ANIMAL WELFARE EMERGENCY MANAGEMENT: EDUCATIONAL NEEDS

A thesis presented in partial fulfilment

of the requirements for the degree

of

Master of Education (Adult Education)

Massey University (Manawatu)

New Zealand

HAYLEY SQUANCE

2011

"The greatness of a nation and its moral progress can be judged by the way its animals are treated" (Gandhi)*.*

ABSTRACT

Animal Welfare Emergency Management (AWEM) is an emerging area of emergency management. AWEM is used to describe the management of animal welfare needs, through all phases of emergency management. It is a critical component of modern emergency management, due to the complex bond between humans and animals and the unequivocal evacuation non-compliance of pet owners during disasters. As this is a new area, no studies have been conducted to examine the different personnel involved in animal welfare emergency management, nor has the development of evidence-based core competencies been examined.

The purpose of this research was to define animal welfare emergency management, identify and define different groups of personnel involved in animal welfare emergency management and examine core educational domains along with core competencies and the associated assessable learning outcomes.

This study, from a broad perspective, aimed to provide an overview of current multi-discipline competencies, curriculum and course content in relation to disaster practitioners' requirements, which could shape the development of similar domains and competencies with associated assessable learning outcomes for animal welfare emergency management personnel. The study also explored the requirements for different levels of cognitive knowledge, from low-order to high-order, within different roles of animal welfare emergency management.

Both quantitative and qualitative data have been collected in this study using a combination of triangulated methods and Delphi technique, including scientific document review and analysis, online questionnaire and a panel of subject experts. The findings from the document review informed the development of core educational domains, and the online questionnaire informed and guided the development of core educational competencies and associated learning outcomes.

This study identified three different groups of personnel involved in animal welfare emergency management; (1) policy/planning, (2) emergency animal shelter and (3) emergency animal

rescue, all of which require defined core competencies to adequately fulfil their roles in animal welfare emergency management.

This study also identified eight core educational domains:
(1) Emergency Management
(2) Animal Welfare Emergency Management
(3) Behaviour
(4) Roles in Animal Welfare Emergency Management
(5) Co-ordinated Incident Management Systems (CIMS)
(6) Safety,
(7) Communication
(8) Problem-solving;
- and eight core competencies with twenty-eight associated assessable learning outcomes.

This study has developed a foundation for the development of educational and training programmes in animal welfare emergency management in New Zealand. These findings indicate the need for replication of this study on an international scale to extend the generalisability of the results and to test the reliability and validity of the newly developed competencies. This could lead to international standardised educational core competencies for all personnel involved in animal welfare emergency management.

This is the first study which has identified the three groups of personnel involved in animal welfare emergency management and developed animal welfare emergency management competencies, with associated assessable learning outcomes. The corpus of knowledge that has evolved from this study could be used to promote awareness of animal welfare emergency management in government, private and educational sectors. Ultimately, adding to the limited literature available in this area will make a significant contribution to addressing the welfare needs of animals during disasters.

PREFACE

Four years ago I was asked a question by the MidCentral Health Board pandemic planner, "are there any emergency management plans for animals in New Zealand and what resources are available?" I was unable to answer this question and the more research I did on the topic, it became clear that 1) New Zealand does not have an emergency management plan for animals 2) there is very little literature available on this subject and 3) I could make a significant and worthwhile contribution to the welfare of animals in disasters if I pursued this as a research study. For me this has been an enlightening and enriching journey that has encouraged me to continue to contribute to Animal Welfare Emergency Management.

Undertaking the present study has reminded me again of the great privilege and responsibility I have as an educator and veterinary technologist, who can continually make contributions to animal welfare through education.

I sit here with my trusted canine companion who hasn't left my side throughout this whole research study and seems to live life for the moments we can spend together. How could I be expected to leave him (Zia), my other canine companions Meisha and Larka or my neighbours pets behind during an evacuation or be told to shoot them all before I leave? Acknowledgement of the importance of having policy and capability to management animals in a disaster is required by New Zealand's Civil Defence and Emergency Management sector. This acknowledgment will lead to a change in the current omission of animals in emergency management plans.

"*Be the change you want to see in the world*" (Gandhi).

ACKNOWLEDGMENTS

Contents

List of Tables

Picture

List of Figures

List of Appendices

Glossary of Terms

Term	Definition
Act	Civil Defence Emergency Management (CDEM) Act 2002
Administering authority	As required by Section 23 of the CDEM Act 2002, which is responsible for the provision of administrative and related services required by the Group
Agencies	Government agencies, including public service departments, non-public service departments, Crown entities, and Offices of Parliament; and • Non-governmental organizations; and • Lifeline utilities
Animal Rescue Unit	A team which conducts search and rescue efforts of animals during an emergency. Displaced animals, animals that have been left behind are rescued from buildings and on the streets and transported to animal welfare centres. Animals may require first aid out in the field. Personnel in this unit/team are highly trained in animal handling and emergency rescue response
Animal Response Unit	Incorporates the animal rescue unit and the animal welfare centre personnel
Animal Welfare Inspector	Inspector means an inspector appointed under Section 124 (1) or 124(2) of the Animal Welfare Act 1999 and includes every member of the Police
Capability	Means the effectiveness of co-operation and co-ordination arrangements across agencies for the delivery of resources in the event of an emergency
Capacity	Means the adequacy of resources in terms of quantity, and suitability of personnel, equipment, facilities and finances
CDEM	Civil defence emergency management
CDEM Group	A Group established under s 12 or re-established under Section 22 of the CDEM Act 2002. Can be read to mean any of the 16 regional CDEM Groups in this Guideline
CIMS	The New Zealand Co-ordinated Incident Management System. An agreed method of incident management to be employed by emergency responders for efficient incident management
Competency / Competencies (plural)	The level of performance demonstrating the effective application of knowledge, skill and judgment
District Health Board	Means the provider of publicly funded health services for the population of a specific geographical area in New Zealand
Emergency	Means a situation that: • is the result of a happening, whether natural or otherwise, including without limitation, any explosion, earthquake, eruptions, tsunami, land movement, flood, storm, tornado, cyclone, serious fire, leakage or spillage of any dangerous gas or substance, technology failure, infestation, plague, epidemic, failure of or disruption to an emergency service or lifeline utility, or actual or imminent attack or warlike act; and • causes or may cause loss of life or injury or illness or distress or in any way endangers the safety of the public or property of New Zealand or any part of New Zealand; and • cannot be dealt with by emergency services, or otherwise requires a significant and co-ordinated response under the CDEM Act 2002

EOC	The CDEM Group's local Emergency Operations Centre(s) for the co-ordination of local response activities by all local responders, the management of local Evacuation Centres, and the care of local communities
Euthanasia	Literally euthanasia means "good death" or a "mercy killing". Euthanasia is offered as a release from pain or debilitating disease states in animals
Evacuation	The temporary relocation of all or part of a particular population or geographical regional region from a location that has been or is about to be affected by an emergency, to a place considered to be safe
NAWEM	National Animal Welfare Emergency Management Liaison Group
Pet Friendly Hotel/Motel	Is an establishment where people who are evacuate may seek shelter where consent has been given by the establishment to allow animals occupy the rooms with the owners
Pet Friendly Shelter	Shelters that put owners and their animals in close enough proximity that the owners can provide the majority of the care for their pet(s)
State of emergency	Has the same meaning as in Section 4 of the CDEM Act 2002 and means a state of national emergency or a state of local emergency
Temporary Animal Shelter (TAS)	Shelters set up to house animals either in a building which has been previously identified as suitable to house animals; or temporary housing situations in boarding facilities
Veterinarian	A person with the relevant qualifications who is currently registered with the New Zealand Veterinary Council as a practicing veterinarian
Veterinary Paraprofessional	A veterinary nurse or veterinary technologist who holds a qualification in either a certificate in veterinary nursing, diploma in veterinary nursing or Bachelor of Veterinary Technology or equivalent
WAG	Welfare Advisory Group established under Section 8.6.1 CDEM Act 2002
Welfare Centre	The CDEM Groups local centres for direct involvement with the public for: • The provision of advice and information about an emergency • Temporary shelter for evacuees • Registration of evacuees and relocation to accommodation; and • The provision of aid to affected communities
Zoonotic Disease (zoonoses)	An infectious disease that can be transferred from animals to humans or conversely to humans to animals

Chapter One

1.0 INTRODUCTION

Animal Welfare Emergency Management (AWEM) is an emerging area of emergency management. This term is used to describe the management of welfare needs through all phases of emergency management. It is a critical component of modern emergency management due to the complex bond between humans and animals. This bond has been attributed to evacuation non-compliance of pet owners in recent catastrophic disasters.

"*Pets are one of the family and it is not okay to leave them behind when evacuating*" (Glassey, 2010).

The foci of this study are to define animal welfare emergency management and the groups of personnel involved in delivering AWEM, along with exploring the educational needs of personnel involved in animal welfare emergency management. The research question is:

"What are the educational and technical needs of personnel involved in animal welfare emergency management, in New Zealand?"

1.1 Rationale for this Study

Training and education of healthcare and government workers has long been accepted as integral to disaster preparedness, although, until recently neither New Zealand veterinarians, nor veterinary paraprofessionals have participated in such practices. Internationally, animal welfare emergency management (AWEM) training and education is neither evidence-based nor standardised. In 1959, the American Medical Association published a report which suggested that veterinarians should receive training in disaster management and become proficient in the practice of disaster veterinary medicine; together with the inclusion of paramedical training to be able to aid the medical profession (Howell, 1998). Today, most veterinary schools do not include AWEM in their curriculum even though AWEM is an essential part of the veterinary

professions obligations to both animals and humans (Madigan & Dacre 2009). With these gaps identified, research is required to define animal welfare emergency management, identify and define groups of personnel involved in AWEM and develop educational competencies and assessable learning outcomes in criteria-based emergency management that are relevant to personnel involved in AWEM. A systematic evidence-based consensus-building method will be used to derive the educational competences and objectives.

In 2006, I was interviewed by the MidCentral District Health Board pandemic planning team leader Murray Mill on pet preparedness during the impending Avian Flu pandemic. I was unable to answer the question;

 "*are there any disaster response plans or teams for animals in New Zealand?*".

I therefore needed to research whether any such group existed or plans were available. I could not access any information on animal disaster response plans, nor could I find any information on Animal Emergency Response in New Zealand. I saw a need for this gap to be filled due to New Zealand's high animal population, isolation from neighbouring countries and the increasing prevalence of disasters occurring in New Zealand.

During this time I discussed my concerns with Dr Ian Dacre, who was taking up a position as the Disaster Management Operations Director in Asia for the World Society for the Protection of Animals (WSPA). He informed me of a newly-developed National Animal Welfare Emergency Management Liaison group, which is a cluster of agencies with the purpose of providing advice on animal welfare issues during emergencies through individual and multi-agency action. They were looking for a Masters student to contribute to achieving the terms of reference they had developed. This was my opportunity to incorporate my Masters in Education thesis with an area of interest. I could see that there was limited knowledge in this field and this was an opportunity for me to become an expert in the field of animal welfare emergency management.

Finally, this study was designed to incorporate two fields of personal interest and involvement – animal welfare during disasters and advancing a field through educational development and delivery.

1.2 Research Aims

This is the first study that explores Animal Welfare Emergency Management, the personnel involved and development of core competencies of Animal Welfare Emergency Management Personnel. This study aims to fill a number of research gaps by addressing the following:

- Define Animal Welfare Emergency Management
- Identify and define groups involved in animal welfare emergency management
- Development of educational domains for Animal Welfare Emergency Management
- Development of educational core competencies with associated assessable learning outcomes
- Enhancing Awareness of Animal Welfare Emergency Management
- Enhancing current knowledge on Animal Welfare Emergency Management through a scientifically robust programme of research which will be of benefit in the development of this area
- Gaining knowledge in animal welfare emergency management.

1.3 Outline of the thesis

This thesis has six Chapters. This chapter has provided an introduction to the context within which the research was developed including the rationale of the study, research aims and the gaps to be filled.

Chapter Two provides an analysis of current knowledge of animal welfare emergency management, emergency management and an overview of the importance of education and the development of training programmes. There is limited literature available on Animal Welfare Emergency Management, so the Animal Welfare Emergency Management section of this chapter is a combination of available literature and the introduction of areas that are not discussed in the literature. It highlights a number of key gaps and sets the focus for this study.

The methodological approach is outlined in Chapter Three. It begins with how the study design and methods applied to this study were informed by previous studies on educational competencies, curriculum and programme content of disaster education and training in the healthcare, veterinary and emergency management fields. The chapter proceeds to explain

triangulated methods, how the Delphi technique was applied and how the target population was defined and selected. In addition, the ethical issues considered by the study are discussed.

Data collection is presented and discussed in the following two chapters based on their relevance to the research. Chapter Four explains the document analysis and initial questionnaire. It focuses on describing the different groups of personnel involved in animal welfare emergency management, educational domains for animal welfare emergency management and the different aspects of knowledge and skills required by each group of personnel. This chapter also includes the findings from the questionnaire which contributed to the development of core competencies.

Chapter Five presents the overall findings from the expert panellists on the clarity, appropriateness and relative importance of the core competencies and the associated learning outcomes. This chapter discusses the findings and brings all themes together.

Chapter Six contains the conclusion of the thesis. It links the key findings discussed in the previous chapters. This Chapter draws conclusions about animal welfare emergency management in New Zealand and presents twelve recommendations for government and non-government agencies that either have an interest in animal welfare during disasters or should be addressing the issues.

1.4 Background

1.4.1 Animal Welfare in disasters

New Zealand is one of the most advanced countries when it comes to disaster preparedness, monitoring and warnings. However, until recently animals have not been considered in emergency management planning and the animal health profession has had little direct involvement in emergency management. Production animals are particularly at risk, as they occupy approximately 50% of the land mass of New Zealand. As the country's economy relies heavy on the animal health industry as more than 42% of our merchandise exports are derived from animal products (Ministry of Agriculture and Forestry, 2011).

The nation must take heed of the effects of international disasters such as Hurricane Katrina in 2005, the 2008 cyclone (Nargis) in Myanmar and local disasters such as the 2004 Manawatu floods, subsequent droughts, the Canterbury earthquake 2010, and the Queensland, South East Australia floods 2011 as they all had devastating effects on animals. For example cyclone Nargis caused a huge number of stock losses and human deaths, in a country that 77% of the population are involved in agriculture, resulted in national economic effects. Myanmar already had infectious diseases present before the cyclone, as the remaining animals are stressed the possibility of an increased incidence of these diseases was a reality. It is also postulated that decaying bodies of animals results in the spread of various infectious diseases.

Floods are occurring more frequently and are noted as the biggest disaster, having detrimental effects. Generally people focus on the short-term effects of such events and forget about the long-term effects. Malnutrition can occur due to long-term effects of floods, although it is rarely document (Guha-Sapir, 2011). It is hoped that New Zealand has enough resources to avoid ending up in the same predicament, although isolation from neighbouring countries who may also be affected means that they may take a significant period of time to respond to our needs. Floods in the Manawatu in 2004 are estimated to have cost $400 million, with the national economic effects of droughts estimated to have reduced gross output by 12% ($760 million) between 2005/2006 and 2007/2008 (Bevin, 2007). The ever-increasing climate change is expected to impact significantly with the frequency, intensity and magnitude of these adverse events.

In today's society companion animals are considered to be integral members of the family. New Zealanders have a very high involvement with cats and dogs. This is reflected in New Zealand's pet ownership statistics which are amongst the highest in the world. Over 53% of households own at least one cat and 18% own two or more, making it the highest cat ownership rate in the world (New Zealand Pet Food Manufacture Association, 2010). Just over 35% of households own a dog (New Zealand Pet Food Manufacture Association, 2010), a number that is becoming greater than the number of households with children.

The human-animal bond is a powerful force, helping provide companionship for many individuals and creating positive impacts on mental and physical health. Expectations of the standards of care of companion animals, are approaching, and in some cases exceeding, those within human medicine (Dunning *et al* 2009). Current research has revealed that people are just as likely to suffer from depression from losing their pet, in a disaster, as they do from losing their home (Hunt M., *et al* 2008).

Planning for animals during a disaster is ultimately a human issue. There have been many well-documented instances of evacuation non-compliance during emergencies, as pet owners refuse to leave their pets behind. Hurricane Katrina serves as a reminder for the necessity of considering animals in disaster planning to avoid compounding the emotional and economic toll on individuals and communities which are already impacted by devastating loss or injury (Heath, & Linnabary 1993). Many people refused to evacuate from an area because they were forced to leave their pets behind or they ignored cordoned off areas to go back into unsafe zones to rescue their pets (Irvine 2009). Heath (2001a), characterised the risk factors for household evacuation failure, pet evacuation failure and pet rescue attempts during a natural disaster. More than 80% of persons who re-entered the evacuated area did so to rescue their pets. Effectively, therefore, forcing owners to leave their pets behind can lead to putting the general public at risk and create civil unrest.

During Hurricane Katrina the public transportation (in the form of buses and inflatable boats) that took the residents to welfare shelters, refused to allow pets on board (Shiley, 2006). Many owners were distraught when the authorities made them leave pets behind. In one incident the authorities demanded a group that was taking refuge in a church with their pets, to go to the welfare shelter with the agreement that the authorities would look after their pets (Shiley, 2006). The authorities did not keep this promise: the owners were not out of ear-shot when the

authorities opened fire on the pets and killed them all. Pictures of the pets revealed that the authorities took random shots at the pets and did not humanely euthanise them. The graphic pictures were released via the media, which elicited a highly emotional public response.

During Hurricane Katrina, well over 50,000 companion animals were stranded due to forced abandonment and 80-90% of these pets subsequently died (Shiley, 2006). Of those live remaining pets 10,000 to 15,000 pets were rescued which led to the largest animal welfare rescue mission (Anderson and Anderson 2006, Irvine 2009). Only 2,000 to 3,000 pets were reunited with their owners, leaving many animals having to be rehomed or destroyed. In addition to the companion animal deaths, over 600 million production animals, mainly intensively farmed animals such as chickens, were killed in horrific circumstances (Irvine, 2009). Because of the large scale of this disaster and the number of human and animal lives lost due to the requirement to leave animals behind, specific legislation known as the Pet Evacuation and Transportation Standards (PETS) Act 2006 was passed by the United States Congress. The PETS Act requires a city or state to submit a plan detailing its disaster preparedness program and include how they will accommodate households with pets or service animals to the Federal Emergency Management Agency (FEMA). Many countries are following the lead of the US, which is led by legislating for the preparation of disaster planning for animals as well as people, New Zealand is yet to follow.

In the context of New Zealand Glassey (2010) undertook an online survey of Taranaki and Wellington pet owners, which showed that over 56% of respondents indicated that they would not evacuate if they could not take their pets with them and 79% were not prepared to leave their pets behind during an evacuation. Similar findings have been reported in Australia following online surveys conducted after the 2009 Victorian bushfires.

Awareness and preparation are vital for coping with any unexpected disaster or emergency. As New Zealand is extremely vulnerable to the occurrence of natural disasters namely flooding, earthquakes, landslides, volcanic eruptions and extreme weather conditions (such as snow and fire) it needs to be aware of the effect any such events would have on New Zealand society, including their pets.

Animal owners have the legal responsibility for their animals during an emergency. Emergency management plans should include an animal welfare emergency management plan which fulfils

the welfare needs of companion and production animals. In New Zealand, local authorities have a responsibility for animal emergency welfare under the National Civil Defence Emergency Management Plan, and emergency services have a vested interest in ensuring pets are considered during an evacuation to assist in evacuation compliance.

1.4.2 Ministry of Civil Defence and Emergency Management

In New Zealand the Ministry of Civil Defence and Emergency Management (MCDEM) is responsible for the establishment and enforcement of the Civil Defence Emergency Management Act 2002. The act is based on Norton's dispersed accountability model (Angus, 2005). It places accountability on local government to facilitate community level disaster resilience, rather than emulate a top down command and control mentality (Glassey 2011, personal comms), such as the Incident Command System (ICS) used in the USA.

The Ministry of Civil Defence and Emergency Management (MCDEM) leads the way in making New Zealand and its communities resilient to hazards and disasters (MCDEM, 2010a). The overarching strategy for achieving resilience to hazards and disasters is through a risk management approach to the four "Rs" of:

- **Reduction**
- **Readiness**
- **Response**
- **Recovery**.

MCDEM (2010a) explains the four "R"s in greater detail:

"*this approach starts with recognising the hazards we face and the vulnerability of our communities and infrastructure to those hazards. By addressing what these hazards could do to us (New Zealand), the focus can move to measures for reducing the risks and for managing the impacts when they occur.*

The Ministry aims to put the right tools, knowledge and skills in the hands of those who will be responsible for designing and implementing solutions at the local level. It does this by working closely with local government, utilities and the emergency services involved in civil defence

emergency management, provide strategic policy advice on New Zealand's capability to manage and be resilient to the social and economic costs of disasters".

New Zealand's Civil Defence Emergency Management framework is made up of several instruments, which include:

- Civil Defence Emergency Management (CDEM) Act 2002
- CDEM Regulations
- National CDEM strategy
- National CDEM Plan
- CDEM Group Plans
- Director's Guidelines
- other Statutes

The purpose of the CDEM Act 2002 is to:

- Improve and promote the sustainable management of hazards to contribute to the well-being, the safety of the public and the protection of property.
- Encourage and enable communities to achieve acceptable levels of risk by applying risk management.
- Provide for planning and preparation for emergencies and response and recovery in the event of an emergency
- Require local authorities to coordinate CDEM through regional groups
- Integrate local and national CDEM planning and activity
- Encourage the coordination of emergency management across emergency sectors.

Animal welfare during disasters is not covered in the CDEM Act 2002, though the National CDEM Plan explains it's roll in domestic animal welfare. Section 48 of the Plan it states:

> "*48: Domestic animal welfare*
>
> (1)   *While the Ministry of Agriculture and Forestry maintains the government's reporting capability on adverse events and natural disasters affecting agriculture, forestry and horticulture, and for administering any approved government programmes, it is recognized that territorial authorities*

provide this function locally, and that this may also extend to domesticated animals in urban environments.

(2)   Local authorities may be assisted by the Royal New Zealand Society for the Prevention of Cruelty to Animals and from the Ministry of Agriculture and Forestry in both urban and rural environments

(3)   The Ministry of Agriculture and Forestry encourages farmers and vulnerable industries to develop their own contingency response plans for both natural disasters and biosecurity hazards". (MCDEM 2005)

The Guide to the National CDEM Plan explains domestic animal welfare further:

"A domestic animal is defined in this Guide as an animal that is kept by humans for companionship and enjoyment rather than for commercial reasons (this also extends to farm dogs). In this context, domestic animals may also be referred to as companion animals or pets.

The primary responsibility for domestic animal welfare lies foremost with the owner or person in charge of the animal(s). The SPCA and local authorities may be involved at CDEM Group and local planning levels to plan for operational response to domestic animal welfare issues. Communities should work with their local councils and emergency management personnel, within both local government and relevant agricultural industry bodies, to assist with this planning." (MCDEM, 2005)

Until recently, there were no Animal Welfare Emergency Management plans written within regional Welfare Plans, though there has been an unwritten expectation that the New Zealand Royal Society for the Prevention of Cruelty to Animals (SPCA) will respond to animal welfare needs in disasters. This is an unrealistic expectation, as many regions within New Zealand do not have an SPCA shelter that has the resources or funds to respond to such an event.

1.4.3 National Animal Welfare Emergency Management Liaison Group

In 2006, the National Animal Welfare Emergency Management Liaison Group (NAWEM) was established as a cluster of agencies with the purpose of providing advice on animal welfare issues during emergencies, through individual and multi-agency action. NAWEM was formed in response to adverse events (2004 lower North Island floods, 2006 Canterbury snow storm) that highlighted significant regional variation in the local communities ability to cope, and the need

for heightened national coordination among relevant agencies. The group consists of key animal industry and emergency management members. The following organizations are represented:

- New Zealand Veterinary Association (NZVA)
- Federated Farmers of New Zealand (FFNZ)
- Royal New Zealand Society for the Prevention of Cruelty to Animals (SPCA)
- World Society for the Protection of Animals (WSPA)
- Ministry of Agriculture and Forestry (MAF)
- Ministry of Civil Defence & Emergency Management (MCDEM)
- New Zealand Companion Animal Council
- Massey University

The key objectives of NAWEM are:

- **Clarify** the roles, responsibilities and capabilities of respective agencies for animal welfare during emergencies;
- **Identify** multi-agency resources and gaps in animal welfare emergency planning;
- **Bring** gaps to the attention of agencies' senior management along with proposed solutions;
- **Provide** technical and educational training advice on animal welfare emergency management;
- **Promote** risk reduction and preparedness for animals in emergencies.

During the past four years NAWEM has coordinated regional workshops to identify the regional and national resources required for animal welfare, recruited animal welfare emergency management regional co-ordinators (aligned with the sixteen MCDEM Regional Welfare Advisory Groups) and developed NAWEM's Terms of Reference. The group has decided that because it's members have fulltime work commitments, the most feasible way to fulfil NAWEM's objectives is to develop a companion animal welfare emergency management plan guideline. This guideline will be distributed to the sixteen regional CDEM Welfare Advisory Groups to assist with the development of Animal Welfare Emergency Management Plans. As NAWEM is in the early development phase there are many gaps that need filling; more due to lack of government funding, the sustainability of NAWEM relies on the goodwill of the organizations represented in the group. Movement forward is at a slow pace and the opportunity has arisen

for research to support one of the group's key objectives of providing advice on technical and educational training on animal welfare emergency management.

1.4.4 Training and Education in Emergency Management

Training and education of healthcare and government workers has long been accepted as integral to disaster preparedness, although, until recently neither New Zealand veterinarians, nor veterinary paraprofessionals, nor any other animal-related personnel, have participated in such preparations. Internationally, animal welfare emergency management (AWEM) training and education is neither evidence-based nor standardized. In 1959 the American Medical Association publish a report which suggested that veterinarians received training in disaster management and become proficient in the practice of disaster veterinary medicine and to include paramedical training to be able to aid the medical profession (Howell, 1998). Even so, most veterinary schools currently do not include AWEM in their curriculum, even though AWEM is an essential part of the obligations of the veterinary profession to both animals and humans (Madigan & Dacre, 2009).

AWEM should highlight to the emergency management profession that animals need to be considered during emergency management planning. Catering for animals during disasters can be achieved by including them in local and regional emergency management plans. During the development phase of an animal emergency management plan recommendations for the care of animals should only be given by people who are familiar with both emergency management operations and animal care. This means that there needs to be personnel with animal welfare experience working at a policy level to assist with developing animal welfare plans, as well as people who have the skills to act as responders during an emergency. This will require personnel to participate in animal welfare emergency management training which until recently has not been available in Australasia or New Zealand.

1.5 Summary

In New Zealand, the concept of considering animal welfare during disasters is relatively new. The country has high animal populations, some are the largest in the world. Over 50% of the land mass is occupied by production animals and over 50% of household own a cat and 35% own a dog. There has been a lot of research undertaken to understand why people will not evacuate when ordered to do so. Pet owners are generally over-represented in evacuation non-

compliance. Hence, the importance of the inclusion of animal welfare in emergency management plans. The nation need to take heed of the lesson learnt from other countries on the effect of catastrophic disasters such as Hurricane Katrina, as well as disasters that have occurred recently in New Zealand.

MCDEM is responsible for ensuring regional CDEM groups have emergency management plans, although it is not mandated to include how animals are evacuated, identified, transported and cared for during and after an emergency. Some countries such as the USA have developed separate Acts to cover these concerns, one such act is the PET Act 2006. This was developed in response to public outcry about how animals were not included pre Hurricane Katrina and the sheer number of animal fatalities. Animals are recognized by CDEM as "property" and not members of the family. CDEM should change their attitudes towards animal as in today's society; animals are seen as part of the family.

NAWEM is a group that was formed in 2006 by a cluster of agencies' whom recognised gaps in emergency management in relation to animal welfare. This groups' existence signifies a need to address animal welfare during disasters. This is a step in the right direction for New Zealand.

Having an understanding of education and training in emergency management leads to a good template to begin the development of training and education in AWEM.

The results from this research will be used to inform the development of Animal Emergency Response training, for inclusion in emergency management, veterinary science, veterinary paraprofessional and other animal –related curricula.

Chapter Two

Literature / Resource Review

Because animal welfare during disasters is an emerging area of concern, there are few published resources that are specific to AWEM. This literature and resource review will focus on three separate but interconnected themes: (1) Animal Welfare Emergency Management (2) Emergency Management and (3) Educational Theory.

