INQUIRY INTO RESPONSE TO MAJOR FLOODING ACROSS NEW SOUTH WALES IN 2022
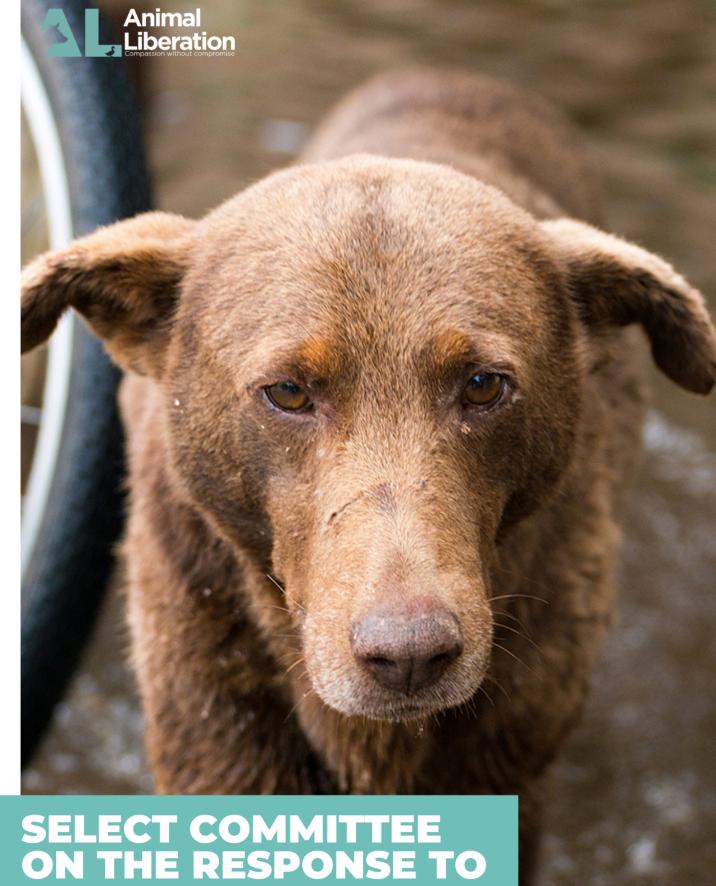
Organisation: Animal Liberation

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SELECT COMMITTEE ON THE RESPONSE TO MAJOR FLOODING ACROSS NSW IN 2022

AN ANIMAL LIBERATION SUBMISSION

Select Committee on the response to major flooding across New South Wales in 2022
Parliament of New South Wales

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1.   Introduction

Animal Liberation welcomes and appreciates the opportunity to provide the following submission to the Select Committee on the response to major flooding across New South Wales in 2022 ('the Committee').

Australia is prone to disasters (Commonwealth of Australia 2020). Between 1967 and 1999 Australia endured 265 ecological disasters with an average annual cost of $1.14 billion (Gentle et al. 2001). Accounting for bushfires and floods alone, the Australian Institute for Disaster Resilience ('AIDR') has recorded 237 disasters between 2000 and 2022 (AIDR n.d.). The overwhelming majority of these were floods, the majority of which occurred in NSW (ibid). Flash floods from high-intensity rainfalls are already Australia's most expensive disasters (Croke 2017), costing an average of $8.8 billion per year (O'Malley 2022). The NSW Government explains that flooding in this state costs an estimated $250 million per year in damage to property and infrastructure, including roads and services (NSW Government 2022). While the scale of damage caused by the February-March 2022 floods remains unknown, it is expected to exceed $2 billion (CDP 2022). This surpasses the estimated cost of previous flooding events and, as such, is one of Australia's most expensive ecological disasters to date (Ludlow et al. 2022a).

While "natural disasters" are the most common type of disaster in Australia, the scale, frequency and intensity of recent events are not natural (Lloyd 2022). The National Strategy for Disaster Resilience ('NSDR') states that disasters can involve any "serious disruption to community life which threatens or causes death or injury in that community and/or damage to property which is beyond the day-to-day capacity of the prescribed statutory authorities and which requires special mobilisation and organisation of resources other than those normally available to those authorities" (NEMC 2011). This submission will demonstrate that such a definition necessarily encompasses a number of scenarios with serious animal welfare implications.

As Australia's premier animal protection organisation ('APO') that specialises in advocating for permanent improvements to animal welfare, AL's submission addresses the terms of reference ('TORs') through an animal welfare lens. While we will demonstrate the key environmental drivers influencing the scale and intensity of floods and other natural disasters across NSW is the climate crisis and its associated impacts, we will show that insufficient planning and resourcing have been focused on preparing for animal welfare outcomes. In this context, we will consider relevant legal frameworks, the recommendations of previous inquiries and relevant state, national and international disaster planning policies. Finally, we will make recommendations for improved, strengthened and science-based strategies to prevent animal welfare tragedies arising from the impacts of floods and other natural disasters. Beyond that, we do not address other aspects of the TORs, as these issues are better addressed by other experts.

The climate crisis is an emerging animal welfare disaster. We hope that this Select Committee will investigate and make recommendations for how NSW can achieve greater coordination and accountability with respect to animal welfare preparedness and resilience.

2.   Ecological disasters and the climate crisis

2.1   Background

Evidence of anthropogenic climate change is unequivocal (McMichael et al. 2004; OECD 2008; UN 2011; Hanna and McIver 2018). The association between human activity and the climate crisis[1] has been demonstrated in a range of examples, including an increased frequency, intensity and duration of:

- heatwaves (Perkins et al. 2012; Hansen and Sato 2016; Perkins-Kirkpatrick and Lewis 2020);

- droughts (Seneviratne et al. 2002; Karoly et al. 2003; Ogburn 2013);

- wildfires (Williams et al. 2001; Voiland 2015; Abatzoglou and Williams 2016) and;

- heavy rainfall and flooding events (Emanuel 2017; Rahmstorf 2017; Collini 2021; Denning 2022; Lindsey 2022).

