AUSTRALIAN INSTITUTE OF ANIMAL MANAGEMENT SUBMISSION
Strong Dog Laws: Safer Communities Discussion Paper

The Australian Institute of Animal Management (AIAM) is the national peak body representing Local Government Animal Management Officers. The AIAM Board consists of a wide range of professionals engaged in the various aspects of companion animal management.

AIAM seeks to support those engaged in the business of companion animal management, and the function itself, by providing training and information, opportunities for networking and collaboration and by encouraging the use of best practice policy and practices. AIAM promotes consistency of legislation, consultation in the creation of legislation, and workplace processes and healthy relationships with external stakeholders and the community. AIAM supports cross sector collaboration and co-design of projects and initiatives. The Board of AIAM welcomes the opportunity to engage and advocate at all levels on topics relevant to or inclusive of companion animal management.

The Institute believes that all dogs should be effectively managed by their owners to ensure community safety. AIAM advocates for owner accountability for dog management, and the prevention of dog bites to humans or other animals as a community goal. The Institute promotes the idea that Animal Management needs to be more than just good at responding to dog bite incidents - it needs to be good at prevention also.

AIAM supports the notion that best practices in dog bite incident prevention can ultimately be derived from best practices in dog bite incident response. AIAM encourages all levels of government to implement legislative and regulatory systems that include policy approaches that support, inform, and incentivise compliance with laws in the first instance to reach the majority of pet owners. Thereafter, enforcement of existing ordinances is important in order to elevate the significance of responsible pet ownership laws in a community and increase public safety. This can then move to effectively assessing, declaring, and subsequently controlling dogs that have bitten. The Institute advocates consistency (at regional, State and National levels) in the standard operating procedures that are employed in responding to dog bite incidents; collecting and assessing information about dog bite incidents, and tailoring prevention efforts to the unique factors present in individual communities that lead to dog bites.

This submission builds on the AIAM Position Statement: Reducing dog bites to humans in the community and focuses on the complimentary values of complete owner accountability for individual dog management, and strong, evidence-based regulatory and compliance approaches by Animal Management of dogs who exhibit problematic behaviour within the community.

While it is outside of the scope of the Queensland Government to develop and implement a nation-wide system for the management of dangerous dogs, revision of existing state laws to reflect best practice principles in community-wide behaviour change, investigation and response to dog bite incidents, and application of the learnings from these investigations to develop preventative strategies will set an example for other Australian states and territories that may lead to a nationally consistent approach.

The AIAM Board appreciate the opportunity to contribute to this vital discussion and welcome the chance to provide further insights on the recommendations detailed below.

Executive Summary

The Australian Institute of Animal Management, representing Local Government Animal Management Officers and professionals engaged in companion animal management, offers valuable insights on the challenges facing Queensland's companion animal management sector when managing dangerous dogs.

In addition to providing our position on the seven questions requested AIAM have provided a detailed literature review of the issues of Dangerous Dogs within modern Companion Animal Management. The literature review provides context and support of the responses and recommendations provided in this submission. While we appreciate the Department will have a significant number of submissions on this issue, we would hope that as the national peak body representing Local Government Animal Management Officers, our submission will be reviewed in detail.

Our key recommendations to the Department of Agriculture and Fisheries (DAF) are (in no particular order) as follows:

1. Any policy decisions made by the Queensland Government must be underpinned by evidence and must include data collection and review mechanisms.

2. Enhanced dog guardianship skills and practices need to be promoted and incentivised i.e. owners supported to desex, identify and register, train and keep safe.

3. Strong breeder regulations need to be developed and enforced.

4. Effective control regulations need to be developed and enforced.

5. Development of culturally and socially appropriate bite prevention programs for children and adults

6. Development of evidence based incident investigation process and response as per the recommendations in the AIAM Position Statement: Reducing dog bites to humans in the community .

7. The Queensland Government does not introduce Breed Specific Legislation (BSL) of any type.

8. The Queensland Government engage the services of World leading experts (e.g. Dr Jim Crosby) to ensure best practice policy development.

9. The Queensland Government develop a dog management model based on a 6-step process:

    i. *Identify issues*: Government should engage with the community and industry professionals through targeted stakeholder and open public forums to determine what issues matter to Queenslanders. This approach allows the Queensland

Government to gather credible facts and information and find solutions that are suitable in the Queensland context.

ii. *Engage the community*: Government should then engage stakeholders on what they are hearing from the community. Through this process it is important to look for validation for key measures and engage the community on possible solutions. For example, this may include discussing what rewards would encourage desired behaviour change.

iii. *Develop regulatory processes that work*: once the Queensland Government understands what matters to the community, it can start to build administrative and regulatory processes that work in that context. This may include registration programs that are easily accessible and market sensitive to price and/or regulations and corrective actions that can respond quickly and effectively to community feedback.

iv. *Educate the community*: once changes in administrative and regulatory processes are developed Queensland Government can then educate the public about the new system. This should include information on why the proposed changes make the community safer and stronger. This needs to include information about what it means to own dogs safely in Queensland.

v. *Demonstrate the consequences of non-compliance*: once the new system is in place, it is important for the Queensland Government to support any changes to the new regulatory environment by enforcement of non-compliance.

vi. *Measure and undertake continuous improvement activities*: It is important to measure progress in the new regulatory environment to determine whether things are getting better, getting worse, or staying the same. This requires good baseline information and data, and the outcomes will guide the next step towards continuous improvement.

10. Creation of a system to record, monitor and assess dog bite incidents in the State.

11. Advocate for all officially recorded dangerous dog designations to be valid across all municipal and state borders in Australia.

12. Advocate for a National Dangerous Dog Database that draws data using a standard data capture format from every recorded dog bite incident causing injury to humans in all States of Australia.

13. Consideration of and consultation with indigenous communities and Aboriginal Shire Councils regarding legislative impact and practical application of all changes made to Animal Management regulation.

14. Appropriate budgetary provision to Local Government to enable enactment of recommendations provided.

Response to questions posed in "Strong dog laws: Safer communities" Discussion Paper

Q1. The development and implementation of an evidence-based community education campaign for responsible ownership is a high priority as a key primary prevention strategy.

The Institute strongly supports this action.

Traditional approaches to bite prevention in the community centre on education about and enforcement of regulatory dog controls. While both education and enforcement are necessary components of community-level animal management, they suffer from known weaknesses at achieving behaviour change and should be coupled with other approaches to best improve community pet keeping practices (Philpotts et al., 2019).

Despite wide variation in how community members practically manage their dogs, people view themselves as responsible owners (Westgarth et al., 2019). This mismatch between perception and reality has implications for education and public messaging campaigns about "Responsible Pet Ownership", resulting in lack of market penetration in target groups simply because people do not see the messaging as relevant to themselves. Additionally, punishment-centric approaches to behaviour change at community level, such as regulatory enforcement of speeding drivers, when effectively applied, incompletely suppress undesired behaviours rather than increasing the performance of desired ones (Alonso et al., 2013), resulting in intermittent performance of undesirable behaviours and few tools to encourage the performance of desired ones.

To address this limitation of traditional approaches to community education and compliance, modern behaviour change approaches are multi-faceted, using social marketing techniques (David et al., 2019), behavioural economics approaches such as 'nudging' (the facilitation of desired behaviours to make the performance of desired behaviours easier than non-desired behaviours)(Forberger et al., 2019), 'budging' (a version of nudging supported by regulation) (Oliver, 2013), and harnessing technology to interact with community members in a targeted and direct way (Oxley et al., 2022) or facilitate desired learning outcomes (EUFIC 2014). These combined approaches have been repeatedly shown to effectively shift social norms towards desired behaviours and increase the likelihood that individuals within a community will perform them.