2.0 Animal Welfare Emergency Management

<u>Assumptions</u>
- People will risk their lives and, thereby the lives of others, to protect animals.
- Inability or unwillingness to evacuate animals will adversely impact human evacuation operations and may result in human fatalities.
- Disasters that affect livestock and cause the transmission of infectious diseases have the potential to exert a negative impact on the domestic economy, international trade, national food supply, public health, public confidence, and psychological and social well-being of livestock producers.
- Emergency responders have a legal obligation to offer evacuation, shelter, and other services to "Disability Assist Dogs", equivalent to those provided to people. A Disability Assist Dog is one that is certified by one of the following organisations as trained to assist a person with a disability:
  - Hearing Dogs for Deaf People New Zealand:
  - Mobility Assistance Dogs Trust:
  - New Zealand Epilepsy Assist Dogs Trust:
  - Royal New Zealand Foundation of the Blind:
  - Top Dog Companion Trust
  - Assistance Dogs New Zealand Trust (as of December 2010):
  - an organisation specified in an Order in Council made under Section 78D of the Dog Control Act 1996.

- There is an ethical and societal responsibility for welfare emergency management plans to provide for the welfare of all animals impacted by a disaster. This includes the provision of food, water and shelter, appropriate veterinary care or humane euthanasia for injured and sick animals.

Animal Welfare Emergency Management is comprehensive, meaning it takes into account all phases of emergency management, has an all-hazards approach and contains many facets concerning animal welfare. The following topics outline important components of animal welfare emergency management that Animal Welfare Emergency Management personnel should be aware of. An understanding of these topics will place decisional and operational personnel in a position where they have the knowledge to adequately fulfil their role through all phases of Animal Welfare Emergency Management.

2.0.1 Understanding the Human and Animal Bond

Relationships between humans and animals are complex and are influenced by many variables and have changed over time. Understanding the intricate relationship between humans and animals is an important component of a comprehensive public health approach to emergency response and a critical element in promoting the resilience of individuals and communities (Hall M., *et al* 2004).

In New Zealand, companion animals are kept for a variety of reasons such as companionship, security, status, co-workers, lifestyle (city workers living in a rural environment) and family. Public information on the stress-relieving, health-promoting and therapeutic effects of owning a pet has encouraged companion animal ownership. There is anecdotal evidence that many childless couples have pets as child substitutes, and that animals are used as a bonding and learning mechanism before having children. Owners have more disposable incomes that they are willing to spend on their pets. In some instances owners spend more time and money on their pet, than they do on their own health. This has created a situation in which companion animals are living a lot longer than they did 10 years ago.

Veterinarians and veterinary paraprofessionals have an understanding of how the loss of a pet and the bereavement process affects the owners, although not everyone involved in emergency management will have these insights. Heath (2001b) has shown that owners can be more adversely affected by the loss of a pet than the loss of material items, such as their home. He

also found that more than one third of dog owners felt closer to their dogs than to any human family member. This factor significantly affects a person's ability to cope during a disaster. If people have someone or something to talk to, about what is going on, they are better able to cope with the situation. The stress-relieving, health and therapeutic effects of petting an animal during times of unease is well documented. In the aftermath of the destruction of the World Trade Centre, dogs were bought into the red zone to assist with relieving stress of the rescue personnel. The dogs were used to provide onsite comfort in the rest zones and were simply there for officers who had been traumatised by the crisis to pet and hug (Hall *et al.,* 2004).

2.0.2 Animal welfare

The welfare of animal in New Zealand is protected under the Animal Welfare Act 1999. The Act states that:

> "*the owner of an animal, and every person in charge of an animal, must ensure that the physical, health, and behavioural needs of the animal are met in a manner that is in accordance with both—*
> o *(a) good practice; and*
> o *(b) scientific knowledge" (Animal Welfare Act 1999).*

The term physical, health, and behavioural needs, in relation to an animal, includes—

- o (a) proper and sufficient food and water:
- o (b) adequate shelter:
- o (c) opportunity to display normal patterns of behaviour:
- o (d) physical handling in a manner which minimises the likelihood of unreasonable or unnecessary pain or distress:
- o (e) protection from, and rapid diagnosis of, any significant injury or disease,—

In each case these needs must be appropriate to the species, environment, and circumstances of the animal.

The Act remains unaffected during a declared state of emergency (Glassey, 2010). Therefore regardless of who the person in charge of the animals is, be it the owner, the supervisor at a temporary animal shelter, or the officer of authority who has enforced the abandonment of an animal, must uphold their obligations with regards to the Animal Welfare Act 1999 during a disaster. The Act lays down substantial penalties for failure to discharge these obligations.

2.0.3 Effects of disasters on animals

The National Hazardscape Report 2007 has identified hazards in New Zealand that have the potential to affect society, although there are disasters that can greatly affect the animal population that are deemed to have little to no consequence to society (e.g. drought and severe snow storms). However, Nusbaum *et al.*, (2007) have discussed the negative psychological effects on farmers and veterinarians who are immersed in livestock depopulation and death, the extension of these effects into the rural community and the consequences of them upon the economy.

There are several emergencies for which an animal emergency welfare response may be required, including but not limited to: severe storms, cyclones, floods, earthquakes, volcanic eruptions, tsunami, hazardous material accidents and fires (Humane Society of the United States, 2000). All of these hazards have the ability to compromise shelter, food and water sources for animals. However, there is little literature on the effects of disaster on animals, and most of the linkages between hazards and the types of specific injuries and/or effects upon animals are assumed. For example Wingfield & Palmer (2009) discuss a variety of injuries and diseases that may occur during a disaster, though they fail to specify to which particular disaster they pertain.

Hsu *et al.*, (2006) developed competencies and outcomes for healthcare workers, in relation to the role they play in a disaster. Competency 2 (*"Apply the principles of critical event management"*) relates to this topic. Each competency has testable outcomes, one of which relates to this competency. This is being able to apply their knowledge of different disasters, identify key components of a response and recognize appropriate response activities. In simple terms, a healthcare worker should be able to identify what injuries or medical disorders patients may incur during the disaster. Therefore, they will be prepared to be able to effectively plan for, respond to and receive and treat patients.

With this in mind, New Zealand hazards that are most likely to affect the welfare of animals have been extrapolated and the direct possible injuries or medical disorders have been identified below:

Floods & Tsunami
Animals can drown or be stranded without shelter, food and suitable drinking water during floods or tsunami. Faeces, other bodily wastes, high concentrations of lead (so occurred in Hurricane Katrina) can leach into the environment and contaminate water supplies. Hazardous materials may be released, which make animals susceptible to chemical burns and poisonings if they ingest, inhale or absorb (through the skin or mucus membranes) the hazardous material (Soric *et al*., 2008).

Fires
Animals can be affected by smoke inhalation and burns. Blast injuries and explosions may result in injuries such as ruptured ear drums and penetrating wounds (Wingfield, *et al* 2009).

Earthquakes and landslides
Earthquakes and landslides can result in crush and cutting injuries, fractures, electrical burns and respiratory conditions. Livestock such as dairy cows are susceptible to mastitis therefore an increase in somatic cell counts due to disruption to milking, as occurred during the 2010 Canterbury earthquake. Animal's behaviour can change if there is continuous seismic activity for extended periods of time. There is anecdotal evidence emerging from the Canterbury earthquake that owners from the affected region are seeking help from veterinarians and animal behaviourists with relation to unusual behaviour of their pets. Most are presenting with nervous and neurotic behaviour disorders. This could be attributed to the owners' unease after many large aftershocks.

Snow/Ice storms, extreme temperatures and droughts
Extreme temperatures may cause hypothermia or hyperthermia and dehydration. Electrical burns may also occur if power lines are damaged by heavy snow/ice. These hazards can affect the animals' shelter, food and water supply and behaviour.

Volcanic eruption
A volcanic eruption may result in structural collapse of buildings. Food and water sources can be contaminated with volcanic ash. Particular components of volcanic ash can have detrimental effects to an animal's health e.g. eye, skin and lung damage. Volcanic lava can cause severe burns and volcanic gases can cause toxicities

Hazardous materials
Animals are susceptible to chemical burns by direct contact and poisonings may occur due to ingestion or inhalation of the hazardous material.

Terrorism

Terrorism activity such as a siege can affect an animal's shelter, food and water supply. If explosions occur they have the potential to inflict multi-system, life-threatening blast injuries as a result of over-pressurization force impacting the body surface (Wightman & Gladish, 2001). Other injuries include penetrating wounds, blunt trauma, ruptured eardrums, loss of limbs, burns and eye irritations (from cement and fibreglass) (Gwaltney-Brant *et al* 2003).

Escaped Animals

In disasters the potential for animals to escape is high. This can lead to the separation of owners and animals and other concerns including:

- Escaped animals may threaten the public

- Escaped animals wandering on roads represent an increased risk to motorists

- Escaped animals may become disorientated leading to multiple issues such as increased aggression, injuries and loss of shelter, food and water.

2.0.4 Animal behaviour

Many different types of animals may need to be managed during an emergency response. Understanding the behaviour of a species is vital to safely move, capture and handle different groups. Anyone involved in AWEM should have an understanding of animal behaviour, particularly animal emergency responders, who must have a solid understanding and comfort level in dealing with a wide variety of animals that may be affected by the disaster (Palmer, 2009). Animals' behaviour during a disaster can be made more difficult because their normal behaviour may be overridden by survival instincts. For example, a dog that is usually very placid and well socialized, may lash out at a responder, if it is injured or placed in a situation where it feels threatened. A good understanding of behaviour is also necessary in the development of animal emergency management plans. This will ensure, firstly, that plans are relevant to the needs of a particular species and, secondly, that responders are prepared to anticipate the reactions of animals they may encounter.

2.0.5 Veterinary Medical Care

Animals may sustain injuries or become ill during the response and recovery phases. Veterinary medical care must be available so that animals' health can be assessed, not only due to the high probability of injuries and illness occurring, but also because of animals' inherent

ability to hide any weaknesses during times of stress. A single veterinarian will be quickly overwhelmed with the numbers of animals that need to be assessed and treated, therefore a Veterinary Medical Assistance Team (VMAT), consisting of registered veterinarians, veterinary paraprofessionals and support staff should be available to assist with medical needs. A separate veterinary medical assessment and shelter area must be set up to fulfil the medical needs of all animals.

2.0.6 Animal sheltering, feeding and water

Animals have several basic needs, shelter, food and water being some of the most important. Moreover, according to the Animal Welfare Act 1999 an animal must have the opportunity to display its normal behaviour patterns. All of these needs present significant challenges during disasters, as shelter, food and water should reflect the normal standard of care given to animal in society (Madigan & Dacre, 2009).

AWEM plans need to identify several sites in different parts of the community that could serve as temporary animal shelters, in case some facilities are rendered unusable by the disaster. The Humane Society of the United States suggests it is important to shelter pets close to human welfare shelters, due to the human animal bond and how it enhances coping mechanisms for humans in times of stress.

There are varying types of animal shelters available, particularly for companion animals:

Pet friendly shelter

People and their pets are in the same building, but in separate areas. This is the ideal situation in which the owners can visit their pets and, if appropriate security is in place, allows owners to look after their own pets, reducing the number of personnel required to look after animals.

Evacuation Shelter

People and their pets are located in separate buildings at varying distances apart. This is very much more labour intensive than the abovementioned option, because more qualified animal handlers, careers and volunteers are needed to care for the animals when owners are unavailable to do so. The use of this type of shelter may be inevitable due to the type of disaster, particularly where animals are displaced, the owner is unknown, or the owner is missing.

Veterinary hospital shelter

This is where animals that require emergency medical assistance are located. As veterinarians, veterinary technologists, veterinary nurses are trained and qualified to attend to injured or diseased animals, have expertise in animal health and care, they can address and treat special disaster-related medical concerns. This shelter could be at the same site of the evacuation shelter, or a nominated veterinary hospital that is in a safe zone could house the animals that require assistance.

Food and water drops

During a large scale event such as Hurricane Katrina the rescue effort and sheer number of animals that needed rescuing, drastically overwhelmed the resources available at the shelters. It was decided that a food and water drop would be instituted instead of rescuing companion animals (dogs and cats) and placing them in shelters (Shiley, 2006). This type of decision is a reality in many situations, though it depends on the type of event, how extensive the damage is, how much of the region is affected and how long the residents from the community will be kept away from the area.

Even though food and water drops may be a necessity, there are many concerns that arise from such practices. The following are likely outcomes:

1. Food and water supplies left behind can become contaminated; therefore food drop sites would have to be visited frequently to ensure fresh supplies are available. This increases the number of personnel required on the ground, further exhausting scarce resources.
2. Food sours quickly and can become toxic to animals
3. Leaving food exposed in streets attracts vermin therefore increasing the likelihood of spreading disease by these vectors
4. Dominant pack animals may well be protective of food and this could create aggression amongst the animals left behind, therefore requiring medical attention.
5. Animals that are used to frequent human contact can become 'feral' when not given the opportunity to continue with the contact. This creates aggression and anxiety problems when they are eventually rescued. Therefore, the safety of rescue and shelter personnel can be compromised when confronted with animals in this situation.

2.0.7 Reunification of animals with owners

Rescuing and sheltering animals during an emergency is important, but reuniting them with their owners is just as important. There are three scenarios that could occur with respect to where pets will end up after rescue from immediate danger (Humane Society of The United States, 2000). These are:

- Reunification with the owners

  The animal is kept in the shelter until the owner has a safe place to look after their pet, the animal is reunited with the owner or the pet is fostered or adopted out.

- Adoption of animals which are unable to be unified with the owners or the owners no longer wish to own the pet. Animals can be adopted out if the owner does not wish to have the animal anymore or all avenues have been explored to locate the owner without success. Adoption of animals must not be taken lightly and potential owners must be screened for suitability of ownership of a particular animal that needs adopting (Humane Society of the United States, 2000).

- Fostering of the pet until such times the owner is able to care for the pet

  A fostering programme is usually implemented when resources cannot handle the number of animals needing assistance. Therefore, an alternative is to place the animals in temporary foster care until they can be returned to their owners. Foster care means that an animal is cared for in a private home within the community on a temporary basis. Fostering of animals is occurring more frequently especially in large scale disasters where the owner's property is rendered unsafe for an extended period of time. This occurred after the Victorian bushfires in 2009 (K Brady personal comms 2010) and recently after the Canterbury earthquake in 2010, due to owners unable to find rental accommodation that allows pets.

In the case of a displaced animal (i.e. in which the owner has not been traced), "approved organizations", (as defined under section 141 of the Animal Welfare Act 1999) can dispose of stray (re-homing or euthanized) after 7 days of acquiring the animal.

2.0.8 Animal Rescue

One of the many problems with emergencies is their unpredictability. This can cause issues with where people are situated when the emergency occurs. Many people could be at work or away from the family home, therefore their access to their pets that are at home may be cut off. Another reality is that injuries occur during an emergency and render people incapacitated. This will lead to animals being stranded in areas that require evacuation. Animal Rescue Units can assist with the transportation of rescued and evacuee animals to the welfare reception or temporary sheltering facilities.

During a declared CDEM emergency, where directed by a police officer or incident controller, Animal Rescue Units have legal authority to enter and seize/rescue animals. Where a declared state of emergency is not in effect, such legal authority has to be directed by the Police or Fire Service.

2.0.9 Animal search and rescue

The Human Society of the United States (2000) advocates that individuals or teams conducting animal rescues, should have extensive experience in disaster response, animal handling (of all types of animals), first aid for humans and animals, and knowledge pertaining to emergency management and animal law. Madigan and Dacre (2009) describe in more detail that the training of such personnel should include practical training in the use of ropes, slings and extraction method, the concepts of sheltering "in place", as well as the establishing of triage areas.

The dearth of literature on animal search and rescue became abundantly evident during recent disaster events in New Zealand. After the Canterbury earth-quake, the Urban Search and Rescue (USAR) Task force teams were deployed to search buildings for trapped citizens. The task force teams are highly specialised and trained in entering collapsed structures. It was reported in the media that there were no persons trapped in the buildings yet there is much anecdotal evidence that animals were trapped in the buildings (anonymous personal communication). As members of the taskforce team are not trained in the handling and extraction of animals, they were not willing to attempt to do so. If society is to fulfil its obligations to animal welfare, it would therefore seem evident that there is a requirement for animal search and rescue team members to be trained in entering unstable structures and to

identify USAR communication techniques so that animal rescue teams can work alongside USAR teams and complement their services.

2.0.10 Decontamination

Decontamination is the process of removing or rending harmless, agents that have contaminated animals, responder personnel and equipment. The purpose of decontamination is to limit tissue damage and absorption, prevent systemic poisoning, confine contamination to a specified area, and to prevent secondary contamination of other animals, emergency responders, and veterinary hospitals (Wingfield, 2009). All animal emergency response teams should have a written decontamination plan and contacts should be made with other agencies to ensure cooperation and consistency.

2.0.11 Evacuation plans for people with animals in a disaster

More than 40% of New Zealand residents do not have an emergency plan and are ill prepared (MCDEM, 2010). Ultimately it is the owner's responsibility to have their own plan to evacuate the family along with all of the household pets. They should have prearranged accommodation that will facilitate housing of pets, such as a friend's house or an animal-friendly motel. Animal facilities and vulnerable animal industries should have contingency plans for either evacuating the animals or implementing a plan to protect them as much as possible. Lifestyle block owners should have an evacuation plan in place and be able to 1) arrange to transport large animals from the property to a safe zone or 2) have a safe zone on the property such as higher ground in the case of floods on their property or neighbouring properties if theirs is not suitable.

2.0.12 Transportation of animals

Pet owners and owners of livestock should have a plan of what they are going to do or who they will call for help during a disaster (Casey, 2009), although the reality is that assistance to do so may be required. During the recent earthquake in Canterbury, many pet owners were refused entry into welfare centres with their animals and directed to transport their pets to the local animal control facility, though there were no means of transport available to them (confidential personal communication, 2010).Transportation of animals affected by a disaster is vital, so an evacuation plan should include a checklist of transportation resources available. Transportation resources should be separated into those for livestock (particularly that on lifestyle blocks e.g.

alpacas, deer, pigs), horses, and small animals. Dog clubs, breeder groups and animal control officers can often mobilize and transport dogs on short notice. Many farmers in New Zealand have vehicles that can transport several dogs at once; therefore they may be another transportation resource. The transportation of animals from human welfare shelters to veterinary medical hospitals or temporary pet shelters should be available.

Understanding the community demographics will assist in evaluating transport requirements during a disaster. Assessing demographics will highlight areas of particular concern, for example high dependency residents (e.g. elderly, aged, and disabled); areas with high pet populations and those areas dependent on caregivers or public transport. It cannot be assumed that every member of the community has or is able to arrange private transport, therefore companion animals should be allowed on public transport during evacuations and not left behind. This will both allow pet owners and their pets to be evacuated and transported to a shelter at the same time and reduce the number of animals that need to be evacuated by Animal Rescue Units.

If the general public is being evacuated by boat then thought needs to go into the type of vessel used. Inflatable boats are can be hazardous if you are transporting dogs due to their claws ability to tear the material. Therefore, aluminium boats or the inclusion of protective shields on inflatable boats, should be considered when rescuing dogs that are not being transported in carrier cages.

Personnel who are assisting the general public with evacuating horses and livestock must be suitability experienced in this area (Gimenez, *et al.,* 2008). Animals which are put in situations that they are not used to can react in an unpredictable way, risking the safety of the animal as well as people around them. Personnel who are transporting horses must be experienced in this task. Horses are likely to try and escape out of the float, causing the vehicle to be hard to control.

2.0.13 Animal Identification

Identification of incoming animals is extremely important in reuniting animals with their owners. Various methods are available, including digital photographs (which can be circulated via the internet or in print to owners), follow through microchip data (the microchip number is documented and the animals whereabouts is updated it the animal is moved), registration

forms, tattoos, brands etc. Many of these rely on the establishment of accurate databases of identification details before a disaster occurs.

2.0.14 Infectious disease control

Infectious disease control in the context of animal responders during a disaster refers to measures taken to (Wingfield, 2009):

- keep disease agents out of animal populations where they do not exist
- prevent animal responders from spreading a disease when leaving the site of an emergency
- prevent the spread of zoonoses

As Wingfield (2009) suggests, disease control is important, although in many instances it is not (or cannot be) implemented during the early phases of setting up shelters and acceptance of animals (Sheily, 2006). Disease control during a disaster is generally a reaction measure which is instigated when an outbreak occurs, rather than being used as a preventative measure. As provisions and care for animals during disasters should reflect normal standards of care in everyday society (Madigan & Dacre 2009), all companion animals that have not been vaccinated and/or are showing signs of possible infectious or zoonotic diseases should be placed in isolation when admitted to the animal care centres. It is important that shelter personnel are able to identify the clinical signs of the diseases and put isolation procedures in place. For a detailed table of the common infectious disease in in companion animals New Zealand see appendix C.

Zoonosis relates to the transmission of a disease from an animal population to a human population (Squance, 2009). Animal faeces and faecal-contaminated skin and fur may pose a risk of transmitting diarrheal illness from *Camplylobacter* spp. *Salmonella* spp., to some internal parasites and protozoa such as cryptosporidiosis and giardiasis. The protozoan diseases mentioned are associated with high infection and death rates worldwide; this includes developed countries such as New Zealand. These are notifiable diseases in New Zealand due to the public health impacts and economic impacts associated with their control. Although these risks are usually small, in the wake of natural disasters such as extensive flooding, physical stress, exposure to floodwaters and contaminated food and water may increase the risk of infections. Another waterborne disease associated with floods and is internationally highly

prevalent is leptospirosis. The transmission of this disease is commonly seen through vectors such as rodents. Excretions from infected domestic animals become excreters of the disease.

2.1 Emergency Management

According to Drahek and Hoetmer (1991), emergency management is the discipline and profession of applying science, technology, planning and management to deal with extreme events that can produce extensive damage. Emergency management is often conceptualised as a complex multi-objective and multidisciplinary optimisation problem, concerned with solving an emergency situation and its effects on society with limited resources (Zhou *et al*., 2011).

Understanding the principles of emergency management is paramount for anyone participating in emergency management functions. It enables participants to become integrated within a multi-agency administrative structure, be well prepared to respond to any disaster and respond professionally during an event (Engelke, 2009).

Participants involved in animal welfare emergency management can contribute to the four basic components of disasters management, known as the four "R's": reduction (mitigation), readiness (preparedness), response and recovery.

2.1.1 Reduction/Mitigation

Madigan and Dacre (2009) describe reduction as actions taken before a disaster occurs which can reduce the impact on society. This could include such techniques of changing building codes commensurate to earthquake standards or deeming land unsuitable for building houses.

As society is becoming more urbanised, building structures are bigger, made by materials that are not stable and are destructive when they collapse. An exceptional example of the effects of building design/materials is illustrated by the Haiti earthquake in 2010. It is pertinent to question to ask why there were so many lives lost in the Haiti earthquake compared to the 2010 New Zealand Canterbury earthquake, which was of similar magnitude? The Haiti earthquake rendered over 1.5 million people homeless and killed over 200,000 people. An article in "The Infrastructurist, America Under Construction"[1] (Anon, 2010) explained the situation thus:

 *"Earthquakes Don't Kill People says John Mutter, a seismologist and disaster expert at Columbia University's Earth Institute "Bad buildings kill them." And Haiti had some of the worst buildings in world. There are building codes, but in a country that has been ranked as the 10th most corrupt in the world, enforcement is lax at best. The concrete blocks used to construct buildings in the capital are often handmade, and are of wildly varying quality. "In Haiti a block is maybe an eighth of the weight of a concrete block that you'd buy in the U.S.," says Peter Haas, the executive director of the Appropriate Infrastructure Development Group (AIDG), an NGO that has worked on buildings in Haiti. "You end up providing buildings quickly and cheaply but at great risk." (*The Infrastructurist 20th January 2010). Picture 2.1 shows the destruction of the buildings after the 2010 Haiti earthquake.

Picture 2.1: Haiti, showing the destruction of buildings.
Picture courtesy of WSPA International (with permission)

Hence, it seems prudent that emergency managers should be involved in resource consent processes that are submitted to the local government. An example of disasters that have occurred from housing being built in an unsafe environment is the Abbotsford landslide in New Zealand. In 1979, a major landslide occurred in Abbotsford, resulting in the destruction or relocation of some 70 houses, and requiring the evacuation of over 600 people, despite an earlier report that stated that the Abbotsford soil was unsuitable for building houses on because of its instability (Boon, K, 1995).

Examples where disasters have affected livestock, that might perhaps have been prevented during the resource consent process, relate particularly to poultry farming, which is seen large death toll out of all animals in disasters throughout New Zealand, the 2004 Lower North Island floods killing thousands of chickens, the most recent being over 3,000 chickens killed in the 2010 Canterbury earthquake (Wilson, *et al*., 2010).

Van Schalkwyk (2010) describes other components of reduction as understanding hazards and how they affect society, the development of strategic partnerships and relationships and how all of this influences mitigation implementation. Madigan and Dacre (2009) examine the notion that there are predictable disasters, such as drought and famine. These can be considered as disasters with advanced warning, as they build up over time, can be managed to reduce the impact on animals, society and the economy. Such practices as reducing stocking density, stockpiling supplement food supplies, increasing water holding capacity and investing in breeds that can cope with drought conditions can reduce this impact.

2.1.2 Readiness/Preparedness

Readiness includes such activities as developing emergency management plans, public education, education of personnel involved in emergency management, training and exercising, public information and communications. Such activities serve to minimize the loss of life and the emotional and economic consequences of a disaster (Engelke 2004).

New Zealand has an overarching national plan in the event that a disaster affects the entire country. At the next tier of government every regional and local council within New Zealand has a Regional/Local Emergency Management Plan, although currently there is no mandate to include animals in such plans. However, as previously discussed, there seems to be a strong case for the development of animal emergency management plans that can be implemented well before a risk is imminent.

It is also the policy of the New Zealand government that every family and business should have an emergency management plan. This plan should include making provision to stay safely "in place" (i.e. home or work place) for three to seven days, with sufficient emergency supplies, until rescued or until utilities are back to normal (Englke, H., 2004; Madigan & Dacre, 2009). This plan should include a pet evacuation plan and a pet survival pack, that contains necessary items (i.e. food, water, means of restraint (cage, lead etc) and identification details) to fulfil the

animals' needs for at least 3 days. Cats are vulnerable to evacuation failure, due to their instinct to hide in such circumstances, so cat owners should have an appropriate pet carrier (Heath, 2001; Glassey, 2010).

Veterinary clinics' emergency management plans should include the scenario of a disaster occurring whilst the clinic is "closed" and it still has hospitalised patients. Such a plan might involve identifying who will attend to the animals, who will contact owners, what back-up plans there are for providing continual care to patients.

Veterinarians have an ethical responsibility to advise clients of reduction / mitigation activities to consider for their pets (Engelke, 2009) and livestock. Hall, *et al.*, 2004 recommend that large animal veterinarians educate farmers about animal evacuation plans as veterinarians understand that:

"*farming families are part of a rural culture that has unique characteristics*" and this is "*critical to establishing credibility and being able to intervene effectively during a crisis*"

Large animal veterinarians are in a position to know of individual farm families' circumstances, therefore they will be able to advise authorities about the families' and animal's needs (Hall, *et al.,* 2004).

Small animal veterinarians should assist owners in the development of a pet emergency plan (e.g. emphasising the importance of properly identifying their pets, keeping vaccinations and anthelmintic treatments current) and might consider maintaining supplies of pet carrier cages.

There is an important role for education for readiness/preparedness. Education should be directed at the general public, although the training and education of animal welfare emergency management personnel is probably more important. There is little relevant training currently available in New Zealand, although there are a variety of options available internationally. Currently, internationally, animal welfare emergency management (AWEM) training and education is neither evidence-based nor standardized. With this gap identified, research is required to derive educational competencies and objectives in criteria-based preparedness and responses that are relevant to personnel involved in AWEM.

2.1.3 Response

The response phase includes the assessment of damage and needs, evacuation, transportation, search and rescue, temporary sheltering (including food, water and medical care), humane euthanasia, and coordination of the response, amongst a number of other activities. Additionally, Madigan and Dacre (2009) suggest that depending on infrastructure, size and impact of the disaster, the response should include providing preventative measures against diseases. Infectious and zoonotic disease outbreaks commonly occur after a disaster, although the focus of most research on the subject has been the impact of such diseases on humans rather than upon animals.

In New Zealand, the Co-ordinated Incident Management System (CIMS) is an inter-agency incident management system which is activated during a disaster. It provides a set of management rules that is common to all emergency service providers and other agencies. This means that when different emergency services need to work together on an incident or disaster, they already share a standardized management structure, a standardized set of management principles, and a standardized system of information management. CIMS is mandated through the Civil Defence Emergency Act of 2002.

Section 55 of the Act states:

55 Co-ordinated Incident Management System (CIMS)

(1) CIMS is used by the emergency services and other agencies as a basis for operational response.
(2) The most important aspect of CIMS is co-ordination that brings together agencies to ensure consistent and effective response and recovery efforts.
(3) CIMS is about teamwork in emergency management through sharing common terminology, using a modular organizational structure, integrating communications, using common incident action plans, ensuring manageable spans of control, and sharing resources.
(4) Co-ordination is based on four core elements –
    (a) control; and
    (b) planning and intelligence; and

(c) operations; and

(d) logistics

(5) Multi-agency incident control (horizontally across agencies) is exercised by the senior first responder but is transferred on the basis of which agency has primacy for the incident type (for example, police for law and order situations).