Natural hazards such as these are the events that trigger *ecological disasters* (Chaudhary and Piracha 2021)[2]. Though such hazards are numerous and occur regularly (Cui et al. 2021), the frequency and severity of events labelled "natural disasters" are increasing (Easterling et al. 2000; Parmesan et al. 2000; Diffenbaugh et al. 2005; Mascarelli 2009; Schiermeier 2011; Coumou and Rahmstorf 2012; IPCC 2014; Dominey-Howes 2015). *Disasters* occur when *hazards* negatively impact the functioning and livelihoods of vulnerable groups or communities (Weichselgartner and Bertens 2000; Dominey-Howes 2015; Best 2021). Though natural hazards, including floods, lead to deaths and damage (i.e., they *become* disasters), these consequences arise from "human acts of omission and commission" rather than acts purely of "nature" (Chmutina and von Meding 2019).

As such, experts have challenged how "natural" so-called "natural disasters" are. Many have demonstrated that they are socially produced (Ball 1975; Glantz 1977; O'Keefe et al. 1976; Oliver-Smith 1986; Cannon 1994; Smith 2005; Bosher 2008; Chmutina et al. 2017). There are three (3) key reasons for this: (1) humanity is interfering with the Earth system, primarily through climate change, and increasing the probability of more frequent and extreme hazards (Kerr 2011); (2) humanity is mismanaging natural systems in a manner that enables hazards to become more disastrous (Dominey-Howes 2015) and; (3) humanity is spreading into and occupying areas where more hazards occur, thereby exposing communities to harm and loss when hazards occur (Futamura et al. 2011).

The conclusion that while *hazards* cannot be prevented, whether they become *disasters* can be is supported by esteemed international organisations. For example, the United Nations Office for the Coordination of Humanitarian Affairs ('OCHA') states that "it's actually the decisions we make that create a disaster" (OCHA 2022). As we have shown, it is increasingly apparent that the scale, frequency and severity of such hazards are being amplified by the climate crisis (Dominey-Howes 2015).

2.2   The Australian context

Australia has already started to experience the devastating consequences of climate change and the increased risks posed by more frequent and severe ecological hazards. These impacts include, but are not limited to:

- the warming and acidification of oceans (Brown and Gerbing 2020; CSIRO 2021a);

- rising sea-levels (AAS 2022);

- decreased rainfall in southern regions and increased rainfall in the north (SA EPA 2016; Trewin 2022) and;

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[1] As global temperatures are warmer than during 75% of the Holocene temperature history (Marcott et al. 2013) and the average global temperature is over 1°C above pre-industrial levels (IPCC 2018), it is reasonable to conclude that we have the context of climate change has entered *a crisis* (Twine 2017; Ripple et al. 2020).

[2] A *disaster* is commonly defined as "a serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts" (UNDRR 2022a). A *hazard*, meanwhile, is commonly defined as "a natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation" (UNDRR 2022b).

- the long-term increase in extreme fire weather and severe bushfires (Cox 2018; Wang 2022).

Many of the hazards outlined in the previous subsection have been experienced in NSW and have had devastating consequences. Consider, for instance, the following examples:

- up to 98% of NSW was affected by droughts in 2019 (RFS 2020);

- in 2019/20, bushfires claimed the lives of three billion native animals (van Eeden et al. 2020);

- the "unprecedented" yet catastrophic floods that form the focus of this Select Committee (AAP 2022a; Anon. 2022; Ludlow et al. 2022b; Readfearn et al. 2022).

The future consequences Australia are expected to endure due to the climate crisis include the intensification and proliferation of ecological adversities we have already witnessed. This will include:

- further increases in temperature, with more extreme hot days and fewer cool days (CSIRO 2021b);

- increasing bushfires, both in terms of both severity and length (Tran et al. 2020);

- intensified and more frequent periods of drought (Canadell et al. 2021) and;

- increasing heavy rainfall events that cause further and intensified flooding (Tabari 2020; Gergis 2021).

In the most comprehensive assessment of the impacts of climate change undertaken to date - released amidst the ongoing devastation of the February/March 2022 floods - the IPCC identified Australia as experiencing greater impacts from climate change than any other advanced economy (IPCC 2022; O'Malley 2022). Others have suggested that the opportunity to "save ourselves" from the impacts we have briefly described above is rapidly closing (Slezak 2022). As renowned climate scientist James Hansen explained, the action we take or do not take will be felt in the storms experienced by our grandchildren (Hansen 2009).

2.3   The impact of climate change on flooding events

There is strong evidence demonstrating that extreme weather events are related to ecologically harmful human activity (Karoly and Braganza 2005; Gould and Lewis 2009; Thomas and López 2015; Bowman et al. 2017; Sambrook and Richardson 2019; Arriagada et al. 2020). Heavy rainfall and catastrophic flooding events are more likely due to climate change (IPCC 2022).

The water-carrying capacity of the lower atmosphere rises by approximately 7% for every 1°C of warming (Ingram 2016; Allan et al. 2020; Tabari 2020). Global estimates suggest that the frequency of intense rainfall events is expected to nearly double with each degree (Myhre et al. 2019). Australia's climate has warmed by 1.4°C since national records began in 1910 (BOM 2020) and is expected to rise further in the future (Whetton et al. 2015). The majority of disasters recorded in Australia between 2000 and 2022 were floods (AIDR n.d.). Recent decades have seen the intensity of short-duration extreme rainfall events increase by up to 10% in some regions (CSIRO and BOM 2020). As such, Australia is highly vulnerable to increasingly intense storms and catastrophic flooding events (Rice et al. 2022).

While the NSW Department of Planning and Environment ('DPE') maintains that heavy rainfall that leads to flooding is a "natural process" (DPE 2022), and others note that floods are "part of Australia's natural ecology" (CSIRO 2022), the NSW Government acknowledges that climate change is associated with rainfall extremes and is "expected to make storm and flood events more severe" (NSW Government 2022). The BOM explains that even if greenhouse gas ('GHG') emissions remain within international targets, there may still be ongoing disruption of rainfall patterns and associated drought and flood risks (BOM 2017; Power et al. 2017b). We have shown that there is a strong trend, tied to the climate crisis, in which wet areas become wetter and dry areas become drier (Seager et al. 2010; Gergis 2021).

