The role of environmental health officers in emergencies

Stories from the front line
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Stories from the front line

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<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>ABS</td>
<td>Australian Bureau of Statistics</td>
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<tr>
<td>AO</td>
<td>Authorised Officer</td>
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<tr>
<td>CCA</td>
<td>Copper Chrome Arsenate (treated timbers)</td>
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<tr>
<td>CDC</td>
<td>Communicable disease control</td>
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<tr>
<td>CFA</td>
<td>Country Fire Authority</td>
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<tr>
<td>DHS</td>
<td>Department of Human Services (now Department of Health, Victoria)</td>
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<tr>
<td>DFMP</td>
<td>Dengue Fever Management Plan</td>
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<td>DMG</td>
<td>Disaster management group</td>
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<td>EHO</td>
<td>Environmental Health Officer</td>
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<td>EHWWG</td>
<td>Environmental Health Workforce Working Group</td>
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<td>EMA</td>
<td>Emergency Management Australia</td>
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<td>EPA</td>
<td>Environment Protection Agency</td>
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<tr>
<td>GIS</td>
<td>Geographic Information System</td>
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<tr>
<td>GPS</td>
<td>Global Positioning System</td>
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<tr>
<td>MECC</td>
<td>Municipal Emergency Coordination Centre</td>
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<tr>
<td>MEMplan</td>
<td>Municipal Emergency Management Plan</td>
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<tr>
<td>MEPC</td>
<td>Municipal Emergency Planning Committee</td>
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<tr>
<td>MERO</td>
<td>Municipal Emergency Resource Officer</td>
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<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
</tr>
<tr>
<td>SES</td>
<td>State Emergency Services</td>
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<tr>
<td>TPHU</td>
<td>Tropical Public Health Unit</td>
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<tr>
<td>TRS</td>
<td>Tropical Regional Services</td>
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This report was commissioned to profile the role of Environmental Health Officers (EHOs) in disasters and emergencies. This context provides a window into the broader role of EHOs. The core responsibilities of assessing and managing environmental health risks and protecting public health still apply. The difference is that the work is more intense, often stressful and demands rapid responses under difficult circumstances.

The role of EHOs in emergency management includes enforcement but more importantly it showcases the role EHOs play in influencing, educating and supporting people to improve environmental and public health outcomes. Emerging environment trends suggest that these aspects of the role are becoming increasingly important. There is widespread consensus that the incidence and severity of extreme environmental events is increasing. Activities such as engaging and educating communities, building community capacity and resilience and fostering adaptability are central to both emergency management and to climate change work.

The report documents a series of case studies to tell the stories of selected events through the eyes and voices of EHOs and the people they work with. The emergencies include the devastating bushfires in Victoria in 2009; the 2009 outbreak of dengue fever in far north Queensland, the worst outbreak in 50 years; and, in the NT, responding to the ongoing environmental health challenges, particularly those in remote Indigenous communities.

The material for each of the case studies was compiled in 2009-10 and draws on interviews, focus groups and surveys of key participants. The studies capture a point in time from the personal perspective of the people who participated. The purpose is not to critique the response to specific events but rather to provide an insight into the contribution of a group of professionals that is often underestimated and overlooked.

These case studies were commissioned by the Environmental Health Workforce Working Group (EHWWG) of enHealth. The EHWWG is charged with developing policy to support and promote the environmental health workforce in the context of chronic labour shortages. The case studies are part of a suite of initiatives to achieve this purpose. They sit alongside the development of the Environmental Health Skills and Knowledge Matrix (Matrix) which establishes a national description of the environmental health role. Related projects that support national implementation include initiatives to maintain and improve professional standards through alignment of course accreditation with the Matrix, the expansion of the available workforce through the development of alternative pathways into the profession and support for developing appropriately skilled technician roles.

Documenting what EHOs do in emergencies and how they experience this aspect of their work can serve multiple outcomes. Providing details of the role and contribution of EHOs can assist managers in local, state and territory governments to make better informed decisions about how they utilise and develop available skills and knowledge in emergencies; it can help partner agencies involved in managing emergencies to better understand and work alongside environmental health professionals; and, it can inspire people looking for a career to consider environmental health as an option. The materials collected in these case studies provide a resource for developing targeted information campaigns to reach these audiences.

Executive summary
The role of environmental health officers in emergencies: stories from the front line
1 EHOs in emergencies

1.1 About this report
This report presents the findings of a series of case studies designed to better understand the contribution of environmental health officers (EHOs) to emergency management. It documents the formal roles and responsibilities of EHOs but more importantly, tells the stories of the people working in these jobs. The emergencies span the devastating bushfires in Victoria in 2009; the 2009 outbreak of dengue fever in far north Queensland, the worst outbreak in 50 years; and, in the NT, responding to the ongoing environmental health challenges, particularly those in remote Indigenous communities.

These stories capture experience at a point in time. Emergency management is a dynamic environment. Some of the circumstances described reflect historical rather than current situations and issues raised have since been addressed. The purpose of this report is not to critique responses to specific emergencies but rather to provide an insight into the work of EHOs that can provide a resource for promoting the profession.

Documenting what EHOs do in emergencies and how they experience this aspect of their work can serve multiple outcomes. Providing details of the role and contribution of EHOs can assist managers in local, state and territory governments to make better informed decisions about how they utilise and develop available skills and knowledge in emergencies; it can help partner agencies involved in managing emergencies to better understand and work alongside environmental health professionals; and, it can inspire people looking for a career to consider environmental health as an option.

This work was commissioned by the Environmental Health Workforce Working Group (EHWWG) of enHealth. The EHWWG is charged with developing policy to support and promote the environmental health workforce. This is a workforce with wide-ranging responsibilities matched by a similarly broad skills and knowledge base. The core responsibility of EHOs is to assess and manage environmental health risks and protect public health. This responsibility still applies in an emergency although the context is very different. Working in emergencies is more intense, often stressful and demands rapid responses under difficult circumstances. The context is challenging, but the activities and judgements an EHO makes draw on the same skills and knowledge they apply in their everyday roles. As one EHO puts it:

*Any emergency situation gives us an opportunity to show how important the public health role is – it’s our opportunity to shine.*

Promoting better understanding of the EHO role is high on the agenda of the EHWWG. The role of EHOs is not well understood and is often underestimated. In most jurisdictions responsibility for the hand-on aspects of emergency management is devolved to local government. In the territories this responsibility rests directly with the territory government. As an expanding range of environmental health responsibilities are delegated to local government, EHWWG is committed to finding ways to better support this tier of government to make informed assessments about the skills required to fulfill these roles.

Helping local government managers to understand the environmental health skills and knowledge resource available to them is only part of the challenge. The other part is ensuring there are sufficient numbers of people with the right skills and knowledge to do environmental health work.
Successive reports on the environmental health workforce raise concerns about the challenges of attracting people to the job, particularly in rural and remote areas. These reports identify one of the barriers to entry as a lack of awareness and understanding of the role. The material generated by these case studies will be used to raise awareness of the role as it relates to emergency management. These reports also identify narrow approaches to job design related to enforcement and compliance as a source of job dissatisfaction for some EHOs.

The role of EHOs in emergency management showcases a different side of the job. It relies on working alongside other agencies and with people directly affected by events. It is much more about influencing, educating and supporting people than about enforcement.

Emerging environmental trends suggest that these aspects of the role are becoming increasingly important. Although emergency events are not necessarily directly related to climate change, there is widespread consensus that the incidence and severity of extreme environmental events is increasing. Activities such as engaging and educating communities, building community capacity and resilience and fostering adaptability are central to both emergency management and to climate change work. The focus on emergency management therefore provides a window into some of the capabilities that are likely to become increasingly relevant to public and environmental health work.

Finally, this work can support EHOs and their managers to reflect on the experiences and lessons that come out of their involvement in specific emergencies. In spite of the rhetoric associated with a continuous planning approach to emergency management, all too often organisations end up lurching from one crisis to the next with little time or energy left for reflection. As one manager described: writing it up is a luxury. Although the focus of this work is to profile the EHO role in emergencies, it also draws out some common themes and opportunities to build on this experience to improve current practice.

Report structure

The first section of this report presents some of the common issues and themes echoed through the case studies. These are targeted to different audiences including current and prospective EHOs and the different tiers of government involved in emergency management. It goes on to establish the legal and policy context for emergency management to situate the role of EHOs. It concludes by reviewing features of the EHO workforce and a summary of factors that inspired some EHOs to enter the profession.

The subsequent sections present the three case studies. These are documented as stand alone reports. Because the method used was adapted to suit the diverse incidents studied, each report briefly describes the data collection methods applied. The report concludes with some reflections on the potential application of the materials developed to promote the environmental health profession.