During a state of national emergency or a civil defence emergency of national significance, CIMS will be used in the field by primary responders. Incident controllers are directed and co-ordinated through local and CDEM Group Emergency Operations Centre's, in turn, are co-ordinated by the National Controller. A diagrammatical representation of the CIMS structure and interface for CDEM co-ordination can be found in Appendix C.

Understanding the principles of emergency management and functions of CIMS, is essential for anyone participating in emergency management functions. It enables participants to become integrated within a multi-agency administrative structure, be well prepared to respond to any disaster and respond professionally during an event (Engelke, 2009).

The harsh reality of disasters is that they result in loss of life. This loss is usually over represented in the animal population, particularly amongst intensively farmed animals (Irvine, 2009). Part of the response phase is dealing with decomposing animals, which can maintain and transfer diseases to humans, livestock, wildlife and pets as well as contaminated ground water system (Murphy & Knight, 2009). Under such circumstance, AWEM personnel need to work with environmental, health and agricultural agencies with the appropriate disposal of dead and decaying animals.

2.1.4 Recovery

This phase includes all post-disaster activities (Engelke, 2004). As the effects of a disaster are brought under control, the affected population is then capable of undertaking activities to restore their lives and the infrastructure that supports them. The speed and cost of recovery depends on the magnitude of the disaster. There are no distinct points at which immediate relief changes into recovery and then into long-term sustainable development. There are many opportunities during the recovery period to enhance prevention and increase preparedness, therefore

reducing future vulnerability. Ideally, there should be a smooth transition from recovery to on-going development.

In the animal context, attention should be focused on restoring medical care, reuniting animals with their owners, and restoring functions that facilitate the delivery of husbandry needs of animals. For example Wilson *et al.,* (2010) reported that during the recovery phase of the Canterbury earthquake, dairy cattle had high somatic cell counts in their milk, because they had to be milked once-a-day through the small number of milking sheds that remained functional. It is also postulated that stress from the earthquake itself contributed to the increase in somatic cell counts (Glassey S., personal comms 2011).

Debriefing is a group meeting arranged for the purpose of integrating personal experiences on a cognitive, emotional and group level, as well as discussing what did and didn't work during response phase. A component of debriefing is known as Critical Incident Stress Debriefing (CISD). CISD is an intervention to manage stress that was originally designed for workers in high-risk occupations such as fire fighters, police, paramedics and disaster response teams (Mitchell, *et al* 2003). Debriefing is an imperative component of recovery, as personnel involved in AWEM can become emotionally and psychologically affected with casualty factors such as burnout, stress-related illness, somatic complaints, interpersonal conflicts (Baker, & Havice-Cover, 2009) and an inability to become integrated back into society. This phenomenon has been termed compassion fatigue. All AWEM personnel should be educated on how to cope with stress factors, techniques to use to prevent compassion fatigue and how to identify if oneself or colleagues are showing clinical symptoms so they can act upon them.

Although the literature in relation to animals during the recovery phase in emergency management is limited, it is clear that, there are vulnerable groups within the community who are heavily reliant upon their pets for companionship and daily functions. The elderly community usually has pets for companionship. If they are separated from their pet during any phases of the emergency management cycle, it is imperative that they are reunited as soon as possible, to assist with the owners personal recovery process. Many older adults who are living independently in the community are dependent on their pets: such people represent a vulnerable group in a disaster who experience high morbidity and mortality rates during a disaster (Touhy, 2009) and who are highly over-represented in evacuation noncompliance due to their dependence and bond with their pets.

Other vulnerable groups that are likely to be missed are such people who have behavioural dysfunctions such as autism, for whom companion animals assist with their integration into society and as a coping mechanism for stressful situations. Such animals are not officially recognised as being assistance dogs therefore the dog and its owners do not have the same access rights as recognized assistance dogs. During the response and recovery phases personnel involved in animal welfare emergency management should be able to recognize registered or unregistered assist dogs, within the community and cater for the animals' and owners' needs.

2.1.5 Summary

Emergency management comprises of four phases; mitigation/reduction, planning/readiness, response and recovery, which can occur simultaneously. An understanding of what needs to happen during each phase is core to all AWEM functions. Understanding how legislation affects the operation of AWEM personnel during each of the four phases is also imperative: the rights, responsibilities and remedies are vested in AWEM during an emergency are critical to their ability to operate effectively. Further research is required to investigate the effect of disasters on animals during all phases of the emergency management cycle.

2.2 Overview of Importance of Education and Development of Training

Internationally, emergency management agencies and personnel are under increasing pressure from their communities to improve their emergency management capabilities and professionalism. Due to this pressure, there has become a demonstrated need for formal all-hazards educational standards and competencies, which are comprehensive and widely accepted. An educational standard is the minimum prerequisite needed to make all phases of emergency management effective in the field of reduction, planning, response, recovery and training (Alexander, D., 2003).   According to the International Council of Nurses (ICN), competence is defined as a level of performance demonstrating the effective application of knowledge, skill and judgment. The development of educational standards and competencies, which have assessable learning outcomes, is congruent to curriculum development.

2.2.1 Curriculum Development

Decisions about the curriculum are driven by the learning outcomes that the participants should display at the end of the training. There is a significant difference between outcome-based education and producing outcomes of an existing curriculum (Davies, 2003), inasmuch as outcome-based education drives the development of curriculum, whereby simply producing outcomes from an existing curriculum is merely a decryption of that curriculum. Barnett (1994) warns that a focus upon "competencies" in higher education can become problematic when a narrow definition of competence is adapted or when the demonstration of competence becomes a dominant aim of the curriculum. Therefore an emerging discipline, which does not currently have any standardised educational competencies, has the opportunity to develop evidence-based and standardized competencies through a systematic consensus building process, to guide curriculum development of education programmes in this discipline.

Curriculum development is a process that can be described as more akin to art than science, as it is characterised by interaction, cooperation, change and possibly conflict; comprised of overlapping, interactive, and iterative decisions; shaped by contextual realities and political timeliness; and influenced by personal interests, philosophies, judgments, and values (Iwasiw *et al* 2005). It is a complex process that should not be taken lightly as it requires extensive research to ensure that the students, industry, and community are equality represented in the process. The development phase is never-ending as it is a continual process with the ever changing technological world (Iwasiw *et al* 2005).

Toohey, (1999) discusses in detail the strategic decisions which should be made before inception of a new course or programme, as is with the development of educational competencies. Her course design model, which was developed from that of Diamonds (1989) model (Figure 2.1) appears very simple, yet represents a solid basis to use whilst creating a programme. Toohey suggest that there is a central question, which has to be answered through the competency design process namely, *what is most important for the participants to know and what might be the best ways for them to learn it*? Thus, Toohey discusses the importance of collecting and analysing information on what should be taught. When educational competencies are being designed, this has to take place in the context of fundamental ideas, knowledge, skills, attitudes which must be developed through a programme of study.

However, the development of competencies is rarely determined solely on this logical basis and development as it does not follow a linear pattern. The development of competencies usually take place in response to many factors, including the perceived need within the sector, public pressure and a change in trends or as a response to undesirable events within the sector

1	2	3	4	5	6
Establish need and demand for educational competencies	Establish participant characteristics	Determine competencies	Set assessable learning outcomes	Choose teaching and assessment methods	Implement, evaluate and adjust components as necessary
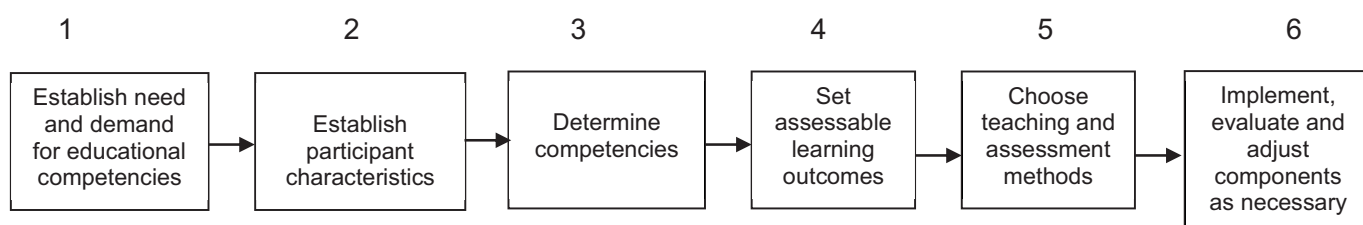
Figure 2.1 Typical model of the course design process to incorporate educational competencies (adapted from Toohey, 1999)

Even though the participant is an extremely important stakeholder of the development of educational competencies, Toohey fails to include one of the most significant key-end stakeholders of educational competencies, the industry/sector (stakeholders). Therefore a suggested model of the course design process should include both stakeholders as well as historical decisions which influence the creation of educational competencies (Figure 2.2). The new model takes the shape of a conceptual map more than a linear model. It is more holistic, it includes the modern manner in which it is presented to the student as well as new concepts on programme internationalization that are now in high demand within the educational sector.
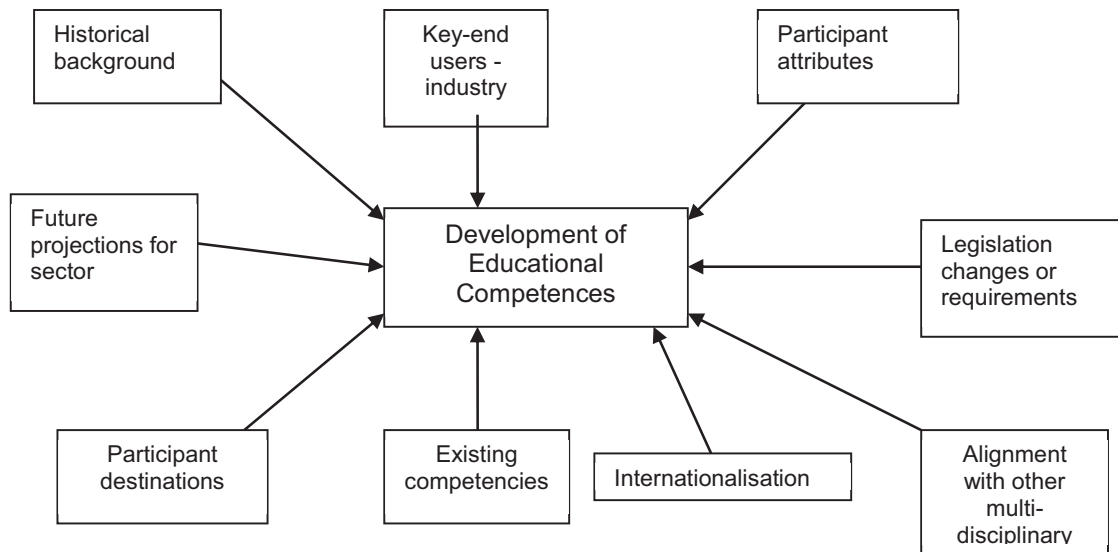
Figure 2.2 Development of Educational competencies process

This aforegoing process of development of competencies in detail resembles the grounded theory methodology of educational research introduced by Glaser and Straus in the late 1960. Grounded theory is associated with qualitative research, which uses a methodology for developing theory that is grounded in data which have been systematically gathered and analysed (Denzin & Lincoln 1998), and which evolves whilst the researcher is participating in the actual research. Data can be collected by interviews, questionnaires, field observations, documents such as policies, historical accounts and critical literature analysis, as well as the researcher's previous experience and knowledge.

Throughout development of a discipline in emergency management, an expectation has developed that personnel involved in emergency management need to achieve higher order competencies, such as problem solving skills, alongside their more specific technical skills. Thus, competencies need to reflect the level of thinking required. A framework that can be used to identify and assess different levels of thinking is the cognitive domain of Bloom's taxonomy, which calibrates ascending cognitive levels from the lowest (i.e. knowledge involving the recall of facts), to the highest (evaluation, which involves the comparative assessment of outcomes) (Oliver, & Dobele 2007).

Figure: 2.3 Bloom's Domains of learning (Churches, A., 2009)

Figure 2.4: Bloom's Taxonomy of cognitive skills (Churches, A., 2009)

Figure 2.5: Bloom's Revised Taxonomy of cognitive skills (Churches. A.. 2009)

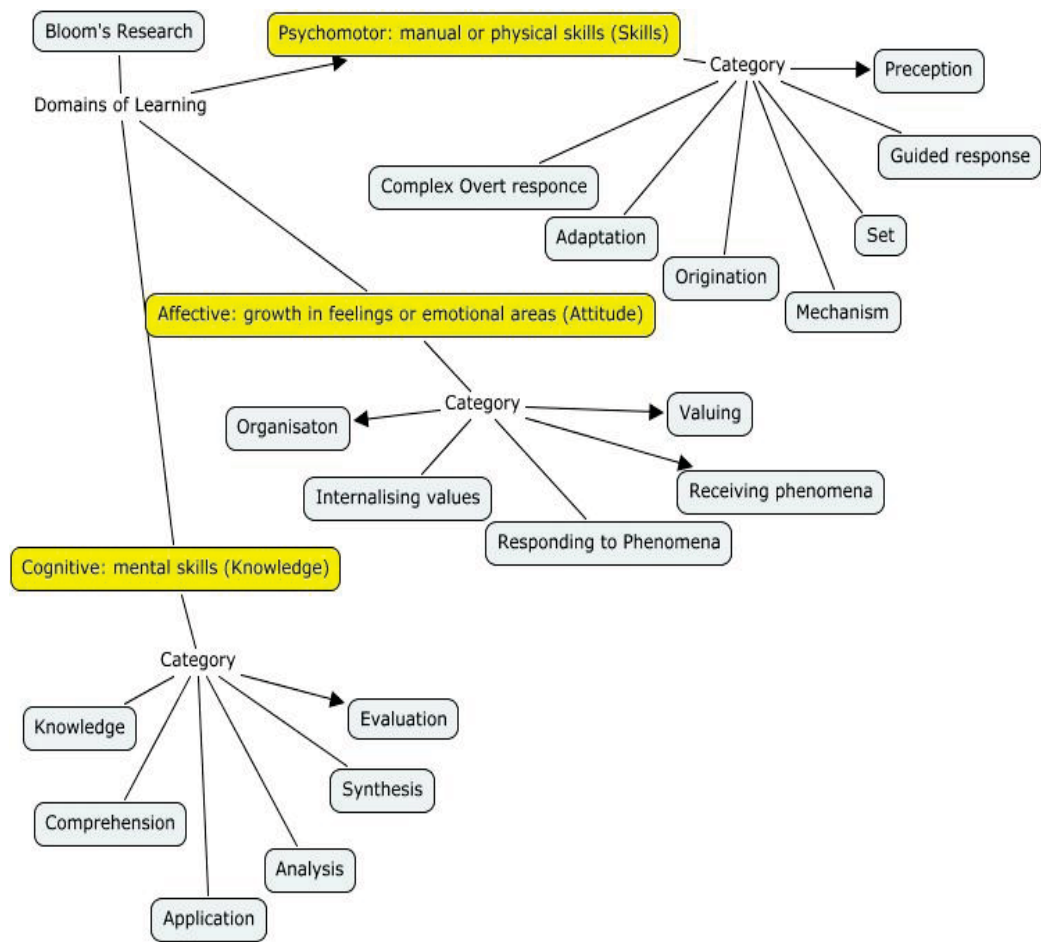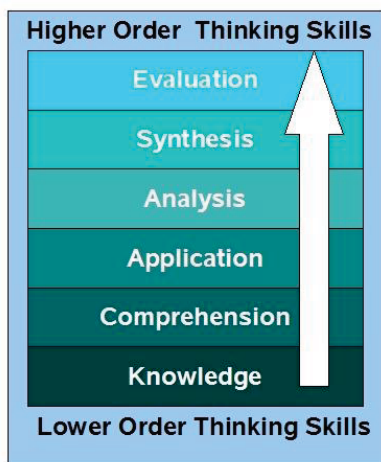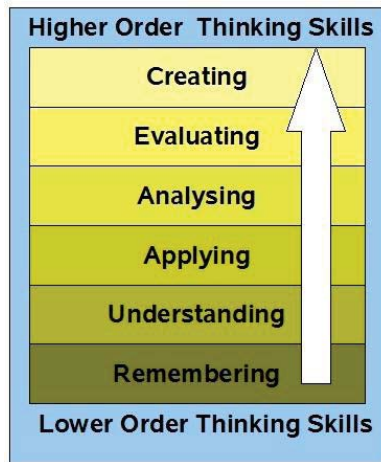Gorgone *et al* (2002) argued that courses in the early years of a programme should concentrate on achieving objectives set at the lower end of Bloom's taxonomy, where as those in the final years should be orientated towards skills development at the upper end of the scale. However, Bloom's view was that one cannot understand a concept if one does not first remember it, similarly one cannot apply knowledge and concepts if one does not understand them (Churches, 2009).

2.2.2 Multi-professional Disaster Preparedness Competencies
The concept of "One World, One Health", which has linked animal disease with human health, has recently become topical. As disasters affect the health of animals, it is inevitable that there will be a flow-on effect upon the health of people. This concept has increased the awareness of the importance of disease prevention in animals in today's society, particularly in disasters. This concept of multiple professionals working in a synergistic relationship to fulfil the same outcomes, is impelling a consortium of multi-professional disciplines to develop disaster preparedness competencies. Whilst this movement is gaining some momentum, it is clear that, within the human health, veterinary and animal welfare professions, there is an urgent need to build capacity in emergency management and disaster preparedness (Dunning, *et al* 2009).

Whilst there is limited literature on the competencies and curricula for animal-related emergency management training, there are several comprehensive discourses on training programs specific to health care disciplines. Dunning *et al*., (2009) discussed how to train veterinary students in preparedness and disaster response. However, there appears to be no literature that deals with the concept of all-hazard, standardised, evidence-based educational competencies, encompassing all phases of emergency management for all personnel involved in animal welfare emergency management.

Dunning *et al* (2009) described a new competency-based Veterinary Credential Responder training programme at North Carolina State University College of Veterinary Medicine. They found the current literature suggests that a core-competency-based program is the preferred method of implementing a training program within the human health or veterinary profession. An all-hazards training curriculum centred on core competencies, rather than on specific topic matter, ensures a focus on proficiency and cross-discipline capability that is not specific to one

particular event or an emergency. The non-veterinary articles emphasised learning objectives, commonly listing an incident command system (similar to CIMS in New Zealand), the National Incident Management System, team work, communications and critical event management/ problem solving. The authors developed eight proposed core competencies in disaster preparedness and emergency management for veterinary medicine, based on Bloom's taxonomy (Table 2.1).

Table 2.1: North Carolina State University College of Veterinary Medicine Eight core competencies in disaster preparedness and emergency management that are proposed for veterinary medicine,(Dunning, *et al* 2009).

Core Competency Variable	Expected Level of Proficiency
ICS and NIMS	Comprehension
Critical incident de-briefing or psychologic first aid	Demonstrate
Euthanasia physiology, methodology and mechanics	Describe
Bio-security	Evaluate
Personal protective equipment	Demonstrate
Hazardous material	Knowledge
All-hazards approach to emergency preparedness	Demonstrate or analyse
Personal and business continuity training	Demonstrate
Awareness of the opportunities and need for veterinarians with certified responder training at local, state, and national level	Knowledge

The competencies identified by Dunning *et al* (2009) cover a number of important aspects of emergency management, although they are not comprehensive as they do not deal with all phases of emergency management (i.e. the reduction/mitigation and recovery phases have been omitted). It is important that veterinarians are aware of both of these phases, and that they have knowledge and skills that could contribute significantly to these phases. Interestingly, Dunning *et al* (2009) noted that:

 "*due to the increasing importance of the human-animal bond, more emphasis is being place on preparing for a potential emergency or evacuation in advance*".

To prepare for a potential emergency or evacuation in advance, one must have an understanding of the potential hazards that could cause the emergency, therefore be able to take steps to mitigate the risks. Madigan and Dacre (2009) suggest a veterinarian can contribute to the mitigation phase by instituting vaccination programmes against expected

water-borne diseases, such as leptospirosis, strengthening and securing animal shelters for anticipated use, and offering micro-chipping days to clients to increase the possibility of being reunified with their animals.

The recovery phase tends to be forgotten and not given the attention it deserves. Veterinarians can play vital roles during this phase, such as restoring veterinary care (Madigan & Dacre 2009), proper disposal of dead carcasses and offering advice to owners on how to cope with stress factors affecting their animals. Veterinarians can also play an advisory role for government and private sectors on any matters that affect animal welfare. They can make a significant contribution by researching and analysing the event and making recommendations, which could reduce the negative impact of animal welfare in the future (Howell, 1998).

2.2.3 Summary

As emergency management is multi-faceted and involves many agencies, it is important to recognise that veterinarians are not the only personnel who are involved in animal welfare during disasters. Historically, the inclusion of animals in emergency management plans has been driven by non-veterinarians as well as the development of AWEM plans and policy. Therefore there is a need to develop all-phase evidence-based educational competencies and assessable learning outcomes for all personnel involved in AWEM.

CHAPTER THREE

Methodology

3.0 Introduction

In the previous chapter, research gaps have been identified. The research question has been developed after an extensive literature search and critical analysis of the 12 most relevant studies on aspects of core educational competencies for the veterinary, healthcare and emergency management sectors for comprehensive emergency management.

The present chapter discusses how the research strategies and methods used in this thesis were developed, guided by what was learnt from previous studies and a review of different types of educational research strategies. The application of grounded theory and the Delphi method is explained. The details of data collection and analysis and the consideration of methodological rigor are provided for each of the methods used. Finally, the ethical considerations associated with the study are discussed.

3.1 Peer-reviewed literature and relevant document review and analysis

Data to be collected from the current study to fulfil the research aims came from two sources. One was from peer- and non-peer review published literature. The literature search process used various article database search engines such as PubMed, Google scholar, ERIC and web of science identified peer-reviewed articles relating to educational competencies for health care workers, veterinarians and emergency managers in disasters. The following specific search terms and key words were used: veterinary AND emergency or disaster AND training or curriculum or competencies. This search had inherent problems as different countries use the word emergency and disaster interchangeably. Other searches consisted of the key words: healthcare AND disaster AND curriculum as well as emergency management AND curriculum.

Each article or text had to meet a certain criteria. They had to be relevant to the topic, many of the articles that had emergency in the title referred to emergency medicine rather an emergency/disaster management and they had to describe educational competences, curriculum, course design or recommendations for training in this area. All articles were peer-

reviewed and published by well-known reputable journals and sources. Only articles that were published in the last 10 years were included.

The initial search identified 320 articles that were relevant to the search key words although only twelve articles fitted all criteria.

Data gained from this source included such information as educational competencies from other studies within the healthcare, veterinary and emergency management sector The twelve articles were reviewed and the existing competencies and course outlines for healthcare workers, veterinarians and emergency managers were explored, summarised, catalogued and coded. Another internet search was conducted for existing course content, competencies of veterinarians, healthcare workers and emergency managers, outside of peer-reviewed literatures. Some examples include educational course outlines from university programmes and programmes offered by not-for-profit Non-Government Organisations (NGO's).

Common themes within the competences and course content from both peer-reviewed and non-peer reviewed literature were catalogued and gaps were identified. This information informed the process of writing the questionnaire questions.

3.2 Learning from previous studies

In the review of literature, 12 studies were identified as being particularly significant and relevant to the area of emergency management education. These studies were further explored in order to understand the roles and responsibilities, core competencies, educational knowledge and other aspects of personnel involved in various professions within emergency management. By assessing the answers to the following questions Lang & Secic (1997), a practical tool was developed to guide the methods of the current study:

- What was the purpose of the individual studies?
- What was the target audience of the study?
- How was the study conducted?
- Limitations of the methods use

In order to provide answers to the above questions, the methodological information of this has been summarised in Table 3.1.

Table 3.1 Numerical Summary of twelve most relevant studies

Studies Classification		Number of studies
Country	United Kingdom	1
	United States of America	10
	Japan	1
Year	2003	4
	2005	1
	2006	2
	2008	1
	2009	2
	2010	2
Study method	Literature review	3
	Focus group	2
	Expert panel	4
	Literature review + expert panel	1
	Literature review + questionnaire + expert panel	1
	Literature review + focus group	1
Study purpose	Competencies	7
	Barriers to participation in EM	1
	Recommendations on AWEM topics to consider	1
	Course objectives	1
	Curriculum content	1
	Educational and technical standards	1

3.2.1 What was the purpose of the individual studies?

The purpose of the studies was similar yet diverse. Seven of the twelve studies explored required competencies for emergency management, yet they were diverse inasmuch as they were from multiple disciplines (veterinary, human healthcare and emergency management professions). Among the studies, one developed cross-cutting competencies with testable terminal objectives for health care workers undertaking disaster training. Five studies examined various educational requirements from curriculum content, course objectives and standards. One study discussed the importance of tertiary education for emergency managers, particularly at leadership level. Three of the studies included two phases of emergency management (readiness/preparation and response), two of these were from the veterinary field, one from the healthcare sector. Three of the studies included three phases of emergency management, (readiness/preparation/ response and recovery), all were from the healthcare sector. The remaining six studies included all phases of emergency management; two were from the veterinary profession, two from the healthcare sector and two from the emergency management profession. More details can be found in Table 3.2.

Table 3.2 Summary of how research was conducted in twelve studies

Author, Year	Title of Article	Purpose	Target Audience	How was the research conducted
Dunning, *et al* 2009	Preparedness and Disaster Response Training for Veterinary Students: Literature Review and Description of the North Carolina State University Credentialed Veterinary Responder Program	Develop a list of suggested core competencies for veterinary preparedness and disaster response training	Veterinary curriculum developers	Literature review
Ablah, E., *et al* (2009)	Assessment of Emergency Preparedness of Veterinarians in New York	Research was conducted to overcome identified barriers to veterinarian's participation in emergency preparedness and response.	Veterinarians, emergency managers and health care workers	Focus group of eight New York Veterinarians
North American Veterinary Medical Education Consortium (NAVMEC), 2010	Roadmap for Veterinary Medical Education in the 21st Century: Responsive, Collaborative, Flexible"	The development of: 1) NAVMEC strategic goals 2) Confirm core competencies required for all veterinary medical school/college graduates 3) Identify information gaps in research and a research agenda 4) Develop and act upon implementing a series of recommendations to advance veterinary medical education from this time going forward	Veterinary curriculum developers	Three national meetings with 400 stakeholders of veterinary medical education to identify and agree upon evolving societal needs, core competencies. Then a nine-member NAVMEC board of directors comprising three members of each from academia, accreditation and testing licensure groups convened to confirm core competencies
Beaver, B.V., *et al* (2006)	Report of the 2006 National Animal Disaster Summit	Identifies major roadblocks encountered during relief efforts in recent disasters and developing a list	Veterinarians and personnel who will	Summit (focus group) was attended by 100 participants from veterinary medical assistance teams and government

Author	Title	Aim	Target	Methodology
		of recommendations for improvement to the overall response efforts for animal during major national and regional disasters	respond to animal welfare needs in disasters	departments who responded in Hurricane Katrina
Italo Subbaarao, et al (2008)	A consensus-based Educational framework and competency set for the discipline of disaster medicine and public health preparedness	Integrate competencies across health specialties and professions in disaster medicine and public health preparedness	Curriculum developers of all health professionals	Literature of peer and non-peer reviewed published literature then an eighteen person expert panel developed seven competencies
Hsu E.B., et al (2006)	Healthcare worker competences for disaster training	Development of cross-cutting competencies with testable terminal objectives for health care workers in disaster training	Curriculum developers of health care professions as well as graduated health care professionals	(1)Literature review of peer-reviewed articles on relevant content areas and educational theory (2) Structured review of existing competences (3)Synthesis of new cross cutting competencies (4) expert panel review (5) Refinement of new competencies and (6)Development of testable terminal objectives for each competency using a similar process
International Council of Nurses (2007) Japan	Educational competences for registered nurses responding to mass casualty incidences	Identification of a minimum level of knowledge and skill to appropriately respond to a mass casualty incident.	Nursing curriculum developers	Expert panel with representatives from graduate, undergraduate schools of nursing, professional nursing organizations and practicing nurses
Kaji, et al (2010)	A Disaster medicine curriculum for medical students	Develop an introductory disaster curriculum for medical students to measure its effectiveness by	Medical school educators	Literature review

			assessing students mastery of knowledge and their ability to analyse historic disaster
Markenson et al 2005	Preparing health profession students for terrorism, disaster and public health emergencies: core competencies		Describes a process and a list of core competences for teaching emergency preparedness to students in the health care professions
Association of American Medical Colleges (2003)	Training Future Physicians about Weapons of Mass Destruction (WMD): Report of the Expert Panel on Bioterrorism Education for Medical Students	Medical educators	To agree on what medical students should learn about bioterrorism and what kind of educational experiences would allow students to achieve those learning objectives	Multi-disciplinary group of experts convened to develop recommendations on general principles for curriculum development
Alexander (2003)	Towards the development of standards in emergency management training and education	Emergency management practitioners and emergency management curriculum developers	The development of prototype for standards are presented to ensure comparability, quality assurance and international compatibility of training in emergency management	Literature review
Blanchard, (2005)	Top Ten Competencies for Professional Emergency Management	Emergency management practitioners and educators of emergency management programmes	Provide assistance to academics who have responsibility of designing or maintaining a collegiate emergency management programme.	Literature review, focus groups

3.2.2 Target population of the studies

Four of the twelve studies selected had the veterinary profession and veterinary school curriculum developers as their target audiences. Six of the studies had the healthcare sector, ranging from nurses, doctors, pathologists to psychiatric professionals and curriculum developers as their target audience, whilst two studies had the emergency management profession and curriculum developers in this area as their target audience.