2.4   The 2022 floods

Water-related hazards are capable of becoming significant ecological disasters (UN 2021; WMO 2021). Floods are a type of rapid-onset emergency because they occur with little warning and cause immediate and often severe impacts (Campbell and Knowles 2011; LEGS 2014). Flash floods from high-intensity rainfalls are already Australia's most

expensive disasters (Croke 2017), costing an average of $8.8 billion per year (O'Malley 2022). Flooding in NSW costs an estimated $250 million per year in damage to property and infrastructure (NSW Government 2022). While the scale of damage caused by the February-March 2022 floods remains unknown, it is expected to exceed $2 billion (CDP 2022). This surpasses the estimated cost of previous flooding events and, as such, is one of Australia's most expensive ecological disasters to date (Ludlow et al. 2022a). As previous sections have shown, these costs are expected to become increasingly devastating and frequent as the climate crisis progresses (Reid and King 2022).

Though some were initially reluctant to attribute the 2022 floods to climate change (Norman 2022), others have explicitly identified the frequency and intensity of these events as being influenced by climate change (Steffen and Alexander 2016; Gergis 2021; Hanrahan 2022). A recent report published by the Climate Council of Australia ('CCA' or 'the Climate Council') notes that "climate change is firmly embedded in the 2022 flooding emergency that swept through southeast Queensland New South Wales" (Rice et al. 2022).

2.5   The impact of flooding events on human health and resilience

Though the hazards that cause ecological disasters do not discriminate, some groups are acutely more vulnerable than others (Wisner et al. 2004; Tierney 2006). The recent IPCC report, referred to above, predicts that the climate crisis will cost Australia "hundreds of billions of dollars" in the coming decades (Foley 2022; IPCC 2022). If current data is consistent, up to 90% of the damages these events cause will be personal (ICA 2021). While this could amount to up to $245,000 per person (Mallon 2020), these estimates do not consider associated health and wellbeing impacts (Phelan and Svenson 2021). Similarly, it does not account for other associated impacts that cause long-term disadvantages. Recent reports suggest, for instance, that climate change will result in 1 in 25 homes becoming "uninsurable" by 2030 (Hutley et al. 2022; Kilvert 2022). In addition to secure shelter, other health impacts are expected to include key environmental determinants, such as clean air, safe and sufficient resources, disease and pollution (Beaudeau et al. 2011; Squance 2011; Cann et al. 2013; Murshed et al. 2014; Stanford et al. 2014; Yard et al. 2014; Young et al. 2015; WHO 2021).

Climate change also has an acute impact on psychosocial wellbeing (IPCC 2022). For example, following the 2010-11 floods in Queensland mental health issues were the largest economic impact, with a lifetime cost determined to be $5.9 billion (DAE 2017). Impacted residents were over five (5) times likelier to report poorer health and over two (2) times likelier to report post-traumatic stress disorder ('PTSD') than those who were not impacted by the floods (Rice et al. 2022). This corresponds with a longitudinal study that found between 15-20% of those impacted by an ecological disaster have symptoms of PTSD (Beck and Franke 1996). Similar surveys have produced supporting results (Bryant et al. 2014; Hooper and Magor-Batch 2018; Lowe et al. 2019; Willis 2020; Agyapong et al. 2021). Furthermore, victims in regional, remote or economically disadvantaged areas were more likely to report emotional impacts caused by the floods (DAE 2017). The Climate Council note that the loss of loved ones, homes, property and farmed or companion animals triggers acute and prolonged psychological trauma (Rice et al. 2022). The latter will be further discussed in the next section of this submission.

3.   Climate change and animal welfare

3.1   Background

When disaster strikes, it is widely and tacitly understood that human lives take precedence over other animals (Irvine 2009; Trigg et al. 2021). Many animals are regarded as expendable or disposable, particularly during times of crisis (Ellis 2007). Yet animals represent a significant source of concern during and after environmental disasters due to the severe welfare issues involved (Possenti et al. 2020). Recent disasters, including the 2019-20 bushfires and the March 2022 floods, have made the vulnerability of animals during and after disasters acutely apparent (Best 2021).

In a recent review of the impact of climate change on animal welfare, the RSPCA concluded that "it is clear that climate change poses an immediate and future risk to the welfare of all animals and urgent action must be taken now to manage and prevent those risks" (RSPCA Australia 2020a). Though some jurisdictions have started integrating animals in disaster planning, their interests remain subordinate to those of people (Best 2021). For example, the Victorian Emergency Animal Welfare Plan ('VEAWP') was introduced in response to the recommendations of the 2009 Victorian Bushfires Royal Commission (Agriculture Victoria 2019). While this plan represents the first meaningful Australian attempt to protect animals during disasters (White 2012), it remains "highly anthropocentric" (Best 2021). For example, its first guiding principle is that the "protection and preservation of human life is paramount" (DJPR 2019). Similar principles exist in other Australian plans. South Australia's equivalent defines the protection of humans as its "overarching priority" (PIRSA 2018) and Western Australia's equivalent declares that protecting people is the "primary aim" of disaster and emergency response (DPIRD 2021). While there may be rationales for prioritising human safety during disasters, the subjection of animal interests as authorised by their property status can have serious consequences for their welfare (Heath and Linnabary 2015). We will show that such a prioritisation places human wellbeing at risk (Hall et al. 2004; Hunt et al. 2004; DCSI 2013; Taylor et al. 2015a).

