. While the possibility for emerging technologies to reduce roadstrike is vast, it remains unlikely that there will be a singular solution or tool that will be able to adequately address the multi-factorial components that contribute to wildlife roadstrike incidents. This is due to the dynamic nature of wildlife movement, population size and the factors affecting risk relating to WVCs, with hotspots and high-risk periods able to change over time, variability in driver behaviour, complexities in habitat distribution and a sparse understanding of species-specific behaviour around roads.[26] [27] [28] [29] There is thus a need for government to commit to an evidence-based approach that will require ongoing investment in research to determine the most appropriate mitigation tools that can be employed that consider site- and species-specific factors. Traditional infrastructure such as fencing with over- and underpasses must continue to be invested in and implemented where appropriate.

To understand the options being developed, a recent review of emerging technologies was commissioned by the Transport for New South Wales state government department and are summarised into broad categories by the review in Figure 1 below.

[23] Rytwinski T, Soanes K, Jaeger JA, Fahrig L, Findlay CS, Houlahan J, van der Ree R, van der Grift EA. 2016. How Effective Is Road Mitigation at Reducing Road-Kill? A Meta-Analysis. *PLoS One*. 11(11) e0166941. doi: 10.1371/journal.pone.0166941

[24] Huijser MP, Fairbank ER, Paul KS, editors. Cost effective solutions: Best practices manual to reduce animal-vehicle collisions and pro-vide habitat connectivity for wildlife. Transportation Pooled Fund Study, TPF-5(358). Nevada Department of Transportation, Carson City, NV. 10.15788/ndot2022.2

[25] Dexter CE, Scott J, Blacker ARF, Appleby RG, Kerlin DH, Jones DN. 2023. Koalas in space and time: Lessons from 20 years of vehicle-strike trends and hot spots in South East Queensland. *Austral Ecology*. 49(2) e13465. https://doi.org/10.1111/aec.13465

[26] Ibid.

[27] Dunne B, Doran B. 2021. Spatio-temporal analysis of kangaroo–vehicle collisions in Canberra, Australia. *Ecological Management & Restoration*. 22(S1) 67-70. https://doi.org/10.1111/emr.12475

[28] Lester D. 2015. Effective Wildlife Roadkill Mitigation. *Journal of Traffic and Transportation Engineering*. 3 (2015) 42-51 doi: 10.17265/2328-2142/2015.01.005

[29] Dexter CE, Appleby RG, Scott J, Edgar JP, Jones DN. 2017. Individuals matter: predicting koala road crossing behaviour in south-east Queensland. *Australian Mammalogy*. 40(1) 67-75 https://doi.org/10.1071/AM16043

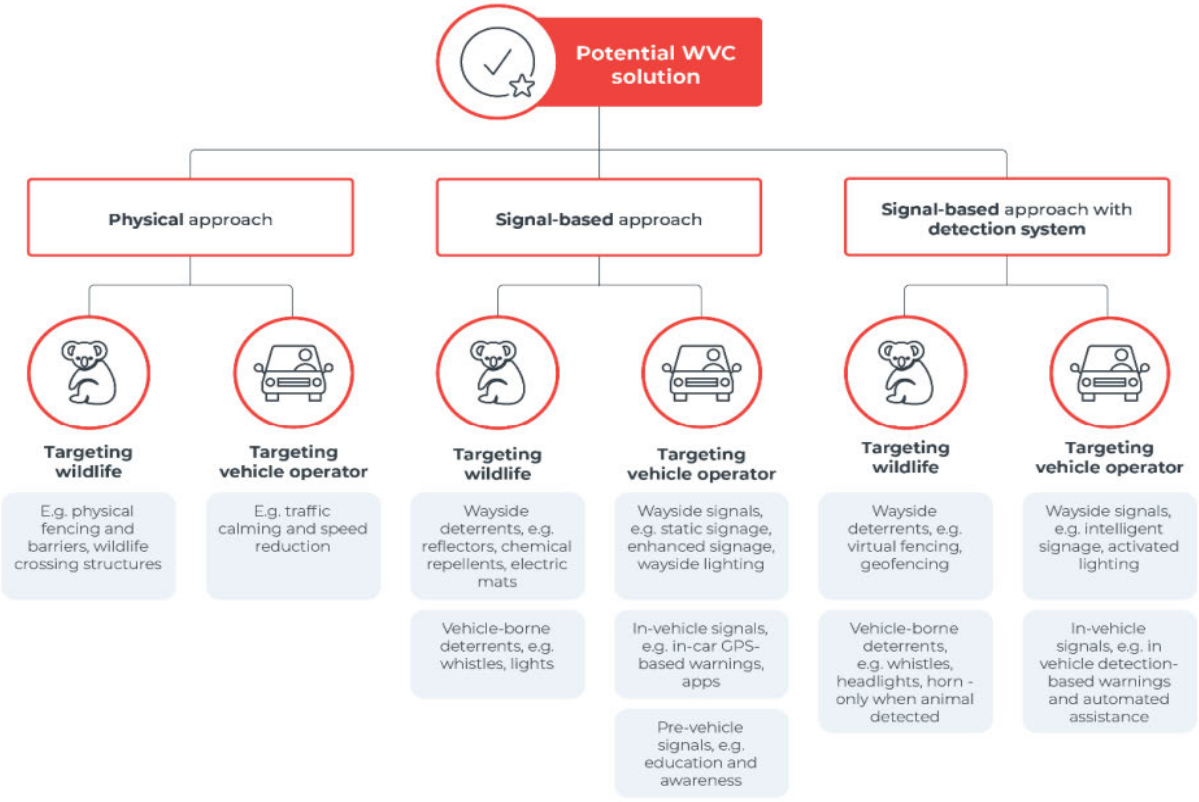

Figure 1. Visual schema of technologies for wildlife roadstrike from: WSP, 2024. Using technology to reduce wildlife vehicle collisions: literature review and directions paper. New South Wales: Transport for New South Wales. https://www.transport.nsw.gov.au/system/files/media/documents/2025/Using-technology-to-reduce-wildlife-vehicle-collisions-Directions-Report.pdf

The NSW paper notably highlights that reflectors, virtual fencing, static traditional wildlife signage, and auditory deterrents such as whistles attached to the front of vehicles, are not sufficiently effective to warrant ongoing trials in their current forms. While many local councils are trialling virtual fencing that omits light and/or noise when a car approaches, with anecdotally reported success,[30] the majority of scientific papers that evaluate the effectiveness of virtual fencing in the Australian context have found that virtual fencing in its current form is ineffective in substantially reducing roadstrike incidents, and where effects have been found, these have been contested.[31] [32] [33] [34] [35] Investing in scientific, robust analysis of any new and emerging technology is thus

[30] Schapove, N, 3 November 2024. Wildlife rescuers say 'virtual fence' saving hundreds of animals on Victoria's Surf Coast. ABC News. Available at: https://www.abc.net.au/news/2024-11-03/virtual-fences-trial-anglesea-great-ocean-road-kill-kangaroos/104532456

[31] WSP, 2024. Using technology to reduce wildlife vehicle collisions: literature review and directions paper. New South Wales: Transport for New South Wales.