None of the studies defined multi-disciplinary positions across animal welfare emergency management personnel. Hence, for the present research, it was evident that clear definitions of the roles of all personnel involved in animal welfare emergency management would be required.

3.2.3 Conduct of the studies

A variety of research methods were used. Expert panels were used in seven studies and focus groups in three studies. Two studies were based solely on literature, whilst four of the studies using expert panels or literature review also drew data from literature reviews. Some studies collected qualitative and quantitative data, whilst other solely collected qualitative data.

The use of expert panels was the method that was most commonly used for gathering quantitative and qualitative data, via the "Delphi" survey technique (five out of twelve studies). Expert panels ranged from five to forty five participants. The Delphi survey is a group facilitation technique, which is an iterative multistage process designed to transform opinion into group consensus (Hasson *et al*., 2000)

Some studies hosted forums within their profession to gauge a consensus of core knowledge and technical skills before the panel convened. The number of participants in the phase of the process ranged from one hundred to four hundred participants and conducted.

Hsu, *et al* 2006 argue that traditional training practices have not been systematically developed, rigorously examined or objectively tested. In their study, they develop what they call higher standards for cross-cutting competencies (applied to related, but distinct target audiences within the field) for healthcare workers involved in disaster response, which are evidence-based,

developed on sound educational theory and have quantitative outcome measures. Notwithstanding these assertions, there is a dearth of systematic and formal evaluations of programmes addressing emergency management and response, so it is unknown if the programmes are meeting their goals. Moreover, Hsu *et al* acknowledge that:

" *the differences among healthcare workers such as cultural and educational backgrounds, prior training, work experience and abilities all contribute significant challenges to the standardization of disaster training and education.*"

Dunning *et al* (2009), developed their curriculum via a literature review and modification of programmes currently offered through governmental authorities and other animal disaster programmes. They confirm that there is a need to continually revise curricula through different research methods such as experiential learning of each cohort of students who completed their programme.

However, an all literature-based study is limited by the dearth and fragmentary nature of that literature. Furthermore, as much of the literature available is for healthcare students, another limitation is the diversity of the two different populations (healthcare students and veterinary students) which makes the coordination of the curriculum development different.

3.3 Research Approach

Educational research can be explored through many different perspectives. According to Cohen, *et al.*, (2000) there are two significant theories which underpin the practice of research: (a) scientific and positivistic methodologies and (b) naturalistic and interpretive methodologies. Historically, it has been said that researchers choose to follow either theory and it is acknowledge that this choice generally shapes research methodology. Scientific, positivistic methodology is seen as factual knowledge. As Cuff & Payne (1979 cited in Cohen *et al* 2000) say:

"*A scientific approach necessarily involves standards and procedures for demonstrating the "empirical warrant" of its findings, showing the match or fit between its statements and what is happening or has happened in the world*".

In contrast naturalistic and interpretive researches consider that:

"(that) social work can only be understood from the standpoint of the individuals who are part of the ongoing action being investigated: and that their model of a person is an autonomous one, not the plastic version favoured by positivist (scientific) researchers" (Cohen *et al* 2000, pg 19)

Therefore the distinction between scientific/positivistic and naturalistic/interpretive approaches to research can be based on the researchers differing ontological, epistemological assumptions which give rise to methodological assumptions (Cohen *et al* 2000). It is more common now to adopt a more mixed method approach to research, which embodies both of these approaches. The research described in this thesis used such a mixed methods approach.

3.3.1 Grounded Theory Methodology

Grounded theory methodology has been used for many decades in sociology research. It is argued that this is a logical and safe theory as it works from the ground up; the building blocks are made up of the questions and answers revealed throughout the research. It must never be overlooked that the adequacy of a theory for sociology cannot be divorced from the process by which it is generated (Glaser & Strauss, 1999).

Grounded theory is conducted via the deductive and qualitative research that requires the operationalisation of researchers' concepts. In other words, before measurements are made, grounded theory offers a methodology for allowing concepts to be generated in the course of empirical research (David & Sutton,2004). The theory evolves during actual research as a continuous relationship between data analysis and data collection (Denzin, & Lincoln. 1998). Grounded theory allows for the use of a combination of qualitative and quantitative techniques to analyse data (Denzin, & Lincoln. 1998).

There have been many different views of research methodology in the academic community, through different trends throughout several decades, although the broad approach to inquiry is not dissimilar (Kumar, 2005; Horn *et al*., 2009). Upon analysing several different research methodologies a familiar theme of the research process has become apparent. Kumar (2005) infers that the research process consists of the following eight steps:

```
┌─────────────────┐      ┌─────────────────┐      ┌─────────────────┐
│  Formulating a  │ ───▶ │ Conceptualising │ ───▶ │ Constructing an │
│    research     │      │   a research    │      │  instrument for │
│    problem      │      │     design      │      │ data collection │
└─────────────────┘      └─────────────────┘      └─────────────────┘
                                                             │
                                                             ▼
┌─────────────────┐      ┌─────────────────┐      ┌─────────────────┐
│                 │      │    Writing a    │      │                 │
│  Collecting data│ ◀─── │    research     │ ◀─── │  Selecting a    │
│                 │      │    proposal     │      │    sample       │
└─────────────────┘      └─────────────────┘      └─────────────────┘
         │
         ▼
┌─────────────────┐      ┌─────────────────┐
│                 │      │    Writing a    │
│ Processing data │ ───▶ │ research report │
│                 │      │                 │
└─────────────────┘      └─────────────────┘
```
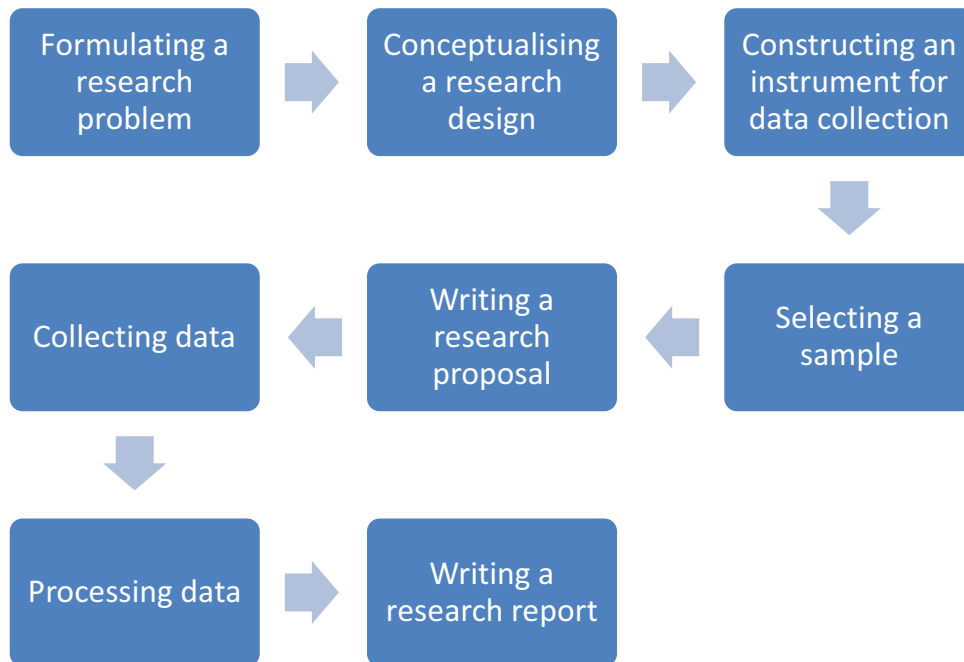
Figure 3.1 Kumar (2005) Research process

Each step is explored, implemented and should be assessed to ensure of reliability and validity of the research.

3.4   Study and design approaches

According to Horn *et al* (2009), educational research is the systematic inquiry into a research question of interest and, ultimately, all studies carry with them an assumption of benefiting education and the participants within the discipline in question.   It is important to ensure the study and design approaches are adequate for answering the research question. Generally, research is classified into two very broad categories, qualitative and quantitative research (De Vaus 2001; Onwuegbuzie & Leech 2005; Horn *et al* 2009).

Kumar (2005) classified research from three further perspectives; application, objectives and inquiry mode. The inquiry mode, involves two approaches to conduct inquiry: a structured approached (quantitative) and unstructured (qualitative). According to purists, distinctions exist between quantitative and qualitative researchers with respect to ontology, epistemology, axiology, rhetoric, logic, generalisation and causal linkages (Onwuegbuzie, & Leech, 2005).

Kumar (2005) explains the differences in a more simple fashion:

"*Quantitative and qualitative research methodologies differ in the philosophy that underpins their mode of inquiry as well as, to some extent in methods, models and procedures used. Though the research process is broadly the same in both, quantitative and qualitative research is differentiated in terms of the methods of data collection, the procedures adopted for data processing and analysis, and the style of communication of the findings.*" (Kumar, 2005 p 17)

Cohen, *et al* (2000) explains that the quantitative approach is concerned with finding out how many, or how much and describing a phenomenon in terms that can be counted or statistically expressed; whereas qualitative approaches are concerned with describing the nature of the answers: the who, what, when and the why (Blaikie 2000).

Some researchers choose to use either qualitative or quantitative research in isolation. There are many examples of each approach within educational research, particularly in the veterinary, healthcare and emergency management sectors, whereby both methods are used to complement each other. Onwuegbuzie and Teddlie (2003) argue that there should be a de-emphasising of the two terms and instead subdividing the research into exploratory and confirmatory methods.

As the present research is on an emerging area, the major problems anticipated were (i) the small amount of literature available, (ii) the small number of experts in this field and (iii) difficulties of attracting participants across a multitude of disciplines to access target audiences. Past and current attitudes of various professions across disciplines with relation to animal welfare during disasters were a cause for concern, due to their required input and objectivity of the study.

3.4.1 Types of data collection

The research questions for the present study had some clear requirements for quantitative data, such as positions within the sector, along with the educational competencies of personnel in animal welfare emergency management and qualitative data collection techniques. Other questions that required justification of previous answers required qualitative approaches. Therefore, more than one method was deemed appropriate for the study to gather both quantitative and qualitative data.

The present research is an evidence-based consensus-building study, as the development of the knowledge and technical skills for personnel involved in animal welfare emergency management consisted of following the triangulation model. According to Greene *et al* (1998), a triangulation model seeks convergence, corroboration, correspondence of results from different methods.

3.4.2 Quantitative Data Collection

One of the most widely used quantitative collection techniques is by questionnaire, although other techniques such as structured and in-depth interviews and observation can also be used in survey research (de Vaus, 2002).

There are advantages and disadvantages of using questionnaires. They need to be designed in a way that addresses six principles that should be built into questions (1) reliability, (2) validity (3) discrimination (variation in the sample on key variables), (4) promotes high response rates, (5) has some meaning for the participants as well as (6) relevance (de Vaus 2002).

Questions must be prepared in such a way that respondents can complete them without any assistance, as this participation of the researcher in answering questions could cause bias or influence in answers (Blaikie 2000).

de Vaus 2002 has developed a questionnaire design check list (Appendix E), with 16 questions, to assist researchers with the planning phase of their survey. During the initial review and pilot testing for the study, some areas of concern were clarity and reliability. On further examination of the questionnaire the concerns were address by once again going through De Vaus' (2002) check list and ensuring each point was signed off. One further pilot testing was performed and the questionnaire was approved.

3.4.3 Questionnaire Data Analysis

The completed questionnaires were coded, tabulated and analysed. Data were manually entered into a database and analysed with the SPSS package.

For questions that asked for justification and/comment, the results were analysed using SPSS to identify the number of participants who chose a particular item within a question and with similar comments.

3.4.4 Expert panels

Davis (1992) argues that one of the most important steps to take when selecting a panel of experts is to define the necessary expertise for panel members. Panels should have a mixture of experts across disciplines. If the purpose of the study is to develop educational and technical competencies, the panel should consist of members with expertise in curriculum development, instructional design, as well as theoretical and conceptual framework experts. In the area of emergency management, the panel should include experts from high government roles, as well as at the coal-face.

Hasson *et al* (2000) advocate caution in the use of "experts":

"*The claim that one group represents valid expert opinion has been criticized as scientifically untenable and overstated*."

Hence, when selecting members of an expert panel, there is a fine balance between having experts who can be relatively impartial so that the information obtained, reflects the current knowledge and perceptions, as well as having an interest in the topic (Hasson, *et al* 2000).

Tigelarr D., et al (2004), argue that many of the disadvantages of using an expert panel can be overcome by using the Delphi technique, inasmuch as they believe that it is an efficient method to obtain information from educational experts and to reach a consensus.

3.5   Summary of study design and methods used

The aim of this study is to define animal welfare emergency management, identify and describe different groups of personnel who are involved in animal welfare emergency management, to examine the educational and technical requirements of all personnel involved in animal welfare emergency management and to develop evidence-based competencies with assessable learning outcomes. It includes a description of the three generalized groups of animal welfare emergency management personnel, identifies the knowledge and technical skills required of each group and develop core and specialised evidence-base competencies with assessable learning outcomes.

Triangulated methods were used to collect data to address the research questions. This was a six step evidence based consensus model that comprised of the following steps:

1. review of peer-reviewed literature on relevant content areas, across disciplines and educational theory;

2. structured review of existing competencies, national and international level course and published training objectives across disciplines

3. synthesis of new competencies

4. expert panel review

5. refinement of new competencies

6. development of assessable learning outcomes, using Bloom's taxonomy.
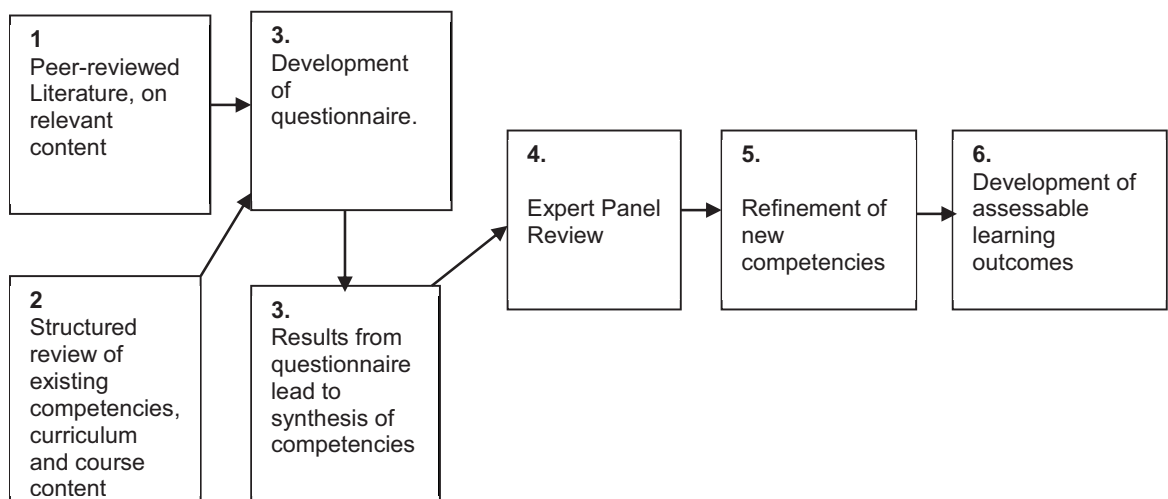
Figure 3.3 Triangulated method for data collection

3.5.1 Sampling Methods used in this study

Two techniques of data collection were used in this study; namely literature / resource review and a modified Delphi technique. The Delphi technique is a group facilitation technique that seeks to obtain consensus on the opinions of "experts" through a series of structured questionnaires (Hasson *et al*, 2000). The questionnaires are completed anonymously by the panellists and the responses/results from each questionnaire are summarised and fed back to the panellists. This is a continuous cycle and the number of "rounds" is dependent on how long it takes for a general consensus to be reached on the topic, the amount of time available for the study and the consideration of levels of sample fatigue (Hasson, *et al* 2000). Once consensus is reached, results are reported. For the purpose of this study consensus is defined as a response score lower than 2.5 out of a possible score of 5 for each question. The scoring system is discussed in deal in later in this Chapter. The Delphi technique was modified slightly in the present research. Generally, the first step in Delphi is to ask panellists to make qualitative comments on a particular topic. Once this information is collected it is put into a series of questionnaires. Due to time constraints and the probability of sample fatigue the first stage in the process was modified, by way of presenting a questionnaire based on the literature / resource review rather than asking for initial comments about the topic.

3.5.2 The target population

It would be ideal to include all groups of animal welfare emergency management personnel, though it proved difficult to fulfil this requirement in New Zealand, due to the fact that it does not currently have all AWEM roles in the country. Initially, emergency management experts in New Zealand were identified by contacting emergency management academics within New Zealand, who were able to offer names and contact details. Members of the National Animal Welfare Emergency Management Liaison Group were also asked to participate in the study.

Due to the small number of target population within New Zealand, international panellists from all abovementioned groups were approached. The panellists approached the researcher when they were informed of the study by colleagues. These panellists are representatives from the National Alliance of State Animal and Agricultural Emergency Programmes (NASAAEP). In partnership with USDA, FEMA, and a host of other stakeholders, NASAAEP is working to provide tools and educational opportunities for States and local communities in developing animal emergency management plans and response capabilities. Their membership consists of

state animal response teams, veterinary medical reserve corps units, national animal welfare partners, government agencies (responsible for planning and policy in relation to animal welfare during disasters) and, academics in from a broad range of disciplines, namely veterinary science, educational developers, agriculture and emergency management.

3.6 Online questionnaire Survey One

The purpose of the structured questionnaire was to gather information on the knowledge and technical skills required by policy/planners, shelter and rescue animal welfare emergency management personnel. Other information that was gathered included the species of animals that should be included in an animal emergency management curriculum, who should offer courses in AWEM, how this should be presented and priories given to educational needs of AWEM personnel.   The structured questionnaire was based on the principles of a good questionnaire, as expounded by de Vaus (2002).

The previous literature search helped to shape the comprehensive, all-hazards questions on knowledge and technical skills required for animal welfare emergency management personnel. Participants were also given the option to add knowledge and skills at the end of the question if they believed a skill or knowledge attribute had been inappropriately omitted and should be included.

Participants were asked to identify themselves in regards to the role they currently play within animal welfare emergency management, as this may influence their response to the questions in the survey and to ensure that there was true and equal representation from all disciplines that are part of AWEM.

3.6.1 Data analysis of initial questionnaire

The data were collected from the completed surveys, it was edited through structured inquires such as inference. Whilst examining participants written answers some responses showed a misunderstanding of the question being asked, therefore these answers were omitted from the data analysis.

3.6.2 Cataloguing

A combination of qualitative and quantitative univariate analysis was performed via grouping similar items together to provide a universal description, known as cataloguing. The process is initiated by open cataloguing and it is a process of analysis via comparisons. This allows the analyst to see emerging themes and place them into core categories. Each category consists of various properties which leads to theoretical coding. An example of this cataloguing analysis used in the present study is shown in Table 3.3.

Table 3.3: Example of Cataloguing of literature

Catalogue	Explanation
EM	Emergency Management
AWEM	Animal Welfare Emergency Management
CIMS	Co-ordinated Incident Command System
Behaviour	Animal Behaviour
Comms.	Communication
Safety	Health and Safety
AWEM role	Different roles within AWEM or similar profession
PB	Problem Solving

This information was developed into the initial questionnaire and generated three core categories for AWEM personnel (Policy/Planner, Shelter, and Rescue) and various properties of all categories. The properties consisted of a list of knowledge and skill requirements for the core categories (see Appendix E for the initial questionnaire).   Analysis of the responses of the first questionnaire began the second phase of the cataloguing process. A second cycle of the cataloguing process was performed and educational competency domains emerged (see Chapter Four). The competency domains formed the grounding for the development of core competencies which were accompanied by assessable learning outcomes.

3.6.3 Maximising Response rate

Research studies have reported low and inconsistent response rates in survey research. It appears that low response rates are considered inevitable and sometimes accepted as the

'norm'. However, low response rates are a major concern to researchers mainly to due the element of error, in validity and reliability, associate with non-response bias.

This research study was limited by time and resources available.   Although these problems were minimized by the following ways:

Firstly, the target audience received a group reminder email once a fortnight for the duration that the surveys were open.

Second, the surveys were available online for participants for ease of completion and assisted with ensuring the participant remained anonymous to reduce the probability of 'interviewer bias'.

Third, the surveys were available for one month to allow many opportunities for the target audience to participate.

Finally, a research pack accompanied the invitation to participate in the research.   The pack included a letter outlining the purpose of the study, what was involved and what risks were for the participated associated with the research along with a consent form.

3.6.4 Ethical considerations

A number of ethical issues were considered while designing the study. The first issue was voluntary participation in the survey. The participants were explicitly informed in the introductory letter to the research project (Appendix D) that participation in this research was voluntary and confidential and they may withdraw at any time.

"*Voluntary participation implies that participants make a choice, and true choice requires accurate information if it is to be truly voluntary*" (de Vaus, 2002 pg 60)

The second issue was informed consent by the participants. An information sheet (Appendix D) explaining the purpose of the study, the general aims of the study, who was conducting the study, how the study was to be carried out, what the anticipated discomfort or risks were associated with participating in the research and where the results were going to be published, was given to all participants before being asked to sign a consent form.   Once the consent form

was received by the researcher the relevant website address with a survey password was issued.

The third issue was anonymity and confidentiality.

"the most obvious way in which participants can be harmed in research is if the confidentiality of responses is not honoured" (de Vaus, 2002, pg 62)

The participants remained anonymous throughout all phases of the study, as no names or any form of identify were recorded to ensure that participants were unidentifiable. The url of where the participants completed the online survey was not recorded, to further ensure participants were not identifiable.

The reasons for assuring confidentiality is to improve the quality and honesty of the responses, encourage participation in the study therefore improve the representativeness of the sample and to protect the person's privacy (deVaus, 2002).

Ethical approval was granted by Massey University before conducting the research.

3.7 Conclusion

The overall research design that has guided this study has been explored and discussed in this chapter. In addition, the target audience and selection of participants were introduced. Data gathering, ethical considerations, response rates, publication of results, as well as methods of data analysis have been outline. The next chapter presents the research findings by exploring the emergent competency domains, educational core competencies along with their associated assessable learning outcomes.

Chapter Four

Animal Welfare Emergency Management Education and Training

Presentation and analysis of data and the discussion of findings and results are usually presented in separate chapters; a different structure would benefit this research thesis because of the types of information found and the aims of the differed methodologies. In consideration of the triangulated study methods applied, both the quantitative and qualitative data on the different aims are addressed; the data, results and the discussion of results have been incorporated into two chapters. These arrangements allow the presentation of the findings and the response to the research question more effectively. Following these chapters is an overview of the discussions, which links the overall findings of the study to the research question.

This chapter will first present the data and information generated from the document analysis and initial questionnaire. This will be followed by a discussion of the implication of the findings. The chapter is divided into the following three sections:

4.0 Document analysis

4.1 Definitions of AWEM groups

4.2 Questionnaire survey one

4.3 Discussion of document analysis and questionnaire survey

4.0 Document Analysis

The document analysis mainly focused on identifying AWEM educational domains. In addition, the analysis endeavoured to define different groups within animal welfare emergency management personnel and obtain a clearer picture of the individual groups' knowledge and technical skills, to compile a list that would contribute to the first questionnaire. It also examined

relevant studies carried out in the development of core competencies, curriculum and programme content from multiple disciplines since, as the present research is the first of its kind, there were no comparisons from within its field that could be used.

As discussed in Chapter three, one of the aims of the document analysis (n=26, 12 peer reviewed articles and 14 non-peer reviewed articles) was to identify common themes of knowledge that could be categorised into educational domains. The results from the document analysis identified eight common themes of knowledge, hence educational domains. Table 4.1 shows the frequency of the eight educational domains which emerged from the literature review

The phases of emergency management have been highlighted as an important (77%) domain to include in any educational programme which relates to disaster management, planning and response. This was followed by the inclusion of CIMS. Even though the inclusion of AWEM was only discussed in 50% of the papers, this is not surprising as this is a new area and there is limited literature available on this topic. Eighteen out of the twenty six documents related to either veterinary involvement in animal welfare emergency management or solely on animal welfare emergency management. Seventy per cent (70%) of these documents mentioned animal welfare emergency management.

Table 4.1 Frequency of the educational domains

As discussed in Chapter 2, there is no literature available on the different roles of personnel in

	Educational Domain	Number of times discussed in documents	Proportion of documents (n = 26)%
1	Co-ordinated Incident Management (CIMS)	15	58
2	Emergency Management (cycle, phases of)	20	77
3	Animal Welfare Emergency Management	13	50
4	Roles in Animal Welfare Emergency Management	9	35
5	Behaviour	6	23
6	Safety	11	42
7	Communication	9	35
8	Problem solving	5	19

AWEM, although analysis of the data showed that three groups of personnel emerged in other disciplines associated with emergency/disaster management. For the purpose of the present study, these roles have been adapted for animal welfare emergency management. The groups are as follows: (1) Policy/Planning, (2) Shelter and (3) Rescue personnel. Defining these groups contributed substantially to the development of the present study.

4.1 Definition of different groups within animal welfare emergency management personnel

The definitions of the generalized groups are as follows:

- Emergency Animal Planning Personnel
- Emergency Animal Shelter Personnel
- Emergency Animal Rescue Personnel

4.1.1 Emergency Animal Planning Personnel

Emergency animal planning personnel are individuals who assist with the development of policies and AWEM plans at local, regional/state and national levels. Such personnel require background knowledge of animal welfare and emergency management to allow a symbiotic relationship between these two normally-separate areas. Veterinarians are commonly approached to fulfil this role due to their training and knowledge in animal health, husbandry and animal welfare (Madigan & Dacre 2009), although many do not have experience in animal welfare emergency management. In order to begin an animal welfare emergency management planning process, one must be able to understand the facets of the phases of emergency management. This understanding will facilitate a robust animal emergency management plan that will cover all phases of emergency management.

4.1.2 Emergency Animal Shelter Personnel

Emergency animal shelter personnel are responsible for setting up temporary shelters for animals. This involves many different facets of shelter management, which includes, but is not limited to, registering animals upon arrival, providing food, water, shelter and medical attention for animals, ensuring that all of the animals welfare needs' are met, and reunification of animals with their owners. Animals should be triaged (assessed) as soon as they arrive at the shelter to

assess their health status. Hence, shelters should ideally incorporate a veterinary medical section within, or close to the shelter

<u>4.1.3 Emergency Animal Rescue Personnel</u>
Emergency animal rescue personnel are involved in assisting owners evacuate before an event occurs, after an event occurs and rescuing animals that are abandoned, trapped in buildings or injured. There are two variations on these roles which require different skill sets. The personnel who assist owners during evacuation can do so with little animal welfare emergency management experience, so many animal control officers and animal welfare inspectors can be called upon to fulfil this role. After an event has occurred and animals are trapped in buildings (e.g. after structural collapse), in flooded waters or any environment that is deemed dangerous, rescue personnel require more specialist skills and knowledge to be able to fulfil this role. These groups of people are usually from an animal rescue unit who have specialist training in this area. In New Zealand, they are required to work within the CIMS, alongside other emergency services and rescue personnel.

4.2 Questionnaire Survey

The online questionnaire survey was initially sent to twenty five personnel who were selected to represent emergency managers, academics in the field of emergency management and human rescue personnel within New Zealand. After one week of the survey going "live", five participation consent forms were returned and five surveys were completed. A reminder email one week later only generated one extra response. Due to this limited number of personnel in New Zealand with knowledge in this field and who believe this topic is worthy of their contribution, the original research invitation was sent to another one hundred personnel who are experts in this field, from the USA, Asia, United Kingdom and Costa Rica. A further 45 participation consent forms were returned and 45 surveys were attempted. Amongst the fifty people who were invited to complete the surveys, 37 returned completed questionnaires. Details of the survey responses are provided in Table 4.2

Table 4.2 Online questionnaire completion

125 invitations sent	Participation consent forms received	Percentage
Completed	37	30%
Incomplete	13	10%
Total	**50**	

4.2.1 Representativeness of respondents

The present study had an initial response rate of 40% (50/125 target audience), although 30% (37/125) completed the questionnaire, of the study population (n=125) can be considered satisfactory. As the response rate for questionnaires in previous studies were not mentioned, no comparison can be made. It is noted that the non-completion of the survey started after Question One, therefore the thirteen non-completions did not answer any further questions after Question One. The researcher was informed by participants who started the questionnaire and did not complete, the reason for non-completion was simply due to time pressures and interruptions whilst participating in the research.