Similarly, it is evident that the management of animals during and after disasters is crisis-driven and reactive rather than designed to facilitate long-term outcomes by improving underlying structural deficiencies (Hall et al. 2004; Heath and Linnabary 2015; Thompson et al. 2017; Squance et al. 2018). The subsequent sections will demonstrate that there is substantial evidence demonstrating that the strong bonds between humans and animals can lead to people endangering their own safety to rescue animals in their care during or after disasters (Zotterelli 2010; Heath et al. 2001a; Anderson and Anderson 2006; Edmonds and Cutter 2008; Glassey and Wilson 2011; Brackenridge et al. 2012; Trigg et al. 2015a; Akhtar 2016; Wilkinson et al. 2016; McCarthy et al. 2018; Migliaccio et al. 2018; Green 2019). This necessarily undermines the efficacy of disaster response. As such, we will show that failing to account for or incorporate animals in disaster management represents a significant threat to both human and animal welfare.

Table 1: Adverse animal welfare impacts caused by climate change

Impact	Consequence
Nutrition	Animals may suffer thirst, hunger, malnutrition, gastrointestinal pain, starvation and death as climate change impacts global food and water security (IPCC 2018). Higher ambient temperatures associated with climate change also have a direct effect on appetite and thirst (Lacetera 2019).
Environment	The consequences of climate change impacts all aspects of an animal's environment (RSPCA Australia 2020a). Animals suffer during and after more frequent and intense extreme weather events, such as floods and fires. These events cause direct mortality as well as prolonged suffering where habitats have been destroyed leaving little food, water or shelter. As a result, animals are likely to experience fear, distress, discomfort and pain which in many cases will be unpredictable, inescapable or prolonged (Rajewski 2020; Stockwell 2020).
Health	Climate change can have profound direct and indirect effects on animal health (RSPCA Australia 2020a). Though traumatic death in extreme events such as bushfires and floods is perhaps the most dramatic direct effect of climate change on animals (Yeates 2010), animals are also impacted by increased heat, food and water scarcity and water and increased diseases, caused by climate change (Green 2019).
Behaviour	Climate change poses several challenges to animal behaviour. These include limiting activity (e.g., fish may be unable to swim when water bodies dry up due to drought), disrupting social dynamics (e.g., separation during extreme weather events), inescapable sensory pressures (e.g., unavoidable heat) and restrictions on sleep (e.g., due to the destruction or fragmentation of suitable sites) (RSPCA Australia 2020a).

Impact	Consequence
Psychology	While there is ample research indicating that climate change has a negative impact on human mental health (Berry et al. 2010), little to no attention has been given to the effects of climate change on the overall mental state of other species (RSPCA Australia 2020a). There are accounts of Australian wildlife in the aftermath of bushfires demonstrating responses consistent with shock (Lewis 1980). Though it is likely that climate change has and will continue to cause adverse experiences, including increased anxiety and fear, research is required to ascertain and understand the extent to which this has and will occur.

3.2   Companion animals

At least one companion animal can be found in two-thirds of all households in Australia (Thompson 2015). Nine out of ten households have included a companion animal at some time (AMA 2019). Recent figures show that over 29 million companion animals are kept across 61% of Australian households (Hannink 2020; RSPCA Australia 2020b). Of these, 86% regard companion animals in their care as part of the family (Westcott 2015). Many of these animals are vulnerable to the increasing frequency and severity of extreme weather events caused by climate change (IPCC 2012; Best 2021). This has, in turn, shaped human vulnerability (White 2014)[3]. Animals are frequently impacted by the issues affecting climate refugees and can be displaced with their guardians or abandoned when they are forced to escape (Fraser et al. 2021)[4]. We will demonstrate that the latter constitutes a significant yet overlooked aspect of existing disaster management in Australia.

The loss of an animal under any circumstances can have a significant impact on people's well-being (Myers 2002; Morley and Fook 2005; Barton Ross and Baron-Sorensen 2007; Blazina et al. 2011; Coombs et al. 2015). The impact of losing animals can cause prolonged psychosocial impacts after disasters and decrease or delay their capacity to cope or recover (Hall et al. 2004; Hunt et al. 2008). As such, when such loss occurs within the context of a disaster, it is experienced in association with the trauma of the disaster and a person's recovery and resilience may be further compromised (Leonard and Scammon 2007; Mort et al. 2008; Glassey 2010; Evans 2011; Evans and Gray 2012; Chan and Rhodes 2014; Lowe et al. 2015). As such, an explicit acknowledgement of the impact of changes to animal-human relationships must also feature in assessments by critical response teams, social workers and other human service practitioners (Evans and Perez-y-Perez 2013).

Australian research identifies pet ownership as a significant disaster-risk factor for vulnerable individuals (DCSI 2013). For example, although the desire to protect, save or rescue the animals in their care can undermine disaster response (Hunt et al. 2012; Taylor et al. 2015a) and be emotionally burdensome (Hall et al. 2004), if appropriately considered this may be leveraged to increase disaster preparedness and resilience (Thompson et al. 2014; Thompson 2015; Thompson 2013; Trigg et al. 2015a; Trigg et al. 2015b). As such, it is increasingly acknowledged that explicit consideration of the needs of and planning for animals during and after disasters can produce positive outcomes for animal welfare, public health, the emotional wellbeing of people and the economy (Hall et al. 2004; Austin 2013).

3.3   Farmed animals

Humanity is deeply entwined with and dependent upon the lives of billions of other-than-human animals (Alcano et al. 2003; Benor 2014; Bankoff 2015; Scheffer et al. 2018). Many of these animals have been forced to live in modified environments that produce particular forms of vulnerability that are amplified and compounded during disasters (Green 2019). The legal status of animals as property allows them to be treated and kept in conditions that maximise their economic value (Francione 1995; Eisen 2017), regardless of whether this increases their vulnerability to disasters (Kelch 1998). The fact that animals are property under law legitimises practices that heighten their vulnerability to hazards while neglecting to provide for their welfare during emergencies (Best 2021). The implications of this are particularly profound for farmed animals.

Though all animals are threatened by ecological disasters, those at greatest risk and acutely vulnerable during and after such events are those who are confined and unable to escape (Irvine 2006b; Irvine 2009; Glassey 2010; Potts and Gadenne 2014). The severity of the threats to confined animals during disasters are notable. The agricultural sector, including farmed animals, has been identified as being "particularly vulnerable to natural hazards and disasters" (FAO

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[3] *Vulnerability* is defined as "the characteristics of a person or group and their situation that influence their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard (an extreme natural event or process)" (Wisner et al. 2003).