[32] Coulson G, Bender H. 2022. Wombat Roadkill Was Not Reduced by a Virtual Fence. Comment on Stannard et al. Can Virtual Fences Reduce Wombat Road Mortalities? 2021. *Ecol. Eng.* 172, 106414. *Animals (Basel).* 12(10):1323. doi: 10.3390/ani12101323.

[33] Candy SG, Bunker JA, Englefield B. 2024. A Trial of a Virtual Fence to Mitigate Roadkill on an Unsealed Rural Road in Tasmania, Australia. *Animals*. 14(11), 1641. https://doi.org/10.3390/ani14111641

fundamental to ensure that resources are used appropriately and will tangibly result in long-term positive outcomes for wildlife.

Some technology is slated to be particularly promising, such as using artificial intelligence (AI) assisted animal detection systems that link to 'smart' signage, and in-car applications that warn users when they are approaching a hotspot – ideally informed by up-to-date spatial WVC data and habitat modelling (see Table 2). The NSW Government have recently committed $500,000 to mitigate wildlife roadstrike in early 2025,[36] including a trial for AI assisted animal detection systems linked to 'smart' roadside signage. In Queensland, there is also work occurring to use AI-driven systems to detect cassowaries on the roadside and trigger smart signs to warn oncoming drivers,[37] and one council has found that the use of dynamic signage in koala roadstrike hotspots has resulted in consistent reductions in driver speed, albeit modest reductions, with signs of habituation taking five-years to occur.[38]

Table 2. Summary of current and emerging technologies and their readiness for use as identified in NSW review paper[39]

Category	Target	Technology	Effectiveness and readiness for use
Physical	Wildlife	Physical fencing and crossing structures	There is sufficient scientific evidence that fencing can reduce WVCs for medium to large terrestrial animals. Ideally investing in further research to improve designs to assist a broader range of species would be beneficial. Note there are issues with increasing the barrier effect of roads by using fencing unless paired with crossing structures that are effective. Further investigation is required into the efficacy of crossing structures for Australian species, and this likely requires long-term research as some species may take time to habituate to the structures and begin using them.[40]

[34] Englefield B, Candy SG, Starling M, McGreevy PD. 2019. A trial of solar-powered, cooperative sensor/actuator, opto-acoustical, virtual road-fence to mitigate roadkill in Tasmania, Australia. *Animals.* 9(10), 752. https://doi.org/10.3390/ani9100752

[35] Connelly C, Sutherland D, Day R. 2024. Virtual fences do not affect wallaby and possum roadkill rates. Victoria University, Phillip Island Nature Parks, Bass Coast Shire. Available at: https://www.eianz.org/document/item/7895

[36] John Graham & Jennu Aitchison, NSW Labor Party. Media Release - Wildlife Protection at the Heart of Road Technology Trials. Accessed February 2025. Available at: https://www.jennyaitchison.com.au/news/media-releases/media-release-wildlife-protection-at-the-heart-of-road-technology-trials/

[37] Kunming L, Shan M, Perez, SB, Luo K, Worrall S. 2024. Endangered Alert: A Field-Validated Self-Training Scheme for Detecting and Protecting Threatened Wildlife on Roads. Unpublished data. https://arxiv.org/pdf/2412.12222

[38] Appleby R, Ransome L. 2023. Redland Smart Signs and Smart Messages: A Driver Change Behaviour Project – Year 5 Final Report. Prepared for Redland City Council. Applied Road Ecology Group, Centre for Planetary Health and Food Security, Griffith University: Nathan, Qld.

[39] WSP, 2024. Using technology to reduce wildlife vehicle collisions: literature review and directions paper. New South Wales: Transport for New South Wales. https://www.transport.nsw.gov.au/system/files/media/documents/2025/Using-technology-to-reduce-wildlife-vehicle-collisions-Directions-Report.pdf

[40] Young G, King R, Allen BL. 2023. Where do wildlife cross the road? Experimental evaluation reveals fauna preferences for multiple types of crossing structures. *Global Ecology and Conservation*. 46, e02570. https://doi.org/10.1016/j.gecco.2023.e02570

	Drivers	Speed reduction and traffic calming	There are difficulties with implementing traffic calming methods in high-speed or high-volume traffic settings. Where these can be implemented, multiple tools are likely required to be effective. There is some evidence that a combination of strategies can work in the right contexts, with a trial in Tasmania showing a 59% decrease in WVC following the installation of rumble strips to reduce driver speed, targeted signage, and reduction of roadside vegetation to improve driver visibility.[41]
Signal-based	Wildlife	Deterrents (reflectors, chemical repellents, electric mats, vehicle-borne whistles or lights)	Reflectors have been unsuccessful in Australian trials and would need further refinement to specifically target Australian species and avoid habituation. Similarly for chemical repellents, e.g., the odour of a predator applied along a roadside or bitter-tasting compounds applied to roadside vegetation, the results in studies overseas have been mixed and further research would be required to determine their usefulness in Australia. RSPCA Victoria would not support the use of electric shock mats placed at fence ends due to their capacity to cause pain and distress in larger animals, and potentially kill smaller animal species like amphibians and reptiles. They are also unlikely to be effective for macropods, who can hop, and have not been trialled in the Australian context. Vehicle-borne acoustic deterrents have been shown to be ineffective. Further research is already occurring by the University of Melbourne and Volkswagen to uncover whether species-specific adjustments such as the use of 'thumping' warning sounds to scare away macropods may be more effective than artificial sounds.[42] Further research will also need to occur into vehicle lights which could be enhanced to deter wildlife, and which could also improve driver visibility thus increasing time available for a driver to respond to an animal on the road.
	Drivers	Signage (static, enhanced), in-car GPS based warnings or apps, education and awareness campaigns	Static signage is not an appropriate option to mitigate roadstrike, as multiple studies have found that drivers typically will not alter their behaviour. However, enhanced, dynamic signage or 'smart' signage (see section below) is much more likely to elicit the desired behavioural responses from drivers. Enhanced signage can be erected permanently or during high-risk periods such as animal breeding or fledging periods, are usually larger or have more information than static signage (e.g., "Birds on Road, Reduce Speed"), can be dynamic (e.g., lights, a reduced speed limit or a warning message that turns on at certain times manually or automatically – sometimes called 'variable message signage', or when used in conjunction with animal detection systems – see smart signs below), and may be removed when high-risk periods are over. Paired with driver awareness programs of the reason for the signage, this approach can potentially achieve moderate reductions in WVCs. There is still a risk of driver habituation over time, and signs must be well-designed with accurate messaging. Additional methods like increasing roadside lighting may have unintended ecological