The role of regulatory enforcement is then to manage the behaviour of individuals who act outside of accepted social norms, leveraging social and material/financial motivations to improve compliance of the majority of the population (Scalco et al., 2017; Mak et al., 2019), rather than relying on punishments as a motivator to perform behaviours. Such interventions targeting dog management behaviours such as leash laws and confinement regulations, that already have strong community support (Van de Kuyt, 2004) have shown some efficacy in reducing dog bites in public places (Duncan-Sutherland et al., 2022). In order to retain community support, any legislative dog-bite mitigation strategy whose purpose is to provide safeguards to the public through a reporting system, should avoid imposing divisive mechanisms across responsible dog-owner populations (Creedon & O'Súilleabháin, 2017).

Glanville and colleagues (2020) examined behaviour change strategies aimed at improving pet keeping practices, and found several common limitations:

- Failure to accurately identify the target behaviours
- Failure to identify and apply a known behaviour change intervention
- Lack of information about the program and how it was delivered

By applying best practice principles for behaviour change to pet keeping situations, Glanville and colleagues (2020) developed the 'Ten Task' model to assess, design, apply and evaluate behaviour change interventions aimed at pet owners. This model is an ideal template for the Queensland Government to apply when developing dog bite prevention interventions.

Currently, Queensland councils do not have the data collection, management and assessment processes in place (Queensland Audit Office, 2023), nor the staffing resources available (Queensland Audit Office, 2010), to implement a structured, multi-faceted approach to reducing dog bites within their communities.

To work effectively at state level, social marketing and behaviour change strategies that sit above regulation of local laws, must be data driven, and consistent across Queensland. It is poor use of resources to replicate systems for data analysis and program design in each municipality, when this could effectively be achieved at state level; in short, if the Queensland Government is committed to reducing dog bites and attacks within the state, resources must be invested into the implementation of modern approaches to community-wide behaviour change, instead of relying on Local Government regulation of Local Laws.

Q2. Do you support dog breeds that are restricted under Commonwealth legislation being banned in Queensland?

The Institute **does not** support the banning of dog breeds.

Status of Federally Restricted Breeds in Australia

There are five pure breeds of dog restricted from import into Australia, including the Dogo Argentino, Fila Brasileiro, Japanese Tosa, American Pit Bull Terrier or pitbull terrier, and the Perro de Presa Canario (Presa Canario). Of these, only the American Pitbull Terrier is the only one of the breeds banned in Australia that is currently present in Queensland (see Queensland List of Regulated Dogs). Pitbulls have been banned from importation into Australia since 1992, with restrictions around ownership and keeping of pitbulls varying by state or territory. The American Pitbull Terrier is often labelled interchangeably with the American Staffordshire Terrier as the breeds share close ancestry; indeed, the United Kennel Club of America recognises individual dogs as both American Staffordshire Terriers and American Pitbull Terriers (see UKC Application For American Pit Bull Terrier Single Registration), with this being just one of several significant challenges to the enforcement of Breed Specific Legislation relating to the pitbull.

Even if there was sound evidence for specific breeds bring over-represented in dog bites and attacks, or breed being predictive of human-directed aggression, breed specific approaches to the management of dogs bites and attacks has been shown repeatedly to be ineffective at reducing dog bites, across the world (Collier, 2006; Cornelissen & Hopster, 2010; O'Súilleabháin, 2015; Creedon & O'Súilleabháin, 2017; Mora et al., 2018; Nilson et al., 2018; Tulloch et al., 2021).

Lack of community support for Breed Specific Legislation

Despite perception of widespread community support for breed specific approaches to dog management, community members are increasingly speaking out against Breed Specific Legislation (Leema, 2011; Dogs Life Magazine, 2013a; Dogs Life Magazine, 2013b; National Canine Research Council, 2021; KC Dog Blog, 2012; Dogs Victoria, 2015; Hui, 2023; Theocharous, 2023). In Victoria, following 4 years of strict enforcement of breed bans in the state, widespread public scrutiny of the laws came from Veterinarians, Not For Profit animal shelters, owners, councils, and companion animal researchers (Adoranti, 2015). The increasing community pressure challenging Victorian BSL resulted in a moratorium on the enforcement of the laws in March 2015 (Savage, 2015), and the revocation of strict breed bans in 2017 (Department of Jobs, Precincts and Regions, 2023). The lack of community support for breed-specific legislation stems from concerns about its effectiveness, fairness, and potential negative consequences for responsible dog owners, the welfare of dogs, and the associated cost to Local Government.

Many experts and advocates believe that a more balanced and community-oriented approach to dog safety would result in safer communities. We have provided a list below of just some Australian and international organisations who have published position statements explaining their lack of support for breed specific legislation.

[Australian Veterinary Association](#)

[RSPCA Australia](#)

[British Veterinary Association](#)

[Association of Professional Dog Trainers](#)

[American Veterinary Medical Association](#)

[American Veterinary Society of Animal Behavior](#)

[National Animal Care and Control Association](#)

[National Canine Research Council](#)

[Pet Professionals Guild](#)

[RSPCA UK](#)

Human rights and ethical issues associated with Breed Specific Legislation

"Social constructions are powerful perceptions, images or stereotypes that help explain why public policy, which can have such a positive effect on society, sometimes—and often deliberately—fails in its nominal purposes, fails to solve important public problems, perpetuates injustice, fails to support democratic institutions, and produces an unequal citizenship. Understanding the positive and negative social constructions of target groups helps explain why it is that while every citizen is presumably equal before the law, policy designs tend to distribute mainly benefits to some people while almost always punishing others." (Ingram et al, 2014)

Social construction theory proposes that although democracy tries to create equality between classes and races, social perceptions of groups can lead to unfair policies because of negative portrayals related to unworthiness or inferiority (Ingram et al, 2014). These constructions are also important when considering political arguments.

BSL has been recognised as having high potential for inconsistent or unfair targeting of owners by Animal Management authorities, due to pre-existing biases towards communities in which targeted breeds are most commonly owned (Humane Society of the United States, 2019). As discussed by Linder (2018) and Duberstein et al. (2023), bias towards pit bull type dogs appears to have originated in the USA, after the media linked pit bulls with gangs composed of persons of colour, and criminal activities. Over time, the alleged criminal and violent tendencies of gang members became synonymous with pit bull type dogs. This served to racialise the breed in the public eye, and perpetuate the stigma now associated with what is essentially a breed type, not a single breed of dog. Confirmation bias has perpetuated this negative stereotype in Australia, with dog bites incidents involving breeds perceived to be dangerous, attracting disproportionate attention (Mouton, 2019; Barrios et al., 2021). As a result, people pay more attention to incidents involving pit bulls and dismiss, or simply never hear about, similar incidents involving other breeds. This reinforces the perception that pit bulls are inherently dangerous.

The discrimination associated with Breed Specific Legislation has been noted in the UK context with O'Neill (2007) saying "The 'dangerous dogs' issue has become a scare story for our times, expressing the political and media elites' innate distrust, fear and loathing of working-class and poor communities". Implicit, or automatic and unintentional biases, affect one's judgments, decisions, and behaviours, skewing perceptions of an entire group of individuals. These have been described as a major contributor to the perpetuation of discrimination (Devine et al., 2012), as they are often based on underlying stereotypes (Salmanowitz, 2018). The increased monitoring and legislation applied to restricted breed owners, as opposed to all dog owners, much like parolees, can be viewed as discriminatory and unethical. The difference being that parolees are (alleged) offenders of known crimes. Dogs affected by breed restrictions are not. However, they are both more heavily monitored and judged by enforcement agencies, legislators, and the rest of the population.