[4] See Table 1 above.

2021). Climate change places the welfare of Australia's estimated 800 million farmed animals at increasing risk (Harle et al. 2007). During and after environmental disasters, farmed animals often endure disease (Sen and Chander 2003) and scarcities of food and water (Migliaccio et al. 2018). Examples of recent ecological disasters provide an insight into the emerging animal welfare crisis produced by the climate crisis.

Farmed animals are used exclusively for food in high-income countries and, as such, disaster-related losses are regarded as economic events (Delgado et al. 1999; Pingali and McCullough 2010; Steinfeld et al. 2010). Even if an approach or perspective that disregards the animal welfare impacts of these events, losses can be substantial (Campbell and Knowles 2011). Tens of thousands of farmed animals died in the 2019–20 Australian bushfires (Crawford 2020). Many of these animals had unsuccessfully attempted to flee and perished in the fires (Bell 2020). Similar examples can be found relating to other Australian ecological disasters (Government of South Australia 2020). An estimated 11,000 farmed animals died during the Black Saturday bushfires of 2009 in Victoria alone (Teague 2009), with the direct cost of such losses conservatively estimated at more than $18 million (Coli 2013), though others place the number of deaths significantly higher (Pawsey 2015). Up to 600,000 cows died in the far north Queensland floods of 2019, with estimates suggesting that 2% of the national herd perished in the 2022 floods (May 2022a). In 2021, there were reports of cows being attacked by bull sharks in NSW floodwaters and many instances of animals experiencing hypothermia, shock, pneumonia and exhaustion (AAP 2021). Similar instances can be found in the wake of other international ecological disasters. Some have concluded that such risks present a valid reason for eliminating intensive animal agriculture (Irvine 2006b).

Australian industry documents emphasise that "the welfare of livestock remains the responsibility of the livestock owner or their nominated representative" (Integrity Systems Company and MLA 2019). The Australian chicken industry, for example, is owned by six (6) processors (May 2022b). Similarly, 72% of sows in NSW are confined in 2% of total farms (DPI 2015). Within the chicken industry, processors contract individual operators to grow birds who are then sent to company-owned abattoirs (ACMF 2020). In addition, the sheer numbers of animals confined in a typical facility poses several serious logistical problems, such as transportation and re-housing, in the event of rescue. An average chicken shed can hold about 40,000 chickens and there can be up to ten (10) sheds on a single farm (Poultry Hub Australia 2022). Ultimately, saving the lives of farmed animals during disasters or emergencies often costs more than the monetary value of the animals' lives and operators are thereby unwilling to do so (Irvine 2006b). Other animals whose movement and means of escape is restricted include horses kept in stables, rodents and primates in laboratories, fish and other sea life in aquariums, exotic animals in zoos, and others kept in kennels or entertainment industries (Bekoff 2015).

Concerted efforts to raise awareness of the conditions farmed animals are produced for human consumption have increased worldwide (Fraser et al. 2022). The human population is predicted to grow to approximately 10 billion by 2050 (UN 2019), generating an estimated increase in demand for animal products by 70 per cent (Linehan et al. 2012; Makkar 2018; Ranganathan et al. 2018; Searchinger et al. 2018). Given animal products provide only 17 per cent of global kilocalories and 33 per cent of global proteins, it is predicted that the number of farmed animals will grow in line with human population growth (Rojas-Downing et al. 2017). As such, growing numbers of animals will be held in the conditions of extreme confinement that "in and of themselves are cruel and abhorrent" (Fraser et al. 2022), but simultaneously expose them to adverse impacts of climate change (Asner et al. 2004; Howden et al. 2008; Rojas-Downing et al. 2017). In such circumstances, it is reasonable to conclude that it was "the factory farming system, not the weather alone, [that] created disastrous consequences" (Irvine 2009). In all instances, it is the property status of these animals that enabled them to be kept in confined areas exposed to lethal vulnerability (Best 2021). Because animals are legally classified as "possessions", they "are at risk of being treated as 'things' or 'objects'" under existing emergency management law (Potts and Gadenne 2014).

3.4   Wild animals

Natural disasters, including floods, can be significantly injurious to animals both physically and psychologically (OIE 2016; Villa et al. 2017; Gaviglio et al. 2021). Research has demonstrated that the climate crisis is already impacting free-living or wild animals (Fraser et al. 2021). While many native species are well adapted to coping with periodic ecological disasters, including floods, they will continue to face increasingly frequent and intense events in the future due to climate change (Ritchie and Jolly 2022).

Australia already has the highest extinction rate for mammals (Woinarski et al. 2015) and the destruction wrought by the ongoing impacts of the climate crisis means that some species may become extinct at a more rapid rate (Dickman 2020). Indeed, the increased frequency of extreme climatic events could increase the risk of local or total extinction (Soriano-Redondo et al. 2016; Commonwealth of Australia 2020: 355; Readfearn 2020), exposing the intrinsic connection

between the climate crisis and biodiversity loss (Ritchie 2022)[5]. The final report of the Royal Commission into National Natural Disaster Arrangements noted that also found that "Australia has, in general, failed to arrest the declines in its threatened species" (Commonwealth of Australia 2020: 363). Despite this, the interim report of the EPBC Act Review noted that "there is no avenue for an emergency listing of newly threatened species in response to natural disasters" (Samuel 2020).

The final report of the Royal Commission into National Natural Disaster Arrangements also noted that first responders during disasters do not always understand existing arrangements relating to wildlife (Commonwealth of Australia: 357). It stated that including non-government organisations ('NGOs'), including APOs, within emergency management arrangements could enable groups to work in collaboration with state emergency management agencies and that such an arrangement could be beneficial for a number of reasons. For example, it noted that NGOs could "benefit from the situational awareness of first responders, and to access the fire ground safely" while first responders could benefit from increased "awareness of animal welfare, species conservation, and the capabilities of wildlife first responders" (Commonwealth of Australia: 357). As such, it concluded that because there are no current national standards for the rehabilitation, assessment, treatment and care for wildlife during or after disasters, the development of "clear and consistent national guidance on rescue and treatment of wildlife would support a coordinated approach to recovery" (Commonwealth of Australia 2020: 360).