[41] Lester D. 2015. Effective Wildlife Roadkill Mitigation. *Journal of Traffic and Transportation Engineering*. 3 (2015) 42-51 doi: 10.17265/2328-2142/2015.01.005

[42] Volkswagen, 2025. Introducing RooBadge, an innovative approach to deterring kangaroos. Accessed February 2025. Available at: https://www.volkswagen.com.au/en/roobadge.html

			effects such as disturbing wildlife and insects. There are currently no trials that explicitly link the effectiveness of clearing roadside vegetation to increase driver visibility with reductions in roadstrike, and the presence of roadside vegetation has been associated with variable effects on roadkill rates depending on the species (e.g. less vegetation may result in higher rates of bird roadkill).[43] In-vehicle warnings or phone applications that provide warnings based on GPS-data are promising options that are likely to be developed further. Up-to-date data on wildlife hotspots informed by spatial databases and the type of habitat the vehicle is approaching can warn drivers in real-time that they are approaching a high-risk area. Trials overseas have shown that this method elicits the intended driver response. Driver awareness and education campaigns must be widespread and ongoing in order to be effective, and there is the possibility that they are not readily received or are ignored by the public. Such campaigns may be improved if warnings are more accurate (e.g. the use of enhanced or smart signage, instead of static signage).
Signal-based paired with animal detection systems	Wildlife	Deterrents (e.g., virtual fencing)	Current roadside deterrents like virtual fencing have generally failed to elicit a statistically significant reduction in roadstrike when researched in the Australian context. Future research will be needed to potentially alter the type of signal being used, e.g., utilising biologically relevant noise instead of artificial sound, and further determine the efficacy of such technology before it is rolled out.
	Driver	Intelligent signage, in-car detection-based warnings and/or automatic assistance	Intelligent or 'smart' signage is similar to enhanced signage but is coupled with roadside animal detection systems, which include a wide variety of developing technology such as roadside AI-trained cameras or laser tripwires. Once an animal is detected on the roadside, this will send a signal to the smart sign which may activate lights, or a warning message, advising oncoming drivers that there is an animal present. These systems greatly improve the accuracy of warnings to drivers, and trials have shown success in reducing driver speed and incidences of WVCs. However, current detection systems need further work to reliably detect Australian wildlife, particularly smaller animals. There is work being undertaken in NSW and QLD to trial AI-assisted animal detection systems and smart signage. In-vehicle animal detection technology has been developed overseas, however there are limitations on its accuracy and there have been no trials in the Australian context where animals are smaller and behave more erratically around roads. Further research is required.

Given that work is already occurring on the potential for emerging technologies across the country, RSPCA Victoria recommends establishing a cross-sectorial reference group to build on this work and bring together experts in planning, road transport networks and safety, road ecologists, conservationists, animal welfare and wildlife organisations. Such a group could further guide the

[43] Rendall AR, Webb V, Sutherland DR, White JG, Renwick L, Cooke R. 2021. Where wildlife and traffic collide: Roadkill rates change through time in a wildlife-tourism hotspot. *Global Ecology and Conservation*. 27. https://doi.org/10.1016/j.gecco.2021.e01530

development and implementation of other important tools for the state, such as a centralised reporting system and database and improve the coordination of rescue and response efforts. In the interim, and while other emerging technological solutions are advanced, the Victorian Government could consider implementing enhanced, dynamic signage at identified high-risk zones and during high-risk periods where traditional physical infrastructure cannot be implemented, to improve driver responsiveness. Ideally this approach would be coupled with targeted driver education that explains the use of such signs and how drivers are expected to respond to them when they are in place. This approach could improve the outcomes for wildlife in targeted areas, particularly if used in conjunction with other mitigation strategies suitable to the specific area or hotspot, such as traffic calming.

Recommendations

8. Invest in infrastructure (fencing, over- and under-passes) and research into emerging technologies to mitigate roadstrike incidents with appropriate consideration for site- and species-specific factors, acknowledging that multiple tools are likely required to adequately reduce incidents

9. Establish a cross-sectorial reference group to build on the work already being undertaken across the nation, and to bring together experts to guide the research and implementation of strategies

10. Implement enhanced, dynamic signage and targeted messaging at identified hotspots during high-risk periods, paired with driver education

(4) The impact of road strike on Victorian motorists, including major trauma incidents and motor vehicle damage

Collisions with animals pose a serious human safety risk, with more than half of surveyed Australians having been involved with an animal collision.[44] According to data provided by Victoria Police's Traffic Incident System, the number of WVCs resulting in injury to a person has increased in the last five years, causing a total of 749 accidents since 2020 in Victoria (see Figure 2). Data from AAMI, a national insurer, reported that in 2022, collision claims with wildlife cost an average of $5,500 to $6,400 and 1 in 7 claims involving a crash with wildlife caused damage so severe that the car was written off.[45]

[44] Suncorp Group, 6 June 2024. Animal collisions jump 22% as AAMI urges drivers to stop ignoring wildlife signs. Accessed December 2024. Available at: https://www.suncorpgroup.com.au/news/news/animal-collisions-2024