The stated purpose of BSL is to identify and impose additional regulation on dogs that look a certain way or have certain breed mixes in their DNA, with the ultimate goal being to make communities safer. In reality, practical enforcement of BSL results in discrimination against dog owners based on the appearance of their dogs.

Breed types most frequently subjected to BSL are openly recognised by Animal Management teams as being more prevalent in vulnerable, marginalised and/or low-income communities, and therefore BSL affects these owners disproportionately, when they may also be less able to comply with costly regulations. Raj (2019) examined breed restrictions and socioeconomic factors in the County of Yakima, WA, USA, and concluded that the ban targeted a minority group of the community and may have also been a tool to deter dog owners of lower socioeconomic status out of the city of Yakima and into other cities in Yakima County. Breed restrictions, like the one in Yakima, that include a special licence, requirement to confine the dog indoors or in a locked pen, desexing, and microchipping or other specified actions can be viewed as being discriminatory and unethical particularly if sufficient support for the associated burden of costs is not provided by the restricting body to enable dog owners to comply with the legislation.

This discrimination can also be felt by low income or marginalised owners trying to legally defend their dog from breed bans. People with limited means may find the appeal process, DNA tests and/or other proof required difficult or impossible to attain. The unequal burden of financial costs of defending against breed bans implies that owners of lower socioeconomic status are not fit to own dogs of their choice, and that only those who have reliable, and somewhat higher incomes, are suitable owners. With the awareness that Queensland has less households earning a high income, and more households earning a low income than the two states bordering it ([Household income | Australia | Community profile](#)), the financial burden of BSL must be a factor for consideration. Additionally, that BSL reverses the legal burden of proof poses another question of ethics. An owner must prove their dog does not fall into the restricted breed criteria and is therefore not inherently more dangerous than other pets, making redundant the legal principles of due process which grant innocence until proven guilty.

BSL can also result in limited housing options for owners of breeds targeted by the legislation, potentially infringing upon the right to adequate housing (National Canine Research Council, 2023).

In straightforward terms, BSL unfairly impacts vulnerable, marginalised, and economically disadvantaged communities, as well as non-problematic dogs and owners. Governments should thoroughly assess whether the implementation and enforcement of BSL contradicts the fundamental rights of Australians to receive equitable and just treatment under the legal system.

Difficulties in practical implementation of BSL

Developing criteria for the implementation of BSL will be problematic. The lack of accuracy in visual identification of pit bull-type dogs has been discussed previously in the section 'Which dogs bite'. This lack of consistency has been found problematic in a number of studies (Olsen et al, 2015; Best Friends Animal Society, 2018) and also by the Victorian Local Governments when attempting to administer BSL in their state (Moira Shire Council, 2015). Therefore, it is clear that visual identification alone is not going to be an adequate method for identifying a restricted breed.

The question then becomes whether DNA testing will be utilised as a tool for administering BSL, and if so, do the owners, State or Local Government bear this significant cost? What DNA percentage of the prescribed restricted breed will be deemed to be falling within the criteria? If a dog's DNA heritage is 5% of a restricted breed, does it meet the breed specific criteria? 15%? More? Importantly, what number of dogs of a particular breed type will need to be removed from the community to make a difference to the number of dog bite incidents occurring?

Patronek et al. (2010) examined the issue of improving public safety via BSL through a modification of the NNT (Number Needed To Treat) calculation, a risk-based statistic used in evidence-based medicine (Shearer-Underhill & Marker, 2010), to produce the NNB (Number Needed To Ban). Patronek and colleagues (2010) conservatively calculated the NNTB for different regions in the USA, using dog bite frequencies from published studies. For example, a Colorado study reported a rate of 80 dog bites/100,000 people/y, for which the NNB to prevent a single dog bite each year would be 8,333 dogs. Scaling up these numbers up to a city the size of Brisbane, with over 2.2 million residents, the sheer number of dogs of a target breed that would have to be removed from the community to prevent even a single incident, illustrates the high costs of BSL in terms of dog lives and deleterious effects on responsible owners, whose pets would be killed or removed from the state as a result of such a ban. In addition, the financial burden placed on any level of Government to enforce this legislation would be excessive, particularly for the current structure of budget for Local Government

Animal Management departments and is likely to be seen as an inefficient and inappropriate usage of resources.

Q3. Do you support the introduction of a new state-wide requirement for dogs to be effectively controlled in public places?

The Institute supports this action. See our comments under Q1. This would better reflect the requirements on owners in effect under local laws already and reduce inconsistencies between state and local laws.

Q4. Do you support the review of penalties in the Act relating to attacks involving regulated dogs to better reflect community expectations?

The Institute supports this action. We believe that penalties should be reviewed considering best practice scientific information.

Q5. Do you support the inclusion of a new offence in Queensland law including imprisonment as a maximum penalty for the most serious dog attacks?

The Institute supports the Queensland legislation for the most serious dog attacks to be brought in line with the rest of the States.

Q6. Do you support amendments being made to the Act to make it clear when a destruction order can and must be made for a regulated dog?

The Institute supports this action with caveats (assessment by a person with post-graduate qualifications in dog behaviour being a requirement for all destruction orders)

Q7. Do you support limiting when appeals from external review decisions (QCAT) about a destruction order can be sought by owners, including placing greater responsibility on owners to offer proof otherwise?

The Institute supports this action with caveats - see Appendix 2: Final Report: Independent Review into the Management of Dogs in the ACT

Introduction

The Australian Institute of Animal Management brings to this submission a wealth of expertise as the national body representing Local Government Animal Management Officers. Our Board comprises professionals dedicated to upholding best practices in companion animal management.

AIAM understands the complex pressures facing Local Governments and rescue organisations involved in companion animal management and rehoming. Our commitment lies in fostering successful, evidence-based strategies that prioritise animal welfare and harmonious human-animal coexistence.

Examining the issue

The management of dogs who bite humans is a complex issue. Dog keeping culture varies widely across communities and as a result, the circumstances surrounding dog-on-human bites within these communities vary (Department for Environment Food and Rural Affairs, n.d.).

As with any complex problem, in order to develop an evidence-driven prevention response, it is necessary to fully understand the issue before targeted and effective solutions can be developed.
The lack of information about contributory factors leading to dog bites, and the focus on dog-centric factors such as breed in the 'Stronger Dog Laws, Safer Communities' discussion paper, is illustrative of current approaches to the management of dog aggression.

As examined by Huitson (2005), in the face of heightened public pressure to prevent dog bites and attacks, and constrained by a lack of detailed, current knowledge of the nature and frequency of dog bites in our communities, regulators treat the 'dangerous dog' problem as a homogenous issue, shifting focus from human-centric factors that are known to correlate with increased frequency and severity of dog bites, such as dog keeping practices (Patronek et al., 2013), inappropriate interactions with dogs (Cornelissen & Hopster, 2010), and lack of active supervision of children and dogs (Bykowski et al., 2017; Oxley et al., 2018b), onto dog centric features, such as breed, that the public associate with dangerous dog behaviour. Problematically, public perception of the 'dangerous dogs' is heavily influenced by biases in reporting of dog bite incidents by the media (Watson, n.d.; Mouton, 2019; Hutchings, 2020), meaning that public policy relating to management dogs in the community is driven indirectly, but significantly by media messaging about dogs that bite.