When comparing the roles of the participants, Emergency Management Officers were relatively underrepresented among the participants (Table 4.3). An even representation of participants from the other relevant roles is evident. Even representation of the target population reduces sampling error and increases confidence intervals (de Vaus, 2002)

Table 4.3: Role: Participants identified their roles in AWEM:

Role in AWEM	% Response
Policy / Advisor at government level	36%
Emergency Management officer	2%
Animal control / welfare officer	10%
Animal Welfare Emergency Management co-ordinator	20%
Animal Response Personnel	36%
NGO involved in Animal Welfare Emergency Management	28%
Academic in Emergency / Disaster Management	18%
Other	18%

Responses for other:
- Educator
- State support function agriculture
- American bar association leader on emergency management
- Military Disaster Response Coordinator and veterinarian
- ABA liaison to NASAAEP: Chair ABA subcommittee on animals in disaster response
- State response board member

4.2.2 Knowledge of AWEM personnel

Question Two of the survey asked participants to select the areas of knowledge that they believe are essential for personnel involved in the three different areas identified (i.e. policy, shelter and rescue). Table 4.4 summarises the responses to the specific knowledge needed for each group. Participants selected 83% of the knowledge topics that had been identified from

the literature as core knowledge for each of the three groups. Any topics that scored lower than 50% from the responses was considered to be non-mandatory. Six knowledge topics were identified as areas in which only certain groups need knowledge. These areas are; funding sources, navigation (use of GPS), driving vehicles in operational situations, human first-aid, emergency animal shelter, emergency animal rescue and animal handling and restraint.

According to the responses, funding sources was a topic that is not required by rescue personnel, navigation is not required by policy and shelter personnel, driving vehicles in operational situations is not required by policy or shelter personnel, human first-aid is not required by policy personnel, knowledge of emergency animal shelter is not required by rescue personnel, emergency animal rescue is not required by shelter personnel and animal handling and restraint is not required by policy personnel.

Participants were given the opportunity to comment on their responses or to include any topics that they believe should be included. A comment from a participant who identified him/her-self as a disaster response co-ordinator suggested that biosecurity should be included.

One participant commented:
"*My answers reflect the belief that planners need a basic understanding of the issues being faced by those being planned for, such as sheltering and rescue*" (identified as a policy role)

Another participant noted:
"*Note: I think planners and policy makers need to be across all aspects to ensure correct procedures and SOP's etc are developed*" (identified as a policy role).

These comments are contrary to the belief that policy personnel, in New Zealand, have indicated to the researcher during meetings to discuss such notions. These comments are refreshing and reiterate the responses from participants that all personnel have core knowledge in 83% of the knowledge topics listed.

A final comment from another participant:
"*My answers for shelter and rescue refer to members of these teams/groups rather than supervisors. Had this intention been to look at the supervisors/leaders, my responses would be significantly different*".

Table 4.4 Summary of knowledge of AWEM topics

Knowledge	Emergency Animal Planning	Emergency Animal Shelter	Emergency Animal Rescue
The Four Phases of Emergency Management	✔	✔	✔
Roles and Responsibilities of all Civil Defence & Emergency Management Agencies	✔	✔	✔
Legal issues	✔	✔	✔
Civil Defence & Emergency Management Act 2002 (New Zealand)	✔	✔	✔
Animal Welfare Act 1998 (New Zealand)	✔	✔	✔
Incident Command System (ICS, USA) Coordinated Incident Management System (CIMS New Zealand)	✔	✔	✔
Functions of CDEM Welfare Centres	✔	✔	✔
Communications (verbal & written)	✔	✔	✔
Health & Safety	✔	✔	✔
Debriefing	✔	✔	✔
Risk, Damage and Needs Assessment	✔	✔	✔
Stress Management	✔	✔	✔
Develop Standard Operating Procedures	✔	✔	✔
Animals in disaster	✔	✔	✔
Media Communications	✔	✔	✔
Funding Sources	✔	✔	
Navigation, use of GPS			✔
Human-animal bond	✔	✔	✔
Leadership	✔	✔	✔
Social and psychological impacts of the aftermath of disasters	✔	✔	✔
Driving vehicles in operational situations			✔
Infectious Animal Diseases including zoonosis	✔	✔	✔
Human First Aid		✔	✔
Basic Animal Care	✔	✔	✔
Animal Behaviour	✔	✔	✔
Emergency Animal Shelters	✔	✔	
Emergency Animal Rescue	✔		✔
Animal First Aid	✔	✔	✔
Animal Handling and Restraint		✔	✔
Animal Identification	✔	✔	✔
Animal Triage	✔	✔	✔
Animal Decontamination	✔	✔	✔
Emergency Euthanasia	✔	✔	✔
Reunification of Animals with owners	✔	✔	✔
Advanced Emergency Animal Medicine (Veterinarian and Veterinary Technician Level)	✔	✔	✔

4.2.3 Technical skills for AWEM personnel

Question Three of the survey asked participants to select the technical skills that they believe is essential for personnel involved in the three different areas of policy, shelter and rescue. Table 4.6 summarises the responses to technical skills for each group. It is evident from the responses that there is a clear distinction between requiring knowledge on the topic and being able to perform the task. There are four core technical skills for the three groups. These are: communications (verbal: i.e. amateur radio, written; USAR signage), report writing, stress management and team work. Many of the skills listed have been noted as not required by policy personnel. It can be postulated that this is determined by where the person will be during an event, as this is where most of the technical skills listed would be required. Shelter and rescue personnel will be at the coalface of the disaster, therefore they required specialist skills in each area.

One of the more specialised technical groups is the emergency animal rescue group. They will be required to be at "ground zero" (also known as the "red zone"); therefore they need to be equipped with skills not only to rescue animals but also to ensure of their safety and the safety of others around them. Table 4.5 summarises the basic technical skills required by emergency animal rescue personnel:

Table 4.5 Technical skills required by emergency animal rescue (EAR) personnel

Technical Skills	EAR
Communications (verbal i.e. amateur radio, written, USAR signage)	✔
Report writing	✔
Stress management	✔
Teamwork	✔
Specialist equipment handling	✔
Use of GPS, navigation	✔
Basic Urban Search and rescue awareness	✔
Driving vehicles in operational situations	✔
Set up of rescue unit	✔
Human First Aid	✔
Animal First Aid	✔
Animal Handling and restraint	✔
Transportation of animals	✔
Animal triage	✔
Animal decontamination	✔
Advanced rescue techniques, rope rescue large animals (including sling rescue)	✔
Height rescues	✔
Advanced rescue techniques , rope rescue small animal (including sling rescue)	✔
Swift water rescue	✔
Work with aircraft at emergencies	✔
Advanced emergency animal medicine (veterinarian and veterinary technician level)	✔
Specialist response to technical animal rescues	✔

Table 4.6 Summary of essential technical skills for personnel involved in AWEM.

Technical Skills	Emergency Animal Planning	Emergency Animal Shelter	Emergency Animal Rescue
Communications (verbal i.e. amateur radio, written, USAR signage)	✓	✓	✓
Report writing	✓	✓	✓
Stress management	✓	✓	✓
Teamwork	✓	✓	✓
Specialist equipment handling		✓	✓
Use of GPS, navigation			✓
Basic Urban Search and rescue awareness	✓		✓
Driving vehicles in operational situations			✓
Set up of animal shelter	✓	✓	
Set up of rescue unit	✓		✓
Human First Aid		✓	✓
Animal First Aid		✓	✓
Animal Handling and restraint		✓	✓
Transportation of animals		✓	✓
Animal triage		✓	✓
Implant microchips		✓	
Animal decontamination		✓	✓
Advanced rescue techniques, rope rescue large animals (including sling rescue)			✓
Height rescues			✓
Advanced rescue techniques , rope rescue small animal (including sling rescue)			✓
Swift water rescue			✓
Work with aircraft at emergencies			✓
Advanced emergency animal medicine (veterinarian and veterinary technician level)		✓	✓
Specialist response to technical animal rescues			✓

Participants had the opportunity to write a comment about the technical skills or to list additional skills which they believe should be included. No comments were noted.

4.2.4 Animals that should be included in an AWEM curriculum

Question four on the survey asked participates to indicate which of a selection of animals should be included in an AWEM curriculum. Table 4.7 summarises the animals that participants indicated as required inclusion in the curriculum.

Table 4.7 Summary of animals that should be included in an animal welfare emergency management curriculum

Animal	Response %
Small animals (includes dogs & cats)	100
Horses	97.3
Production Animals (dairy, beef, sheep, deer, poultry etc)	97.3
Birds	81.1
Exotics (alpacas, ostriches, emu etc)	75.7
Small mammals (rabbits, guinea pigs, rats & mice)	73
Other	32.4

As evidenced by the data, all selected animals should be included in an AWEM curriculum. One participant commented that "*Animals includes ALL animals*". Another commented "(there) *needs to be awareness for any animals that will come into the shelter*". This notion for learning about what animals are actually going to arrive at a shelter, therefore for understanding the needs of your community, rather than learn about what you are prepared to accept at a shelter, is supported by Heide (1989) "*Emergency planners need to ensure plans are developed based on likely behaviours, not correct behaviours, in order to be effective*". Previous disasters are evidence that animals other than cats and dogs will be bought to emergency animal shelters. Examples of such animals include birds and fish, horses, alpacas etc. At the time of writing (January 2011), Queensland and other parts of the south eastern Australia are being hit by devastating floods and a news report shows a young women carrying a Joey (baby kangaroo) out of the flood waters. Other reports include a horse racing stud that had 50 of its 70 horses drown in the floods. Escaped horse's ended up in rural backyards, from where they required rescuing and sheltering. People were asking for assistance to help evacuate animal boarding facilities and animal rescue shelters such as the RSPCA. This highlights that curricula require the inclusion of all animals.

Participants were requested to specify the animal they noted as "other". Three common themes of groups of animals emerged. These include zoo animals, wildlife and laboratory animals. In New Zealand, the Department of Conservation is responsible for the welfare of wildlife in a disaster, though the actuality of the public response to any injured animal is to take it into an emergency animal shelter, therefore an understanding to these animals basic needs should be met. Due to the nature of zoo animals (i.e. dangerous animals and those not native to New

Zealand and which could be considered a pest if released) most zoos and sanctuaries have emergency welfare plans which involves mass euthanasia of animals. Therefore it is important for zoos to be located in areas that are at low risk of being affected by disasters. Irvine (2006) describes laboratory animals as having a high zoological vulnerability (i.e. they are at high risk of being effected by a disaster and generally have high morbidity and mortality rates). This relates to the large number of animals usually kept in such facilities along with society's apparent lack of disconnection with these animals.

4.2.5 Responsibility for offering courses on AWEM

Question five of the survey asked participants to nominate who should be responsible for offering courses for animal welfare emergency management. Table 4.8 presents these findings

Table 4.8 Responsibility for offering courses on AWEM

Who should be responsible	Response %
Government Organisations	80
Non-government Organisations	77.1
Universities	62.9
Polytechnic / TAFE / College	54.3
Other	11.4

The majority of respondents thought that government organisations should be responsible for offering courses on AWEM. One participant commented:

"*government should be responsible for making sure adequate classes are available or accrediting classes, any of (the) above can actually offer them*"

Ensuring there are adequate classes as a mandate for government organisations is a theme that occurs internationally. The USA is one such country. The Federal Emergency Management Agency (FEMA) implements "The National Training Program (NTP)".

"*It provides an organized approach to training for emergency managers and emergency response providers across the Nation that supports the National Preparedness Guidelines. The NTP provides policy, guidance, and tools that addresses training design, development, delivery, and evaluation, as appropriate. The NTP supports the development, promulgation, and regular*

updating, as necessary, of national voluntary consensus standards for training; and ensure that the training provided under the NTP is consistent with the standards." (FEMA, 2011)

 In New Zealand, the two government bodies who should take responsibility for ensuring that adequate AWEM education and training is available and is standardized are the Ministry of Civil Defence and Emergency Management and the Ministry of Agriculture and Forestry (MAF). As MAF is mandated to be responsible for animal welfare at a national level during disasters, it is logical to suggest that it should take responsibility for education in this area.

4.2.6 Modalities for delivery of AWEM education

Question Seven of the survey asked participants what they believe is the best way to deliver AWEM education. Table 4.9 summarises the responses. Seminars closely followed by conferences were the most popular responses, as they offer the opportunity to deliver information in a short period of time.

Table 4.9 Summary of delivery of AWEM education

Delivery modality	Response %
Conferences	80
Seminars	85.7
External / online studies	71.4
Block courses	54.3
Internal semester long courses	31.4
Other	31.4

Participants were asked to specify "other" if selected. Some response included table-top exercises, boot-camps for teams, hands-on field training (taught during a disaster) and many suggested the requirement for hands-on technical courses.

Another question relevant to this topic that was asked in the survey was how the participants personally kept up-to-date with the latest research, ideas and topics involved in their discipline. The answers ranged from scientific journals, conferences, meetings, workshops and training, along with general communication with colleagues in the field. This highlights the importance of continued research in this field, to ensure it is research led and that there is literature available

in the future which is relevant, reliable and up-to-date. As the National Animal Welfare Emergency Response Liaison Group (NAWEM) is now written into "The Guide" to the National Plan as a cluster group with an interest in animal welfare during disasters, it should advocate the inclusion of AWEM in emergency management, veterinary, veterinary nursing, animal control and other relevant conferences, as well as the veterinary curriculum in New Zealand. They should been seen as leaders in this field and begin to offer seminars and workshops in AWEM.

4.2.7 Types of courses offered

Question eight of the survey asked participants if there should be one generic course offered in all aspects of AWEM for all personnel or should two separate courses be offered, one for responders and one for policy and emergency managers. Participants had varying qualitative answers, although a general theme was evident Table 4.10 summarises the responses

Table 4.10 Summary of types of courses offered

Type of Course	Response %
One generic course all aspects of AWEM all personnel	52%
Two separate courses one for responders and one for policy/planners and emergency managers	48%

The participants' answers were catalogued into the above choices; therefore the participants' answers had to be interpreted as one of the choices. The following comments from participants further explain their responses:

"*The scope is too broad for one course to be able to cover. The suggestion of two courses is a good one, however, the responders and policy-makers need to understand both sides of the equation to effectively do their respective jobs. There is nothing worse than trying to implement a policy that was developed by someone who had absolutely no operational background or understanding*"

Another similar comment:

"*different programmes for the three target groups you have identified, however they may have a number of courses in common*".

Several participants commented on the level that the courses should be provided:

"*policy, planners and responders are three different levels of comprehension … awareness of concepts via lecture, workshops to develop discussion and understanding of concepts and hands on labs for technical skills development*"

"*two courses would be better because the level of detail and scope of knowledge needed varies between groups*"

"*(there are) different skill sets and level of knowledge between the two*".

Providing education and training at different levels of cognitive understanding for different roles between the groups as well as within the groups (i.e. leadership roles) is supported by the literature in disaster education (Alexander, 2003; Blanchard, 2005; Hsu *et al*., 2006; Subbarao, et at., 2008; & Dunning *et al*., 2009).

4.2.8 Accreditation of Animal Emergency Response Teams
Question ten asked participants to identify by whom animal emergency response teams should be accredited and/or registered. They were given a selection of different agencies from which to choose. Responses are summarised in Table 4.11

Table 4.11 Accreditation of animal emergency response teams

Agency	Response %
National Animal Welfare Emergency Management Liaison Group (NAWEM)	72.7
Ministry of Civil Defence and Emergency Management (MCDEM)	48.5
Society for the Prevention of Cruelty to Animals (SPCA)	15.2
Independent Panel	15.2

Over 70% of respondents suggested NAWEM as an accrediting / registration body. Participants were asked to justify their answer. One participant commented:
"*NAWEM, because this group already exists and has representation that would provide useful insight into the various aspects of what the team is required to do*"

Two participants commented on their MCDEM choice:

"*should be associated with government to gain more consistent recognition*"
and
"*accreditation at the highest level may allow responders to access disaster scenes more easily, without local organizations wondering if a responder's accreditation is valid or not. Also, a single source of accreditation allows more efficient record keeping*"

Several other participants commented on combining the agencies with the skill sets of professionals who know what is required:

"*government (should have) single oversight, but standards of skill set and credentialing standards set by those who know*"

"*They (government) should be the keepers of the list of responders who meet the nationally-accepted standards which is developed by all the organisations listed. Too many other agencies get in the way otherwise*"

"*all agencies have a role to play – different skills/resources*"

Thus, it was clear that respondents considered that animal emergency response team should be accredited by one governing body, although the development of the credentials for teams should consist of representatives from all agencies, along with professionals who have expertise in educational development. Teams need to be recognized as having a minimum set standard to be integrated successfully into human emergency response co-ordination.

4.2.9 Prioritise educational knowledge of personnel involved in AWEM
Question 12 asked participants to prioritise areas of knowledge in AWEM from least important to most important. Participants were given five subject areas to select from. A summary of the findings is represented in Table 4.12

Table 4.12 Order of priority for subject areas in AWEM for all personnel

Subject area	Ranking
How to develop and implement an animal emergency response plan	1
Knowledge of CIMS	2
Animal Welfare Emergency Management	3
Technical skills required by personnel in Animal response teams	4
Understanding the human-animal bond	5

'How to develop and implement an animal emergency response plan' was ranked as the highest priority in which personnel should have knowledge, closely followed by CIMS. The least important subject area was 'understanding the human-animal bond'. This finding is marked contrast to the literature. The literature states that you need to know, in detail, the communities (including animals) needs and before you can begin the planning process (HSUS, 2009). It is also important to understand the bond between humans and animals, as this is what has been referred to in the literature as key in pet owner evacuation non-compliance. It is postulated that the participants of this survey are experts in this area, therefore they already know the basics of these topics and they assume personnel involved in Animal Welfare Emergency Management will as well.

4.2.10 Additional comments from participants

At the end of the survey participants were given the opportunity to make comments on the research project or add any information that they believe is relevant to the research topic.

Amongst the many comments that were made in response, the following points emphasise the importance of integration of AWEM in emergency management plans and veterinary curriculum and standardization of education:

Integration of AWEM in emergency management plans
"*it is absolutely critical that any animal efforts be fully integrated into the overall emergency management structure. Failing to do so will result in independent operations that likely will run in conflict with each other*"

Veterinary Curriculum

"(I) highly recommend developing basic disaster awareness and ICS training at the DVM (veterinary) colleges – if they learn to help prepare their clients, and their animals, it will reduce the burden on the entire system"

Standardisation of AWEM education and training

"Develop a standard training programe and set of credentials with appropriate identification so that a(n) Incident Commander recognises the level of training the person has and is capable of performing in the event of an emergency involving animals"

The final comment summarises much of the data from this survey

"There is very little information that is not relevant to planners. Planners need to be aware of what the folk they are planning for do and face in a response. It might be germane to try to tease out the level of understanding required, for example technical proficiency may not be required but an awareness level training may be beneficial. Planners should know the basics of animal first aid to understand the equipment/supplies needed and everyone, regardless of job, should know human first aid as a public service to their fellows. I am a strong proponent of the planners understanding what they are planning for, but the worker bees and technicians should understand why there are some policies versus others."

4.3   Discussion of literature data analysis and Questionnaire Survey One

Through the analysis of the data generated from the literature and the questionnaire survey completed by personnel involved in AWEM seven major findings have been identified. These were (i)   confirmation of the validity of the three different groups involved in AWEM (policy/planning, shelter and rescue); (ii) the requirement for eight core knowledge domains across the three groups, with different levels of understanding required (horizontal and vertical, within and across groups); (iii) the requirement for core technical skills across the three groups with each group needing other specific skill sets; (iv) offering AWEM education and training through blended learning; (v) government bodies taking responsibility for ensuring AWEM educational and training programmes are available and standardized, and (iv) the need for response teams to be accredited through a government agency.

4.3.1 Policy/Planners, Shelter and Rescue

The current study acknowledged the requirement for three separate groups of animal welfare emergency management personnel: policy/planners, shelter and rescue. The three groups all play an important role in the successful delivery of AWEM.

- Policy/planners are tasked with developing policy and plans in relation to animal welfare through all phases of emergency management.
- Shelter personnel are responsible for setting up shelter facilities that can accept all animals for general care whilst evacuation orders are in place. The shelter personnel include veterinary staff who can attend to the medical needs of animals whilst in shelter.
- The rescue personnel have specialist technical skills, which allow them to work in the red zone of the disaster to rescue animals from impending danger.

4.3.2 Core knowledge for all AWEM Personnel

All AWEM personnel require core knowledge of the subject to be able to successfully contribute to their role in AWEM. Policy/planners need to know for whom they are planning and the needs of the community and response teams need to be aware why certain policy's and plans are in place. This study acknowledges the requirement for different levels of knowledge from low-order (remembering and understanding) to high-order (evaluating and creating which reflects problem solving) for different groups and different roles within groups. This finding corroborates the conclusions drawn from earlier work Hus *et al* 2006: Selena *et al* 2007: Subbarao *et al* 2008: and Dunning *et al* 2009 that was discussed in Chapter 2.

4.3.3 Technical skills for AWEM Personnel

Four core technical skills for all AWEM personnel were identified from the data:

- Communication
- report writing
- stress management and;
- teamwork.

These four competencies are required for any team to function effectively and efficiently, although they are difficult skills in which to assess proficiency. Each group also requires specific specialists technical skills to fulfil their role in AWEM. For example, emergency rescue

personnel require more diverse skill sets than the policy and shelter personnel, due to the requirement that they work within ground zero of a disaster.

4.3.4 Blended learning

The three main findings from the document analysis and questionnaire survey of the modalities of presenting AWEM education and training include conferences/seminars, online short courses and hands-on training. No one modality was identified as the single most effective way of delivery educational material.

4.3.5 Responsibility of availability and standardisation of AWEM programmes

The consensus from the data was that government agencies should be responsible for ensuring AWEM education and training is available and standardised. A major argument for this approach is that it allows for quality assurance of programmes offered. The government agencies should work together with personnel who have expert knowledge in AWEM, along with people who have expertise in curriculum development to develop training and education in this area. The government agencies in New Zealand who would take primary responsibility for such programmes are the Ministry of Civil Defence and Emergency Management (MCDEM) and the Ministry of Agriculture and Forestry (MAF). MAF, under the CDEM Act 2005 is mandated with the responsibility of animal welfare at a national level during a disaster. It therefore seems logical that MAF and MCDEM should work together to ensure that appropriate AWEM education is available and standardised.

4.3.6 Response Team accreditation

The concept of accreditation of animal emergency response teams has not been mentioned in any previous studies, though there is anecdotal evidence that doing so would assist with the credibility of such teams and facilitate their inclusion in human emergency response teams. The consensus of the present data was that a government body should be responsible for accreditation and management of animal welfare emergency response teams. If teams are recognised at a Ministerial level then it is expected that the teams will be accepted at a local level and have the ability to be deployed nationally and internationally.

4.3.7 Biosecurity

Biosecurity was mentioned by participants as an important component of AWEM. Even though there is belief in NZ that biosecurity is adequate, inclusion in AWEM curricula occurs

internationally, if New Zealand follows this trend it will have increased response capacity if an incursion occurs.

Through evaluation of the data of the literature and questionnaire survey analysis from this study discussed in this Chapter there are seven significant findings. These findings have guided the development of core educational competencies required by animal welfare emergency management personnel. These core competencies are discussed in detail in Chapter five.

Chapter Five

Comprehensive Animal Welfare Emergency Management Core Competencies

The focus of this chapter is to compare and contrast the competencies of healthcare workers, veterinarians and emergency managers that have been identified from the literature (Chapter 2) with those identified in the present research. This comparison requires the clarification of the roles of personnel involved in AWEM and a need to define terms that are used in the language of AWEM.

Although various previous studies have identified key competencies for healthcare workers, veterinarians and emergency managers in emergency management, no studies included a comprehensive approach to the development of core educational competencies for all personnel involved in animal welfare emergency management.

Hence the purpose of this chapter is to facilitate the development of comprehensive core competencies for all personnel involved in AWEM, along with assessable learning outcomes based upon those competencies.

Eight core competencies were identified from the present research. These will each be considered in the next section of this chapter.

5.1 Comprehensive AWEM Competencies

Following analysis of the literature data, the initial questionnaire survey and the identification of core educational domains for AWEM described in earlier in Chapter Two, a total of eight all-hazard competencies and twenty-five assessable learning outcomes (ALO) for all animal welfare emergency management personnel were developed. In doing so, it was assumed that comprehensive AWEM must integrate multi-disciplinary training with different tiers. This allows for an all phase and groups approach, therefore serving as a minimum level of knowledge and skills for AWEM personnel.

5.1.1 Evidence based educational competencies with assessable learning outcomes

Competency 1

Emergency Management

Understand the principles of the four phases of emergency management.

The four phases of emergency management include mitigation/reduction, planning/readiness, response and recovery and all phases are used to increase community resilience from events such natural, technological and biological disasters. An essential component of appropriate community resilience is to ensure all personnel involved in emergency management understand what takes place during each phase and how they can contribute to these phases.

ALO 1.1 Reduction / Mitigation

Apply and illustrate knowledge of all hazards approach, education and strategic partnership with reference to mitigation.

ALO 1.2 Readiness / Planning

Identify and implement the five basic components (planning, education, training, communication and public information) of readiness in relation to emergency management.

ALO 1.3 Response

Appraise and apply knowledge of four basic components (operating an emergency operations centre, assessment of damage and needs, coordination and information management) of response and understand what is involved in each component.

ALO 1.4 Recovery

Identify key components of recovery and recognize appropriate recovery activities that will lead to a more resilient community with reduced impact from disasters in the future.

Educational Competency 2

Animal Welfare Emergency Management

Apply knowledge of all components of Animal Welfare Emergency Management (AWEM) and explain how this can be integrated in emergency management welfare plans.

In order for personnel to be able to develop effective AWEM plans they require working knowledge in all components of animal welfare emergency management to ensure no gaps appear in their plans during a disaster response. Understanding how an AWEM plan can be integrated into a welfare plan will assist with better integration into the welfare plan as well as recognition from other agencies that an AWEM plan exists.

ALO 2.1 Risks / Hazard Identification

Identify risks and hazards and explain the associated effects on animals

ALO 2.2 Planning

Explain the key components of an animal welfare emergency management plan.

ALO 2.3 Public Education

Explain the principles of public education for AWEM and how they can be implemented.

ALO 2.4 Training and Education

Explain knowledge and technical skills required to participate in AWEM

ALO 2.5 Animal Welfare Needs

Explain the legislation pertaining to basic needs, husbandry, and hygiene requirements for animals

ALO 2.6 Illustrate knowledge of basic needs, husbandry, and hygiene requirements for animals

ALO 2.7 Evacuation / Transportation

Explain the principles of evacuation and transportation requirements for different species.

ALO 2.8 Search and Rescue

Explain the principles of search and rescue of animal and the associated risks.

ALO 2.9 Decontamination

Describe the principles of decontamination and explain when decontamination procedures are likely to be employed.

ALO 2.10 Euthanasia

Describe the legal, ethical and welfare considerations associated with euthanasia during and after a disaster.

ALO 2.11 Disease Control

Illustrate knowledge of disease control measures and the implications if this is not considered during a disaster.

ALO 2.12 Veterinary Care

Identify the importance of accessibility to veterinary care for animals during the response and recovery phases.

Educational Competency 3
Animal Behaviour

Understand animal behaviour and how this can be effected by disasters.

Animal behaviour can change significantly before, during and after a disaster. Understanding that this occurs and what the likely changes in behaviour may be can assist personnel with development of plans that need to be put in place, along with the technical skills required to evacuate and rescue such animals. Animal behaviour during recovery phases is generally overlooked, although these changes can adversely affect animals' health and wellbeing if they are not addressed.

ALO 3.1 Animal Behaviour

Explain the importance of understanding the changes in animal behaviour during the response and recovery phases.

Educational Competency 4

AWEM Roles

Explain the concepts of and describe functional roles through all emergency management phases and the skills required by specific AWEM roles.

Understanding the functional roles that are required in all phases of animal welfare emergency management as each role has specific knowledge and skill sets. These encompass the three different groups of policy/planning, emergency animal shelter and emergency animal rescue, along with the roles within the groups, from leadership to cadet.

ALO 4.1 AWEM role

Demonstrate knowledge and skills needed to fulfil your AWEM role in all phases of emergency management.