[45] Suncorp Group, 24 May 2023. Crashing with wildlife: Most Aussie drivers would dangerously swerve or slam the brakes to avoid a collision. Accessed December 2024. Available at: https://www.suncorpgroup.com.au/uploads/AAMI-Animal-Collisions-media-release-FINAL2.pdf

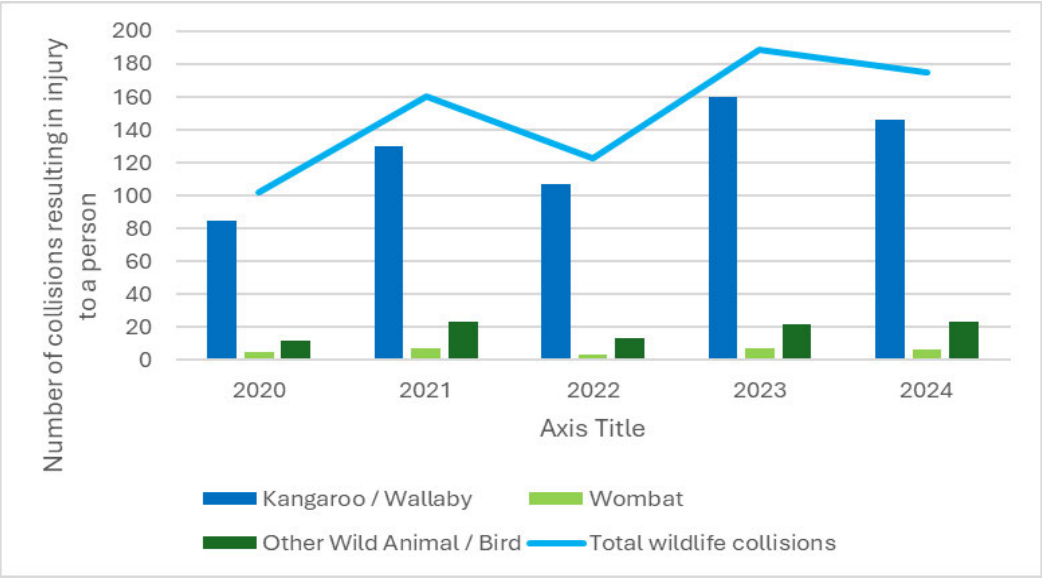

Figure 2. The number of wildlife-vehicular collisions resulting in injury to a person from 2020 to 2024, provided by Victoria Police's Traffic Incident System. Note this data only includes reports in which injury to a person was caused by the collision, and therefore collisions where no injury occurred are not captured.

It is clear from both the reported incidences of WVC involving macropods (kangaroos, wallabies) to Wildlife Victoria,[46] and from the data in Figure 2, that preventing roadstrike with macropods is a primary concern from both an animal welfare and human safety perspective. It is likely that their population status and large size, the overlap between urban and peri-urban development and their preferred habitat, as well as their unpredictable behaviour around roads, contributes to their over-representation in reported WVCs.[47] Development planning in urban, peri-urban and rural areas should carefully consider whether there are populations of kangaroos that will be impacted, displaced, and potentially involved with creating a higher risk of WVCs (see Recommendation 14).

Notably, drought has also been linked to high macropod roadkill rates,[48] and the Royal Adelaide Hospital recorded an increase in trauma cases caused by collisions with kangaroos following the 2019-20 bushfires,[49] indicating that the risk of serious WVCs may increase during and following major disasters that displace or harm wildlife and habitat. This risk is likely to be realised more frequently as climate change causes more intense and frequent extreme weather. Given this, the government should consider targeted signage and messaging following bushfires and in drought to warn road users of the increased risks of wildlife movement and collisions (see Recommendation 10).

[46] Royal Automobile Club of Victoria, 2024. How to drive safely around wildlife and minimise injuries. Accessed December 2024. Available at: https://www.racv.com.au/royalauto/news/animals-hit-by-cars-in-victoria.html

[47] Herbert CA, Snape MA, Wimpenny CE, Coulson G. 2021. Kangaroos in peri-urban areas: A fool's paradise? *Ecological Management & Restoration.* 22, (S1); p 167-175. https://doi.org/10.1111/emr.12487

[48] Department of Energy, Environment, and Climate Action. 2023. Victorian Kangaroo Harvest Management Plan, 2024-2028. State Government of Victoria: Victoria.

[49] Hardy P, Harris D, Clarke C, Ellis, DY. 2021. Increased incidence of kangaroo-related trauma following a severe bushfire season. *Emergency Medicine Australasia.* 33(3):p 583. doi: 10.1111/1742-6723.1376

Additional information available from the Victorian Government's publicly available road crash database[50] indicates that 92.3% of fatalities involving an animal collision on Victorian roads between January 2012 and August 2024 have been in speed zones of 100km/hr, and 86.9% of serious injuries involving an animal collision occurred in speed zones 80km/hr and over (see figure 3). Traffic speed has been shown to be associated with rates of WVCs indicating speed is a target for modification,[51] however, people may ignore reduced speed limits or only marginally slow down.[52] Despite this, introducing a mechanism that allows speed safety zoning decisions to consider the risk of WVCs when setting and reviewing speed limits, with input from road ecologists, is a reasonable and low-cost step that the government could implement. Additionally, where appropriate, consider utilising traffic calming strategies and dynamic signage with reduced speed limits in identified hotspots.