1.2 Common issues and themes

Each of the case studies provides insights into different aspects of the EHO contribution in emergencies or extreme events. While every incident is unique, these experiences echo some repeated themes. Although the case studies are not intended to provide a forensic description or evaluation of the emergency management approach,

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1 These include:

2 See Appendix 1 for a description of project method.
inevitably any discussion of this kind generates observations or suggestions that could improve current practice from an EHO perspective. These suggestions are captured and reported where they reflect common themes across the case studies or where they could stimulate new thinking around approaches to addressing environmental health in the context of emergency management. It should be noted that views expressed by participants in the case studies have not been more widely validated and may reflect personal perceptions rather than official policy or practice.

Common themes are addressed to key audiences of current and prospective EHOs, local government and state or territory government.

People considering career options: what you should know about EHOs and emergency management

- Environmental health sits at the intersection between the environment and public health. It addresses factors in the environment that can affect health.
- Most people attracted to working in environmental health have an interest in science and a passion for making a difference to the lives and health of their communities.
- The work involves applying basic science and technical concepts to find practical solutions to support public health. A key skill of EHOs is being able to communicate this information to people in the community.
- In an emergency event or incident, EHOs work as part of multidisciplinary teams of professional emergency workers. They form close working relationships both within and across agencies and with different levels of government. Local work teams can include diverse professions such as engineers, planners, building surveyors, health and welfare professionals and tradespeople. Cross agency relationships can include working with police, state emergency services, aid and community organisations and essential services suppliers. All this makes for interesting and diverse working relationships and can generate lateral thinking and novel solutions in responding to challenging circumstances.
- EHOs are the arms and legs of the public health response to emergencies. Unlike most other professionals involved, they contribute to every aspect of emergency management. This ranges from participating in education campaigns and working with communities to help people prepare and protect themselves from the likelihood of an emergency occurring through to staying on after the media attention and limelight fade to help communities recover and rebuild. It combines office work like strategy planning and data management through to hands on work in the field such as inspecting, collecting and analysing evidence, pinpointing risks and working out what to do about them and explaining and overseeing the action required.
- The work involves building relationships, educating, negotiating and influencing people across the community, from industry leaders, local business owners, householders to elected councillors and agency managers.
- EHOs are generally people who enjoy the unexpected. Every day they walk into businesses or other environments to inspect, identify and assess risks and provide information. Every inspection is different. EHOs are people who learn to expect the unexpected. Building relationships and educating is a big part of the role but EHOs also have extensive legal powers to enforce legislation.
- Working in emergencies draws on the skills built in the day to day work of environmental health. EHOs learn to be flexible, self reliant, creative and resourceful.
- EHOs need a solid base of environmental health skills and knowledge as well as emotional...
maturity. This is especially true for their work in emergencies where EHOs can find themselves working with communities under stress and sometimes suffering emotional trauma and managing, supporting and motivating work teams working in high pressure situations. At the same time as working to protect public health EHOs also need to monitor and manage their own health and emotional wellbeing.

- EHOs get training and support to build personal resilience, develop self awareness and learn how to manage in a crisis.

- All facets of planning have potential implications for environmental health. Considering health implications should be an integral part of all planning processes.

- EHOs have the skills and knowledge to identify and anticipate environmental health issues that can be applied both to emergency management as well as to wider planning forums. In emergencies councils come to recognise this expertise but there are opportunities to engage EHOs more effectively, before an event occurs.

Local government: what you should know about EHOs and emergency management

Local government has a legal duty of care

- Local governments are elected to represent, facilitate and support their local communities. Because they are the closest tier of government to local communities, they have a central role in building community capacity and resilience to prepare for, plan, respond and recover from emergencies.

- Legislation establishes the responsibility of local (or Territory) government to protect environmental and public health both in and out of emergencies.

- When authorising people to act under public health and emergency legislation, local government must ensure they appoint officers with the appropriate skills and knowledge to undertake the work.

- Local government can be held accountable if officers abuse their powers.

How local government can take advantage of EHO skills to protect and maintain public and environmental health

- Public and environmental health is not a standalone issue. Building, maintaining and protecting health outcomes requires an integrated approach.

- The level and effectiveness of emergency management planning directly influences whether EHOs feel able and prepared to contribute effectively to emergency response activities.

- EHOs have the technical skills to undertake environmental health work but need training in emergency management structures and responsibilities. All employers of EHOs need to ensure their EHO staff have undertaken emergency management training and participate in regular refresher training.

- EHOs are often one of the first points of contact between government agencies and the community. They identified ways that local government can facilitate them to engage in response activities:
  - having clear and current statements of job roles, responsibilities and procedures;
  - appropriate legal authorisations;
  - providing vehicles and high visibility uniforms that clearly indicate that they are council officers responsible for environmental health;
  - being equipped with the appropriate personal protective clothing and relevant equipment and support such as GPS devices, ‘grab and go’ kits, IT support;
– providing staff cover to handle the day to day workload of EHOs to free up time so they can focus on their roles in emergencies;
– introductory and refresher training in emergency management;
– debriefing sessions. EHOs stressed the benefits of providing effective recovery support and counselling to help people to manage their personal emotional health, particularly when EHOs (and other emergency workers) are exposed to traumatic events such as the bushfires.

• ‘If you don’t use it, you lose it’. EHOs have a broad contribution to make in the field of emergency management but many are also frustrated that they have very limited opportunities to contribute their skills and knowledge. In the context of labour shortages, agencies wanting to engage EHOs should consider how they can best use their skills and knowledge. This can both improve council capacity at the same time as providing more rewarding and motivating work opportunities for this professional group.
• The experience of working collaboratively in handling incidents across local government departments and across agencies cements relationships, and builds capacity and camaraderie. This shared experience can be further developed to improve ongoing working arrangements.

Managing and supporting people

• In an emergency or incident response, agencies need to quickly find people with the right skill sets to handle the work. Some jurisdictions have already established databases of people with the relevant skills and experience. Others suggested that an ‘emergency-ready’ people register would provide a valuable resource, especially when trying to fill roles in a crisis.
• In the height of response activities, people are drawn from all over and participate with an attitude of ‘whatever it takes’. However there is a logistical side to handling the sharing of expertise between councils and agencies. These arrangements worked more seamlessly in some cases than others. A project in Victoria undertaken by the Municipal Association of Victoria developed a set of protocols to support a more robust and consistent approach to support these arrangements.
• EHOs stressed the value of debriefing sessions but also distinguished between different types of sessions. There is a difference between debriefing sessions held for the benefit of individuals and those designed to contribute to the ongoing improvement in the way organisations and agencies approach emergency management. Both are important but often the two become blurred.
• Understanding the principles and practicalities of all stages of emergency management is critical. EHOs need both introductory and refresher training in emergency management. Training provides grounding in the principles and procedures that support emergency management. Most EHOs surveyed had participated in basic emergency management training but frequently requested refresher training. This is important to keep EHOs up to date on current agreements, guidelines, protocols and the like that inform the way the role is carried out in a specific jurisdiction or event as well as refreshing skills and knowledge by providing opportunities to participate in practical exercises and drills.

State government: what you should know about EHOs and emergency management

This heading is used to group aspects of the experience that are most effectively addressed at a collective level. Although they are described under the heading of ‘state government’, some of the issues raised could equally apply to Territory governments as well as to state-wide bodies such as industry bodies or professional organisations.
• Establishing robust interagency relationships and role clarity underpins a holistic, multi-agency emergency management approach. Leaving EHOs to negotiate these issues in the heat of response efforts is a recipe for failure. EHOs repeatedly stressed the value of all stakeholders understanding the roles and responsibilities all agencies. From an environmental health perspective, health departments can play a role in facilitating clarification of boundaries and roles of EHOs where they overlap with other professionals. This can take the form of negotiations of memoranda of understanding (MOUs) or protocols with partner agencies.

• Some EHOs were unsure of their scope of powers in emergencies. State and local governments share authority to authorise officers under legislation and need to make sure that officers are authorised and acting under appropriate legal instruments and aware of their legal powers, especially where these may be subtly different from the powers they exercise in their day to day work.

• Volunteers and volunteer organisations make an important contribution to response efforts and need to understand environmental health issues related to their roles. For example, local community organisations might set up a kitchen to supply meals to people affected by an emergency. A basic explanation of public health issues in emergencies and the role of EHOs in supporting public health could be developed and targeted to volunteer organisations. This could support the work of individual EHOs in building relationships with local community organisations.

Managing data collection

• Individual councils have made significant advances in both data collection ideas and technologies. There is scope to support organisations to share this experience to improve practice across councils. Encouraging adoption of common platforms would also facilitate EHOs who work across councils in an emergency.

• Interagency data sharing is an element of a holistic approach. Notwithstanding the different interests and focus of partner agencies, there is significant scope to improve data sharing.