When regulators respond to perceived public support for breed-centric approaches by implementing or strengthening Breed Specific Legislation (BSL), this creates a contentious and divisive political issue. BSL has been repeatedly shown to be expensive, ineffective, and unenforceable (Collier, 2006; Cornelissen & Hopster, 2010; O'Súilleabháin, 2015; Creedon & O'Súilleabháin, 2017; Mora et al., 2018; Nilson et al., 2018; Tulloch et al., 2021). The substantial allocation of resources by Local Government to implement BSL is done so with the expectation of reducing dog bite incidents. However, the outcome often follows a predictable pattern: no decrease in such incidents occurs, and instead, resentment builds toward Animal Management Officers responsible for enforcing breed-specific restrictions. This dynamic fuels heightened public frustration and fear, amplified by the media's persistent emphasis on the "dangerous breeds" storyline. Unfortunately, scant consideration is directed towards addressing the behaviours of dog owners, which frequently play a pivotal role in

provoking   dog   bites.

Experts and key stakeholders in the sector have been calling for the replacement of Breed Specific Legislation with effective, evidence-based regulatory action for decades (Watson, 2003; Bruce et al., 2015; Australian Veterinary Association (AVA), n.d.; Dog and Cat Management Board, 2020; RSPCA Australia, 2023) with alternative models informed by international experts and peer-reviewed science proposed by:

- Australian Veterinary Association (AVA): Dangerous Dogs - a sensible solution (Australian Veterinary Association, n.d.-b)
- Royal Society for Prevention of Cruelty to Animals Australia: Preventing Dog Attacks in the Community (RSPCA Australia, 2023b)
- Australian Institute of Animal Management: AIAM Position Statement: "Reducing dog bites to humans in the community"
- ACT Government: The Canberra Dog Model (Transport Canberra and City Services Directorate, 2019).

Despite decades of effort towards improving the management of dangerous and potentially dangerous dogs in Australian communities, dog aggression incidents remain as high as ever (Dexter, 2022; "Surprising Truth About 'Harmless' Dog Breed," 2022; ABC News, 2023), and we are no closer to having accurate and reliable local data on dog aggression incidents at state or national level, to inform Local Government approaches to preventing dog bites.

AIAM appeals to the Queensland Government to take the opportunity during this review, to shift the focus of dog management back onto owners, and begin the process of developing evidence-based, data-driven responses to preventing and responding to dog-on-human bites. The information in this section examines current, evidence-driven understanding of dog bite incidents worldwide, as a basis for informing the recommendations made by AIAM in this submission.

Where bites occur

Most dog bite incidents occur within homes or on private property between dogs and humans who are familiar to each other (Oxley et al., 2018b), during a direct interaction between them (Department for Environment Food and Rural Affairs, n.d.; Reisner, 2003; Kelly & Hoffman, 2023). Regional differences exist in human demographics and circumstances surrounding dog bites and fatalities that occur within private homes (Ozanne-Smith et al., 2001; Raghavan et al., 2014; Sarenbo & Svensson, 2021). Of particular concern, children from low socioeconomic families are shown to be at increased risk of dog bite injuries in the USA (Shuler et al., 2008) and within metropolitan Brisbane where Logan City and Redlands were found to be hotspots for paediatric dog bite injuries requiring hospitalisation (Pekin et al., 2021).

Dog bites that occur in public predominantly occur in the area immediately adjoining the dog's home property, and over 80% of attacks that occur in public involve dogs that were inadequately confined to their yard (Van de Kuyt, 2001). Unlike bites within private homes, bites in public typically involve unprovoked bites triggered by fast movement of the person past the dog (Gobbo & Šemrov, 2021).

Bites that occur in public, while less frequent, are investigated more often by councils than in-home bites, due to the public safety risk posed by the offending dog, and because people unknown to the dog are more likely to report bites to authorities (Van de Kuyt, 2001; Creedon & O'Súilleabháin, 2017).

Dog bites that occur in public, those resulting in human deaths, and those involving breeds perceived to be dangerous, attract disproportionate attention from the media relative to their frequency (Mouton, 2019; Barrios et al., 2021), limiting the usefulness of media reports to inform dog management strategies.

Who is being bitten

Characteristics of human victims of dog bites and attacks vary widely. While children and the elderly are the most common victims of severe dog bites within homes (Australian Institute of Health and Welfare, 2005), bites in public often involve adults, and recent findings indicated that women between the ages of 35 to 64 years are increasingly being bitten more often than other adults in some communities (Tulloch et al., 2021). Children and males are the most frequent victims in dog bite related fatalities in the US (Langley, 2009; Shields et al., 2009). In Australia generally, males are bitten more often than females in all age groups (Thompson, 1997; Kelly & Hoffman, 2023). However, examination of medically treated bites in 3 remote indigenous communities in Queensland, showed that individuals aged 35-44 years of both sexes were more likely than other age groups to be bitten, and there was no difference in dog bite incidence between the sexes in any community or age group (West & Rouen, 2019). Over half of bites that occurred in these communities were sustained to lower limbs, and a further 24% of bites were on upper limbs (West & Rouen, 2019); this correlates with patterns common to dog bites in public in other communities.

When considering all dog bites including those that did not require medical attention, Westgarth and colleagues (2018) found that owners of multiple dogs were over 3 times more likely to be bitten in their lifetimes than non-owners, and adults were most commonly bitten by a dog they have never met before, regardless of the location in which the bite occurred.

Individuals that score more highly on emotional stability were less likely to be bitten than those with lower scores. Similarly, children with ADHD are over-represented in dog bite victims requiring hospital attention (Mitchell et al., 2003) and adults with diagnosed mental health conditions are more likely to sustain injurious dog bites than healthy adults (Yeh et al., 2012). Bites are more likely during interactions in which human behaviour towards the dog was inappropriate and elicited a fear, excitement, or predatory response (Department for Environment Food and Rural Affairs, n.d.). The patterns observed in who is being bitten across communities, indicate that pet keeping practices (or 'pet culture') influence the incidence and severity of bites, with children being particularly vulnerable to bites.

While young children most commonly sustain injuries to the head and neck, adults more frequently sustain injuries to the extremities and when injuries are severe, hospitalisation is typically longer for adults than children (Ozanne-Smith et al., 2001). A review of over 2,000 dog-on-child bite injuries from South Africa revealed that children under 6 years of age were more likely to be bitten inside the home on the upper body and head, while children over 6 year of age were more likely to sustain bites to the perineum, buttocks, legs or feet while interacting with the dog in the yard of the home (Dwyer, 2007). Medeiros and Colleagues (2022) found similar patterns in the location of incidents and injuries sustained by children in Brazil, with younger children being more likely to be bitten on the upper body while inside the home, and children aged 7-14 years sustaining injuries to arms and legs during incidents that occurred in an outdoor environment.

While vulnerable groups, children, the elderly, and people who experience challenges to interacting appropriately with dogs are more likely to sustain severe bites from familiar dogs, physically capable adults are more likely to be bitten by unfamiliar dogs and sustain less serious injuries.

Which dogs bite

Examination of dog-centric factors that correlate with bites and attacks on children, show that dogs suffering from diagnosed anxiety disorders or medical concerns are more likely to bite than healthy dogs (Reisner et al., 2007), and increasing age, male sex, and sexually entire status of dogs, correlate with stranger-directed and owner-directed aggression (Casey et al., 2014).