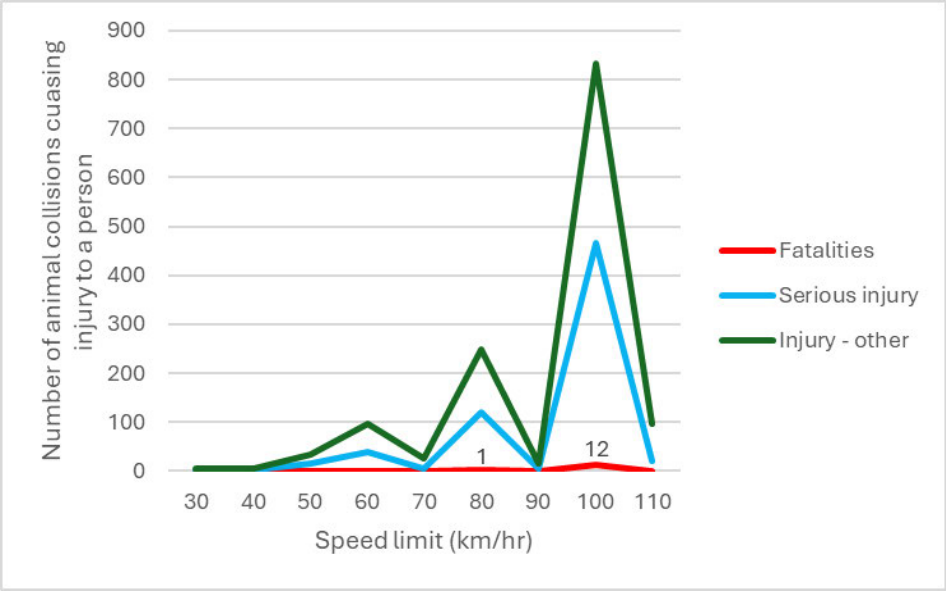

Figure 3. Fatalities and injuries to people involved with an animal collision on Victorian roads between January 2012 and August 2024, according to the Victorian Government's publicly available road crash database.

There are social and emotional costs to motorists regarding wildlife roadstrike. Tourists view roadkill as a serious issue and are often unaware of the scale with which the problem exists on Australian roads,[53] and it can be highly distressing to have hit and killed or injured an animal. Market research collected by Verian for RSPCA Victoria shows that only 19% of people self-report as 'definitely' knowing what to do if they hit wildlife with their car, indicating a knowledge gap that is

[50] Data Victoria, 2025. Department of Transport and Planning's Victoria road crash data. Downloaded March 2025. https://discover.data.vic.gov.au/dataset/victoria-road-crash-data/resource/6d16124d-1f59-478a-baf8-a139dc5742dc

[51] Rendall AR, Webb V, Sutherland DR, White JG, Renwick L, Cooke R. 2021. Where wildlife and traffic collide: Roadkill rates change through time in a wildlife-tourism hotspot. *Global Ecology and Conservation*. 27. https://doi.org/10.1016/j.gecco.2021.e01530

[52] Riginos C, Fairbank E, Hansen E, Kolek J, Huikser MP. 2022. Reduced speed limit is ineffective for mitigating the effects of roads on ungulates. *Conservation Science and Practice*. 4:(3), e618. https://doi.org/10.1111/csp2.618

[53] Leurs E, Kirkpatrick JB. 2024. Wildlife–Vehicle Collisions in Tasmania: Tourists' Attitudes and Behaviour. *Animals.* 14, 2413. https://doi.org/10.3390/

likely exacerbated by the disjointed approach to WVC response, reporting, and lack of education. Additionally, when respondents were asked the highest risk time of day to drive around wildlife, 58% of respondents selected dusk, 31% selected during the night, and only 9% selected dawn. More than a decade of data from the Victorian Government's road crash database indicates that dawn is the most frequent time for an animal collision to occur that causes an injury to a person, followed by dusk (see figure 4).

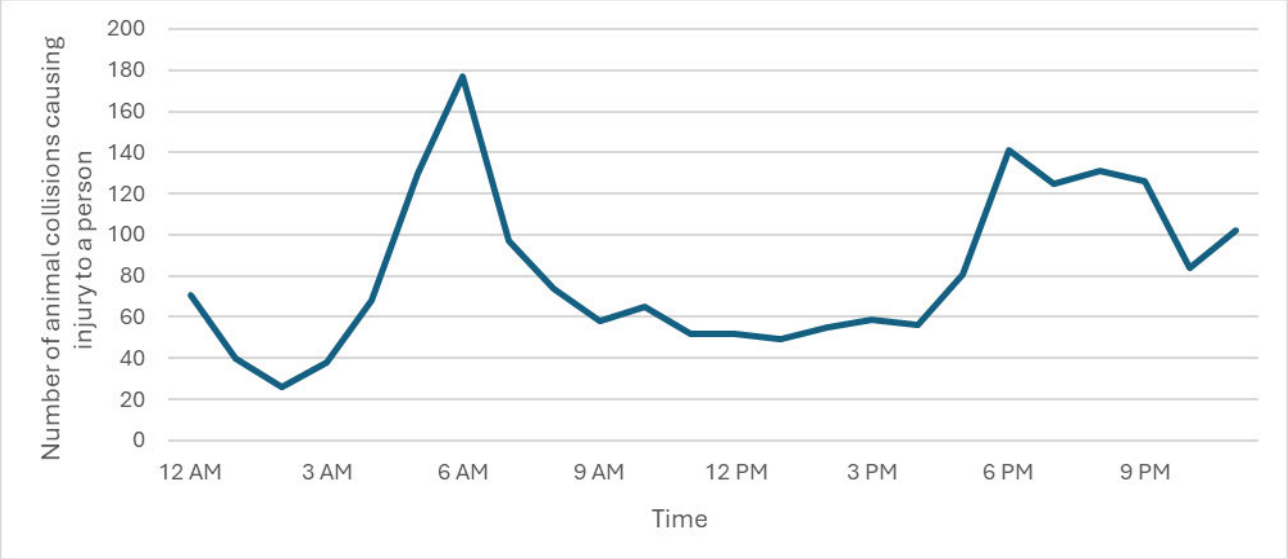

Figure 4. Time of day that animal collisions incidents causing injury to a person occur, between January 2012 to August 2024, according to the Victorian Government's road crash database. Note this data only includes reports in which injury to a person was caused by collision with an animal, and therefore collisions with animals where no injury occurred are not captured.

Given the lack of confidence that the general public have regarding what to do when they hit a wild animal, and the misconceptions around high-risk times for driving that exist, RSPCA Victoria recommends a targeted and general education and awareness campaign is implemented. Educating motorists on both what to do if they do hit an animal, how to avoid hitting an animal, and what the different mitigation strategies and tools in use are, will improve driver understanding of how they should act and react while on Victorian roads. This may also improve driver responsiveness to mitigation strategies if they understand what is being employed, e.g. dynamic signage during high-risk periods. Provision of information for motorists at point of registration, purchase of car and car insurance policy, and on hiring a rental car could also be considered.