1.3 The context: emergencies and disasters

Australia has always been a country ‘of droughts and flooding rains’. Our coasts are buffeted by cyclones and the country is flooded, baked, burnt and shaken by wind and earthquakes. In recent years each new disaster seems to set a new record as the ‘worst’, ‘largest’ or ‘most deadly’. Climate change modelling confirms that the frequency and magnitude of extreme events which trigger a natural disaster or emergency is increasing. This is not to suggest that our experience of all natural disasters can be directly linked to climate change but rather underlines the need for a focus on emergency management that include planning and preparing for, responding to and recovering from public health impacts related to environmental change. In addition EHOs also deal with a range of industrial hazards such as fires, leaks and explosions of toxic materials. More recently biological, chemical and radiological hazards have been added to the list. Any of these hazards can trigger an emergency.

As we understand more about emergencies, our approach to defining what constitutes emergency and related responses has changed. Most of the resources and public attention are directed to the specific event and the immediate aftermath. Yet the costs of emergency events reverberate long after the event has passed. They are measured in terms of the impact on community life and local infrastructure; emotional and physical health of the people; economic impact; insurance costs; financial stress and environmental impact. Traditionally definitions concentrated on severity of an event measured in terms of loss of life and damage to property. More recently approaches to defining

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3 Reference from the poem My Country by Dorothea Mackellar.

disasters’ and ‘emergencies’ within legislation and related guidelines aim to capture a more holistic understanding that takes account of the community context in which they occur and upon which they impact.

As emergencies become more frequent and more complex, ‘all hazards’ or ‘holistic’ approaches have been developed and adopted. These approaches engage and coordinate a breadth of expertise including the three tiers of government, volunteer organisations and local communities.

1.4 The role of EHOs in emergencies

We have services and infrastructure that we live with day to day that make our environment pretty safe. Most people don’t understand how easily that can break down. (EHO, Victoria)

Environmental health sits at the intersection between environmental factors and health impacts. It is concerned with how both the natural and built environment can impact on public health. EHOs are responsible for promoting, maintaining and protecting this aspect of public health. This responsibility becomes even more critical in the event of an emergency. Emergencies can take us to the threshold where the basic infrastructure we take for granted such as the infrastructure that delivers power, clean water, safe food and manages waste are at risk of collapse. Not only are these services often under threat, but when people become tired and stressed – whether they are emergency workers or affected communities, their health also becomes more vulnerable. EHOs work alongside other emergency workers and people caught up in emergencies to protect public health. Ironically, the more effectively they do the job, the more invisible they become.

Legislation provides authorised officers with specific powers to fulfil this role. In addition to granting often extensive powers to authorised officers, officers and/or the person responsible for their appointment may be subject to the law of negligence. Legislation protects legal rights of people who may be affected by the inappropriate exercising of powers. This underlines the importance of establishing robust authorisation processes that ensure that officers have the required skills, knowledge and support to carry out their roles. In an emergency context, authorised officers need to understand the legislation that applies in specific emergency situations and the related powers of authorised officers.

Legislation is specifically concerned with defining legal authority and powers relating to enforcement. It is less helpful in understanding the broader role that EHOs play in educating, advising and facilitating practices to ensure the basic needs of communities are met in ways that eliminate or minimise environmental health risks. As with most EHO work, in the emergency context enforcement is only a minor part of the role, coming well behind education, advice and support.

The most important thing is your ability to get on with people. It’s about influencing, not throwing the book at people. (EHO)

Emergency Management Australia (EMA) sits within the Attorney General’s Department and is responsible for coordinating government responses to emergency incidents. EMA describes four inter-related areas of activity that can reduce or eliminate hazards, reduce susceptibility or increase resilience. These headings provide a structure for exploring the EHO role in emergencies. They are outlined here in general terms and examined in the context of each of the case studies.

1. Prevention and mitigation activities
2. Preparedness activities
3. Response activities
4. Recovery activities

The nomenclature around activities is constantly evolving and is currently under review.
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**Prevention and mitigation**

A scan across each of the case studies underlines the potential to draw EHOs more fully into the earlier stages of emergency management. Prevention and mitigation activities refer to influencing codes, policies and practices so that the conditions that give rise to or influence the severity of public health incidents are reduced or eliminated altogether. For example, EHOs working to bring the spread of dengue-carrying mosquitoes under control identified opportunities to influence building codes to minimise design features that allow water to collect and provide ideal breeding grounds for mosquitoes.

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**Preparedness**

Preparedness activities focus on planning and building community resilience. The community links that EHOs build to support their day to day work also position them to take an active role in supporting communities to engage in planning processes and improve their own level of preparedness and resilience to withstand emergency events.

There are specific structures and mechanisms that support emergency planning but the general principles are familiar to any EHO who has been involved in planning for a major mass event. Week long rave parties, scout jamborees, community festivals, bike rides involving thousands of cyclists or major sporting events are just some of the activities that EHOs work with. Their role is to identify public health risks, to anticipate what could go wrong and to work out ways to prevent or minimise the likelihood of a problem developing. These same skills of analysing hazards and managing risk are applied to emergency management planning activities.

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**Response**

The response phase puts plans into action. The focus of EHO work is on providing specialist advice on emergency management facilities and activities as they affect health outcomes. The heightened vulnerability of people under stress including emergency workers and the people directly affected, underlines the importance of this work. The case studies profile the inventive ways that EHOs work alongside other emergency workers to raise awareness and find solutions that protect public health under difficult conditions.

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**Recovery**

The planning processes and infrastructure that support each of the case study emergencies differ. However each study echoes the importance of effectively utilising EHO skills and knowledge early on in planning processes. Some of the councils that participated in the development of the case study materials were seeing new opportunities for EHOs to play a fuller role in planning processes. In part this was a consequence of seeing the breadth of EHO skills and knowledge demonstrated in the height of an emergency.

The recovery phase involves dealing with the aftermath of emergency events – cleaning up and ensuring that essential services and infrastructure are available. Once the immediate crisis passes, the work transitions to a business as usual state where EHOs continue to provide advice and support to communities and businesses about what they need to do to promote and protect public health.

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**EHO roles and responsibilities**

To understand more about the role we asked EHOs involved in each of the case study emergencies to describe what they do in emergencies. The general description is presented in the following table. The case studies provide specific examples of how these general features applied in specific contexts. In many ways, the role is ordinary EHO work conducted under extraordinary conditions where limited resources can combine with highly stressful situations to significantly increase the potential exposure to risk. There is another important way in which this work varies. In their day to day work EHOs work independently. In contrast, emergency work is a multi-disciplinary activity. The emergency management framework relies on all activities.

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7. eNHealth is about to publish Disaster management: A disaster response guide for environmental health practitioners which will provide further information on EHO roles and responsibilities.
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participants understanding and following a clear chain of command. In addition, EHOs also need to understand the legal authority and powers they can act under. Declaration of a formal emergency state can have an impact on the role and authorisation of EHOs.

The following table describes a breadth of EHO roles. Not all EHOs involved in emergency management are called on to perform all roles. The role performed by EHOs in a specific event reflects differences in job design of EHOs depending on where they work, their level of responsibility for staff and the requirements of the specific emergency context.

**EHO role in emergencies**

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<thead>
<tr>
<th>Prevention/mitigation</th>
<th>Preparedness</th>
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<tr>
<td><strong>Planning</strong></td>
<td>• Participate in emergency risk management planning processes and committees (eg state, regional/district, local)</td>
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<tr>
<td>• Establish or review arrangements to prevent or mitigate risks eg building codes and regulations; land use management; traffic controls</td>
<td>• Collect local information on local risks, capacity, needs, resources</td>
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<tr>
<td>• Participate in drafting and implementing legislation, codes and guidelines</td>
<td>• Contribute to developing environmental health and emergency management operational plans and allocate responsibilities</td>
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<tr>
<td>• Participate in establishing and implementing communication and warning systems Facilitate community and business engagement in planning processes</td>
<td>• Participate in arrangements to provide for that necessary staff, skills and resources are available</td>
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<tr>
<th>Response</th>
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<tr>
<td><strong>Managing</strong></td>
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<tr>
<td>• Act within scope of authorisation and under chain of command</td>
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<tr>
<td>• Assess operational involvement and resource requirements</td>
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<tr>
<td>• Follow protocols to access and allocate resources</td>
</tr>
<tr>
<td>• Monitor, manage and report on implementation of emergency management plans and resource expenditure</td>
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<tr>
<td>• Participate in officer debriefing/counselling and support</td>
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| **Communication and public education** |
| • Provide advice, support and direction on public health risks to health and partner agencies, local authorities and communities to mitigate public health threats |
| • Maintain regular communication with agencies and stakeholders |
| • Assist with media content and response |
| • Respond to information requests from emergency coordinators and other partner agencies |

| **Risk assessment and mitigation** |
| • Provide advice on facilities and activities conducted at staging areas; Incident Control Centres; emergency relief and/or temporary accommodation centres |
| • Identify and report on public health risks |
| • Work with others to ensure public health risks are addressed |
| • Work with others to reinstate temporary infrastructure eg power, potable water, toilet and shower facilities, waste management |
| • Enforce public and environmental health standards appropriate to the circumstances |
| • Investigate and monitor illness outbreaks |

| **Recovery** |
| • Assess public and environmental health impact |
| • Undertake or direct remedial/clean up activities |
| • Provide advice on programs and support to facilitate community recovery |
1.5 EHO skills, knowledge and attributes

The skills and experience that equip EHOs to undertake this role are embedded in their day to day activities. What sometimes looks like relatively mundane, routine work provides the training ground for building flexibility, resourcefulness and self reliance. The emergency context also brings knowledge of the science that underpins environmental health to the fore as EHOs work together with other emergency workers to find workable solutions.