On these grounds, the Royal Commission into National Natural Disaster Arrangements recommended that jurisdictional cooperation within state and territory governments and collaboration with relevant NGOs to "establish best practice arrangements and responses relevant to emergency wildlife response and recovery" (Commonwealth of Australia 2020: 360). It similarly recommended that state and territory governments "ensure that effective wildlife response and recovery capabilities are developed and integrated into emergency planning processes for natural disasters" (Commonwealth of Australia 2020: 360).

3.5   Conclusion

Well planned and implemented strategies incorporate the needs of animals and their caretakers or guardians (Heath and Linnabary 2015) and communities are increasingly expecting animals to be incorporated in emergency management planning (Westcott et al. 2017a). Increasing demands for improved animal welfare outcomes can be expected to expand this further as the consequences of the climate crisis become increasingly apparent and impactful (Taylor and Signal 2009; Bennett and Blaney 2003; Futureye 2018; McGreevy et al. 2019; Windsor 2021).

Climate change has and will continue to have a profound impact on animal welfare (Mellor and Beausoleil 2015; RSPCA Australia 2020a). Companion animals (Thompson 2013), farmed animals (Lacetera 2019), animals used for entertainment (Rebbeck 2013) and wildlife (Dickman 2020) can be directly and indirectly affected by climate change (Pratchett et al. 2011; Wild et al. 2019). As a result, many animals have and will continue to suffer and die from the effects of climate change (Fey et al. 2015).

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[5] The EPBC Act Interim Review found that "the number of listed threatened species and communities continues to increase" (Samuel 2020). . Recent disasters, including the 2019-20 bushfires and the March 2022 floods, have made the vulnerability of animals during and after disasters acutely apparent (Best 2021). Based on conservative estimates made by experts at the University of Sydney, the 2019/2020 bushfire season caused the deaths of over 1 billion animals (Dickman 2020).

4. Emergency planning for animal welfare in disasters

4.1 Background

There have been many large-scale environmental disasters that have increased public awareness of the needs of animals in disasters (Appleby and Stokes 2008; Millman 2008; Heath 2011; Lee 2017; Anthony and De Paula Vieira 2022). While media detailing the impacts of disasters on animals is common, it is often described as solely the result of the disaster (Heath and Linnabary 2015). Disasters seldom create new circumstances, however, and in most cases disasters expose underlying vulnerabilities by "suddenly opposing chronically unmet needs with equally chronic insufficient resources" (Heath and Linnabary 2015). For example, a Commonwealth commissioned report found "a lack of understanding and preparedness" meant Australian telecommunications services lacked resilience during and after disasters (Essence 2020). Despite this finding and the investment of $37.1 million through the Strengthening Telecommunications Against Natural disasters package (DITRDC n.d.; Fletcher 2020), these issues were identified as a critical component that impacted rescue and recovery efforts in the Northern Rivers region of NSW after the 2022 floods (May et al. 2022). Similarly, the issues impacting animal welfare during disaster response are seldom new and are symptomatic of an underlying unpreparedness (Heath and Linnabary 2015).

Throughout this submission, we have shown that such events are increasing in frequency and severity (Johnson et al. 2020). People's decision-making and actions during emergencies are strongly influenced by their relationships with animals (Squance et al. 2021). As such, animals are increasingly included in emergency management legislation and policy, including the development of animal welfare emergency management ('AWEM') in many countries (Heath and Linnabary 2015; Westcott et al. 2017; Squance et al. 2018; Dalla Villa et al. 2019; Possenti et al. 2020). Though there is a notable absence of Australian empirical research relating to the welfare of animals during and after disasters, there has been growing awareness of the importance of plans and strategies that consider these needs in emergency contexts (Taylor et al. 2015b).

Animal welfare emergency management ('AWEM') is an emerging area of emergency preparedness and management (Squance 2011; Glassey 2021). Elsewhere, improvements to emergency management protocols have been made (Travers et al. 2017). The exceptionally high rates of companion animal ownership in Australia (AHA 2013; AMA 2019) and the well-documented impacts of grief at animal loss (Zottarelli 2010; Hall et at. 2004; Thompson 2013) have generated calls for the consideration of animals "at all stages of emergency preparedness and planning" (Taylor et al. 2015b). The status of animals as property, however, makes them legally subordinate, and they are often afforded a correspondingly lower priority in emergency response management plans (Best 2021). Distinct categories of animals are "differentially provided opportunities for rescue or escape" (Irvine 2009). It follows, therefore, that emergency planning frameworks are negligent if they exclude animals confined and dependent on automated food and water systems in intensive facilities or in environments where they can not physically escape or avoid harm.

4.2 Why animals matter in disaster and emergency management

a) Animals have intrinsic value

Over the past four (4) decades, scientific opinion has progressed to a virtually unanimous agreement that animals are sentient (D'Silva 2006; Duncan 2006; Proctor 2012; Mellor 2019; Kotzmann 2020). Through the 1980s, science gradually accepted that the importance of feelings was not only central to animal welfare but was "the only thing that matters" (Dawkins 1980; Duncan 1996; Duncan 2004). In the process, sentience has been increasingly recognised in the equivalent animal protection legislation of many states (Duncan 2006; Kirkwood 2006; López 2016; OIE 2017a; Wyatt et al. 2021; Ball 2022; Lessard 2022). As the RSPCA explains, "recognising animal sentience reflects scientific evidence, contemporary best practice in animal welfare legislation and is increasingly a feature of animal welfare legislation around the world" (RSPCA Australia 2019). States whose laws reflect scientific evidence thereby follow a 'sentientist" ethic, whereby the importance of animals and their wellbeing is based, first and foremost, on their intrinsic value (Blattner 2016). As a benchmark and a general principle, it is reasonable to conclude that nations with the most protective animal welfare laws formally and explicitly recognise animal sentience (Park 2021).