Recommendation

11. Include the risk of WVCs in speed safety zoning decisions, and, where appropriate, utilise traffic calming and dynamic reduced speed limits in identified hotspots

12. Implement a statewide education and awareness campaign to improve diver behaviour and awareness of high-risk periods and mitigation strategies being employed, e.g., dynamic signage

(5) The impact of development and infrastructure on incidents of wildlife road strike

Victoria's road network currently sits at approximately 200,000 kilometres (including minor roads and tracks),[54] and is increasing. In addition, the ongoing development of peri-urban and rural land is further fragmenting and removing habitat available for wildlife. The impact of development and other human-driven processes that are continuing to result in the decline of native vegetation across the state was reviewed and discussed extensively in the Parliamentary Inquiry into ecosystem decline in Victoria, held in 2021. However, the Victorian Government is yet to release their response to the recommendations that arose from the inquiry report, which included 15 recommendations to address habitat loss and fragmentation across the state.[55] RSPCA Victoria recommends that the government release its response to the report.

When wildlife lose sources of high-quality food, water and shelter, their welfare is adversely impacted. A reduction in these resources may also cause wildlife to disperse further, placing them at higher risk of encountering risks, such as car traffic.[56] Other factors that can increase the risk for WVCs include roads that cut through habitat that wildlife use as a corridor or when a road bisects native habitat and farmland for some species,[57] but within continuous habitat for others,[58] proximity to forest, road width, increasing traffic volume and speed (noting this can be species-dependent), and variability in driving behaviour.[59] [60] These factors can all be present when peri-urban and rural land is developed. It is therefore not surprising that reported wildlife roadstrike hotspots across Victoria are often located in peri-urban and development growth areas (see Figure 5 & 6).

[54] Transport Victoria. Road types and responsible authorities. Accessed January 2025. Available at: https://transport.vic.gov.au/business/road-and-traffic-management/road-types-and-responsible-authorities

[55] Parliament of Victoria, Legislative Council Environment and Planning Committee, December 2021. Victorian Government Printer: Victoria Available at: https://www.parliament.vic.gov.au/495f95/contentassets/49a77c8206824f2281ccfa8d6fa35587/ecosystem-decline-in-victoria.pdf

[56] Gonzalez-Astudillo V, Allavena R, McKinnon A, Larkin R, Henning J. 2017. Decline causes of Koalas in South-East Queensland, Australia: a 17-year retrospective study of mortality and morbidity. *Sci Rep.* 7, 42587. https://doi.org/10.1038/srep42587

[57] Gunson KE, Mountrakis G, Quackenbush LJ. 2011. Spatial wildlife-vehicle collision models: A review of current work and its application to transportation mitigation projects. *Journal of Environmental Management*. 92, (4);p 1074-1082, https://doi.org/10.1016/j.jenvman.2010.11.027

[58] Webber BL, Bradford M, Ota N, Westcott D. 2025. Predicting cassowary–vehicle collision in the Wet Tropics of Australia. *Wildlife Research.* 52, WR23089. https://doi.org/10.1071/WR23089

[59] Pagany R. 2020. Wildlife-vehicle collisions - Influencing factors, data collection and research methods. *Biological Conservation.* 251, 108758, https://doi.org/10.1016/j.biocon.2020.108758

[60] Lester D. 2015. Effective Wildlife Roadkill Mitigation. *Journal of Traffic and Transportation Engineering*. 3, 42-51 doi: 10.17265/2328-2142/2015.01.005

Figure 5. Map of animal collision claims hotspots, as reported by AAMI, for years 2019, 2021-2023. Data from annual media releases (available at: 2023, 2022, 2021, 2019).

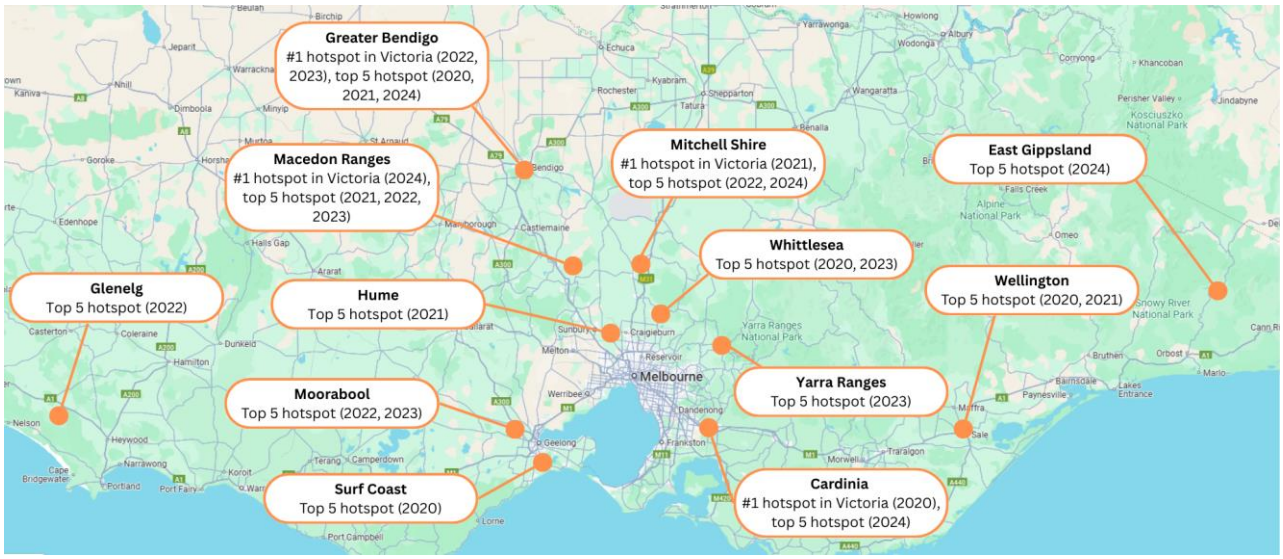

Figure 6. Map of animal collision hotspots by local government area, as provided to RSPCA Victoria by Victora Police from their Traffic Incident System from 2020-2024. Note this data only includes reports in which injury to a person was caused by collision with an animal, and therefore collisions with animals where no injury occurred are not captured.