Educational Competency 5

Health and Safety functions

Describe the principles of and demonstrate the ability to fulfil health and safety functions.

A critical component to emergency response is the ability to protect oneself during a disaster, which will have a flow on affect to colleagues, animals and the general public.

ALO 5.1 Health and Safety

Perform basic human first aid.

ALO 5.2 Psychological first aid

Understand the principles of psychological first aid, identify indicators in self, colleagues and the general public and act on them.

ALO 5.3 Compassion Fatigue

Understand the principles of compassion fatigue, identify indicators in self and colleagues and act on them.

ALO 5.4 Personal protective equipment

Describe the principles of and demonstrate the ability to select appropriate personal protective equipment.

Educational Competency 6

Co-ordinated Incident Management System (CIMS)

Explain and apply the principles of the Co-ordinated Incident Management System (CIMS)

Effective emergency response requires the implementation of a set of management rules that is used amongst response agencies. CIMS will be activated during a disaster response and the lead agency takes command, therefore all AWEM personnel must understand this system and what their role is during its activation.

ALO 6.1 CIMS

Explain and apply the concept of CIMS, it's functional capacity in AWEM and your role in it.

Educational Competency 7

Communication

Identify and perform effective communications through all phases of emergency management.

Communication is a vital element to a successful emergency response. During an emergency normal forms of communication are likely to be impeded, therefore an understanding of alternative methods is required. AWEM personnel need to understand that poor communication through the response and recovery phases are likely to be detrimental to the delivery of AWEM response.

ALO 7.1 Communication

Describe the principles and importance of effective communications during disaster response.

ALO 7.2 Communication Technologies

Identify communication and location technologies that will assist with effective communication through all phases of emergency management

ALO 7.3 Report Writing

Explain and apply the principles of accurate report writing through all phases of emergency management

ALO 7.4 Media Management

Explain the importance of affective media management through all phases of emergency management

Educational Competency 8

<u>Problem solving</u>

Explain the importance of problem solving skills in AWEM during all phases of emergency management.

It is imperative for the welfare of animals that all personnel involved in AWEM have the ability to solve the problems with which they are faced, in a logical fashion. Understanding the process of problem solving, gives all groups the ability to participate in problem solving at a high level of cognation. Where animal welfare is adversity, personnel must have the ability to react appropriately.

ALO 8.1 Problem Solving

Illustrate and employ problem solving skills pertaining to animal welfare emergency management

The eight draft core educational competencies and their assessable learning outcomes were developed into an online survey. The competencies were evaluated by the expert panel.

5.2 Analysis of data generated by subject expert panellists

Once the online survey was available, the panellists were notified and invited to comment on each core competency and its assessable learning outcome. The panel's opinion in form of comments and scores ranging from one (strongly agree) to five (strongly disagree) were complied. Panellists were asked to comment on the clarity, appropriateness and relative importance or each competency and assessable learning outcome. Table 5.1 summarises the results from the panel

Table 5.1 Summary of subject expert panellists comment on competencies and assessable learning outcomes.

Competency and assessable learning outcome	Clarity	Appropriateness	Relative Importance	Total
Competency one Emergency Management	1.2	1.3	1.3	1.2
ALO 1.1	1.9	1.4	1.2	1.5
ALO 1.2	2.0	1.8	1.8	1.86
ALO 1.3	2.2	2.0	2.0	2.06
ALO 1.4	1.8	1.8	1.7	1.76
Competency two AWEM	1.8	1.5	1.7	1.66
ALO 2.1	1.4	1.4	1.4	1.4
ALO 2.2	1.5	1.5	1.5	1.5
ALO 2.3	1.6	1.6	1.5	1.56
ALO 2.4	1.6	1.5	1.5	1.53
ALO 2.5	1.6	1.5	1.6	1.56
ALO 2.6	1.5	1.5	1.5	1.5
ALO 2.7	1.5	1.5	1.5	1.5
ALO 2.8	1.5	1.4	1.4	1.43
ALO 2.9	1.7	1.5	1.6	1.6
ALO 2.10	1.6	1.5	1.5	1.53
ALO 2.11	1.6	1.7	1.7	1.66
ALO 2.12	1.3	1.3	1.3	1.3
Competency three Behaviour	1.6	1.5	1.6	1.56
ALO 3.1	1.9	1.6	1.6	1.7
Competency four AWEM Roles	1.9	1.6	1.6	1.7
ALO 4.1	1.4	1.4	1.4	1.4
Competency five Safety	1.7	1.7	1.7	1.7
ALO 5.1	2	2.5	2.5	2.3
ALO 5.2	2.1	2.1	2.1	2.1
ALO 5.3	1.9	2	2	1.96
ALO 5.4	1.4	1.4	1.4	1.4
Competency six CIMS	1.3	1.4	1.4	1.36
ALO 6.1	1.6	1.5	1.5	1.53
Competency seven Communication	1.7	1.6	1.6	1.63
ALO 7.1	1.5	1.5	1.5	1.5
ALO 7.2	1.9	1.5	1.5	1.63
ALO 7.3	1.9	1.9	1.9	1.9
ALO 7.4	1.9	1.9	1.9	1.9
Competency eight Problem Solving	1.9	1.9	1.9	1.9
ALO 8.1	1.9	1.8	1.8	1.83

The average score given for the proposed competencies were (average1.6 (range 1.2-1.9)). For Clarity, (average 1.7 (range 1.3-2.2)). Appropriateness for the Define Target Audience, (average 1.5 (range 1.3-1.9)). Relative Importance, (Average 1.6 (range 1.2-2.5)).

The average scores for the ALO;s were (2.1 (range1.2 – 2.3)). Clarity (average 1.7, (range 1.2-2.1)). Appropriateness (average 1.64 (range from 1.3-2.5) and for Relative Importance (average 1.63 (range 1.2-2.5)).

The high correlations of agreement with the survey competencies were not surprising, since the competencies were developed using a systems approach.

The literature and resource review and the initial questionnaire highlighted eight essential educational domains that are required by all AWEM personnel. Comparison with the competencies that have previously been identified from other studies as being important for performing essential components of emergency management such as healthcare workers, veterinarians and emergency managers are similar. The questionnaire completed by the panellists allowed for the confirmation of the eight core competencies and their associated assessable learning outcomes. The competency domains, individual core competencies and their associated assessable learning outcomes that are required for AWEM personnel to perform, to fulfil or to demonstrate are summarised in Table 5.2

5.3 Discussion

A number of gaps within animal welfare emergency management literature have been identified. Core educational domains, competencies and some associated assessable learning outcomes have been referred to in various healthcare worker, veterinary, human medicine and emergency management studies. However, the identification and definition of the different groups of personnel has not occurred, nor has the identification of core educational domains, competencies and associated assessable learning outcomes for personnel involved in animal welfare emergency management have not been addressed.

5.3.1 Alignment of Core Competencies in Accordance with Bloom's Taxonomy
As identified throughout the two surveys, there is a need to further define the level of knowledge required for each core competency of the three broad, yet distinct, levels of responsibility carried by different ranks of AWEM personnel (cadet/student; practitioners and leaders), whilst also encompassing the three different roles within the AWEM personnel groups that have previously been defined in this thesis (Section 4.1).

The next step was to interrogate the assessable learning outcomes (ALOs) derived from the initial expert panel against their position in the hierarchy of Bloom's taxonomy (primarily in the cognitive domain, although some ALOs were more closely aligned with the psychomotor and affective domains), to produce an educational model that will allow AWEM personnel to

Table 5.2 Essential educational domains, core competencies and associated assessable learning outcomes for all personnel involved in animal welfare emergency management

Educational Domain	Core competencies	Assessable learning outcome
Emergency Management	*Understand the principles of the four phases of emergency management*	ALO 1.1 Reduction / Mitigation Apply and illustrate knowledge of all hazards approach, education and strategic partnership with reference to mitigation. ALO 1.2 Readiness / Planning Identify and implement the FIVE (5) basic components (plans, education, training, communication and public information) of readiness in relation to emergency management. ALO 1.3 Response Appraise and apply knowledge of FOUR (4) basic components (operating an emergency operations centre, assessment of damage and needs, coordination and information management) of response and understand what is involved in each component. ALO 1.4 Recovery Identify key components of recovery and recognize appropriate recovery activities that will lead to a more resilient community with reduced impact from disasters in the future.
Animal Welfare Emergency Management	*Apply knowledge of all components of Animal Welfare Emergency Management (AWEM) and explain how this can be integrated in emergency management welfare plans.*	ALO 2.1 Risks / Hazard Identification Identify risks and hazards and explain the associated effects on animals ALO 2.2 Planning Explain the key components of an animal welfare emergency management plan. ALO 2.3 Public Education Explain the principles of public education for AWEM and how they can be implemented. ALO 2.4 Training and Education Explain knowledge and technical skills required to participate in AWEM ALO 2.5 Animal Welfare Needs Explain the legislation pertaining to basic needs, husbandry, and hygiene requirements for animals

Competency	Description	Assessable Learning Outcomes (ALO)
		ALO 2.6 Illustrate knowledge of basic needs, husbandry, and hygiene requirements for animals
		ALO 2.7 Evacuation / Transportation Explain the principles of evacuation and transportation requirements for different species.
		ALO 2.8 Search and Rescue Explain the principles of search and rescue of animal and the associated risks.
		ALO 2.9 Decontamination Describe the principles of decontamination and explain when decontamination procedures are likely to be employed.
		ALO 2.10 Euthanasia Describe the legal, ethical and welfare considerations associated with euthanasia during and after a disaster.
		ALO 2.11 Disease Control Illustrate knowledge of disease control measures and the implications if this is not considered during a disaster.
		ALO 2.12 Veterinary Care Identify the importance of accessibility to veterinary care for animals during the response and recovery phases.
Animal Behaviour	*Understand animal behaviour and how this can be effected by disasters.*	ALO 3.1 Animal Behaviour Explain the importance of understanding the changes in animal behaviour during the response and recovery phases.
Roles in Animal Welfare Emergency Management	*Explain the concepts of and describe functional roles through all emergency management phase and the skills required by specific AWEM roles.*	ALO 4.1 AWEM role Demonstrate knowledge and skills needed to fulfil your AWEM role in all phases of emergency management.
Safety	*Describe the principles of and demonstrate the ability to fulfil health and safety functions.*	ALO 5.1 Health and Safety Perform basic human first aid. ALO 5.2 Psychological first aid Understand the principles of psychological first aid, identify indicators in self, colleagues and the general public and act on them. ALO 5.3 Compassion Fatigue

		Understand the principles of compassion fatigue, identify indicators in self and colleagues and act on them. ALO 5.4 Personal protective equipment Describe the principles of and demonstrate the ability to select appropriate personal protective equipment.
Coordinated Incident Management System (CIMS)	*Explain and apply the principles of the Co-ordinated Incident Management System (CIMS)*	ALO 6.1 CIMS Explain and apply the concept of CIMS, it functional capacity in AWEM and your role in it.
Communication	*Identify and perform effective communications through all phases of emergency management*	ALO 7.1 Communication Describe the principles and importance of effective communications during disaster response. ALO 7.2 Communication Technologies Identify communication and location technologies that will assist with effective communication through all phases of emergency management ALO 7.3 Report Writing Explain and apply the principles of accurate report writing through all phases of emergency management ALO 7.4 Media Management Explain the importance of affective media management through all phases of emergency management
Problem solving	*Explain the importance of problem solving skills in AWEM during all phases of emergency management.*	ALO 8.1 Problem Solving Illustrate and employ problem solving skills pertaining to animal welfare emergency management

demonstrate competency according to their rank and role in the management of a disaster. The outcome of this process is presented as proposed core and group-specific competencies for AWEM personnel in Table 5.3. This process will enable AWEM personnel to achieve the highest appropriate level of proficiency within each competency (Subbarao, *et al* 2008).

Personnel would be expected to perform at different levels of proficiency depending on their experience, role, level of education or job function across the core competencies. This framework allows for all the AWEM personnel to be represented in each category, and recognises the diversity of expected functions, level of knowledge and educational requirements for each AWEM person involved in AWEM.

5.3.2 Alignment of competencies with role in AWEM

The AWEM personnel roles introduce increasing requirements for attainments in each core competency. AWEM personnel can demonstrate proficiency in each category, based on their educational needs, experience, professional role, and job function in AWEM. The personnel categories('ranks') have been adapted from Subbarao *et al* (2008), for AWEM personnel:

- *Cadet/student*: these are people who require awareness and understanding of particular aspects of AWEM. These people should be able to describe core concepts or skills but may have limited ability, due to current skill set, or need to apply this knowledge.

- *Practitioner*: these are personnel who are required to apply AWEM knowledge, skills and values in all phases of AWEM. Within this category, distinct educational and training tracks could be defined and developed to meet recommended or required proficiency standards (e.g. basic, intermediate, advanced).

- *Leader*: These are personnel in senior roles such as supervisors, AWEM co-ordinators, with administrative, decision-making responsibilities, leadership functions, and policymaking roles in AWEM. Within this category, distinct educational tracks could be defined and developed to meet various leadership roles and functions in a disaster (i.e. incident command leaders).

Subbarao, *et al*. (2008) have identified that healthcare workers involved in disasters come from multiple disciplines with varying levels of knowledge and different levels of involvement in a disaster, and that their roles could change during any phase of the disaster. By analogy, the same is likely to occur with AWEM personnel. This has highlighted a need for further development of the ALOs to provide a learning matrix that can be customised for any target audience. With this matrix, AWEM education and training programmes can be developed to incorporate the competencies at the desired proficiency levels, as described in Table 5.3.

The process of development of a new educational framework for AWEM was based on a systematic consensus building process to identify core educational domains and competencies with associated learning outcomes. This was further refined into specific learning outcomes that are relevant to the roles of AWEM personnel within a disaster. The competencies and their associated learning outcomes can be applied to a wide range of AWEM personnel who are expected to perform at different levels, according to experience, role, level of education or job function (Subbarao *et al* 2008). This approach can lead to the standardisation of AWEM education and training programmes. It also facilitates a reflective process by which AWEM personnel to identify the limits to their knowledge, skills and authority in a disaster. Moreover, it allows for the accumulation of knowledge as well as helping to define a progression pathway between levels and roles. If all personnel involved in AWEM understand the knowledge and skill requirements and expectations of each other category of personnel, this will allow for effective teamwork and cohesion through all phases of emergency management.

The development of competencies and any curricula is a continuous process of review, critical analysis and refinement (Toohey, 1999). Hence, the educational framework, competencies and associated learning outcomes proposed in Table 5.3 still require validation. The development of the ALOs between those initially distilled from the Expert Panel and presented in Section 5.1, and those present in Table 5.3, is the first iteration of this process.

Table 5.3 Proposed core and role-specific competencies for AWEM personnel.

Educational Domain	Generic ALO	Role-specific learning outcomes		
		Cadet / Student	Practitioner	Leader
Emergency Management **Core competency** Understand the principles of the four phases of emergency management	*Reduction / Mitigation* ALO 1.1 Apply and illustrate knowledge of an all hazards approach, education and strategic partnership with reference to mitigation	Describe the all-hazards approach, education and strategic partnership with reference to mitigation	Conduct hazard vulnerability assessments for your work place, home and community and note mitigation activities	Create, evaluate, and revise policies for meeting the needs of the population in regional, community and institutional environments and mitigating risk
	Readiness/planning ALO 1.2 Identify and implement the five basic components (plans, education, training, communication and public information) of readiness in relation to emergency management	Explain key components of regional community, institutional and person/family emergency plans	Summarise regional, community, office, institutional, and personal/family emergency plans	Participate in the design, implementation, and evaluation of regional community and institutional emergency plans
	Response ALO 1.3 Appraise and apply knowledge of four basic components (operating an EOC, assessment of damage and needs, coordination and information management) of response and understand what is involved in each component	Describe solutions for ensuring the continual ability to fulfilling animal welfare needs during a disaster	Describe the community and institutional protocols and procedures for the evacuation and transportation of people and their animals before, during and after a disaster	Develop, evaluated and revise policies, plans and procedures for the continuous evaluation of regional, community, institutional response efforts and implement the necessary actions to enhance AWEM preparedness, response for future disasters
	Recovery ALO 1.4 Identify key components of recovery and recognise appropriate recovery activities that will lead to a more resilient	Describe short- and long-term needs for consideration of animal welfare of all animals and their owners affected by a disaster	Describe solutions for ensuring recovery of the community to meet the needs of all animals and their owners.	Develop, evaluated and revise policies, plans and procedures for the continuous evaluation of regional, community, institutional recovery efforts and

Animal Welfare Emergency Management	*community with reduced impact form disasters in the future*			implement the necessary actions to enhance AWEM preparedness, response for future disasters
	Risk /Hazard Identification ALO2.1 Identify risks and hazards and explain the associated effects on animals.	Identify risks and hazards and the animals and owners whom may be more vulnerable if a disaster should occur	Conduct hazard, risk and vulnerability assessment for your community.	Develop a hazard report for animals within your regional, community and institutional environments and evaluate and revise policies and procedures on mitigating risk for animals
	Planning ALO 2.2 Explain key concepts of an AWEM plan	Explain key components of regional community, institutional and person/family animal welfare emergency plans	Summarise regional, community, office, institutional, and personal/family animal welfare emergency plans	Develop, evaluate and revise policies and plans for animal welfare needs through all phases of AWEM
Core Competency	*Public Education* ALO 2.3 Explain the principles of public education for AWEM and how they can be implemented	Describe public education interventions appropriate for all ages, populations and communities in relation to AWEM for all animals	Apply knowledge and skills for public education and deliver material appropriate for all ages, populations and communities in relation to AWEM for all animals	Develop, evaluate and revise public education material appropriated for all ages, populations and communities in relation to AWEM for all animals
	Training & Education ALO 2.4 Explain knowledge and skills required to participate in AWEM	Describe the knowledge and skills required to participate in your role in AWEM	Summarise the knowledge and skills required for personnel within your AWEM personnel group (policy, shelter or rescue)	Develop, evaluate, revise and reflect on policies and standards on training and education requirements for personnel involved in AWEM
Apply knowledge of all components of AWEM and explain how this can be integrated in emergency management plans	*Animal Welfare Needs* ALO 2.5 Explain the legislations pertaining to the basic needs, husbandry and hygiene requirements for animals	Describe ethical and legal issues relevant to Animal welfare	Apply ethical and legal principles and policies to address animal welfare needs in a disaster.	Develop, evaluate and revise legal principles, policies and practices and codes to address animal welfare needs in all phases of a disaster
	ALO2.6 Illustrate knowledge of basic needs, husbandry and hygiene requirements for animals	Describe the basic needs, husbandry and hygiene requirements relevant to animals	Apply principles and policies to address the basic needs, husbandry and hygiene requirements relevant to animals in a disaster.	Develop, evaluate and revise policies and practices and codes to address basic animal needs, husbandry and hygiene, requirements in all phases of a disaster
	Evacuation / Transportation ALO 2.7 Explain the principles of evacuation and transportation	Describe the community and institutional protocols and procedures for the evacuation and transportation of all animals and their owners before, during and	Apply the evacuation and transportation policies and plans for all animals and their owners during a disaster	Develop, evaluated and revise policies, plans and procedures for the continuous evaluation of regional, community, institutional

requirements for different species	after a disaster		evacuation and transportation arrangements of all animals and their owners and implement the necessary actions to enhance AWEM evacuation and transportation for future disasters
Search and Rescue ALO 2.8 *Explain the principles of search and rescue of animals and the associated risks*	Describe the principles of animal search and rescue and the associated risks	Explain and apply the principles of animal search and rescue and explain the associated risks	Develop, evaluate and revise policies, protocols and procedures in relation to animal search and rescue under crisis conditions with limited situational awareness or resources
Decontamination ALO 2.9 *Describe the principles of decontamination and explain when decontamination procedures are likely to be employed*	Explain the purpose of animal and human decontamination in a disaster	Decontaminate animals and humans during a disaster at decontamination facilities	Develop, evaluate and revise decontamination policies, protocols and procedures that may be implemented during a disaster
Euthanasia ALO 2.10 *Describe the legal, ethical and welfare consideration associated with euthanasia during and after a disaster*	Describe legal, ethical and welfare considerations associated with euthanasia during and after a disaster	Explain the legal, ethical and welfare implications associated with euthanasia of animals during and after a disaster	Develop, evaluate and revise euthanasia policies, protocols and procedures that may be implemented during a disaster
Disease Control ALO 2.11 *illustrate knowledge of disease control measures and the implications if this is not considered before and during a disaster*	Describe animal disease control measures required before and during a disaster	Explain the implications and specialised control measure required for the management of animal disease control and apply disease control protocols	Develop, evaluate and revise policies, protocols and procedures for the management of disease control and animal remains during and after a disaster
Veterinary Care ALO 2.12 *identify the importance of accessibility to veterinary care for animals during the response and recovery phases*	Describe possible veterinary care requirements of animals during all phases of a disaster	Explain the importance of accessibility to veterinary care for animals during all phases of a disaster	Develop, evaluate and revise policies, protocols, procedures and memorandum of understanding in relation to veterinary care for animals during all phases of a disaster

Competency	ALO			
Animal Behaviour **Competency** Understand animal behaviour and how this can be effected by disasters	*Animal Behaviour* *ALO 3.1 Explain the importance of understanding the changes in animal behaviour during the response and recovery phases*	Describe the possible changes in animal behaviour during the response and recovery phases	Demonstrate the ability to apply and adapt capture, restrain and housing knowledge and skills for the anticipated changes in animal behaviour during the response and recovery phases	Develop, evaluate and revise policies, protocols and procedures for the management of changes in animal behaviour
Roles in AWEM **Competency** Explain the concepts of and describe functional roles through all emergency management phases and the skills required by specific AWEM roles	*Roles in AWEM* *ALO 4.1 Demonstrate knowledge and skills needed to fulfil your AWEM role in all phases of emergency management*	Describe the knowledge and skills needed to fulfil your role in AWEM through all phases of emergency management	Demonstrate an ability to apply and adapt knowledge and skills required to fulfil your roles in AWEM in all phases of emergency management	Develop, evaluate and revise policies, protocols, procedures, credentials and position descriptions of AWEM personnel roles in all phases of emergency management
Safety **Competency** Describe the principles of and demonstrate the ability to fulfil health and safety functions	*Health & Safety* *ALO 5.1 Perform basic first aid*	Describe the components of basic first aid	Apply knowledge and skills in basic human first aid	Develop, evaluate and revise first aid policies and protocols and perform advance human first aid
	Psychological first aid *ALO 5.2 Understand the principles of psychological first aid, identify indicators in self, colleagues and the general public and act on them.*	Describe psychological first aid and identify the signs associated with it	Explain the implications of psychological first aid on a person's ability to cope with the situation and describe and identify the signs associated with it	Develop, evaluate and revise psychological first aid policies, procedures and protocols
	Compassion Fatigue *ALO 5.3 Understand the principles of compassion fatigue, identify indicators*	Describe compassion fatigue and identify the signs associated with it	Explain the implications of compassion fatigue on a persons ability to cope with the situation and describe and identify the signs	Develop, evaluate and revise compassion fatigue policies, procedures and protocols

Competency	ALO	Describe level	Demonstrate/Use level	Evaluate/Modify level
	in self, colleagues and act on them *Personal protective equipment* *ALO 5.4 Describe the principles of and demonstrate the ability to select appropriate personal protective equipment*	Describe the rationale, function and limitations of personal protective equipment that may be used in a disaster	associated with it Demonstrate the ability to select, locate, don and work in personal protective equipment according to the degree and type of protection required in particular situations	Develop, evaluate and revise policies, protocols and procedures for the use of all levels of personal protective equipment that may be used in a disaster
Coordinated Incident Management System **Competency** Explain and apply the principles of CIMS	*CIMS* *6.1 Explain and apply the concept of CIMS, it functional capacity in AWEM and your role in it*	Describe the purpose and relevance of CIMS to AWEM and your role in it	Demonstrate the ability to collaborate with relevant agencies and stakeholders to ensure efficient coordination of AWEM response	Devise, evaluate and modify, regional, community or institutional CIMS operations to unsure a unified command and scalable response to a disease
Communication **Competency** Identify and perform effective communications through all phase of emergency management	*Communication* *ALO 7.1 describe the principles and importance of effective communication during a disaster response*	Describe strategies for and barriers to effective communication during a disaster	Use emergency communication systems during a response to report AWEM information to the appropriate agencies and stakeholders	Evaluate and modify risk communication to ensure that all required AWEM actions are taken, are articulated clearly and appropriately in a disaster
	Communication techs *ALO 7.2 identify communication and location technologies that will assist with effective communication through all phases of emergency management*	Describe emergency communication and location technologies required in all phases of emergency management	Use emergency communication and location technologies during a response to report AWEM information to the appropriate agencies and stake holders	Evaluate and modify risk communication to ensure that all required AWEM actions are taken, are articulated clearly and appropriately in a disaster
	Report Writing *ALO 7.3 Explain and apply the principles of accurate report writing through all phases of emergency managment7.*	Describe emergency reporting systems and procedures through all phases of emergency management	Report timely and accurate information for all components of AWEM through all phases of emergency management	Evaluate and modify emergency reporting systems to ensure that all required AWEM actions are taken, are articulated clearly and appropriately in a disaster

Problem Solving	Problem Solving	
Competency	*ALO8.Illustrate and employ problem solving skills pertaining to animal welfare emergency management*	
Explain the importance of problem solving skills in AWEM during all phases of emergency management		Demonstrate creative and flexible decision making in various contingency situations, under crisis conditions with limited situational awareness

5.4   Overview

This chapter has presented and discussed eight comprehensive educational core competencies for all personnel involved in animal welfare emergency management along with their associated assessable learning outcomes.

This chapter concludes that competencies required by AWEM personnel are varied because of the diverse nature of the three groups involved. The level of cognitive knowledge is also varied because of the diverse roles within each group. The type of disaster, area that is affected and the people and animals in that community will lead to changes in the competencies required in that particular disaster. If changes in legislation with reference to the mandatory inclusion of animals in emergency management plans occur, changes of some of the roles and tasks performed by personnel may occur, and consequently changes in the competences required. With the advancement of technology and the continual urbanisation of communities, competencies will have to evolve with these changes. Climate change has been attributed to the increase in the number and intensity of disasters occurring worldwide and this is not going to change. The development of educational curriculum is an ever evolving process and reflection of the relevance of current competencies should occur with a technologically advancing community.

In summary, the eight core educational domains, core competencies and associated assessable learning outcomes identified for all personnel involved in animal welfare emergency management in this study could be used as a foundation for the development of educational and training programmes for animal welfare emergency management in the future. In addition, the eight competencies and their associated learning outcomes established in this study can be used for future studies to assess the required competences for the three groups (policy/planning, shelter and rescue) from different levels from different disciplines.

Chapter Six

Conclusion and Recommendations

6.0 Overview

This study was based on gaps that were identified in Animal Welfare Emergency Management educational needs, the increasing interest in animal welfare in disasters from the emergency management sector, along with the expressed need from literature and collegial request for the development of evidence-based core competences in this field.

The research question for this study was:

"What are the educational and technical requirements for all personnel involved in animal welfare emergency management in New Zealand"

The participants in the study were experts across a wide range of disciplines that are involved in responses to and management of emergencies: veterinarians, responders, international government agencies responsible for planning and policy in relation to animal welfare during disasters, and academics involved in animal welfare emergency management.

6.1 Core Educational Domains for Animal Welfare Emergency Management

The underlying theme of this study has been the realisation that there is a gap in the understanding of educational competencies for personnel involved in AWEM. Eight core educational domains were identified from the data and, from these, educational competencies were developed and assessable learning outcomes proposed. Together, the eight domains make up a comprehensive foundation for future education and training in AWEM that would be appropriate to all phases of the management of an emergency. Metaphorically, each domain could be likened to an essential component of an animal, without all components the animal cannot sustain life. All AWEM educational domains should be included in training and educational programmes, along with the core competencies, to increase the success of animal welfare emergency management.

Each domain indicates a relevant topic in AWEM education:

1. *Coordinated Incident Management System (CIMS)* - this domain encompasses a system
    that is to be used for managing the response to an emergency that involves multiple
    agencies.

    CIMS is used by the emergency services and other agencies as a basis for operational
    response for disasters that affect humans. The most important aspect of CIMS is its role
    in co-ordination that brings together agencies to ensure consistent and effective response
    and recovery efforts. CIMS is about teamwork in emergency management through
    sharing common terminology, using a modular organizational structure, integrating
    communications and common incident action plans, whilst ensuring manageable spans of
    control, and sharing resources.
    Co-ordination is based on four core elements –
    > (a) control;
    > (b) planning and intelligence;
    > (c) operations; and
    > (d) logistics

    In New Zealand, it is a requirement to use CIMS in a disaster. It allows resources to be
    managed in support of the incident management activities (Swenson, 2009) and draws
    multiple agencies together that do not routinely work together (Madigan & Dacre, 2009). It
    is a first responder template, the first responder is the commander of the scene until such
    times the 'incident' is resolved or a more experience commander arrives on scene.
    AWEM personnel could be the first responders, hence, it is important for AWEM
    personnel to recognised the need for identification of and advanced planning for their role
    in CIMS (Wenzel, 2007), to know their operational objectives (Swenson, 2009) and be
    efficiently integrated into the response efforts.