Ownership and dog care behaviours also strongly correlated with the likelihood of dogs biting humans. Dogs with a documented history of abuse or neglect are more likely to bite humans (Department for Environment Food and Rural Affairs, n.d.). Van Herwijnen and colleagues (2023) identified 9 ownership behaviours that were common in the histories of dogs confiscated following biting incidents, including poor containment, multi-dog households, suspected animal abuse and drug use by owners, and antisocial behaviours of owners including failure to restrain and muzzle dogs following control orders. Casey and colleagues (2014) identified several ownership behaviours associated with increased aggression towards familiar or unfamiliar people, including attendance at puppy socialisation classes which decreased the risk of aggressive responses towards unfamiliar people, and the use of punishment and negative reinforcement as a training tool, which increased the risk of aggression towards both owners and unfamiliar people. Dogs involved in human fatalities were more likely to have limited positive socialisation with people, have been exposed to physical abuse or neglect, and be kept separately from the family home than the general population of pet dogs (Patronek et al., 2013).

Messam and colleagues (2018) found a correlation between increased exposure of children to dogs in the home and likelihood of dog bites, with small dogs obtained as pets who spend longer inside the home in direct contact with children being more likely to bite a child than those who are housed away from children. Where children are involved, parental management of dog-child interactions is the strongest predictor of dog-on-child bites.

The relationship between human behaviour and the occurrence of dog-on-human bites is well-established and significant. Numerous studies have shown that the way people interact with dogs, the level of supervision provided, and their ability to read and respond to canine body language greatly influence the likelihood and severity of dog bite incidents. This correlation underscores the importance of robust public education initiatives aimed at reducing the risk of dog bites. By educating individuals on appropriate dog ownership practices and proper interactions with dogs, communities can effectively diminish the occurrence of these unfortunate incidents.

Examination of breeds and types of dogs that bite or attack humans, reveals little to no relationship between individual breeds and the frequency and severity of bites. Casey and colleagues (2014) found no increased breed risk for aggression, as reported by owners of almost 4000 dogs in the UK. Similarly, Hammond and colleagues (2022) found no significant differences between breeds, or between groups of breeds commonly subject to BSL versus those not subject to BSL, on measures of impulsivity, or sensitivity to positive and negative stimuli. Even if behaviour could be reliably predicted from breed, heredity is only 1 of 5 factors, in addition to early experience, early socialisation and training, behavioural and medical health, and victim behaviour, that may influence a dog's propensity to bite

in a given situation (American Veterinary Medical Association Task Force on Canine Aggression and Human-Canine Interactions, 2001).

In the Australian context, research from Victoria identified 47 dog breeds involved in incidents that occurred in public places (Van de Kuyt, 2001). In NSW in 2023, councils have investigated attacks involving more than 25 different breeds or assumed breed crosses, with the largest group of dogs, involved in almost ⅓ of incidents being of no identifiable breed (Pound and Dog Attack Statistics - Office of Local Government NSW, 2023). It is clear from the limited Australian information available, that dogs of many breeds or crosses inflict injurious bites within our communities, while many individuals from all of these breeds are much loved, safe, and well managed family pets.

Beyond simply not having an identifiable breed to record, the inclusion of dog breed in bite statistics and reports is inherently problematic, due to methodological issues with the identification and reporting of breeds, and the calculation of breed representation within the given population of dogs (Collier, 2006; Creedon & O'Súilleabháin, 2017). Visual identification of dog breeds is not accurate (Olson et al., 2015; Gunter et al., 2018) and more importantly, behavioural traits, including those associated with the expression of aggression, are not predicted by breed (Morrill et al., 2022).

All available evidence from Australia and beyond supports a human-centric approach for the management of dog bites, involving community-wide behaviour change efforts, combined with owner support mechanisms and education aimed at increasing knowledge of factors associated with bites and canine body language, and improving desired ownership behaviours, and supported by strong regulatory tools.

Implications for the expansion of Breed Specific Legislation in Queensland

Status of Federally Restricted Breeds in Australia

There are five pure breeds of dog restricted from import into Australia, including the Dogo Argentino, Fila Brasileiro, Japanese Tosa, American Pit Bull Terrier or pitbull terrier, and the Perro de Presa Canario (Presa Canario). Of these, only the American Pitbull Terrier is the only one of the breeds banned in Australia that is currently present in Queensland (see Queensland List of Regulated Dogs). Pitbulls have been banned from importation into Australia since 1992, with restrictions around ownership and keeping of pitbulls varying by state or territory. The American Pitbull Terrier is often labelled interchangeably with the American Staffordshire Terrier as the breeds share close ancestry; indeed, the United Kennel Club of America recognises individual dogs as both American Staffordshire Terriers and American Pitbull Terriers (see UKC Application For American Pit Bull Terrier Single Registration), with this being just one of several significant challenges to the enforcement of Breed Specific Legislation relating to the pitbull.

Even if there was sound evidence for specific breeds bring over-represented in dog bites and attacks, or breed being predictive of human-directed aggression, breed specific approaches to the management of dogs bites and attacks has been shown repeatedly to be ineffective at reducing dog bites, across the world (Collier, 2006; Cornelissen & Hopster, 2010; O'Súilleabháin, 2015; Creedon & O'Súilleabháin, 2017; Mora et al., 2018; Nilson et al., 2018; Tulloch et al., 2021).

Lack of community support for Breed Specific Legislation

Despite perception of widespread community support for breed specific approaches to dog management, community members are increasingly speaking out against Breed Specific Legislation (Leema, 2011; Dogs Life Magazine, 2013a; Dogs Life Magazine, 2013b; National Canine Research Council, 2021; KC Dog Blog, 2012; Dogs Victoria, 2015; Hui, 2023; Theocharous, 2023). In Victoria, following 4 years of strict enforcement of breed bans in the state, widespread public scrutiny of the laws came from Veterinarians, Not For Profit animal shelters, owners, councils, and companion animal researchers (Adoranti, 2015). The increasing community pressure challenging Victorian BSL resulted in a moratorium on the enforcement of the laws in March 2015 (Savage, 2015), and the revocation of strict breed bans in 2017 (Department of Jobs, Precincts and Regions, 2023). The lack of community support for breed-specific legislation stems from concerns about its effectiveness, fairness, and potential negative consequences for responsible dog owners, the welfare of dogs, and the associated cost to Local Government.

Many experts and advocates believe that a more balanced and community-oriented approach to dog safety would result in safer communities. We have provided a list below of just some Australian and international organisations who have published position statements explaining their lack of support for breed specific legislation.

Australian Veterinary Association

RSPCA Australia

British Veterinary Association

Association of Professional Dog Trainers

American Veterinary Medical Association

American Veterinary Society of Animal Behavior

National Animal Care and Control Association

National Canine Research Council

Pet Professionals Guild

RSPCA UK

Human rights and ethical issues associated with Breed Specific Legislation

"Social constructions are powerful perceptions, images or stereotypes that help explain why public policy, which can have such a positive effect on society, sometimes—and often deliberately—fails in its nominal purposes, fails to solve important public problems, perpetuates injustice, fails to support democratic institutions, and produces an unequal citizenship. Understanding the positive and negative social constructions of target groups helps explain why it is that while every citizen is presumably equal before the law, policy designs tend to distribute mainly benefits to some people while almost always punishing others." (Ingram et al, 2014)

Social construction theory proposes that although democracy tries to create equality between classes and races, social perceptions of groups can lead to unfair policies because of negative portrayals related to unworthiness or inferiority (Ingram et al, 2014). These constructions are also important when considering political arguments.