In 2009 enHealth commissioned the documentation of a skills and knowledge matrix required to carry out the EHO role. In addition to a range of generic skills that underpin the work of EHOs a subsection of the Matrix applies specifically to emergency and incident management. The relevant section is attached in Appendix 3.8

Describing required skills and knowledge provides only a partial picture of what it takes to work effectively in emergencies. There is another less tangible but no less essential aspect that is more difficult to define. It is implied by assertions that ‘it really depends on the individual. No amount of training can guarantee that someone is ready for this role if they don’t have the right approach.’

To unpack what this ‘right approach’ means, EHOs were invited to provide their perspective on the personal attributes and experiences that equip people to be effective in emergency situations. While acknowledging the importance of technical competence, the focus of their comments is on the ‘soft’ skills.

### The ‘right stuff’

<table>
<thead>
<tr>
<th>Technical skills</th>
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<tr>
<td>• Understand the impact of the specific emergency on public and environmental health</td>
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<tr>
<td>• Know how to use equipment and systems. This could mean anything from using handheld computers with GPS to keep track of locations to knowing how to prepare chemicals to control dengue mosquitoes</td>
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<td>• Local knowledge of the environment and the community</td>
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<tr>
<th>Communication</th>
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<tr>
<td>• Good communication and people skills</td>
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<tr>
<td>• Good listener</td>
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<td>• Team player</td>
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<td>• Leadership</td>
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<td>• Able to work within chain of command</td>
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<td>• Compassion</td>
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<td>• Emotional intelligence</td>
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<td>• Bring people with you</td>
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<table>
<thead>
<tr>
<th>Problem solving</th>
<th>For example:</th>
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<tbody>
<tr>
<td>• Lateral thinker</td>
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<tr>
<td>• Assess situations, establish priorities and act decisively</td>
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<tr>
<th>Personal resilience</th>
<th>For example:</th>
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<tr>
<td>• Ability to work under pressure</td>
<td></td>
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<tr>
<td>• Humour</td>
<td></td>
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<tr>
<td>• Look after your own emotional health</td>
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### Skill development

EHOs undertake either an undergraduate or post graduate degree program to prepare them for their role. This provides the cornerstone for building environmental health competence. Classroom learning is then honed and developed in the workplace. Entry level academic programs provide generic skills and knowledge but tend to brush over emergency management as a specific field of study. This gap is filled by a number of short courses. The most popular9 and the only one delivering a nationally accredited program is offered by Environmental Health Australia which runs a 5-day...

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9 Based on survey responses from Victoria and Queensland.
course in emergency management for public health professionals.

The course is run from the Australian Emergency Australia training facility at Mt Macedon, Victoria. A similar but unaccredited version of the program is run in Cairns. The live-in nature of the Mount Macedon course is designed to expose participants to working long hours over a number of days, simulating some aspects of a real emergency environment. A strong emphasis is placed on simulated and practical exercises. People who participated in this program gave strong endorsements of both course content and design and particularly valued the practical activities and opportunities for experiential learning.

Respondents to the case study surveys were also asked whether they felt adequately prepared to participate in an emergency. Interestingly while nearly all had undertaken emergency management training, not as many felt they were adequately prepared. This was by no means a poor reflection on EHA courses. In fact, all comments on the Mt Macedon course were very positive. Nor did it reflect a higher proportion of relatively new EHOs who may have lacked experience. Neither length of service nor previous experience in emergencies was a predictor of a negative or ambivalent response to the question about whether an officer felt adequately prepared. Factors that had a bearing on preparedness included the extent and effectiveness of planning processes undertaken by agencies employing EHOs; clarity on roles and responsibilities; the level of resourcing and back up that organisations provided. A universal criticism related to the lack of regular refresher training in the form of hands-on drills, information updates and practical training activities.

1.6 The EHO workforce

A significant driver for developing these case studies is an interest to attract people to work in environmental health. Before exploring the experience of EHOs in emergencies this section presents some reflections of EHOs about what attracted them to the role.

There is limited workforce data on the national EHO workforce. ABS figures don’t allow for a breakdown to this occupational level. The most detailed picture comes from survey based workforce studies. Although each study used different survey instruments, they reflect some consistent trends. The environmental health workforce has become increasingly professionalised. An undergraduate degree sets the minimum prerequisite for entry to the profession in most jurisdictions. The workforce is also becoming increasingly female. Although men still outnumber women in terms of total numbers, men dominate the higher end of the age scale whereas younger EHOs are more likely to be women.

So, what do EHOs say about the job?

Back in school most EHOs were strpmg in science subjects but that’s not the end of the story. They are also passionate about ‘making a difference’ to people’s lives:

At the end of the day it’s about feeling I make a difference.

We actually do have an impact on people’s health. There’s a regulatory focus but it’s a broader role in health promotion.

I always had an interest in social justice and Aboriginal culture. I just felt that Aboriginal people could do with a better deal – and maybe I could use my skills to improve their lot out bush.

10 Recent examples include:

Local Government Career Taskforce (Qld) (2009), The Queensland environmental health practitioners – attraction and retention survey report, August 2008

I get a buzz out of being involved in things that can change peoples’ lives and being constantly challenged along the way.

The same themes came through comments about their role in emergencies:

*It’s about understanding the people you work with. You might have someone with special needs and you can link them with resources that can help them.*

*Getting positive feedback made me feel like I was giving something to the community, not just dumping information or being a burden.*

*The work itself provides a chance to combine working at a computer with getting out and about. It offers diverse, challenging and often unpredictable tasks:*

*It is the diversity that has kept me in the profession over the years because you never know what the next phone call will bring!*

*It’s never the same from one day to the next.*

This is especially true of emergencies. By their nature they are often unpredictable and occur and escalate with little or no warning. EHOs have plenty of experience of encountering unfamiliar situations where they need to assess the situation and decide what if anything needs to be done. Consulting, negotiating and influencing people underpin everything they do. The difference in emergencies is the scale, the time pressures and the circumstances in which the work needs to be done.

For some EHOs, the experience of working in emergencies provided a stepping stone for further career development for example participating to relief efforts overseas; working with other emergency organisations and signing on as reservists in the defence forces.
2 In the line of fire: the role of EHOs in Victorian bushfires, 2009

Following years of persistent drought, in February 2009 Victoria faced some of the worst bushfire-weather conditions ever recorded. The scale of the Black Saturday fires of February 7 were unprecedented. One hundred and seventy three people lost their lives; a further 414 people were injured and 7562 people were displaced. This case study looks at the role and contribution of environmental health officers (EHOs) in this emergency.

The sheer intensity and magnitude of these events, affecting this number of people is prompting a rethink, not just about the way emergencies of this type are managed, but also about the impact on community health and wellbeing. One of its legacies is to highlight the place of environmental, community and public health in emergency management.

Our reliance on EHOs was a real eye-opener. They were involved from day one and they’re still there. (Local government manager)

This case study reports on the experience of responding to the 2009 bushfires from an EHO perspective. It explores their contribution to each stage of the emergency management process.

Approach

This study draws on the following sources:

• A survey (completed by 20 workshop participants)
• Interviews with EHOs, managers and co workers at Nillumbik City Council
• Follow up interviews with other community and voluntary agencies that worked alongside EHOs.

2.1 Legislated roles and responsibilities of local government

In Victoria the role and responsibilities of local government are covered in a number of Acts. The key legislation is the Emergency Management Act 1986 which requires that each council:

• prepare a municipal emergency management plan (MEMPlan)\(^\text{11}\)
• appoint a Municipal Emergency Planning Committee (MEPC) responsible for and maintaining the Municipal Emergency Management Plan
• appoint at least one Municipal Emergency Resource Officer (MERO).

The Country Fire Authority Act 1958 requires that councils appoint a Municipal Fire Prevention Officer and that they maintain a Municipal Fire Prevention Plan.

The Local Government Act 1989 empowers and requires councils to allocate and manage their resources to respond to and recover from emergencies. Councils must plan for emergencies, identify and manage risks and make realistic assessments of their capabilities. Detailed guidance on the steps involved is set out in the Emergency Management Manual Victoria.