1. *Animal Welfare Emergency Management (AWEM)* – this domain encompasses
    comprehensive aspects that need to be considered for the welfare of animals through all
    phases of emergency management. Eleven core elements were identified within this
    domain:

- Risk / Hazard identification

- Planning

- Public education

- Training and education

- Animal welfare needs

- Evacuation and transportation

- Search and rescue

- Decontamination

- Euthanasia

- Disease control

- Veterinary Care.

Until now, the notion of comprehensive animal welfare emergency management through all phases of emergency management has not been explored or developed. Previous studies have omitted the mitigation/reduction and recovery phases of emergency management. This omission leaves gaps in considerations of animal welfare during disasters.

Steps can be taken to reduce the impact of disasters on animals, for example, by instituting vaccination programmes against water-borne diseases, such as leptospirosis, to reduce the likelihood of contracting infectious diseases that are usually endemic during disasters (Madigan & Dacre, 2009). AWEM personnel should advocate mitigation activities amongst animal owners such as developing emergency management plans that includes their animals for sheltering on-site, evacuation plan and making a disaster kit (Engelke, 2009). Mitigating risk increases the resilience of a community.

The recovery phase includes post-disaster activities that aim to restore the affected community to as-close-to normal living conditions (Engelke, 2009; Madigan & Dacre, 2009). Such activities include the restoration of food and water supplies, replacement of fences and buildings (i.e. hatching sheds, stables) to allow for containment of animals, relocation of people and animals' to safe environments until such time their community is deemed safe and being aware of the psychological disorders that can occur in humans and animals post disaster. The consideration of all elements is important to fulfil a comprehensive structure to AWEM.

2. *Roles in AWEM* – this domain encompasses the grouping of personnel involved in AWEM into three separate groups (1) policy / planning, (2) shelter and (3) rescue. Acknowledging that each group plays an essential role in AWEM, and that the role of each group is inextricably intertwined with those of the other two groups, is imperative to ensuring that AWEM is functional and effective. Each group must understand what its role is in AWEM, understand its own limitations, be aware that each group does not work in isolation, and understand how the abilities of the other groups complements its own.

3. *Emergency Management* – this domain encompasses the four phases of emergency management: mitigation/reduction, readiness/planning, response and recovery. An understanding of what needs to happen during each phase is core to all AWEM functions. Understanding how legislation affects the operation of AWEM personnel during each of the four phases is also imperative:- the rights, responsibilities and remedies are vested in AWEM personnel during an emergency are critical to their ability to operate effectively.

4. *Behaviour* – this domain encompasses the importance of understanding "normal" animal behaviour in the normal environment for that particular species, and what their reactions are likely to be they are faced with environment with which they are not used. Understanding behaviour is the cornerstone to moving, capturing and handling different species safely and effectively (Palmer, 2009). There is a considerable repertoire of behaviour that animals' might show during a disaster (i.e. the fight/flight response). An example of another behaviour response can be defined by the human-animal bond; when an animal stays with their injured or deceased owner to protect them. Operations can be planned and executed based on how animals are likely to react (Palmer, 2009); hence an understanding of the possible behaviours of animals during a disaster will be important for AWEM personnel. The three personnel groups should have a basic understanding of this concept as it can assist with the welfare needs of animals through all phases of emergency management. This domain has not been explored in previous studies.

5. *Safety* - this domain encompasses the health and safety issues surrounding AWEM, which may include physical and psychological issues. In some cases the health and safety issues can be specific to AWEM such as bites from animals and trample injuries. Personnel must be aware of the risks associated with emergency management and need

to understand that their personal safety, along with their colleagues, needs to be appropriately safeguarded during the response to an emergency. If they put themselves in positions for which they have not considered the risks involved, personnel can put their own lives and the lives of others (human and animal) at risk. This is counterproductive to the purpose of AWEM, as it would reduce the impact of the emergency response on human and animal welfare. Personnel need to be aware of their limitations and have an understanding of their personal protective equipment requirements specific to the emergency is important to reduce risk of harm.

6. *Communication* – this domain encompasses all forms of communication, including verbal, written, signal and technological. During an emergency, normal forms of communication are likely to be affected, therefore an ability to communicate by alternative methods is required. Such communication might be in the form of radio and satellite communication, signals and written communication. All groups of personnel need to ensure that effective, accurate and reliant information is being communicated. All personnel should know how to write a report of events, as analysis of the information could be required at any stages of the event. Lessons can be learnt from every event. Such information is often invaluable during the debriefing process and future research.

7. *Problem solving* - this domain encompasses the ability of AWEM personnel to participate in problem solving at a high level of cognition. It is imperative for people involved, to have the ability to solve the problems with which they are faced, in a logical fashion. Limited number of personnel, in particular responders, generally means that supervision may not be possible. In this instance personnel need to be suitability educated and trained to make informed decisions. Different positions within the three groups of personnel are required to use different levels of, and different technologies to perform problem-solving through all phases of emergency management. AWEM co-ordinators working at a government level (policy and planning) can use geospatial information, which is critical to effective and collaborative decision-making during emergency management situations (Rauscher *et al*, 2002). It is a system which can hazard map and assist with visualisation of the disaster and improve situational awareness. Problem-solving at this level has high stakes involved, although the same could be argued for AWEM personnel working in a leadership role within AWEM shelter and rescue roles. Problem solving usually occurs in stressful situations, with information ambiguity and overload with a significant level of

uncertainty (Schaafstal *et al.*, 2001). Therefore, non-routine problem solving of a knowledge base is required.

6.2 Recommendations

Throughout this study, many gaps within Animal Welfare Emergency Management education have been identified. The following recommendations are made to help develop the ability of New Zealand to deal with animals and their welfare during a disaster.

1.   Before legislation changes can occur the government needs to acknowledge the importance of having a policy, capability, strategy and action plan to manage animals in disasters. Once this has occurred, legislative changes could reflect the implementation of the Pet Evacuation and Transportation Standards Act 2006 in the USA. In the USA it is now mandatory that emergency management plans include arrangement for pets and service animals. This need has been highlighted recently in disasters that have occurred in both Australia and New Zealand.

2.   The three groups of personnel involved in AWEM defined by this study, need to be accepted and acknowledged by all government and non-government agencies who manage disasters as being integral to the overall success of disaster management.

3.   The educational core competencies that have derived from this study need to be regarded as minimum competencies for all personnel (policy, shelter and rescue) involved in animal welfare emergency management. AWEM personnel should demonstrate proficiency in each core competency at a level that is based on the AWEM category. The competencies should form the foundation for the development of educational and technical programmes for animal welfare emergency management personnel.

4.   AWEM education should cover companion animals, livestock, equidae (horses and donkeys), birds and small mammals. Education about horses and dogs should include those animals which are kept both as working or companion animals. Education about livestock should include animals which are kept on farms (including intensive units such as pig and poultry farms) and those which are kept on lifestyle properties. Laboratory

animals, which are commonly ignored in AWEM considerations, should not be overlooked.

5.   AWEM education and training should be offered via blended-learning environments, through different modalities. An AWEM awareness programme could be developed and offered by the Ministry of Civil Defence and Emergency Management via an online learning short course, much like those provided by the Federal Emergency Management Agency (FEMA) in the USA. The completion of this programme should be mandatory for all emergency managers and territorial authorities within the Civil Defence and Emergency Management roles. Other delivery educational opportunities for AWEM might be in the form of short courses, presentations at conferences, seminars and workshops. AWEM training and education needs to be tailored to the needs of the specific roles within emergency management from basic awareness through to specialist roles such as animal rescue.

6.   Animal emergency response teams should be accredited by the lead agency and/or NAWEM. This accreditation should be recognized by CDEM as a response team.

7.   Veterinarians and veterinary paraprofessionals play a pivotal role in educating the public in relation to AWEM, particularly in the areas of reduction (mitigation) and readiness (planning). This can be achieved by advocating pet owners develop emergency plans which include: their animals, shelter-in-place, evacuation plans and disaster kits. Therefore basic AWEM principles should be included in veterinary science and veterinary paraprofessional programmes in New Zealand.

8.   Public education campaigns on AWEM should be run through the media, in 'get-ready-get-through' campaigns, as well as in schools.

9.   The CDEM and emergency management sectors should understand that AWEM is a specialised role and specific knowledge and skills are required to fulfil these roles. It is incorrect to assume that animal control and animal welfare officers, veterinarians or veterinary paraprofessionals have the knowledge and/or skills to fulfil this role without education or training in this area.

10. Regions throughout New Zealand should set up specialised Animal Emergency Response Teams. Such an initiative should be guided by the Civil Defence and Emergency Management Sector.

11. Urban Search and Rescue (USAR) Taskforce Teams should have accredited AWEM rescue personnel attached to their teams to give teams the capability to rescue animals whilst they search for humans. Therefore, USAR teams should participate in AWEM education and training.

12. Further research is required in the Animal Welfare Emergency Management field to contribute to the limited literature available.

6.3 Concluding comments

The Ministry of Civil Defence and Emergency Management aims to put the right tools, knowledge and skills in the hands of those who will be responsible for designing and implementing emergency management solutions at the local level (MCDEM, 2010). The National Animal Welfare Emergency Management Liaison Group highlighted a gap within MCDEM's aims in regard to animal welfare during disasters, and that indicated research was required in this area. This study sought to define what is meant by animal welfare emergency management, define the different groups of personnel who are involved in AWEM and explore the educational and technical requirements that are required by personnel involved in AWEM.

This study has developed eight comprehensive evidence-based AWEM educational competencies for three groups of personnel involved in AWEM with assessable learning objectives. The competencies should be used as a foundation for the development of AWEM programmes. The study has added to the limited body of knowledge concerned with animal welfare during disasters. Public and government awareness of AWEM is paramount to the successful inclusion of animal welfare in regional and local welfare plans.

Animal welfare should be included in welfare, evacuation and transportation plans. Therefore we need suitably trained personnel with the knowledge and skills to deliver animal welfare emergency management.

"When the herds are dead, the end of human beings is not far behind"

African Proverb

References

Ablah, E., Benson, L.N., Tinius, A.M., & Gebbie, K.M., (2009) Assessment of Emergency Preparedness of Veterinarians in New York, Journal of Veterinary Medical Education, 36(1) 122-127

Alexander, A., (2003), Towards the development of standards in emergency management training and education, Disaster Prevention and Management 12(2), 113-123

American Veterinary Medical Association (2009), Emergency Preparedness and Response Guide, http://www.avma.org/disaster/emerg_prep_resp_guide.pdf accessed 17 November 2009

Anderson, A., & Anderson L., (2006) *Rescued: Saving animals from disaster*. California: New World Library

Angus L. (2005), Theme 5: Preparedness for effective response - Integrated Disaster Risk Management, Preparedness and Response Capability Development. In: 'World Conference on Disaster Reduction'. Kobe, Japan

Anon (2010), Earthquakes don't kill people, buildings do, The Infrastructurist, America Under Construction' 20th January 2010, http://www.infrastructurist.com/2010/01/20/earthquakes-dont-kill-peoplebad-buildings-do-more-on-haitis-building-codes/ accessed 30th December 2010

Appleby M.C., & Stokes T., (2008), Why Should We Care About Nonhuman Animals During Times of Crisis?, *Journal of Applied Animal Welfare Science*, 11(2), 90-97

Association of American Medical Colleges (2003), Training Future Physicians About Weapons of Mass Destruction: Report of the Expert Panel on Bioterrorism Education for Medical Students. Washington DC

Australian Institute of Animal Management, (2009), Urban animal management in disaster planning, Position Paper on Disaster Planning

Baker, B.M, & Havice-Cover, P.J., (2009) Chapter 4.1: Care for the Caregiver: Psychological and emotional factors in veterinary disaster response, In Veterinary Disaster Response, Wiley-Blackwell, Iowa, USA

Barnett R., (1994) The Limits of Competence: Knowledge, Higher Education & Society, Open University Press, Bristol, PA

Beaver, B.V., Gros, R., Bailey, E.M., & Lovern C.S., (2006), Disaster Medicine: Report of the 2006 National Animal Disaster Summit, *Journal of American Veterinary Medical Association*, 229(6), 943 – 948

Bevin, S., (2007). Economic impact of the 2007 East Coast drought on the sheep and beef sector. A report for the Ministry of Agriculture and Forestry: www.maf.govt.nz accessed 13 December 2009

Blaikie, N.W.H., (2000) Designing social research: the logic of anticipation, Blackwell Publishing, Oxford, UK

Blanchard, W., (2005) Top Ten Competencies for Professional Emergency Management, FEMA Emergency Management Higher Education Project, http://training.fema.gov/EMIWeb/edu/docs/Blanchard%20-%20Competencies%20EM%20HiEd.doc accessed 23 November 2010

Boon, K., (1995) The Abbotsford landslide, Wellington : Kotuku Pub

California Veterinary Medical Association, (1993), Disaster Resource Guide, Sacramento CA, http://www.cdsscounties.ca.gov/coplanners/res/pdf/doc25.pdf accessed 16 March 2010

Casey, J.C., (2009) Chapter 3.1: Family versus business during a disaster in "Veterinary Disaster Response", Wiley-Blackwell, Iowa, USA

Churches A., (2009) Bloom's Digital Taxonomy, http://edorigami.wikispaces.com/file/view/bloom%27s+Digital+taxonomy+v3.01.pdf assessed 20 Jan 2011

Cohen, L., Manion, L. and Morrison, K. (2000), The nature of Inquiry. Research Methods in Education (5th Edition) (pp 3-45). New York; RoutledgeFalmer

David, M., & Sutton, C.D., (2004), Social Research: the basics, SAGE publications, London

Davis, L.L., (1992) Instrument Review: Getting the Most From a Panel of Experts, *Applied Nursing Research* 5(4), 194-197

Davis, M.H., & Harden, R.M., (2003) Planning and Implementing an undergraduate medical curriculum – Lessons Learned, *Medical Teacher*, 25(6), 596-608

de Vaus, D.A., (2002), Survey's in Social Research, Allen & Unwin, Crows Nest, NSW,

Denzin, N.K., and Lincoln, Y.S., (Eds.) (1998), Grounded Theory Methodology: An Overview. Strategies of Qualitative Inquiry (pp 158-183). Thousand Oaks, California; Sage Publications.

Drahek T.E., & Hoetmer, G.J (eds), (1991) Emergency Management: Principles and Practice for local government, International City Management Association, Washington DC,

Dunning, D., Martin. M., Tickel, J., Gentry, W., Cowen, P., & Slenning, B., (2009), Preparedness and Disaster Response Training For Veterinary Students: Literature Review and Description of the North Carolina State University Credentialed Veterinary Responder Programe, *Journal of Veterinary Medical Education*, 36(3), 317 -330

Engelke H.T., (2009), Emergency Management During Disasters for Small Animal Practitioners, *Vet Clin Smal Anim*, 39, 347-358

Federal Emergency Management Agency (2007), Animal Emergency Response (AER) Positions Credentials
http://www.fema.gov/library/file?type=publishedFile&file=aer_credentials_for_nic_oct07_2_.pdf&fileid=0396d660-8337-11dc-9b37-000bdba87d5b accessed 23 February 2010

Federal Emergency Management Agency (2009), NIMS Resource Centre: Resource Management http://www.fema.gov/emerency/nims/ResourceMngmnt.shtm accessed 23 February 2010

Gimenez, R., Gimenez, T., & May K.A., (2008) Technical Large Animal Rescue, Wiley-Blackwell, Iowa, USA

Glaser, B., G., & Strauss A.L., (1999), The discovery of grounded theory : strategies for qualitative research . New York : Aldine de Gruyter

Glassey, S., (2010) Recommendations to enhance companion animal emergency management in New Zealand. Wellington: Mercalli Disaster Management Consulting

Greene, JC., Caracelli, J., & Graham, W.F., (1989) Toward a Conceptual Framework for Mixed-Method Evaluation Designs, *Educational Evaluation and Policy Analysis* 11(3), 255-274

Guha-Sapir, D., (2011), Natural disasters in the world, 17th World Congress for Disaster and Emergency Medicine, Beijing China,

Gwaltney-Brant, S.M., Murphy L.A., Wismer T.A., & Albretsen J.C., (2003), Disaster Medicine; General toxicologic hazards and risks for search-and-rescue dogs responding to urban disasters, *Journal of American Veterinary Medical Association*, 222 (3), 292-295

Hall, M.J., Ng A., Ursano, R.J., Holloway, H., Fullerton, C., & Casper J., (2004) Psychological Impact of the Animal-Human Bond in Disaster Preparedness and Response, *Journal of Psychiatric Practice*, 10(6), 368 – 374

Hasson, F., Keeney, S., & McKenna, H., (2000) Research guidelines for the Delphi survey technique, *Journal of Advanced Nursing*, 32(4), 1008 - 1015

Heath, S.E., & Linnabary (1993) Potential roles of veterinary schools in emergency and disaster management, *Journal of American Veterinary Medical Association*, 203(7), 953-956

Heath, S.E., Beck, A.M., Kass P.H., & Glickman, L, T., (2001a), Risk factors for pet evacuation failure after a slow-onset disaster, *Journal of American Veterinary Medical Association*, 218 (12), 1905-1909

Heath S. E., Kass, P.H, Beck, A.M., & Glickman, L.T., (2001b), Human and Pet-related Risk Factors for Household Evacuation Failure During a Natural Disaster, *American Journal of Epidemiology,* 153 (7), 659 – 665

Heath, S.E., Voeks, S. K., & Glickman, L, T., (2001c), Disaster Medicine; Epidemiologic features of pet evacuation failure in a rapid-onset disaster, *Journal of American Veterinary Medical Association*, 218 (12), 1898 – 1904

Heide, E.A.D., (1989) Disaster Response: Principles of Preparation & Coordination, CV Mosby Company

Horn, C., Snyder, B.P., Coverdale J.H., Louie, A.K., & Roberts, L.W., (2009) Educational Research Questions and Study Design, *Academic Psychiatry,* 33(3), 261-267

Howell J., (1998), Project in Emergency Management: Emergency Management and the animal health profession in New Zealand, Massey University, Palmerston North, New Zealand

Hsu, E.B., Thomas, T.L., Bass, E.B., Whyne D., Kelen, G.D., & Green G.B., (2006), Healthcare worker competencies for disaster training, BMC Medical Education, 6:19, http://www.biomedcentral.com/1472-6920/6/19 accessed 13 April 2010

Hudson, L.C., Berschneider H.M., Ferris K.K., & Vivrette S.L., (2001), Disaster Medicine: Disaster relief management of companions animals affected by the floods of Hurricane Floyd, *Journal of American Veterinary Medical Association*, 218 (3), 354 - 694

Hunt, M., Al-Awadi, H., & Johnson, M., (2008) Psychological sequelae of pet loss following Hurricane Katrina, *Athrozoos*, 21(2), 109-121

Irvine, L., (2009) Filling the ark: animal welfare in disasters. Philadelphia, PA: Temple University Press

Iwasiw, C., L., Goldenberg, D., and Andrusyszyn, M.,(2005) Curriculum Development in Nursing Education, Sudbury, Mass: Jones and Barlett

Kaji, A.H., Coats, W., and Fung, C.C., (2010), A Disaster Medicine Curriculum for Medical Students, Teaching and Learning in Medicine, 22:2, 116 - 122

Kumar, R., (2005), Research Methodology: A step-by-step guide for beginners, SAGE publications, London

Lang, T.A., & Secic, M., (1997), How to report statistics in medicine: annotated guidelines for Authors, Editors and Reviewers, American College of Physicians, Philadelphia, Pennsylvania

Levy, J.K., Edinboro, C.H., Glotfelty, C., Dingman, P.A., West, A. L., & Kirkland-Cady, K.D., (2007), Disaster Medicine: Seroprevalence of Dirofilaria immitis, feline leukemia virus, and feline immunodeficiency virus infection among dogs and cats exported from the 2005 Gulf Coast hurricane disaster area, *Journal of American Veterinary Medical Association*, 231 (2), 218-225

Madigan J., & Dacre I., (2009), Preparing for veterinary emergencies; disaster management and the Incident Command System. Rev Sci Tech, 28 (2),627-633

Ministry of Agriculture and Forestry (2011), National Animal Welfare Emergency Management Group Activities, http://www.biosecurity.govt.nz/publications/biosecurity-magazine/issue-73/national-animal-welfare accessed 1 Jan 2011

Ministry Of Civil Defence & Emergency Management (2005). National Civil Defence Emergency Management Plan

Ministry Of Civil Defence & Emergency Management (2006). A guide to the National Civil Defence Emergency Management Plan

Mitchell A.M., Sakraida, T.J., & Kameg, K., (2003), Critical Incident Stress Debriefing: Implications for best practice, *Disaster Management & Response*, 1(2) 46-51

Murphy, R.G.L., & Knight A.P., (2009) Chapter 1.25: Carcass Disposal following a veterinary disaster in Veterinary Disaster Response, Wiley-Blackwell, Iowa.USA

New Zealand Pet Food Manufactures Association (2010), http://www.petfoodnz.co.nz/ accessed 12 May 2010

North American Veterinary Medical Education Consortium (2010) Roadmap for Veterinary Medical Education in the 21st Century: Responsive, Collaborative, Flexible, http://www.aavmc.org/documents/FinalDraftVersionoftheNAVMECReport-2010-10-31.pdf accessed 15 May 2010

Nusbaum, K.E., Wenzel, J.G.W., & Everly, G.A. Jr, (2007) Psychologic first aid and veterinarians in rural communities undergoing livestock depopulation, *Journal of American Veterinary Medical Association*, 231(5), 692-694

Nursing Emergency Preparedness Education Coalition (2003), Educational Competencies for Registered Nurses Responding to Mass Casualty Incidents, http://www.nursing.vanderbilt.edu/incmce/competencies.html accessed 2 January 2011

Oliver, D. and Dobele, T. (2007), First Year Courses in IT: A Bloom Rating, *Journal of Information Technology Education,* ISSN: online 1539-3585; print 1547-9714.

Onwuegbizie, A.J., & Leech N., (2005) On Becoming a Pragmatic Researcher: The Importance of Combining Quantitative and Qualitative Research Methodologies, *International Journal of Social Research Methodology*, 8:5, 375 - 387

Palmer, S.B., (2009) Domestic Animal Handling in Veterinary Disaster Response, Wiley-Blackwell, Iowa, USA

Rauscher I, Agrawal P, Sharma R., Fuhrmann S., Brewer, I., Mac Eachren, A., Wang, H., & Cai, G., (2002) Designing a Human Centred, Multimodal GIS Interface to Support Emergency Management, GIS 02 Proceedings of the 10th ACM International symposium on advances in geographic information systems, New York USA

Schaafstal, A.M., Johnston, J.H., & Oser, R.L., (2001) Training teams for emergency management, *Computers in Human Behaviour*,17, 615-626

Shiley, M., (2006), Dark Water Rising; Survival Stories of Hurricane Katrina Animal Rescues (DVD), United States of America.

Silenas R., Akins, R., Parrish., & Edwards, J.C., (2008): Developing Disaster Preparedness Competence: An Experiential Learning Exercise for Multiprofessional Education; *Teaching and Learning in Medicine* 20(1), 62-68

Soric, S., Belanger, M.P., & Wittnich, C., (2008), Disaster Medicine: A method for decontamination of animals involved in floodwater disasters, *Journal of American Veterinary Medical Association*, 232 (3), 364-370

Squance, H., (2009) Infectious Diseases of dogs and cats in New Zealand: 193.212 Veterinary Medical Nursing Study Guide, Massey University, New Zealand

Subbarao, I., Lyznicki, J.M., Hsu E.B., Gebbie, K.M., Markenson D., Barzansky, B., Armstrong, J.H., Cassimatis, E.G., Coule, Philip., Dallas C., King, R.V., Rubinson, L., Sattin R., Swienton, R.E., Lillibridge, S., Burkle, F.M., Schwartz, R.B., and James. J., (2008) Concepts in Disaster Medicine: A Consensus-based Educational Framework and Competency Set for the Discipline of Disaster Medicine and Public Health Preparedness, *Disaster Medicine and Public Health Preparedness*, 2:; 57-68

Swenson L.A., (2009) Chapter 1: An Introduction to the Incident Command System , in Veterinary Emergency Response, Wiley-Blackwell, Iowa, USA

Teddlie, C., (2003), Handbook of mixed methods in social & behavioural research, SAGE Publications, London UK

The Human Society of the United States, (2000), Disaster Planning: Community Planning, HSUS, Washington DC

Tigelaar, D.E.H., Dolmans, D.H.J.M, Wolfhagen, I.H.A.P, & van der Vleuten, C.P.M (2004) The Development and Validation of a Framework for Teaching Competencies in Higher Education, 48(2), 253-268

Toohey, S. (1999) *Designing Courses for Higher Education*, The Society for Research into Higher Education, Buckingham, Open University Press

Tuohy, R., (2008), Older adults experiences of a flood evacuation: Making sense of an extraordinary event, Masters thesis, Massey University

University of Florida (2008), Organizing Pet-Friendly Shelters: Best Practices for Florida – Training Guide http://www.flsart.org/PDF/PET-shelter-WB-0606.pdf

van Schalkwyk, R., (2010), Emergency Management in New Zealand, a presentation at Massey University Emergency Management Summer Institute 15th March 2010

Weisaeth, L., (2004), Preventing After-effects of Disaster Trauma: The information and Support Centre, *Prehospital and Disaster Medicine*, 19 (1), 86-89

Weisaeth, L., (2007), Disaster Medicine: Organizational aspects of disaster preparedness and response, *Journal of American Veterinary Medical Association*, 230 (11), 1634 – 1637

Wenzel, J.G.W., (2007), Disaster Medicine; Awareness-level information for veterinarians on control zones, personal protective equipment, and decontamination, *Journal of American Veterinary Medical Association*, 231 (1) , 48-51

Wightman J.M. & Gladish SL, (2001) Explosions and blast Injuries, *Annals of Emergency Medicine*; 36(6) pg 664 - 678

Wilson T, Almond P, Moot D, Whitman Z, & Turnball R(2010). Executive summary of damage and rehabilitation survey of "on-fault" farms affected by 4 September Canterbury Earthquake. (University of Canterbury, Christchurch)

Wingfield, W.E., Nash S.L., Palmer S.B., & Upp J.J., (2009), Veterinary Disaster Medicine; Working Animals, Wiley-Blackwell, Iowa, USA

Wittnich, C., & Belanger M., (2008), How is Animal Welfare Addressed in Canada's Emergency Response Plans?, *Journal of Applied Animal Welfare Science*, 11, 125-132

Appendices

APPENDIX A

Example of how the literature was catalogued.