It is important to recognise that the highlighted areas in Figures 5 and 6 represent only the data collected by these particular organisations for animal collisions, and other high-risk areas likely exist that may be species-dependent or there may be unidentified stretches of road where amphibians, reptiles, small birds or non-native animals are frequently hit but under-reported. Hotspots are also dynamic and relying on historical or isolated data may not achieve the desired outcomes if mitigation strategies are employed at a site that is no longer being used by wildlife, particularly if a high number of roadstrike incidents have resulted in a depletion in the local faunal

population.[61] There is a need to keep hotspot data relevant and informed with centralised reporting (see Section (7)), and the development of peri-urban and rural areas should consider the impact on wildlife as a priority.

While mitigation strategies are often the focus in discussions around wildlife-vehicular collisions and development, it stands to reason that avoidance should be a primary strategy employed prior to any development occurring. This aligns with Victoria's Biodiversity 2037 strategy, which utilises an avoid, minimise, then mitigate or offset approach. For example, if it is found during the planning stages of a development that the construction of roads would likely have a damaging effect on the local wildlife, regardless of conservation status, opportunities for re-routing roads or changing the location of the development should be considered.

When it comes to minimisation and mitigation, a recent review of Australian fauna-sensitive road design (FRSD) policies found that planners do not generally acknowledge or implement FRSD principles or consider road ecology factors during planning.[62] The FSRD principles available for planners in Victoria are guidelines written more than a decade ago by VicRoads.[63] The government could consider a review of the current guidelines to ensure they capture research that has occurred in the last decade on best practice approaches, and investigate mechanisms to enhance the utilisation of these principles in planning. Additionally, FSRD may be applied at a project level, but can lack a landscape level overview that takes into account how individual projects are interacting with each other and potentially amplifying landscape fragmentation and exacerbating factors that could increase cases of roadstrike.[64] The Victorian Government should ensure landscape level assessment is occurring across local government areas and that FSRD policies are incorporated as part of broader environmental assessment requirements beyond those that consider threatened species, given the animal welfare concerns from roadstrike apply to all wildlife.

From a social perspective, in 2018 the Victorian Government developed a 'Living with Wildlife Action Plan'.[65] While this document does mention the danger WVCs pose, there are no actions within this to address WVCs. The government could consider reviewing this and including new actions for wildlife that work to address roadstrike as a significant welfare problem. The Biodiversity Councils 2024-25 survey indicates that Australians are more likely than ever to want to protect

[61] Dexter CE, Scott J, Blacker ARF, Appleby RG, Kerlin DH, Jones DN. 2023. Koalas in space and time: Lessons from 20 years of vehicle-strike trends and hot spots in South East Queensland. *Austral Ecology*. 49(2), e13465. https://doi.org/10.1111/aec.13465

[62] Johnson CD, Matthews T, Burke M, Jones D. 2024. The current attention and traction of fauna-sensitive road design in Australian transport research: a systematic review. *Australasian Journal of Environmental Management*. 31(3), 296–309. https://doi.org/10.1080/14486563.2024.2377086

[63] VicRoads, August 2012. Fauna sensitive road design guidelines. VicRoads: Victoria.

[64] Johnson CD, Matthews T, Burke M and Jones D. 2022. Planning for fauna sensitive road design: A review. *Front. Environ. Sci.* 10:959918. doi: 10.3389/fenvs.2022.959918

[65] Department of Environment, Land, Water and Planning, 2018. Living with Wildlife Action Plan. State Government of Victoria: Victoria. https://www.wildlife.vic.gov.au/__data/assets/pdf_file/0019/112429/DEWLP_LivingWithWildlife-ActionPlan_www.pdf

nature, with 30% of people already making big decisions to support nature, such as changing banks, and a further 45% of people indicating that they would be willing to take action.[66] Altering driver behaviour could be highlighted by the government as an easy way for people to make a difference for wildlife. Particularly wherever development is occurring in high growth areas, community education - including resources that are culturally and linguistically relevant - on high-risk times to avoid driving and how to improve driving behaviour should also be employed, given the increased wildlife-human interactions likely to occur in newly developed peri-urban and rural regions (see Recommendation 12).

Recommendations

13. Release the government's response to the Inquiry into ecosystem decline in Victoria
14. Prioritise the avoidance and minimisation of impacts from development projects on wild animals, regardless of conservation status, over mitigation
15. Review current fauna-sensitive road design guidelines and investigate mechanisms to enhance the utilisation of these principles in planning at a local and landscape-level
16. Review the Living with Wildlife Action Plan and include actions on avoiding or mitigating WVCs

(6) International best practice standards to decrease wildlife road strike

It is important to recognise that wildlife roadstrike in the Australian context is unique due to differences in the species and habitat present, and the vastness of the Australian road network. Consequently, there is a need to be cautious when extrapolating out mitigation strategies that work elsewhere, unless the strategy being employed is for a similar context. For example, it may be appropriate to refer to best practice standards regarding the mitigation of deer roadstrike, but these strategies may not be applicable or the most effective option for mitigating incidents of roadstrike involving macropods. Irrespective of this, best practice standards across the globe rely on a combination of fencing with crossing structures, noting that these measures should be considered as a package rather than standalone options. Crossing structures alone can potentially improve habitat connectivity but need fencing in order to reduce roadstrike. Conversely, fencing alone will reduce roadstrike, but will further increase the barrier effect and isolation of wildlife populations

[66]Biodiversity Council. 2025. 2024–2025 Biodiversity Concerns Report: A survey of community attitudes toward nature conservation. Available at: https://biodiversitycouncil.org.au/resources/2025-biodiversity-concerns-report

created by roads.[67] Used together, one meta-analysis of the available literature found that a combination of fencing and crossing structures can reduce the roadkill of large mammals by 83%.[68]

Consideration to the length of the road and required fencing, the placement and interval of crossing structures, the local wildlife present (e.g., amphibians versus macropods, or both) and which crossing structures are preferred by which animals, as well as buffer zones to reduce 'fence-end' effect – where hotspots move to the end of fences as wildlife attempt to cross a non-fenced part of the road, all must be considered in the planning stages of any mitigation strategy implementation or during the development process.[69] A global assessment of the effectiveness of wildlife crossing structures found that while these structures can mitigate the barrier effect of roads, in many cases their effectiveness has been poorly evaluated, and there is a need for species-specific guidelines coupled with thorough evaluation to ensure their use is appropriate.[70] Further research is required in the Australian context to understand the behaviour of our unique wildlife species and which crossing structures they prefer and will utilise.[71] Additionally, typically due to cost, installed fencing can often be too short and thus become ineffective if it does not cover the entire length of a hotspot or high-risk zone.[72]

RSPCA Victoria reiterates that the Victorian Government commit to an evidence-based approach that will require ongoing investment in research to elucidate the most appropriate mitigation tools that can be employed that consider site- and species-specific factors. Traditional infrastructure such as fencing with over- and underpasses must continue to be invested in and implemented where appropriate, with ongoing support for research efforts to clarify the most effective options for Australian wildlife species.