As sentient beings, animals suffer during and after disasters (Nagasawa et al. 2012; Kelman 2021). Though there is no universal definition of animal welfare (Cornish et al. 2016), and the term is used with varied meanings as different stakeholders have different interests and perceptions (Vanhonacker et al. 2008; Hemsworth et al. 2015), the most widely adopted definition of animal welfare is based on an individual's state concerning their capacity to cope with their

environment (Broom 1986; Alonso et al. 2020). The Australian Animal Welfare Standards and Guidelines ('AAWS&Gs'), and a range of pre-existing model codes of practice ('MCOPs'), adopt this approach and define animal welfare as "the state of an animal and how well it is coping with the conditions in which it [sic] lives". International bodies, such as the OIE, have also adopted this approach (OIE n.d.; Carenzi and Verga 2009). On the basis of animal welfare principles alone, every effort must be made to protect animals during and after disasters.

b) Animals contribute to human health and wellbeing

The concept of the "human–animal bond" is well-established (Brooks et al. 2019; Gee and Mueller 2019). It acknowledges that relationships between humans and other animals can be deep and meaningful (Shoesmith et al. 2021). The belief that relationships with other animals are good for human health is becoming increasingly common (Herzog 2020). Studies have demonstrated that relationships with animals has a range of significant benefits, including improved mental health (Likourezos et al. 2002), improved quality of life, enhanced social interactions (Brooks et al. 2012; Wood et al. 2015) and improving coping abilities in challenging circumstances (Bowen et al. 2020; Ratschen et al. 2020). For example, Australian researchers carried out the first national study investigating the relationships between people and animals in their care in 1994 (Headey 1999). It found that people who cared for animals exhibited better mental and physical health than those who didn't (O'Haire 2010).

Given that relationships with animals provide strong emotional and psychological support for many people, and are frequently regarded as members of the family who are endowed with a degree of "personhood" (Francione 1995; Arluke 2010; Coombs et al. 2015; Westcott 2015; Trigg et al. 2016), it is critical to consider what happens when this support is removed (Bodsworth and Coleman 2001; Irvine 2009; Walsh 2009; Bouma et al. 2022). This applies not only when an animal has been lost, but also when the broader nature of the relationship has been adversely altered by an ecological disaster. Under dangerous circumstances, an anticipated loss of this relationship can trigger significant separation distress (Zilcha-Mano et al. 2011) and prompt actions that risk personal safety (Heath et al. 2000).

Aside from these direct benefits, wild animals have important effects on human well-being (Díaz et al. 2006; Mace et al. 2012). Wildlife play major role in many people's lives (Mackerron and Mourato 2013; Cox and Gaston 2016). The influence of wild animals on human well-being can be described in reference to Nature's Contributions to People ('NCP') (Díaz et al. 2018). Each affect multiple aspects of human well-being, including access to food, water, shelter, health, education, social relationships, and security (Díaz et al. 2015; Methorst et al. 2020).

c) Failure to account for animals places human wellbeing at risk

Close relationships with animals have been shown to delay and reduce the likelihood of safe and successful evacuation (Brackenridge et al. 2012) and are associated with increased attempts to rescue animals and increased actions placing personal safety at risk (Heath et al. 2000). As it applies to flooding, research has shown that the influence of each additional animal increases the probability of evacuation failure by up to 30% (Heath et al. 2001a). The actions of the guardians who rescue animals in contravention of evacuation orders highlight the risks of "incompatible systems of meaning" (Irvine 2006b). One animal response director described the issue as follows: "The public may think the question surrounding companion animals in disasters is, 'will you risk *your life* for your companion animals?' However, the question really is 'will you risk *someone else's life* for your companion animals?" (emphasis in original) (Irvine 2006b).

Failure of emergency or disaster response efforts to consider animal welfare clearly compromises human lives (Glassey 2010; Evans and Perez-y-Perez 2013). Many have lost their lives in attempting to rescue them during an emergency (Thompson 2013). Research demonstrates that households with companion animals are the least likely to adhere to evacuation orders (Heath et al. 2001a; Selbert 2002). Polls conducted in the aftermath of ecological disasters have found that over 60% of respondents would refuse to evacuate if they could not take their animals with them (Mike et al. 2011). Others have found that over 80% of people who re-entered an evacuated area did so to rescue animals (Heath et al. 2001b). Similar figures have been found in Australian contexts (Squance 2011). The Royal Commission into the 2009 Black Saturday bushfires in Victoria found that people actively chose to return to the fire zone in order to rescue animals (Teague 2010). In some cases, people died after refusing to leave without their animals or due to delays due to concern for animals (DPI and DSE 2011). The Queensland Flood Commission of Inquiry found that the guardians of companion animals were reluctant to evacuate without their animals (QFCI 2012).

4.3   Conclusion

Ethical judgments are implicit in all decisions and recommendations relating to the conceptualisation of a "disaster" and definitions of moral considerability (Irvine 2009), its impact on animal welfare (AVMA 2020a; AVMA 2020b; Sawyer and Huertas 2018), or which mitigation framework to deploy (Anthony and De Paula Vieira 2022). Moral beliefs regarding the treatment of animals in disasters are diverse. Some animals are clearly regarded as "near-persons" (Varner 2012) while others are routinely considered "collateral" or "commodities" (Irvine 2009). Ethical principles frequently applied to guide and rationalise decision-making in AWEM can be misinterpreted and cause disputes about priorities (Van Herten et al. 2020). We have shown that human lives are often prioritised in a crisis. Such an approach, however, can create a second disaster in the form of the overwhelming numbers of homeless or abandoned animals requiring rescue, housing, and veterinary care (Irvine 2006b). We have also shown, however, that the needs of animals are increasingly incorporated into the structure of disaster management (Baptista et al. 2021; Anthony and De Paula Vieira 2022).