\(^{11}\) Part 6 of the Emergency Management Manual Victoria provides a detailed guide to this planning process.
Duty of care

In addition to outlining council responsibilities, legislation also protects members of the public where councils fall short of meeting its responsibilities. In 1998 the High Court of Australia ordered a Victorian council to pay damages to two residents for a fire that occurred in a rented dwelling in that municipal district. The claimants were awarded damages because it was proved that the council had known about the risk of fire and had failed to exercise sufficient responsibility in ensuring the safety of the building and its occupants. This decision illustrates an interpretation of council duty of care. The discussion of this case in the Emergency Management Manual Victoria concludes: If councils fail to identify, analyse, assess and address risks over which they have statutory authority they can be liable for any harm or damage resulting from the risk.

Legislation also covers the appointment of officers who have specified powers in emergencies such as the power to request personal details, power of entry, power to seize evidence, obtain information and general powers of enforcement. Local government has authority to appoint authorised officers provided they are satisfied that the person is suitably qualified or trained for the role. These officers and/or the person responsible for their appointment can in turn be held accountable for their decisions under the law of negligence (in Victoria, the Wrongs and Other Acts [Law of Negligence] Act 2003). This underlines the importance of establishing robust authorisation processes and ensuring that officers have the required skills, knowledge and support to carry out their roles.

2.2 Emergency management: the contribution of EHOs

This section highlights some of the experiences and stories of the EHOs who participated in the Victorian bushfire emergency. The four areas of emergency management activity provide a structure for this discussion.

Prevention and mitigation

Prevention and mitigation activities focus on action to either reduce the impact of hazards or eliminate them altogether. Examples of these activities include reviewing building use regulations or zoning and land use management. Although these actions might not remove a hazard altogether, they can significantly reduce the impact and avert a full scale emergency.

As local government comes to understand more about public health it is reshaping approaches to planning. Public health is a complex issue shaped by the social, economic, natural and physical environment in which people live. The Victorian Department of Health prepared an Environments for Health framework to guide councils in designing planning processes that start to influence the causes rather than the symptoms of health issues. The framework provides a host of examples of the ways that built, social, economic and natural environmental factors that might not seem directly related to health, are associated with illness and injury. This much broader understanding of public health is driving more holistic planning approaches that can take account of how changes in any of these environments can have unintended consequences for health outcomes.

Mainstream planning decisions around infrastructure and the built environment have generally been the province of town planners and engineers. If EHOs got involved at all, it was when health issues have already been identified and need to be addressed. The shortcoming of this approach is that other planning professionals are not always well placed to identify the way environmental factors can contribute to health outcomes before they manifest as public health

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12 Reported in EMMV, Part 6, pp. 23–4.

13 Environments for Health was primarily developed to support councils to develop Municipal Public Health Plans which is an obligation under the Health and Wellbeing Act. The same principles can be applied to emergency planning processes. www.health.vic.gov.au/localgov/mphpfr/downloads/mphpf.pdf
issues. It runs the risk that responding to public health becomes a game of catch up where councils react to environmental health issues after the fact. Integrating EHOs into planning processes helps councils to shape environments that systematically support and reinforce healthy outcomes.

Consistent with their limited involvement in wider planning processes, EHOs have not traditionally had a prominent role in emergency planning.

We played a minor role in planning – they didn’t really see why we needed to be there – they just thought we looked after catering. It wasn’t until an emergency happened that they came looking for us. (EHO Manager)

This is another aspect of planning process that councils are reconsidering. Moves to extend engagement around planning issues are reflected in the involvement of EHOs in the development of heatwave plans. In some councils, EHOs are members of the Municipal Emergency Management Planning Committee (MEMPC) and they usually get involved in developing the environmental and public health sub plans that form part of the overall municipal emergency management plan. Some councils are taking the next step to think through ways that health-related issues can be addressed in other sub plans. Traditionally the focus has been on minimising disruption and public nuisance and less about managing longer term and often less visible community and public health issues as one manager explained:

We tend to address organisational response and community recovery in terms of relief centres but we need to think in different ways about public health impact across planning processes. (Local Government, Manager Group Infrastructure)

**Preparedness**

Preparedness is primarily concerned with building the resilience of local communities to withstand an emergency if it occurs. This is sometimes described as reducing community vulnerability to hazards. The more informed and prepared communities are, the less susceptible and more resilient they become in the face of an emergency. EHOs can draw on their existing relationships with local businesses and members of the community developed through their day to day work to bring people into these activities. As well as using informal networks, EHOs build relationships with key stakeholders including community organisations who become working partners in an emergency situation. They also participate in community forums such as addressing the local fireguard group and other public meetings, and keep people informed and invite response to planning issues.

Preparedness also relates to organisational readiness. EHOs participate in developing operational plans together with protocols, procedures and working arrangements with partner organisations. This work occurs at different levels. Avenues for engaging in planning processes are provided in the workplace where councils recognise and draw on the public and environmental health skills offered by EHOs to improve their planning processes. It also occurs at state level through initiatives coordinated by the Victorian Department of Health and by the professional body for environmental health – Environmental Health Australia (EHA). EHA has a specific emergency management special interest group. One example of the way this group contributes to emergency preparedness was the work they recently undertook in partnership with the CFA to develop a protocol about their role in emergency incidents attended by the CFA.

At the workplace level, EHOs get involved in preparing for emergencies by having input to role descriptions, responsibilities and operating procedures; knowing what authorisation and legislation applies to a given emergency situation; making sure physical resources are available. ‘Grab and go kits’ are put together to provide basic equipment an EHO is likely to need like local maps, information sheets, torches, stakes, tape, shovels, sledge hammers, buckets, spray paint, hard hats, masks and boots; GPS devices and/or other data collection tools. They also need to confirm council resource availability such as availability of appropriate vehicles fitted with appropriate signage so that officers are clearly recognisable in the field.
Response

The response phase swings into action in the immediate aftermath of an emergency event. As soon as it is safe to do so, EHOs go into emergency areas as part of a multidisciplinary team of experts responsible for the response effort. They often don’t know what to expect when they get there but it pays to think ahead.

When we first arrived there was nothing set up – no computers, no phone coverage. We were starting from scratch. I ended up going back to the office to bring back a computer we could work on.

Heading in (to the staging area), we didn’t know what we’d strike. We loaded up the cars with basic gear – kits, buckets and as many 40 gallon drums as we could fit. We stopped at a service station on the way in to fill the drums with water thinking they might be useful for watering stock. When we got there we found the fire fighters had no handwashing facilities. They were coming in tired and dirty after being at the fires, grabbing some food like a hamburger and eating it in their hands. We set up a basic handwashing station – not ideal but better than nothing while we were getting set up.

The primary focus of EHOs in this phase is to safeguard the health of emergency personnel such as firefighters as well as the people directly affected and displaced by the fires. They make sure people have access to basic public health services and infrastructure such as clean drinking water, safe food, washing and shower facilities, power supply, suitable shelter and waste management. Their worksites included emergency services staging areas, coordination centres and anywhere that people were living – whether they are in relief or temporary accommodation centres or on their own properties. These are not easy environments to work in. People are working under enormous stress and time pressures which makes them more susceptible to health risks. The work is all about striking the right balance between ‘good practice’ and the realities of the environment they are working in. This calls on their skills as risk managers to find the best solution in far from ideal conditions. It means thinking outside the square.

Everything’s a compromise and often it’s just not possible to apply the letter of the law. It’s also about maintaining professional credibility. Our contribution needs to be professional, practical and appropriate. It’s about finding the best solution in very difficult circumstances.

Establishing the basics

One of the common reactions of people who had been displaced was a preference to stay together as a community rather than going off to hotels.

People wanted to stay together. They were in shock. They didn’t know what was happening. They needed to be together in a place where they could get updates quickly.

EHOs got involved in setting up temporary accommodation. Making sure people are supported by basic public health services and infrastructure can involve anything from advising on site layout and drainage for temporary accommodation to the logistics of negotiating access to shower blocks at community facilities.

I got there and someone handed me a blank sheet of paper and said – we need a plan for a tent city – where to locate toilets, kitchens, washing facilities, the lot. We had to come up with it on the spot.

EHOs need to assess conditions, identify hazards and work out how to minimise risks. For example, emergency staging areas are the hub of activities for emergency workers. People and supplies are often flown in by helicopter and fire trucks, heavy vehicles like bulldozers used to clear roads and other emergency vehicles converge, often creating a dust hazard. Their input to decisions about the layout and orientation of facilities takes these issues into account. They are constantly weighing up the options and working with other emergency professionals to find solutions that allow the emergency workers to get on with the job while not putting their health at risk.
After days of having no shower facilities for fire fighters the shower block was delivered – but to the wrong location. With no silage tank, the option was to wait to get it moved or to run the waste off across a paddock and into a dry creek bed. I first checked that no one took water off the creek. I then had to weigh up the relative risks associated with the temporary handling of waste water balanced against a bunch of tired, dirty fire fighters who hadn’t had access to shower facilities for quite a while. Luckily I made the right decision.