BSL has been recognised as having high potential for inconsistent or unfair targeting of owners by Animal Management authorities, due to preexisting biases towards communities in which targeted breeds are most commonly owned (Humane Society of the United States, 2019). As discussed by Linder (2018) and Duberstein et al. (2023), bias towards pit bull type dogs appears to have originated in the USA, after the media linked pit bulls with gangs composed of persons of colour, and criminal activities. Over time, the alleged criminal and violent tendencies of gang members became synonymous with pit bull type dogs. This served to racialise the breed in the public eye, and perpetuate the stigma now associated with what is essentially a breed type, not a single breed of dog. Confirmation bias has perpetuated this negative stereotype in Australia, with dog bites incidents involving breeds perceived to be dangerous, attracting disproportionate attention (Mouton, 2019; Barrios et al., 2021). As a result, people pay more attention to incidents involving pit bulls and dismiss, or simply never hear about, similar incidents involving other breeds. This reinforces the perception that pit bulls are inherently dangerous.

The discrimination associated with Breed Specific Legislation has been noted in the UK context with O'Neill (2007) saying "The 'dangerous dogs' issue has become a scare story for our times, expressing the political and media elites' innate distrust, fear and loathing of working-class and poor communities". Implicit, or automatic and unintentional biases, affect one's judgments, decisions, and behaviours, skewing perceptions of an entire group of individuals. These have been described as a major contributor to the perpetuation of discrimination (Devine et al., 2012), as they are often based on underlying stereotypes (Salmanowitz, 2018). The increased monitoring and legislation applied to restricted breed owners, as opposed to all dog owners, much like parolees, can be viewed as discriminatory and unethical. The difference being that parolees are (alleged) offenders of known crimes. Dogs affected by breed restrictions are not. However, they are both more heavily monitored and judged by enforcement agencies, legislators, and the rest of the population.

The stated purpose of BSL is to identify and impose additional regulation on dogs that look a certain way or have certain breed mixes in their DNA, with the ultimate goal being to make communities safer. In reality, practical enforcement of BSL results in discrimination against dog owners based on the appearance of their dogs.

Breed types most frequently subjected to BSL are openly recognised by Animal Management teams as being more prevalent in vulnerable, marginalised and/or low income communities, and therefore BSL affects these owners disproportionately, when they may also be less able to comply with costly

regulations. Raj (2019) examined breed restrictions and socioeconomic factors in the County of Yakima, WA, USA, and concluded that the ban targeted a minority group of the community and may have also been a tool to deter dog owners of lower socioeconomic status out of the city of Yakima and into other cities in Yakima County. Breed restrictions, like the one in Yakima, that include a special licence, requirement to confine the dog indoors or in a locked pen, desexing, and microchipping or other specified actions can be viewed as being discriminatory and unethical particularly if sufficient support for the associated burden of costs is not provided by the restricting body to enable dog owners to comply with the legislation.

This discrimination can also be felt by low income or marginalised owners trying to legally defend their dog from breed bans. People with limited means may find the appeal process, DNA tests and/or other proof required difficult or impossible to attain. The unequal burden of financial costs of defending against breed bans implies that owners of lower socioeconomic status are not fit to own dogs of their choice, and that only those who have reliable, and somewhat higher incomes, are suitable owners. With the awareness that Queensland has less households earning a high income, and more households earning a low income than the two states bordering it (Household income | Australia | Community profile), the financial burden of BSL must be a factor for consideration. Additionally, that BSL reverses the legal burden of proof poses another question of ethics. An owner must prove their dog does not fall into the restricted breed criteria and is therefore not inherently more dangerous than other pets, making redundant the legal principles of due process which grant innocence until proven guilty.

BSL can also result in limited housing options for owners of breeds targeted by the legislation, potentially infringing upon the right to adequate housing (National Canine Research Council, 2023).

In straightforward terms, BSL unfairly impacts vulnerable, marginalised, and economically disadvantaged communities, as well as non-problematic dogs and owners. Governments should thoroughly assess whether the implementation and enforcement of BSL contradicts the fundamental rights of Australians to receive equitable and just treatment under the legal system.

Difficulties in practical implementation of BSL

Developing criteria for the implementation of BSL will be problematic. The lack of accuracy in visual identification of pit bull-type dogs has been discussed previously in the section 'Which dogs bite'. This lack of consistency has been found problematic in a number of studies (Olsen et al, 2015; Best Friends Animal Society, 2018) and also by the Victorian Local Governments when attempting to administer BSL in their state (Moira Shire Council, 2015). Therefore, it is clear that visual identification alone is not going to be an adequate method for identifying a restricted breed.

The question then becomes whether DNA testing will be utilised as a tool for administering BSL, and if so, do the owners, State or Local Government bear this significant cost? What DNA percentage of the prescribed restricted breed will be deemed to be falling within the criteria? If a dog's DNA heritage is 5% of a restricted breed, does it meet the breed specific criteria? 15%? More? Importantly, what number of dogs of a particular breed type will need to be removed from the community to make a difference to the number of dog bite incidents occurring?

Patronek et al. (2010) examined the issue of improving public safety via BSL through a modification of the NNT (Number Needed To Treat) calculation, a risk-based statistic used in evidence-based medicine (Shearer-Underhill & Marker, 2010), to produce the NNB (Number Needed To Ban). Patronek and

colleagues (2010) conservatively calculated the NNTB for different regions in the USA, using dog bite frequencies from published studies. For example, a Colorado study reported a rate of 80 dog bites/100,000 people/y, for which the NNB to prevent a single dog bite each year would be 8,333 dogs. Scaling up these numbers up to a city the size of Brisbane, with over 2.2 million residents, the sheer number of dogs of a target breed that would have to be removed from the community to prevent even a single incident, illustrates the high costs of BSL in terms of dog lives and deleterious effects on responsible owners, whose pets would be killed or removed from the state as a result of such a ban. In addition, the financial burden placed on any level of Government to enforce this legislation would be excessive, particularly for the current structure of budget for Local Government Animal Management departments and is likely to be seen as an inefficient and inappropriate usage of resources.

Managing dogs who bite in the community

Management of dogs who bite within communities requires an understanding of how dogs and people interact within that community. While findings from other countries, states, and territories can guide initial State and Local Government interventions, the effect of these must be monitored, assessed, and regularly refined over time to ensure that interventions are tailored and effective.

To improve management of dogs within Queensland, AIAM recommends that the State Government design and implement a system for recording, assessing, and using information about dog bite incidents, including comprehensive Standard Operating Procedures for the dog bite incident responses. Information collected should be combined with dog bite-related information from state injury surveillance systems and compared with relevant national and international research to inform and improve State and Local Government approaches to dog bite prevention and response.

Regulatory mechanisms that support animal management actions also require revision in Queensland to increase owner accountability for their dog's behaviour, facilitate more efficient and effective investigation of dog bite incidents, and streamline the process for Declaring Dogs or seeking a Destruction Order as appropriate.