As human and animal health are "interdependent and bound to the health of the ecosystems in which they exist", preserving and enhancing animal welfare has a range of direct and indirect associations with human wellbeing and environmental issues (OIE 2013).

We recommend the NSW Government and adopt the One Health ('OH') approach, which was originally a response to a rise in emerging infectious diseases, but has been increasingly applied to the advancement of animal welfare during disasters (De Paula Vieira and Anthony 2021). Such an approach prioritises recognition of the convergence between or among the "three prongs" of health, welfare, and wellbeing of people, animals, and the environment (CDCP n.d.; Pinillos et al. 2016; Argent 2022). One Health animal disaster management ('OHADM') strategies and frameworks have been progressively embraced and developed by a number of leading international bodies, including the World Health Organisation ('WHO'), the World Organisation for Animal Health ('OIE'), the Food Agricultural Organisation of the United Nations ('FAO'), and various professional organisations, such as the American Veterinary Medical Association ('AVMA') (AVMA 2012; OIE 2016; FAO 2020; FAO 2021; Anthony and De Paula Vieira 2022).

Though disasters invariably cause varying degrees of destruction, they can also serve as valuable opportunities to reassess underlying problems that predate a catastrophe (Anthony and De Paula Vieira 2022). Disasters can, therefore, stimulate a reconsideration of existing ethical convictions towards certain communities and motivate proactive steps to minimise their susceptibility to harm (Anthony and De Paula Vieira 2022). Moreover, these can stimulate animal-based industries, caretakers or guardians and the public to adopt a proactive approach prior to the onset of a disaster (Anthony and De Paula Vieira 2022). This would necessarily extend the range of moral considerability during a disaster by making animal welfare a "complementary priority" before and during disasters (Heath 1999; Irvine 2009). Incorporating animal welfare into disaster planning can thereby guide the development of a "new normal" for promoting the care of animals while still "saving all who can be saved" (Zack 2009).

5. Conclusion and recommendations

The need to plan and prepare to care for animals in advance of disasters, and then to provide structured and coordinated management when such crises occur, necessitates collaboration between all relevant agencies, in addition to increasing attention and resources (Appleby and Stokes 2008). We have demonstrated that public expectations in relation to the treatment and welfare of animals can be in conflict with or in stark contrast to legislation or policy and that this can lead to significant issues for authorities in disaster situations (Evans 2011; White 2012). Similarly, we have shown the deep and enduring connection many feel with other animals is likely to lead some to ignore official directives if they feel that these could compromise animal welfare (Evans and Perez-y-Perez 2013; Wolfert et al. 2017). As such, the existing approach depends on citizens having the capacity, knowledge and resources to adequately address the needs of animals in a disaster context (White 2012).

Recommendation: the NSW Government should establish a Disaster Plan for Animal Welfare ('DPAW')

While the National Planning Principles for Animals in Disasters ('NPPAD') offered guidance on what should be included in planning processes for animals in disasters, including local disaster management plans ('DMPs'), this process represents an opportunity to build support for the integration of animals into state-based emergency response plans. For example, the second section of the NPPAD provided a tool for jurisdictions to consult when preparing or reviewing DMPs. These principles can act as a guide for jurisdictional adoption and customisation.

In general, the planning process for animals in disasters should:

I.   Explicitly recognise that incorporating animals into emergency and disaster management plans will enhance animal welfare outcomes;

II.   Explicitly recognise that incorporating animals into these plans will assist in achieving improved human welfare and safety during and after disasters;

III.   Emphasise the importance of developing individual and pre-emptive plans of action for those in charge of animals;

IV.   Aim to distinctly distinguish roles and responsibilities organisational structures in adequate detail in order to facilitate effective execution of animal welfare measures;

V.   Consider the recovery of lost, abandoned or relocated animals;

VI.   Recognise the broad scope of stakeholders involved in animal welfare at each phase of the disaster or emergency cycle and ensure that each are consulted during the preparation or review of plan;

VII.   Include effective communication protocols about plan implementation with stakeholders who may be involved or may be impacted by a disaster or emergency;

VIII.   Be drafted and presented in language that is easily accessible and comprehensible to all stakeholders, including the general public.

The Disaster Plan for Animal Welfare ('DPAW') should:

I.   Recognise that the climate crisis is an emerging animal welfare disaster and that the increasing frequency and severity of extreme weather events require urgent and proactive responses;

II.   Recognise that incorporating animals into emergency and disaster management plans will enhance animal welfare outcomes while achieving improved human wellbeing and safety during and after disasters;

III.   Introduce a duty of care that requires people in positions of responsibility to develop and implement proactive life-saving initiatives and solutions to disaster management that focus on best practice animal welfare outcomes;

IV.   Aim to clearly identify roles and responsibilities within command-and-control structures to facilitate the effective implementation of animal welfare measures;

V.   Introduce compliance requirements for animal agriculture operations of all sizes to include the provision of emergency animal welfare planning;

VI.   Develop disaster preparedness and education initiatives for vulnerable populations that include pet-related information relevant for a diversity of pets from small to large, indoor to outdoor, and include non-traditional pets;

VII.   Take the "all-hazards" approach to all species - including farmed, wild and domestic animals and cover a broad array of possible disaster or emergency situations that may impact their welfare;

VIII.   Include explicit consideration of animals at all stages or phases of the disaster cycle (i.e., preparedness, response, recovery and mitigation);

IX.   Recognise the diversity of parties involved in animal welfare at each stage of the disaster cycle and ensure these are consulted during the development and review of disaster plans;

X.   Consider the recovery of lost, abandoned or relocated animals and animal-friendly emergency accommodation, including existing or additional facilities operated by authorised charities under the *Prevention of Cruelty to Animals Act 1979*;

XI.   Ensure effective implementation of the plan by engaging in consultation during the planning process and including an animal welfare element in the requirements for disaster training exercises;

XII.   Develop effective communication about plan implementation with stakeholders who may be directly involved as well as those who may be impacted by disasters.

References

A fill list of references is available upon request.