Buildings used to run operations centres or provide temporary accommodation are often not ideal for the purpose. In one case a local hall was being used as a recovery centre but there were no shower facilities. This is where local knowledge and contacts are invaluable. The EHO negotiated with the local RSL and swimming pool to arrange access to showers.

The work involves constant vigilance. Problems may not be evident initially but come to light as events unfold.

In the emergency centre everyone was using electric kettles – a cup of tea can work wonders but those kettles draw quite a bit of power. We realised that the drain on power meant that the coolstore was regularly cutting out. We got an electrician in to rewire the centre to prioritise refrigeration.

The emergency doesn’t end once the immediate threat has passed. A coolroom was set up on private property. With no plan for disposing of rubbish and an intermittent water supply, pests and growing piles of rotting food became a real problem. We had to go in and help them clean it up.

The main focus is on public health issues but EHOs also get involved in solving basic problems. For example, people coming into temporary accommodation shelters brought with them a few possessions they could grab before fleeing but had nowhere to put them. EHOs found some lockers they could use as temporary storage.

**Influencing others**

In an emergency environment EHOs can’t always rely on exercising their legal powers. Volunteer organisations are not selling food and are not subject to food safety legislation. They may also not understand the advisory and support roles that EHOs play. EHOs talked about how they went about educating and influencing others. Often the best way to handle a problem was to find a way to fix it.

In one case a volunteer group was washing dishes in dirty water. There’s not much point telling them what to do and what not to do. The best way to influence people is to give them a better option. I set up a source of potable water so they used that instead.

**Managing goodwill**

The community response to the bushfires was immediate, generous and sometimes overwhelming. Whether it’s rocking up with a boot full of frozen food or bringing in a batch of homemade soup, the EHO needs to make decisions about whether the food is safe. The first priority is always to protect the emergency workers and people affected by the fires. The second priority is to manage the good intentions of people who genuinely want to help.

In one case a couple wanted to make their own contribution by picking fresh vegetables and making soup. They used bore water but didn’t know how deep the bore was. This presented a potential risk. It was a difficult decision to tell them we couldn’t risk giving it to the fire fighters but once I explained why and pointed out the heightened risk for people under stress, they accepted the decision.

There were other well meaning contributions that presented real challenges for managing health issues. One international aid agency provided residents with basic survival kits containing tents, cooking utensils and tarpaulins to allow them to pitch camp on their properties. Helping people...
to move back onto their properties unintentionally exposed them to a range of risks. Splitting the community immediately following the crisis makes it difficult to target services and support. More importantly, many properties were unsafe and some remained a crime scene. Common risks included damaged septic tanks that people could fall into; unsafe building structures; risks associated with Copper Chrome Arsenate (CCA) treated timbers (CCA) treated timbers and asbestos building materials and the lack of potable water.

**Chain of command**

Emergencies draw on the existing skill base of EHOs but the role differs in some important ways. The day to day work of EHOs is largely self directed. Emergencies on the scale of the bushfires are complex, multi faceted situations that demand a holistic response where the efforts and contributions of multiple players need to be coordinated. Understanding and working within the chain of command is essential.

At a practical level it means that EHOs need to feed requests through to the Municipal Emergency Coordination Centre (MECC) rather than acting independently. However, it doesn’t mean they can’t make use of their own specialist knowledge and networks.

> When we needed to locate temporary toilet facilities I called up my council which wasn’t fire affected. We had recently hired these facilities for an outdoor concert. I passed on the contractor details to save the coordinator time in locating a supplier.

**Interagency working arrangements**

EHOs stressed the importance of establishing clear roles and responsibilities both within and across agencies well before an emergency occurs. A recent initiative to assist this outcome was the development of the protocol on the *Role of EHOs at CFA/DSE Incidents*.

EHOs also discussed the respective roles of EHOs and volunteer organisations. Local volunteer organisations such as the Red Cross, Rotary and the Lions Club are part of the community infrastructure that is mobilised in times of crisis. EHOs work alongside these agencies to provide advice and support on environmental health issues. This interaction is facilitated by establishing relationships with these organisations well before an emergency event. The needs of these organisations vary. In some cases EHOs simply make contact to explain their role and what they can offer. In others they take a more active role such as providing basic food handling instruction to volunteers.

**Recovery**

Following the immediate response, action progresses to the recovery phase. In reality, these phases are not necessarily sequential. Some regions were establishing multiple relief centres following the path of the fires and were concurrently juggling response and recovery efforts. Once areas were declared safe to enter by police and the SES, EHOs teamed up with other professionals to assess the damage on site and provide information and support. Many properties affected by the fires were on septic tank systems. Checking the state of water supply and septic systems was the main focus along with providing information about safety issues related to cleaning up after the fires.

One EHO described how the work was organised in her council:

> We worked with 20 EHOs deployed from other municipalities. These people came from across the state for the first 3–4 weeks. Every day maps were handed out. The EHOs worked in teams of two and travelled in vehicles throughout affected areas identifying damaged properties and inspecting and recording the damage using assessment sheets and digital cameras.

**Collecting and recording information**

Although lots of agencies conduct initial impact assessments, local councils have a duty of care to make their own assessments, especially if people are living on a site. Council is responsible for ensuring that people are living in safe conditions and this responsibility doesn’t disappear in an emergency. From a public health viewpoint they need to know...
whether the water is safe to drink, the state of septic or other waste water systems, the safety of structures and whether sites have power to run essential equipment such as pumps and fridges. EHOs often identified other clean up issues like asbestos, CCA treated timbers, dead or injured animals or livestock.

The first challenge in conducting site assessments is to have accurate information about location, especially if signage and landmarks have been destroyed. A number of councils used GPS devices so that officers could accurately record site locations.

At Nillumbik EHOs called on the IT department to help them identify properties and record inspection details. The IT department adapted tablet technology with inbuilt GPS and prepared screen dump operating instructions so that people new to the technology could pick it up and get going within an hour or two. Data collection tools were uploaded onto hand held devices to avoid double handling of data entry. The GPS feature meant that even when street signs and landmarks had disappeared officers knew exactly which properties had been assessed.

EHOs and building surveyors teamed up to inspect all fire affected properties and enter data into a common database. Officers entered data on site and then downloaded the information overnight. As the team became more experienced they expanded the information collected to include details of items lost or damaged. This informed damage assessment and claims processes.

The experiment was not without risks. Trialling new systems can be challenging at the best of times. This system was being developed and refined on the run in a very high pressure environment. Initially not everyone had faith in handling data electronically and some building surveyors kept back up paper records. It is a credit to both the IT people and the officers in the field that the system not only worked but now provides a key data resource for all departments. The enthusiasm and preparedness of all staff to try new approaches and look for ways to improve the way things are done were key strengths in delivering this outcome.

Recognition of this achievement was reinforced in the form of an award received by Council’s Information Technology team for the Black Saturday Bush Fires Post Fire Recovery Coordination. RapidMap (software supplier) nominated the council for the award and explained that Council: ‘managed and collated accurate Black Saturday post fire assessments and community recovery information in record time. In less than a day, the deployment of Crest\textsuperscript{15} on every available mobile computing device, enabled concurrent Council staff and volunteers with little or no GIS/ GPS training, to record quality post fire observation data in the field. This innovative use of technology for Post Fire recovery activities yielded benefits to the People and Community of Nillumbik Shire.’

The sheer scale of the task of assessing fire affected properties was often daunting. Councils experimented with different approaches. Some concentrated specifically on environmental health assessments, organising for teams of EHOs to visit and assess properties. Others such as Nillumbik, favoured multidisciplinary teams. Each strategy had strengths and weaknesses – a narrower focus allowed more inspections to be conducted within a given time but necessitated multiple visits to each site by different area specialists. At Nillumbik the teams were initially comprised of up to six people from different areas. This reduced the number of contacts with a single site but the time required to conduct each assessment was so lengthy that and their goal of inspecting every property was starting to look like an impossibility. With the benefit of experience, they settled on sending an EHO and a building surveyor. Even then, assessment processes were time consuming. On a good day the teams could inspect up to 10 properties.

Assessment information collected across local governments had a range of applications:

- Assessment data underpinned decisions by local government to direct and prioritise recovery efforts. It was also used to trigger the involvement of other relevant local government services. For example, identification of dead

\textsuperscript{15} Field mapping and inspection software developed by RapidMap.
animals and livestock triggered clean up action by local laws officers; the need to remove vegetation and trees that had either been damaged or presented an ongoing fire risk prompted the involvement of outdoor workers.