Broadly, AIAM recommends that the Queensland Government considers the following five areas of action, that are explored in more detail in the following sections:

- Examine available, relevant information from Local Governments from past dog bite incidents and combine this with knowledge of factors correlating with dog bites in Australia and internationally, and findings from extensive consultation with the Queensland community and municipal Animal Management teams, to develop an understanding of how dogs and people interact, and dog keeping culture, in Queensland communities.
- Collaborate with Local Governments to tailor and apply known effective behaviour change interventions, such as the Ten Task model proposed by Glanville and colleagues 2010, focusing on owner behaviours known to correlate with increased incidence of dog bites, improving dog keeping culture, and strict owner accountability as the core messages (see sections 'Prevention of bites in homes' and Prevention of bites in public' for details).
- Bring state laws into line with the rest of Australia, requiring strict liability of dog owners for dog bite incidents, and a requirement for effective control of dogs in public spaces.

- Create and deliver a system to record, monitor and assess dog bite incidents in the State. Develop two-tiered standardised operating procedures for Local Governments to respond to dog bite investigations and report findings (see detail in section 'Investigating dog bite incidents').
- To enhance the effectiveness and fairness of Declarations and Destruction Orders for dangerous dogs, it is imperative to establish a more comprehensive and standardised set of evidentiary requirements. This can be achieved through the implementation of mandatory Policy where assessments are mandatory for all dogs that local councils intend to subject to Destruction Orders. These assessments should be conducted by professionals possessing post-graduate qualifications in dog behaviour, ensuring a rigorous evaluation of the dog's temperament and potential risks. By introducing these stringent criteria, a higher level of expertise and objectivity can be applied in determining whether a dog truly poses a danger to the community. This approach not only prioritises public safety but also upholds the rights of dog owners by ensuring that decisions are based on a thorough and qualified analysis of the animal's behaviour, thereby fostering a more just and effective system for managing dangerous dogs (see detail in section 'Investigating dog bite incidents').

Investigating dog bite incidents

In addition to the primary aim of dog bite incidents, being to identify the dog and owner, ensure accountability of owner and prevent repeat incidents with the dog, the collection of accurate information about the context and circumstances of these incidents is paramount to monitoring and tailoring of management of dog bites over time.

Contrary to the rest of Australia that enforces strict liability of owners for unprovoked damage caused by their dogs, during legal interactions between the dog and other community members, Queensland requires dog owners to have prior knowledge that their dog may cause harm to others in order to enforce liability for damages. This 'One Free Bite' approach increases complexity of dog bite investigations for Animal Management teams tasked with proving owners had prior knowledge of their dog's predisposition to use aggression, and burdens bite victims with the financial costs of their own treatment and recovery (O'Connor, 2022). Dog owners in Queensland should be subject to strict liability for their dog's behaviour with limited exceptions for provocation and where interactions between the dog and victim were not legal (e.g. in the event of trespass onto private property).

Current approaches for investigating and monitoring dog bite incidents in Queensland are ad hoc, incomplete, and insufficient to properly inform preventative actions for dog bites.

AIAM recommends a two-tiered response to dog bite incidents:

- Incidents that involve any type of bite that does not involve serious injury or death of the victim: provide Councils with standardised incident responses and templates for required information collection that State Government can use to monitor these incidents over time.
- Incidents involving serious injury or death: follow recommendations provided by the Independent Expert Panel for the Management of Dogs in the ACT), and detailed in 'Appendix P: Dangerous Dog Investigations' from the Humane Animal Control Manual (Best Friends Animal Society, 2019).

In addition, provide standardised templates for information collection that all councils are required to collect at the time of each type of incident, to report to the State Government. Monitoring of incident records should occur on a 6-12 monthly basis, with regular reporting back to councils (e.g. annually) on trends and learnings from the data, is also recommended.

Detailed information about high level investigation of dog bite related fatalities and use of evidence in these cases is provided in the Master's Thesis "The Specific Use Of Evidence In The Investigation Of Dog Bite Related Human Fatalities" by James Crosby (2016). This should be used, along with direct consultation with Dr Crosby, to inform the development of standardised procedures in response to severe dog bite incidents.

Achieving behaviour change at community level

Traditional approaches to bite prevention in the community centre on education about and enforcement of regulatory dog controls. While both education and enforcement are necessary components of community-level animal management, they suffer from known weaknesses at achieving behaviour change and should be coupled with other approaches to best improve community pet keeping practices (Philpotts et al., 2019).

Despite wide variation in how community members practically manage their dogs, people view themselves as responsible owners (Westgarth et al., 2019). This mismatch between perception and reality has implications for education and public messaging campaigns about "Responsible Pet Ownership", resulting in lack of market penetration in target groups simply because people do not see the messaging as relevant to themselves. Additionally, punishment-centric approaches to behaviour change at community level, such as regulatory enforcement of speeding drivers, when effectively applied, incompletely suppress undesired behaviours rather than increasing the performance of desired ones (Alonso et al., 2013), resulting in intermittent performance of undesirable behaviours and few tools to encourage the performance of desired ones.

To address this limitation of traditional approaches to community education and compliance, modern behaviour change approaches are multi-faceted, using social marketing techniques (David et al., 2019), behavioural economics approaches such as 'nudging' (the facilitation of desired behaviours to make the performance of desired behaviours easier than non-desired behaviours)(Forberger et al., 2019), 'budging' (a version of nudging supported by regulation) (Oliver, 2013), and harnessing technology to interact with community members in a targeted and direct way (Oxley et al., 2022) or facilitate desired learning outcomes (EUFIC 2014). These combined approaches have been repeatedly shown to effectively shift social norms towards desired behaviours and increase the likelihood that individuals within a community will perform them.

The role of regulatory enforcement is then to manage the behaviour of individuals who act outside of accepted social norms, leveraging social and material/financial motivations to improve compliance of the majority of the population (Scalco et al., 2017; Mak et al., 2019), rather than relying on punishments as a motivator to perform behaviours. Such interventions targeting dog management behaviours such as leash laws and confinement regulations, that already have strong community support (Van de Kuyt, 2004) have shown some efficacy in reducing dog bites in public places (Duncan-Sutherland et al., 2022). In order to retain community support, any legislative dog-bite mitigation strategy whose purpose is to provide safeguards to the public through a reporting system, should avoid imposing divisive mechanisms across responsible dog-owner populations (Creedon & O'Súilleabháin, 2017).

Glanville and colleagues (2020) examined behaviour change strategies aimed at improving pet keeping practices, and found several common limitations:

- Failure to accurately identify the target behaviours.
- Failure to identify and apply a known behaviour change intervention.
- Lack of information about the program and how it was delivered

By applying best practice principles for behaviour change to pet keeping situations, Glanville and colleagues (2020) developed the 'Ten Task' model to assess, design, apply and evaluate behaviour change interventions aimed at pet owners. This model is an ideal template for the Queensland Government to apply when developing dog bite prevention interventions.

Currently, Queensland councils do not have the data collection, management, and assessment processes in place (Queensland Audit Office, 2023), nor the staffing resources available (Queensland Audit Office, 2010), to implement a structured, multi-faceted approach to reducing dog bites within their communities.

To work effectively at state level, social marketing and behaviour change strategies that sit above regulation of local laws, must be data driven, and consistent across Queensland. It is poor use of resources to replicate systems for data analysis and program design in each municipality, when this could effectively be achieved at state level; in short, if the Queensland Government is committed to reducing dog bites and attacks within the state, resources must be invested into the implementation of modern approaches to community-wide behaviour change, instead of relying on Local Government regulation of Local Laws.