Author, Year	Recommendations	Coding of Literature
Dunning, D., Martin M. P., et al 2009	The following is a list of eight (though there are nine listed) suggested core competencies to base veterinary preparedness and disaster response training: 1) ICS and NIMS 2) Critical incident de-briefing or PFA 3) Euthanasia physiology methodology and mechanics 4) Bio-security 5) Personal protective equipment 6) Hazardous material 7) All-hazards approach to emergency preparedness 8) Personal and business continuity training Awareness of the opportunities and need for vet	CIMS Safety AWEM EM AWEM role
Ablah, E., et al (2009)	Amongst many barriers, one of the most identifiable barriers to participation is the lack of understanding of emergency preparedness, their role in an emergency, ICS and training Other areas identified poor relationships between veterinarians and other health care providers. In the response phase, veterinarians believe they lack defined roles Need to establish MOU's with neighbouring communities to describe roles, specifically indicating how veterinarians will work with other agencies and medical professions. Training needs to be marketed correctly be offered in short, focused (clear sense of purpose, providing concrete skills) Offering certification or continuing education credits would motivate veterinarians to attend	CIMS AWEM Role EM AWEM
North American Veterinary Medical Education Consortium (NAVMEC), 2010	The core competencies of all graduating veterinarians agreed upon by NAVMEC participates with relation to emergency management: 1) Public health/one health knowledge and expertise: Further explained as: Prevent, diagnose and control zoonotic disease; food safety & security, emergency preparedness and response, human-animal bond benefits	EM AWEM AWEM roles CIMS

Appendix   B

Common Infectious diseases in dogs and cats in New Zealand (Squance, 2009)

Common Infectious Diseases in Dogs in New Zealand	
Disease	**Organism**
Canine parvovirus	Canine Parvovirus
Canine distemper	Canine distemper virus
Infectious canine hepatitis	Adenovirus 1 (CAV-1)
Canine tracheobronchitis	Adenovirus 1 & 2 (CAV-1, CAV-2), Parainfluenza virus, Bordetella bacteria
Leptospirosis	Leptospira bacteria

Common Infectious Diseases In Cats In New Zealand	
Disease	**Organism**
Feline panleucopaenia	Feline Parvovirus
Feline respiratory tract disease	Herpes virus, Calicivirus
Feline Chlamydiosis	Chlamydophyla felis
Feline immunodeficiency disease	Feline retrovirus (lentivirus)
Feline leukaemia	Feline retrovirus (oncornavirus)
Feline infectious peritonitis*	Coronavirus
Feline infectious anaemia*	Mycoplasma haemofelis (bacteria-like organism)

Appendix C

Coordinated Incident Management System structure and interface for CDEM co-ordination
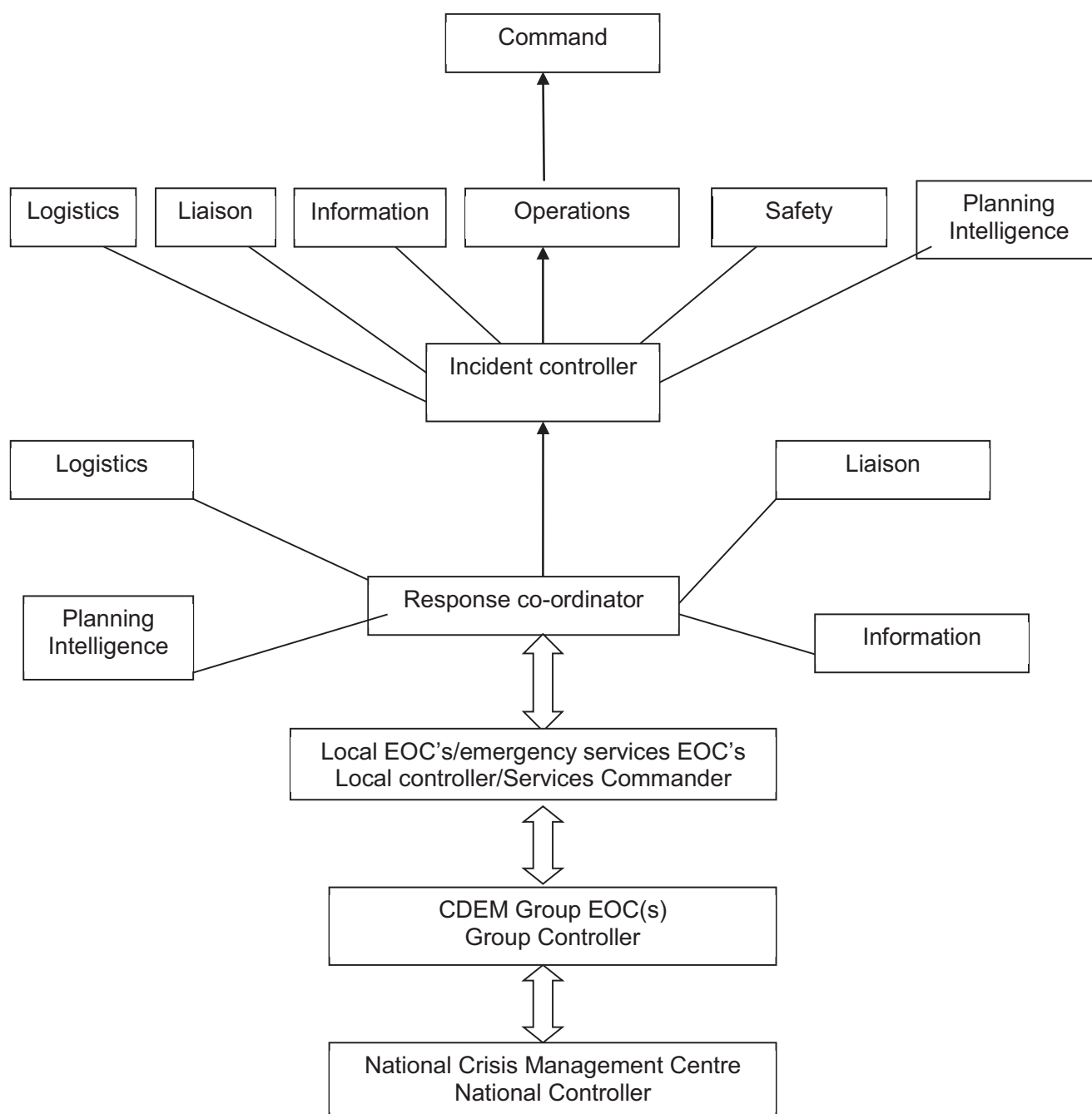
Appendix   D

De Vaus Questionnaire design checklist (2002)

Questionnaire Design Checklist	Addressed in this study
Is the research question clear	✓
What content is each question designed to measure: An attitude An attribute A belief A behaviour knowledge	✓ ✓
Is the question designed to tap attitudes or beliefs what do you want to know about the attitude/belief: Direction Extremity Intensity	✓
Is each question Reliable Valid Sufficient sensitive to variation Likely to achieve a good response rate Have some meaning for the respondents Relevant to the research question	✓ ✓ ✓ ✓ ✓ ✓
Is the specific wording of each question suitable	✓
What type of response format does the questionnaire item require: Open Closed	✓ ✓
What level of measurement do you wan the item to achieve Nominal Ordinal Interval	✓
For closed questions which type of closed format is required Rating Scores Ranking Checklist	✓
How will non-committal response be handled Will a middle response be included Will a don't know option be available	✓
Are the response categories Exhaustive/inclusive Exclusive Balanced	✓
Are clear instructions provided throughout the questionnaire	✓
How will respondents indicate their responses	✓
Is there sufficient space	✓
Are any skips clear and simple to follow	✓
Does the order of questions conform to the principles of question order	✓
How will coding be handled Will questions be precoded How will open-ended question be coded How will data be entered into the computer	All addressed in survey monkey, online survey database

APPENDIX   E

MASSEY UNIVERSITY
COLLEGE OF SCIENCES

INFORMATION SHEET – Phase 1

Name of project: "What are the educational and technical requirements of personnel directly involved in Animal Emergency Management in New Zealand?

Introduction
My name is Hayley Squance, I am conducting research as part of my Masters of Education (Adult Education) degree at Massey University.

You have been invited to participate in this research as you are noted as an expert in the field of emergency/disaster management and/or animal welfare emergency management. Given the nature of this project, your participation is appreciated as you represent an important part of the target population.

Please read this Information Sheet carefully and feel free to ask questions accordingly. Once you understand the nature of this project you will be asked to sign a Consent Form to indicate that you understand the information given and give your consent to participate in the research project along with the publication of anonymous data. A copy of this Information Sheet and Consent Form will be available to keep as a record.

What is this research?
Every year, natural and human-made hazards threaten society and this includes animals. It is mandate that all Civil Defence regions throughout New Zealand have Civil Defence Emergency Management Plans, though animal emergency management plans are not currently required under the Civil Defence Emergency Management Act 2002. Up until now New Zealand has not had any provisions for companion animal evacuation as the mandate has been to leave them behind.

The proposed area of enquiry surrounds the educational and technical requirements of personnel involved in animal emergency management. Of specific importance is the aim of enhancing current knowledge through a scientifically robust programme of research which will be of benefit in the development of this area. It is anticipated that the findings and outputs will extend current academic knowledge and culminate in the development of an industry specific model which will be of use to policy makers, public organisations and private enterprises. The proposed working title for this research is:

"What are the Educational and Technical Requirements of Personnel Involved in Animal Emergency Management in New Zealand?"

What does this research involve?
The proposed research involves the collection of a range of qualitative and quantitative data which will be used as recommendations for the Ministry of Civil Defence and Emergency Management sectors development of New Zealand's Animal Welfare Emergency Management capabilities, development of an Animal Emergency Response course at Massey University and report for the members of the New Zealand National Animal Welfare Emergency Management Liaison Group (NAWEM). The phase you are involved with forms the quantitative section. During this phase of the research programme, data will be gathered through a series of surveys completed by a number of selected participants.

As the Researcher, what is expected of me in this research?
As the principle researcher, it is my intention to conduct the execution of this project to the highest ethical standards.

The ethics aspects of this research have been approved by the Human Ethics Committee of Massey University.

As a participant, what do I need to do in this research? How do I do it?
Participation in this project will involve the completion of structured online survey questionnaires. As a participant, you will be requested to answer a number of questions by entering your response on a variety of question types. In addition, there is a provision on the survey form to add comments as required. It is anticipated that the survey will take approximately 15 minutes to complete.

This research will be undertaken using the conventional Delphi procedure as well as focus group discussion. During the Delphi procedure information will be gathered anonymously from individual experts via a series of questionnaires interspersed with controlled feedback reports.

Are there any discomforts or risks?
There are very low risks and discomforts associated with this research, however, a small time burden associated with a survey completion is anticipated.

Participation in this research is voluntary and confidential and you may withdraw at any time.

Data will be held securely in a locked filing system and password protected computer filing system. In addition associated data coding will assure anonymity as far as reasonably practicable.

Publication of results of this research
Publication in the form of a submitted thesis will be an outcome of this research. In addition, data may also be published in academic papers, journal articles, presented as recommendations for the New Zealand Ministry of Civil Defence & Emergency Management or from time to time presented at conferences.

Consent

As a participant, you will be requested to sign an Informed Consent Form. Essentially, this document protects the participant and the researcher. Prior to the survey completion, the aims of this research will be explained along with any risks or discomforts which might be a possibility will be explained. Equally, how the data will be analysed and reported and how privacy will be maintained will be explained.

Inquiries

If you have a general query regarding the research project please contact one of the following:

Research Supervisor
Dr. Marg Gilling
Senior Lecturer
College of Education
Massey University
Palmerston North, New Zealand
T: +64 6 356 9099 ext 8851
E: m.gilling@massey.ac.nz

Primary Researcher
Hayley Squance BAppSc (VTM), AVN
Director & Lecturer
Veterinary Nursing & Veterinary Technology Programmes
Massey University
Institute of Veterinary, Animal & Biomedical Sciences
Palmerston North
New Zealand
T: +64 6 356 9099 ext 2575
F: +64 6 350 5636
E: h.squance@massey.ac.nz
www.massey.ac.nz

Ethics

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researchers named above are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researchers, please contact Professor John O'Neill, Director (Research Ethics), telephone +64 6 350 5249, email humanethics@massey.ac.nz.

MASSEY UNIVERSITY

COLLEGE OF SCIENCES

CONSENT FORM

Title of research project:

 "What are the educational and technical requirements of personnel directly Involved in Animal Emergency Management in New Zealand?"

NOTE: This consent form will remain with the Massey University researcher for their records.

Tick the box that applies, sign and date and give to the researcher

I agree to take part in the Massey University
research project specified above.   Yes ☐   No ☐

I have been provided with information at my level of comprehension
about the purpose, methods, demands, risks, inconveniences and
possible outcomes of this research. I understand this information.   Yes ☐   No ☐

I agree to make myself available for an interview if required   Yes ☐   No ☐

I agree to complete questionnaires asking me about
Animal Emergency Management   Yes ☐   No ☐

I understand that my participation is voluntary.   Yes ☐   No ☐

I can choose <u>not</u> to participate in part or all of this research at any time,
without consequence.   Yes ☐   No ☐

I understand that any information that may identify me, will be
de-identified at the time of analysis of any data. Therefore, I, or
any information I have provided cannot be linked to my person/
company. (*Privacy Act 1993*)   Yes ☐   No ☐

I understand that neither my name nor any identifying information will
be disclosed or published, except with my permission.   Yes ☐   No ☐

OR

I give permission for identifying information to be published
or disclosed.   Yes ☐   No ☐

I understand that all information gathered in this research is confidential.
It is kept securely and confidentially for 5 years at the University (unless
there are special circumstances, that have been explained to me).   Yes ☐   No ☐

I am aware that I can contact the Supervisor or other researchers at any
time with any queries.   Yes ☐   No ☐

I would like a copy of the summary of results at the conclusion of
this project and will provide my contact address to
Principle researcher.   Yes ☐ No ☐

I understand that the ethical aspects of this research has been peer reviewed
and judged to be low risk. Consequently, it has not been reviewed by one
of the University's Human Ethics Committees.   Yes ☐   No ☐

APPENDIX F
Questionnaire One

Animal Welfare Emergency Management Educational and Technical

1. About You

1. What is your role in Animal Welfare Emergency Management?

Role in Animal Welfare Emergency Management

Policy / Advisor at Government level	☐
Emergency Management Officer	☐
Animal Control / Welfare Officer	☐
Animal Welfare Emergency Management Co-ordinator	☐
Animal Response Personnel	☐
NGO involved in Animal Welfare Emergency Management	☐
International Government department involved in Animal Welfare Emergency Management	☐
Academic in Emergency / Disaster Management	☐
Other	☐

If you selected other please specify

Animal Welfare Emergency Management Educational and Technical

2. Animal Emergency Management Competencies

*Competencies are defined as an integrated set of personal characteristics, knowledge, skills and attitudes that are needed for effective performance in various emergency contexts. For the purpose of this study we will only be focusing on knowledge and technical skills.

1. Knowledge

Select the areas of knowledge you believe are essential for personnel involved in; Emergency Animal Planning(this includes policy and animal emergency management plan development at Ministerial and Regional levels), Emergency Animal Shelters and Emergency Animal Rescue.

	Emergency Animal Planning	Emergency Animal Shelter	Emergency Animal Rescue	Unsure what this means
The Four Phases of Emergency Management	☐	☐	☐	☐
Roles & responsibilities of all Civil Defence & Emergency Management (CDEM)organisations	☐	☐	☐	☐
Legal Issues	☐	☐	☐	☐
CDEM Act 2002	☐	☐	☐	☐
Animal Welfare Act 1998	☐	☐	☐	☐
Incident Command System (ICS) (CIMS in NZ)	☐	☐	☐	☐
Functions of CDEM welfare centres	☐	☐	☐	☐
Communications (Verbal and written)	☐	☐	☐	☐
Health & Safety	☐	☐	☐	☐
Debriefing	☐	☐	☐	☐
Risk,Damage & Needs Assessment	☐	☐	☐	☐
Stress Management	☐	☐	☐	☐
Develop Standard Operating Procedures's	☐	☐	☐	☐
Animals in disaster	☐	☐	☐	☐
Media Communications	☐	☐	☐	☐
Funding Sources	☐	☐	☐	☐
Navigation, use of GPS	☐	☐	☐	☐
Human-animal bond	☐	☐	☐	☐
Leadership	☐	☐	☐	☐
Social and psychological impacts of the aftermath of disasters	☐	☐	☐	☐
Driving vehicles in operational situations	☐	☐	☐	☐

Page 2

Animal Welfare Emergency Management Educational and Technical

Infectious Animal Diseases Including zoonosis	☐	☐	☐	☐
Human First Aid	☐	☐	☐	☐
Basic Animal Care	☐	☐	☐	☐
Animal Behaviour	☐	☐	☐	☐
Emergency Animal Shelters	☐	☐	☐	☐
Emergency Animal Rescue	☐	☐	☐	☐
Animal First Aid	☐	☐	☐	☐
Animal Handling and Restraint	☐	☐	☐	☐
Animal Identification	☐	☐	☐	☐
Animal Triage	☐	☐	☐	☐
Animal Decontamination	☐	☐	☐	☐
Emergency Euthanasia	☐	☐	☐	☐
Reunification Of Animals With Owners	☐	☐	☐	☐
Advanced Emergency Animal Medicine (Veterinarian & Veterinary Technician Level)	☐	☐	☐	☐

Please include any areas that you believe are important that were not mentioned

Animal Welfare Emergency Management Educational and Technical

2. Technical Skills

Select the technical skills you believe are essential for personnel involved in Emergency Animal Planning, Emergency Animal Shelter and Emergency Aniaml Rescue.

	Emergency Animal Planning	Emergency Animal Shelter	Emergency Animal Rescue	Unsure What This Means
Communications(Verbal I.e. amateur radio, written USAR sign)	☐	☐	☐	☐
Report Writing	☐	☐	☐	☐
Stress management	☐	☐	☐	☐
Teamwork	☐	☐	☐	☐
Equipment handling	☐	☐	☐	☐
Use of GPS, navigation	☐	☐	☐	☐
Basic Urban Search and Rescue awareness	☐	☐	☐	☐
Driving vehicles in operational situations	☐	☐	☐	☐
Set up of animal shelter	☐	☐	☐	☐
Set up of rescue unit	☐	☐	☐	☐
Human First Aid	☐	☐	☐	☐
Animal First Aid	☐	☐	☐	☐
Animal Handling and Restraint	☐	☐	☐	☐
Transportation of animals	☐	☐	☐	☐
Animal Triage	☐	☐	☐	☐
Implant microchips	☐	☐	☐	☐
Animal Decontamination	☐	☐	☐	☐
Advanced Rescue Techniques Rope rescue large Animal(including sling rescue)	☐	☐	☐	☐
Height rescues	☐	☐	☐	☐
Advanced Rescue Techniques Rope rescue Small Animal(including sling rescue)	☐	☐	☐	☐
Swiftwater rescue	☐	☐	☐	☐
Work with aircraft at emergencies	☐	☐	☐	☐
Advanced Emergency Animal Medicine (Veterinarian & Veterinary Technician Level)	☐	☐	☐	☐
Specialist response to technical animal rescues	☐	☐	☐	☐

Please include any skills that you believe are important that were not mentioned

Page 4

Animal Welfare Emergency Management Educational and Technical

3. What animals should be included in an animal emergency management curriculum?

- ☐ Small Animals (Includes dogs & cats)
- ☐ Small Mammals (rabbits, guinea pigs, rats & mice)
- ☐ Exotic's (alpacas, ostriches, emus etc)
- ☐ Horses
- ☐ Production Animals (dairy, beef, sheep, deer etc)
- ☐ Birds
- ☐ Other

If selected other please specify

Animal Welfare Emergency Management Educational and Technical

3. Delivery of Educational and Technical Requirements

1. Who do you think should be responsible for offering courses whereby animal welfare emergency management personnel could gain knowledge and technical skills?

☐ Polytechnic/TAFE/College

☐ Universities

☐ Government Organisations

☐ Non-Government Organisations

☐ Other

If you selected other please specify

[text box]

2. How should this information be presented?

☐ Block courses

☐ Internal semester long courses

☐ External / online studies

☐ Seminars

☐ Conferences

☐ Other

If you selected other please specify

[text box]

3. Should there be one course offered to cover all aspects for all personnel involved in animal welfare emergency management or should two separate courses be offered, for example, one for responders and one for policy, planners and emergency managers or another suggestion and why?

Animal Welfare Emergency Management Educational and Technical

4. Who do you believe animal response teams should be accredited and/or registered with?

☐ Ministry of Civil Defence and Emergency Management

☐ National Animal Welfare Emergency Management Liasion Group (consists of representative from the Ministry of Civil Defence & Emergency Management, Ministry of Agriculture and Forestry, New Zealand Veterinary Association, Royal Society for the Prevention of Cruelty to Animals, World Society for Protection of Animals, Federated Farmers and New Zealand Companion Animal Council)

☐ Society for the Prevention of Cruelty to Animals

☐ Independent Panel

Why?

5. How would you priotize educational needs of personnel involved in Animal Welfare Emergency Management from the least important to the most important?

	Not Important	Least Important	Neutral	Important	Most Important	N/A
Technical skills required by personnel in Animal response teams	○	○	○	○	○	○
Understanding the human-animal bond	○	○	○	○	○	○
How to develop and implement an animal emergency response plan	○	○	○	○	○	○
Animal welfare emergency management	○	○	○	○	○	○
Knowledge in co-ordinated incident management system (CIMS)	○	○	○	○	○	○

6. If an Animal Welfare Emergency Management course was developed would you attend and/or send your personnel involved in Animal Welfare Emergency Management (AWEM)?

☐ Yes I would attend

☐ Yes I would attend and send personnel involved in AWEM

☐ No I would not attend and I would not send personnel involved in AWEM

☐ No I would not attend but I would send personnel involved in AWEM

7. How do you personally keep up-to-date with the latest research, ideas and topics involved in emergency management and/or animal welfare emergency management?

Page 7

Animal Welfare Emergency Management Educational and Technical

4. Additional Comments

1. Please include any additional comments or information that you believe is relevent to this research project.

Appendix   G
Questionnaire Survey Two

Draft AWEM Educational Competencies and Assessable Learning

1. Draft AWEM Educational Competency 1 and Assessable Learning Outcome(s)

The following is an educational competency and its relevent assessable leanring outcome(s) that has been identified and abstracted by grouping of common elements from the previous survey results. Please rate the clarity, appropriateness and relative importance of each of the draft AWEM Educational Competencies and learning outcome(s) from a 5 choice scale of strongly agree through to strongly disagree.

1. Understand the principles of the four phases of emergency management.

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Any comments

[text box]

2. Assessable Learning Outcome Reduction/Mitigation
Apply and illustrate knowledge of all hazards approach, education and strategic partnership with reference to mitigation

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Any Comments

[text box]

Page 1

Draft AWEM Educational Competencies and Assessable Learning

3. Assessable Learning Outcome 2 Readiness/Planning
Identify and implement the FIVE (5) basic components (plans, education, training, communication, & public information) of readiness in relation to emergency management.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Any comments

4. Assessable Learning Outcome 3 Response
Appraise and apply knowledge of FOUR (4) basic components (operating emergency operations centre, assessment of damage and needs, coordination and information management)of response and understand what is involved in each component.

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comments

5. Assessable Learning Outcome 4 Recovery
Identify key components of recovery and recognize appropriate recovery activities that will lead to a more resilient community with reduced impact from disasters in the future.

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

Page 2

Draft AWEM Educational Competencies and Assessable Learning

2. Draft AWEM Education Competency 2 and Assessable Learning Outcome(s)

The following is an educational competency and its relevent assessable leanring outcome(s) that has been identified and abstracted by grouping of common elements from the previous survey results. Please rate the clarity, appropriateness and relative importance of each of the draft AWEM Educational Competencies and learning outcome(s) from a 5 choice scale of strongly agree through to strongly disagree.

1. Apply knowledge of all components of Animal Welfare Emergency Management and explain how this can be integrated in emergency management welfare plans.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Any Comments

2. Assessable Learning Outcome 1 Risks / Hazard Identification
Identify risks and hazards and explain the associated efffects on animals

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

Page 3

Draft AWEM Educational Competencies and Assessable Learning

3. Assessable Learning Outcome 2 Planning
Explain the key components of an animal welfare emergency management plan

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

4. Assessable Learning Outcome Public Education
Explain the princples of public education for AWEM and how they can be implemented.

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

5. Assessable Learning Outcome Training and Education
Explain knowledge and technical skilles required to particiapate in AWEM

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

Page 4

Draft AWEM Educational Competencies and Assessable Learning

6. Assessable Learning Outcome - Animal Welfare Needs
Explain the basic needs, husbandry, and hygiene requirements for animals

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

[text box]

7. Assessable Learning Outcome Evacuation / Transportantion
Explain the principles of evacuation and transporation requirements for different species.

	Strongly Agree	Agree	Neutral	Disagree	Strongly agree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add Comment

[text box]

8. Assessable Learning Outcome Search and Rescue
Explain the principles of search and rescue of animals and the associated risks.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

[text box]

Page 5

Draft AWEM Educational Competencies and Assessable Learning

9. Assessable Learning Outcome
Describe the principles of decontamination

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

```


```

10. Assessable Learning Outcome Euthanasia
Describe the ethical and welfare considerations associated with euthanasia during and after a disaster

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

```


```

11. Assessable Learning Outcome Disease Control
Illustrate knowledge of disease control measures and the implications if this is not considered during a disaster

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

```


```

Page 6

Draft AWEM Educational Competencies and Assessable Learning

12. Assessable Learning Outcome Veterinary Care
Identify the importance of accessablity to veterinary care for animals

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

Draft AWEM Educational Competencies and Assessable Learning

3. Draft AWEM Educational Compentency 3 and Assessable Learning Outcome(s)

The following is an educational competency and its relevent assessable leanring outcome(s) that has been identified and abstracted by grouping of common elements from the previous survey results. Please rate the clarity, appropriateness and relative importance of each of the draft AWEM Educational Competencies and learning outcome(s) from a 5 choice scale of strongly agree through to strongly disagree.

1. Understand animal behavior and how this can be affected by disasters

	Stronlgy agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

2. Assessable Learning Outcome Animal Behaviour
Explain the importance of understanding the changes in animal behaviour during and after a disaster.

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add Comment

Page 8

Draft AWEM Educational Competencies and Assessable Learning

4. Draft AWEM Educational Compentence 4 and Assessable Learning Outcome(s)

The following is an educational competency and its relevent assessable leanring outcome(s) that has been identified and abstracted by grouping of common elements from the previous survey results. Please rate the clarity, appropriateness and relative importance of each of the draft AWEM Educational Competencies and learning outcome(s) from a 5 choice scale of strongly agree through to strongly disagree.

1. Explain the concepts of and describe functional roles through all emergency management phases and skills required by specific AWEM roles

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

2. Assessable Learning Outcome
Demonstrate knowledge and skills needed to fulfill your AWEM role in the relevent emergency management phases in a disaster

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

Page 9

Draft AWEM Educational Competencies and Assessable Learning

5. Draft AWEM Educational Competence 5 and Assessable Learning Outcome(s)

The following is an educational competency and its relevent assessable leanring outcome(s) that has been identified and abstracted by grouping of common elements from the previous survey results. Please rate the clarity, appropriateness and relative importance of each of the draft AWEM Educational Competencies and learning outcome(s) from a 5 choice scale of strongly agree through to strongly disagree.

1. Describe the principles of and demonstrate the ability to fulfill health and safety functions

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative importance	○	○	○	○	○

Add comment

2. Assessable Learning Objective First Aid
Perform basic human first aid

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

Page 10

Draft AWEM Educational Competencies and Assessable Learning

3. Assessable learning outcome psychological first aid
Understand the principles of psychological first aid, idenifty indicators in self, colleagues and general public and act on them

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	O	O	O	O	O
Appropriateness	O	O	O	O	O
Relative Importance	O	O	O	O	O

Add comment

4. Assessable learning outcome compassion fatigue
Understand the principles of compassion fatigue, idenifty indicators in self and colleagues and act on them

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	O	O	O	O	O
Appropriateness	O	O	O	O	O
Relative Importance	O	O	O	O	O

Add comment

5. Assessable learning outcome personnal protective equipment
Describe the principles of and demonstrate the ability to select appropriate personal protective equipment.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	O	O	O	O	O
Appropriateness	O	O	O	O	O
Relative Importance	O	O	O	O	O

Add comment

Page 11

Draft AWEM Educational Competencies and Assessable Learning

6. Draft AWEM Educational Compentence 6 and assessable learning outcome(s)

The following is an educational competency and its relevent assessable leanring outcome(s) that has been identified and abstracted by grouping of common elements from the previous survey results. Please rate the clarity, appropriateness and relative importance of each of the draft AWEM Educational Competencies and learning outcome(s) from a 5 choice scale of strongly agree through to strongly disagree.

1. Explain the principles of the Co-ordinated Incident Management system (CIMS)

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

2. Assessable Learning Outcome CIMS
Explain the concept of CIMS, its functional capacity in AWEM and your role in it

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative Importance	○	○	○	○	○

Add comment

Page 12

Draft AWEM Educational Competencies and Assessable Learning

7. Draft AWEM Educational Compentency 7 and assessable learning objective(s)

The following is an educational competency and its relevent assessable leanring outcome(s) that has been identified and abstracted by grouping of common elements from the previous survey results. Please rate the clarity, appropriateness and relative importance of each of the draft AWEM Educational Competencies and learning outcome(s) from a 5 choice scale of strongly agree through to strongly disagree.

1. Identify and perform effective communication techniques

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative importance	○	○	○	○	○

Add comment

2. Assessable Learning Ouctome Communications
Understand the principles and importance of effective communications during disaster response

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative importance	○	○	○	○	○

Add comment

Page 13

Draft AWEM Educational Competencies and Assessable Learning

8. Draft AWEM Educational Compentence 8 and Assessable Learning Outcome(s)

The following is an educational competency and its relevent assessable leanring outcome(s) that has been identified and abstracted by grouping of common elements from the previous survey results. Please rate the clarity, appropriateness and relative importance of each of the draft AWEM Educational Competencies and learning outcome(s) from a 5 choice scale of strongly agree through to strongly disagree.

1. Explain the importance of problem solving skills in AWEM during a disaster response

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative importance	○	○	○	○	○

Add comment

2. Assessable Learning Outcome Problem Solving
Illustrate and employ problem solving skills pertaining to animal welfare emergency management.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Clarity	○	○	○	○	○
Appropriateness	○	○	○	○	○
Relative importance	○	○	○	○	○

Add comment

Page 14

Draft AWEM Educational Competencies and Assessable Learning

9. Additional comments

Please include any comments on areas that have been omitted which you believe should be included

1. Are there any competencies that have not been included which you believe should be considered

Page 15