- One EHO explained how assessment information fed into Council database which included post fire photos of damaged properties tagged with GPS references. They were able to match this with copies of current septic plans which became invaluable in the ongoing recovery stage, especially when looking at rebuilding plans and positioning of upgraded septic systems. EHOs now routinely record the location of septic tank effluent fields on GPS.
- Other agencies drew on this information to check and cross reference their own information and assess and review resource requirements and priorities. This included organisations such as Municipal Emergency Coordination Centres, regional taskforces, police, SES and Victorian Department of Health.

**First point of contact**

EHOs were often among the first people on the scene. Their initial focus was on checking the status of public health infrastructure. They also handed out information sheets, advice and equipment to protect individual safety. When people are in shock and traumatised, this is a challenging responsibility. A case in point was providing support to people as they moved back to their home sites to fossick through the remains. EHOs supported police and other emergency workers by handing out protective clothing kits and advising people about the risks associated with asbestos and other hazardous materials. EHOs also acted as a referral point to other government departments and services or in some cases, just offered a listening ear.

> We had to communicate with fire affected residents about the quality of their water, septic systems, issue asbestos kits and bottled water. We handed out fact sheets and explained what people could do. Sometimes we were just a friendly face.

> Sometimes the support we provided was ‘just listening’ and then passing on basic information about how to keep themselves and their families and animals safe. Basic public health issues like water supply, waste management strategies, dam management for stock were very important.

> Getting positive feedback made me feel like I was giving something to the community, not just dumping information or being a burden. People were so grateful to have someone to talk to and receive some practical assistance.

Communication was two-way. EHOs were also the eyes and ears for their council’s, regional committees, and government departments including DHS and EPA. While they handled issues on the ground, they were also identifying and feeding through issues that needed to be addressed at a more strategic regional or statewide level.

**Rebuilding**

Residents who decided to rebuild faced the prospect of coming to grips with unfamiliar regulatory regimes and planning processes. Planning can be a stressful process at the best of times, let alone when the person navigating the process has just lost their home. On top of that, changes in building regulations designed to improve public safety also have implications for rebuilding costs. Local governments worked with their residents to help people to understand the purpose and requirements of new regulations and streamline planning and permit application processes. In Nillumbik for example, rebuilding teams including a planner, building surveyor and an EHO provided a one stop shop to guide people through the processes of preparing planning, building and public health applications. They also provided advice and support on aspects of property recovery like weed and erosion control and revegetation.

> A lot of the houses lost were older homes – on older septic systems. People hoped they could reuse them but there are new septic system standards. There were also new building regulations. These are not only new for residents, they are also for the architects, the draftspeople and the builders.
The idea of a one stop shop was really designed to reduce anxiety and stress. We wanted to make it (planning processes) as easy as we could.

From an environmental health perspective, a key issue was the change in septic tank regulations. EHOs are used to taking complex, sometimes technical information and breaking it down so it can be simply explained. Translating and explaining technical information, answering people’s questions or researching and coming back with the answers were skills the EHO demonstrated that were highly valued by community members.

The EHO has to have the right personality. They are dealing with people who might be confused or distraught and are trying to get their planning applications through. They might have had a septic tank for 30 years and now they have to have a different waste management system.

There were times (at a public meeting) when things could have got pretty heated but she (EHO) was really good at clearly explaining why, giving lots of examples of what you can do if you’re close to a creek. (Community Recovery Committee)

The same people will continue to work within their communities on these issues. Unlike most other professionals who get involved in emergency response and recovery, helping people to understand how the environment interacts with health outcomes is the core function of EHOs and this remains the same throughout each phase of emergency management.

They’re still out there working – explaining the different kinds of systems available for waste management. It just becomes part of the normal planning process.

2.3 Skills and experience

EHOs not only demonstrate their practical skills in emergencies, they also draw on their knowledge of risks and appropriate solutions to find workable solutions in difficult circumstances. One EHO gave the following example. Ideally, in a food preparation area you would expect a dedicated food preparation sink with running water and a separate sink for handwashing. In the context of an emergency shelter, this might be impossibility. The EHO needs to decide whether operating conditions present unacceptable risks in the circumstances and find the best solution within available resources.

In addition to applying their professional knowledge as environmental health specialists, they also require an understanding of the principles and processes of emergency management. One way people prepare for this role is to undertake emergency management training such as the course provided by the EHA. A number of EHOs stressed the importance of complementing basic emergency management training with regular refresher courses and exercises. Training is essential to equip EHOs with the skills they will need if faced with an emergency but on its own, it is not sufficient. Of the EHOs surveyed[^16], only one respondent had not undertaken training, yet only 75% believed they were adequately prepared. The remaining 25% were more ambivalent, saying they felt only partly prepared. As one respondent commented, given the enormity and severity of the event ‘no amount of experience or training would ever be adequate’. It was also influenced by the extent to which they were supported by their agencies.

The technical dimensions of the role are addressed by professional training and emergency management training equips EHOs to handle the stress of being in the middle of a disaster area with limited resources and possibly no communication. However EHOs need more than this before they become highly effective in an emergency event. They need to develop emotional maturity. This is not only important to equip EHOs to interact with others but also to help them to manage their own emotional responses to extremely distressing events. Training, debriefing sessions and counselling

[^16]: These EHOs played an active role in responding to the fires and were engaged enough to attend a workshop on this event. This is not indicative of the total numbers of EHOs who have participated in emergency management training.
The wrong personality in an emergency event can do some serious damage to people and communities... [it requires a] combination of mental readiness, EHO skill, maturity, empathy and getting the job done.

EHOs identified some of the essential qualities or attributes required to work effectively in emergencies:

- Local knowledge
- Teamwork
- Decisiveness
- Technical knowledge
- Compassion
- Good communication skills
- Emotional intelligence
- Lateral thinker
- Calm under pressure
- Humour
- Self confidence
- Common sense

Finding people with the skills, experience and attributes needed to respond in an emergency is not easy especially at the height of a crisis. EHOs were drawn from across the state into affected areas. Pulling in people from outside the local area brings its own challenges. City-based EHOs can find themselves out of touch with rural issues like managing livestock, checking septic tanks or dealing with damaged asbestos. A common strategy was to match new EHOs with more experienced, local people who could provide hands-on mentoring.

Responsibility for coordinating staff and resources shifts between the state and local levels of government depending on the size and severity of the incident. Given the scale of this emergency, the Department of Health took on this role. Sharing of people across local councils was further facilitated by the work of the Municipal Association of Victoria in developing a Protocol for inter-council emergency management resource sharing which provides a useful start to managing the skill base and arrangements for sharing emergency-ready EHOs.

This case study illustrates how emergencies create situations where the fundamental infrastructure that supports good public health was put at risk. In these circumstances the skills and experience of EHOs were invaluable. Many councils recognised this during the disaster. The challenge now is to draw on these insights to improve the way councils approach each phase of emergency management as well as the way they access and use the skills provided by EHOs day to day.

People are looking round for someone to help – who can do this... and it’s what we do every day.

There were so many things happening and we were involved in most of them. We were the common thread. Every department wanted our advice on something – they finally realised what we do.

The case study tells some of the stories of the work done by EHOs that can be used to raise the profile of the profession. Changes in the reporting requirements under the Public Health and Wellbeing Act could provide an ongoing vehicle for EHOs to promote and publicise the vital contribution they make.
In 2009 Northern Queensland experienced the worst dengue epidemic in 50 years. In the main outbreak, 914 confirmed cases were recorded. Smaller outbreaks pushed this number over 1000. The number of unreported cases is not known but practitioners suggest it is likely to be at least two to three times the reported number.

As the outbreak spiralled out of control, here’s how the ABC reported the outbreak:

Qld Health failing to stop dengue epidemic

Posted Tue Mar 3, 2009 12:06pm AEDT

Health authorities in Queensland have admitted they are failing to stop the spread of dengue fever in the state’s north-east.

More than 600 people have contracted the mosquito-borne virus despite assurances in January that the number of cases would decline within a couple of weeks.

532 cases of dengue fever have been reported in Cairns, 70 in Townsville and a handful in other centres nearby.

The epidemic that started in December was expected to slow in January, but dengue has continued to spread unabated despite a mosquito eradication program.

Dr Linda Selvey from Queensland Health partly blames the wet weather.

“It slows down our response because we can’t actually undertake our dengue control activities when it’s raining and it also means that containers that we had emptied [refill], and refilling creates more breeding sites,” she said.

“We’ve also had the problems with the pesticide resistance.”

Five years ago two people died from dengue fever in the Torres Strait. Cairns Mayor Val Schier is worried people may die again.

“There are always been concerns that people may die, particularly people who are getting it for a second time,” she said.

The council is so concerned it has started imposing fines on those who blatantly leave water lying around their backyards, creating the perfect breeding opportunity for the aedes aegypti mosquito.