Social and cultural influences on dog guardianship skills

Cultural socialisation is the passing of knowledge and practices from parents to children. Cultural identity is the shared characteristics of a group of people and encompasses values, beliefs, and practices (Chen, 2014). The Social Identity Theory (Tajfel & Turner, 1979) connects cognitive processes with behavioural motivations. Applying this to the current context, we can see that social and cultural influences significantly impact dog ownership practices, including how dogs are treated, managed, trained, and integrated into daily life. Rohlf et al. (2010) described a relationship between owners' attitudes and behaviours. The Theory of Planned Behaviour suggests that normative beliefs and peer pressures may play a role in forming and changing behaviours (Ajze, 1991). Rohlf et al. (2010) suggested that practices, such as microchipping, neutering, and socialisation, were more likely to occur if the views of friends and family supported these activities.

Understanding factors that influence community culture is crucial for promoting appropriate and respectful dog ownership within diverse cultural contexts. In order to transform culture, it's crucial to have trust between and among cultural and community members and leaders. It is widely acknowledged that creating trust requires a lot of face time and discussion, rather than an authoritative, external motivation approach. The trust is built by engaging the community in the definition of what their ideal culture would look like, and then working with a core group within the community to spread the new ideas and reshape cultural norms from within (Joey, 2020). Philpotts et al. (2019) posits that science communication, rather than science education as a discipline, may provide as many, if not more, useful sources of information when considering the concept of educating dog owners. Clearly, we need to do more than "educate at" adults in the community to create change in this space. Focussing on the delivery and mechanics of how the information is disseminated is vital, as are the associated support mechanisms that can assist the community to be

the dog guardians that we need them to be. Providing the appropriate support for implementation of enhanced guardianship skills is key to creating cultural change. This support may be in the form of culturally appropriate low/no cost desexing, microchipping, dog behaviour and training, containment, or other support.

Prevention of bites in homes

Dog-on-child bites make up the majority of injurious bites that occur in homes and our communities and while dog bite related fatalities are rare in Australia, children are over-represented (Australian Institute of Health and Welfare, 2005). A review by Jakeman et al. (2020) found that thorough history taking and examination of factors correlating with dog-on-child bites can guide preventative measures, and a multidisciplinary approach to prevention of dog-on-child bites is most likely to be effective at reducing dog bite incidents in homes.

Bite prevention programs aimed at children are typically provided through early childhood care centres, kindergartens, and primary schools, and aim to teach children about how to better understand canine body language (see examples from Animal Welfare League Queensland PetSense Program and Sunshine Coast Council Pet Awareness Programs) and to interact with dogs in a manner less likely to provoke a bite (see example Good Dog In A Box). While research indicates that educational programs can improve children's ability to accurately identify dog behaviours that may precede a bite (Lakestani & Donaldson, 2015), evaluations show that bite prevention programs focused on children are less effective at reducing dog-on-child bites in the community than those aimed at changing parental management of children and dogs (Duncan-Sutherland et al., 2022).

In essence, child safety around dogs is no different to child safety around swimming pools; we can and should teach children the skills to keep themselves safe in the event of a management failure, but prevention must focus on reducing the exposure of children to high risk situations through improving parents understanding of the risks of child-dog interactions (see example from Stop The 77 and The Dog Decoder) and encouraging active parental supervision during dog-child interactions (see example Five Types of Supervision and The Blue Dog).

The Victorian Government delivers multiple programs aimed at improving child safety around dogs and educating children in positive pet ownership behaviours, such as PetTown, We Are Family, and in-school programs delivered through kindergartens and primary schools. AIAM recommends that the Queensland Government follows the lead of other states, such as Victoria, and designs and implements education and behaviour change interventions aimed at improving child safety around dogs, and parental management of dogs around children.

Dog bites involving adults within the home environment may be more difficult to address, given the known causal relationships between inappropriate interactions, human mental health challenges and dog bites, discussed earlier. As such, AIAM recommends a deeper investigation into local factors that correlate with increased dog bites towards adults in private homes, and targets public health interventions to communities most at-risk for dog bites, such as the Brisbane suburbs identified by Pekin and Colleagues (2021).

Public education can address a range of topics, including:

- Canine Behaviour: Teaching individuals how to interpret canine body language and signs of stress can empower them to recognise when a dog might be uncomfortable or fearful. This knowledge enables people to avoid triggering aggressive reactions in dogs.
- Supervision: Emphasising the need for close supervision when dogs are around children, unfamiliar people, or other dogs can significantly reduce the likelihood of bites. Unattended interactions can escalate quickly and lead to unintended confrontations.
- Socialisation and Training: Encouraging proper socialisation and appropriate training techniques can help dogs develop good behaviour and coping skills. A well-socialised and trained dog is less likely to respond aggressively when faced with unfamiliar situations.
- Basic needs of dogs: Highlighting the importance of desexing, regular veterinary care, appropriate enrichment and proper containment measures can contribute to the overall well-being of dogs and reduce the potential for aggressive behaviours.
- Children's Education: Developing age-appropriate educational programs for children can teach them how to interact safely and respectfully with dogs, reducing the risk of bites and fostering a harmonious relationship between kids and pets.
- Situational Awareness: Educating the public about potentially risky situations, such as approaching a dog that is eating, sleeping, or caring for puppies, can prevent unexpected reactions from the dog.
- Breed Neutrality: Emphasising that all dogs, regardless of breed, have the potential to bite under certain circumstances promotes a more comprehensive understanding of bite prevention.

By focusing on public education efforts that address human behaviour, communities can create a safer environment for both people and dogs. While it's important to acknowledge the role of canine behaviour and breed characteristics, fostering informed and supported guardianship and informed interactions is a proactive approach to reducing the risk of dog bites and cultivating positive relationships between humans and their canine companions.

Prevention of bites in public

Preventing dog bites outside of the home requires a proactive approach that combines enhanced guardianship skills, public education, and effective management. Australian urban animal management approaches typically separate dogs from humans in public spaces, to minimise risk of dog aggression and nuisance behaviours (Miller & Howell, 2008), however, modern inclusion of dogs as members of the family has resulted in discussion about whether the degree of separation between 'dog-centric' and 'human-centric' spaces is truly of benefit to communities (Instone & Sweeney, 2014). This may present a new challenge for Animal Management as dogs are increasingly brought into public spaces where they have previously been excluded.

As the vast majority of bites that occur in public are the direct result of inadequate confinement (Van De Kuyt, 2001), focusing on effective confinement of dogs to their home property has been shown to reduce public dog bites by as much as 80%. Australian pet owners have shown strong support for confining dogs to the owner's property (Rand et al, 2023), so behaviour change approaches should focus on understanding local barriers to effective confinement, and facilitating compliance by assisting owners to overcome these barriers.

Effective control of dogs in public spaces requires clear and detailed specifications to be communicated to owners, explaining what an acceptable method of dog control in public is. Messaging should include concrete examples of how owners can achieve compliance with effective control requirements, such as lead length information (see example included in Appendix 2: Final Report: Independent Review into the Management of Dogs in the ACT), required age of the handler responsible for the dog, and exceptions to lead requirements, such as off lead dog areas, and how effective control can be demonstrated by owners in these spaces.

Importantly, all messaging relating to desired dog management practices must target all dog owners and reinforce the concept of strict liability for any damage caused by their dog.

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Appendices

Appendix 1: Victoria's Future in Responsible Canine Guardianship.
https://responsiblecanineguardianshipvictoria.wordpress.com/publications/

Appendix 2: Final Report: Independent Review into the Management of Dogs in the ACT
https://www.cityservices.act.gov.au/__data/assets/pdf_file/0003/1251345/Independent-Expert-Review-into-the-Management-of-Dogs-in-the-ACT.pdf