[67] Huijser MP, Fairbank ER, Paul KS, eds. 2022. Cost effective solutions: Best practices manual to reduce animal-vehicle collisions and pro-vide habitat connectivity for wildlife. Transportation Pooled Fund Study, TPF-5(358). Nevada Department of Transportation: Carson City, Nervada. doi: 10.15788/ndot2022.2

[68] Rytwinski T, Soanes K, Jaeger JA, Fahrig L, Findlay CS, Houlahan J, van der Ree R, van der Grift EA. 2016. How Effective Is Road Mitigation at Reducing Road-Kill? A Meta-Analysis. *PLoS One*. 11(11):e0166941. doi: 10.1371/journal.pone.0166941

[69] Ibid.

[70] Soanes K, Rytwinski T, Fahrig L, Huijser MP, Jaeger JAG, Teixeira FZ, van der Ree R, van der Grift, EA. 2024. Do wildlife crossing structures mitigate the barrier effect of roads on animal movement? A global assessment. *Journal of Applied Ecology*. 61, 417–430. https://doi.org/10.1111/1365-2664.14582

[71] Young G, King R, Allen BL. 2023. Where do wildlife cross the road? Experimental evaluation reveals fauna preferences for multiple types of crossing structures. *Global Ecology and Conservation*. 46, e02570. https://doi.org/10.1016/j.gecco.2023.e02570

[72] Wilansky J, Jaeger JAG. 2024. Predicting the effectiveness of wildlife fencing along roads using an individual-based model: How do fence-following distances influence the fence-end effect? *Ecological Modelling.* 495, https://doi.org/10.1016/j.ecolmodel.2024.110784

(7) Current methods of collating data on wildlife road strike and its effectiveness

The current system of collating data on wildlife roadstrike in Victoria is lacking, and there is no clearly established mechanism for reporting WVCs in a centralised database or other reporting system. As discussed in Section (2), the avenues for reporting and recording WVCs is disjointed, and the current number of known WVCs is highly likely to be a significant under-representation of the true number of roadstrike incidents occurring across the state. This is in part due to the nature of roadstrike incidents, which means smaller and more cryptic species may not be noticed to have been hit, animals may be struck and move off the roadside and out of sight, and some may be quickly scavenged. However, there is also a barrier to understanding the scale of roadstrike occurring in Victoria due to the lack of a centralised reporting system, and a lack of a requirement to report such incidents.

Other states have systems which record incidents of roadstrike or roadkill, such as NSW's BioNet database,[73] and Wildlife Victoria have a dataset and system for collating roadstrike data called WildNet. Local government may also be collecting wildlife collision or roadkill carcass data, such as the Macedon Ranges Shire Council who have an in-house mapping system that provides staff with up-to-date WVC hotspot locations.[74] These existing systems could inform the development of a statewide centralised reporting database that operates as a 'single source of truth' where external organisations like wildlife rescuers, shelters, veterinary clinics, car insurers, citizen scientists (i.e., members of the public who have recorded an instance of roadkill or roadstrike), and other stakeholders could provide their data for collation. A centralised database could also include the appropriate spatial data to allow mapping, and capture installed mitigation infrastructure to monitor effectiveness and thus further inform future mitigation works. Lastly, as future technological advancements occur, having a robust and up-to-date database could inform applications that use in-car warning systems to alert drivers as they approach wildlife hotspots or high-risk zones based on spatially-linked data. Consideration should occur as to how a centralised reporting system could be nationalised in coordination with other jurisdictions.

Recommendation

17. Develop a centralised reporting database to monitor wildlife roadstrike incidents and mitigation infrastructure and tools

[73] Transport for NSW, 2025. NSW BioNet. Accessed April 2025. Available at: https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet

[74] Wildlife Victoria, 2024. Wildlife Road Toll Reduction Toolkit. Wildlife Victoria: Victoria.

(8) Any other related matter

Habitat loss is a key driving factor behind wildlife extinctions in Australia,[75] and land clearing in and of itself is an animal welfare issue.[76] Roads further fragment remaining habitat, and represent a significant and expanding threat to wildlife welfare.[77] Protecting and restoring critical habitat throughout the state, including the ongoing maintenance and appropriate management of national and state parks, is a critical mechanism to safeguard our wildlife populations for the future and must be a priority for state government.

Recommendation

18. Protect and restore biodiverse habitat and support indigenous faunal communities across terrestrial ecosystems in the state

Conclusion

RSPCA Victoria recognises wildlife roadstrike as a serious animal welfare problem that will require cross-sectorial collaboration and significant investment from government to effectively address the issue. There is unlikely to ever be a singular solution that can be applied in all contexts. Any new and emerging technology must be scientifically and robustly tested to ensure that outcomes for animals are positive, tangible, and unconfounded. Establishing a reference group or taskforce to coordinate the approach across states and within Victoria, and to direct resources most effectively, should be an urgent priority for the Victorian Government. Similarly, progressing the review of the Wildlife Act must occur to secure better protections for native wildlife across Victoria.

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[75] Charalambous R, Descovich KA, Narayan EJ. 2024. Identifying Trends in Admission and Release of Wild Koalas in Veterinary Clinics Throughout Queensland, Australia. *Society & Animals*. https://doi.org/10.1163/15685306-bja10220

[76] Finn HC, Stephens NS. 2017. The invisible harm: land clearing is an issue of animal welfare. *Wildlife Research.* 44(5) 377-391 https://doi.org/10.1071/WR17018

[77] Goldingay R, Taylor B. 2009. Roads and wildlife: impacts, mitigation and implications for wildlife management in Australia. *Wildlife Research.* 37(4) 320-331 https://doi.org/10.1071/WR09171

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