“If the teams go into a backyard and they discover multiple breeding sites and people who are just not taking it seriously, we have the capacity to slap a $400 fine on those people,” she said.

Queensland Health will not speculate whether the number of cases will top 900 like it did in Townsville and Charters Towers in 1990, but it says an end is in sight.

“As the temperatures get cooler and as the rain eases off then that helps us in our efforts because it makes the mosquitoes less vigorous in their breeding and also fewer opportunities for the mosquitoes to breed,” Dr Selvey said.

“Mother nature will help us as winter comes along.”

Based on an AM report by James Kelly

Dengue fever is a mosquito-borne (also called vector-borne) disease spread by the Aedes aegypti mosquito. Unlike most other mosquitoes, this strain prefers not to breed in swamps and drains. Instead it selects backyard rubbish, artificial water containers such as buckets, birdbaths, tyres, roof gutters and pots in and around homes. It can also breed in naturally occurring water containers such as bromeliads or water-holding leaves. This preference for living and breeding next to where people live means that people and their behaviour has a direct influence on mosquito populations.
Dengue doesn’t occur naturally in Australia. It begins with a single case arriving from overseas. The infected person is then bitten by an *Aedes aegypti* mosquito and within 8 to 10 days the virus can be transmitted from the infected mosquito to the people it bites. Northern Queensland’s proximity to its Asian neighbours and the popularity of overseas tourist destinations in places where the virus is present means that at any time, travellers can arrive carrying the virus. Tropical conditions providing high rainfall and steamy humidity provide ideal breeding conditions for the *Aedes aegypti* mosquito.

Responsibility for controlling all other types of mosquito populations falls to local councils as part of management of public nuisances. *Aedes aegypti* mosquitoes are much more than a public nuisance. The costs of dengue are borne by local government and the community they are responsible to protect in terms of complaints, illness and stress suffered by residents, time lost due to illness and directly affects the local economy which is further compounded by reducing the attractiveness of these locations to tourists.

This case study documents the role and experiences of EHOs who participated in managing dengue fever outbreaks in far North Queensland.

### Approach

This study draws on the following sources:

- A workshop conducted in Cairns of stakeholders involved in dengue management including the Director of Medical Entomology and EHOs from Queensland Health Tropical Regional Services (TRS) and local government
- A survey completed by 10 EHO workshop participants. All but two had over 10 years in the profession and all had previous experience in responding to emergency events.
- Follow up interviews with key stakeholders.

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**3.1 Legislated roles and responsibilities**

In Queensland the *Disaster Management Act 2003* establishes the legislative framework for coordinating emergency management across all levels of government. The main objectives of the Act are:

- To help communities:
  - mitigate the potential adverse effects of an event; and
  - prepare for managing the effects of an event; and
  - to effectively respond to and recover from a disaster or an emergency situation.
- To provide for effective disaster management for the state
- To establish a framework for the management of the SES to ensure the effective performance of their functions

Local government has a legal responsibility to promote and safeguard the public health of their communities. The *Disaster Management Act* requires local government to ensure they have disaster response capability; develop a local Disaster Management Plan consistent with the strategic policy framework for disaster management for the State; and, communicate information about the event to the district disaster coordinator. The Act also provides for the establishment of disaster management groups (DMG) at state, disaster district and local government levels. The DMG has primary responsibility for managing emergency management. Guidelines have been developed to support both local government and Indigenous communities to undertake the critical roles of supporting their local communities to prepare for, respond to and recover from disasters.

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17 There are no calculations available of average time lost for the 2009 epidemic but the estimated time lost due to illness in the 1992–93 Charters Towers outbreak was calculated to be 10.5 days per person. (McBride WJH, Mullner H, Muller R, Labrooy J & Wronska I, *Determinants of dengue 2 infection among residents of Charters Towers, Queensland, Australia*, *Am J Epidemiol*, 1998; 148: 111–6)

18 The detailed functions of the DMG are set out in Section 29(30) of the *Disaster Management Act 2003*.

19 The State of Queensland (Department of Emergency Services) (2005), *Queensland disaster management planning guidelines 2005 for local government*

A guide to disaster risk management in Queensland Aboriginal and Torres Strait Islander communities (2004), Queensland Government.
3.2 Responding to dengue

The official status of an incident or outbreak has implications for the legal authorisation of the officers charged with carrying out dengue control work. In the 2009 epidemic a Prevention and Control Program was declared under the Public Health Act. This provides limited authority to people deployed to conduct dengue control activities to enter properties for the purpose of inspecting and treating breeding grounds and trapping mosquitoes. EHOs are authorised to exercise wider legal powers such as issuing of public health orders or notices and other enforcement related action.

The Queensland Health Dengue Fever Management Plan (DFMP) for North Queensland details the components and stages of action taken to reduce the risk of outbreaks and strengthen control measures for any future outbreak. The Plan is structured around three components:

- Disease Surveillance
- Mosquito Control and Surveillance
- Education

There are different levels of control activities depending on the level of dengue activity.

**Ongoing prevention** where there is no current dengue activity in the zone.

**Response to sporadic cases** where there are no current cases in the zone but the Tropical Public Health Unit (TPHU) has been notified of an imported or a possibly locally acquired case. Most locally acquired notifications are false alarms and the person doesn’t have dengue. But if a locally acquired case is confirmed, the next level of action is activated.

**Outbreak response** where one or more locally acquired cases are confirmed concurrently in the zone.

This plan provides a framework for coordinating the efforts and expertise of multiple players including doctors and other health professionals, medical entomologists, environmental and public health managers, EHOs and vector control technicians.

The workload is jointly shared between Queensland Health and local government.

The earlier the virus is identified, the more quickly it can be brought under control. A delay in reporting can mean the difference between managing a few sporadic cases compared to facing a full scale epidemic. The surveillance component of the plan relies on doctors and other health professionals who are required to report possible dengue cases to the TPHU. Communicable disease control (CDC) staff from Queensland Health work with local doctors to assist them in requesting the appropriate laboratory tests. They then contact patients to ask them questions to help track and map the extent of the outbreak and work in partnership with local government to plan response activities.

3.3 Dengue: the contribution of EHOs

In the 2009 outbreak EHOs worked across state and local governments and took on a range of roles. The health incident controller as well as operations and logistics officers were all EHOs. Environmental health professionals are also deployed at every level of dengue activity. Entomologists assess information on human and mosquito surveillance to develop evidence based strategies that EHOs put into action – from prevention work to outbreak response.

EHOs are supported in this role by vector control officers working in local government and with Queensland Health.
**Prevention**

As the frontline of emergency management, EHOs have an important role to play not only in the hands-on response to outbreaks, but also in shaping policies and practices that can avoid or minimise the likelihood of future outbreaks. As dengue control experience develops, there is a growing body of knowledge about the diverse locations that provide mosquito breeding grounds. This expertise could be harnessed for example, to improve building design so that architects and designers are informed and encouraged to design structures and environments that minimise the risk of a dengue epidemic.

**Planning**

All stakeholders who are expected to participate in managing an outbreak need to be involved in the planning processes well before an outbreak occurs. Plans spell out agreed agency roles and responsibilities, individual role descriptions, protocols, procedures and authorisation requirements and processes. EHOs need to be involved in planning processes not only to shape planning approaches but also to anticipate the implications for their agencies and capacity to respond when the plan is activated. EHOs contribute to the implementation of a regulatory approach to managing risk and ensure compliance.

**Responding**

In an outbreak - time is of the essence. The objective is to identify where people infected with the virus live, work or have recently visited. The purpose of these efforts is to target activities to control the spread of the virus.

EHOs are involved in establishing control centres to coordinate the response effort. Queensland Health provides local maps showing the target locations for intensive mosquito control activities. Control work involves conducting property inspections yard by yard to identify remove or treat places where mosquitoes breed such as containers or other water collecting points that can hold larvae and pupae. Both the breeding grounds and adult mosquito populations also need to be destroyed. This is done by preparing and placing ‘lure and kill’ mosquito traps and, in some cases, spraying with insecticide to kill adult dengue mosquitoes. Control work that involves the use of pesticides can only be carried out by a licensed pest management technician. Once control measures have been taken to treat the initial population, traps are prepared and monitored to make sure the treatment worked and if not, to determine what additional treatment is required.

The second part of the work involves providing explanatory material, handouts and explanations about the virus and handling inquiries and complaints. EHOs work with their communities to help them to understand what causes dengue; what conditions encourage breeding and spread of the *Aedes aegypti* mosquito and what can be done to remove or minimise such risks; what precautions can be taken to avoid being bitten; why it is important to report possible infection. Most people respond and cooperate to public education campaigns to minimise dengue risks. In the event that people are reluctant or resistant to participating, EHOs are responsible for enforcing this responsibility. Initially this involves issuing public health notices.

Communicating with the public is one aspect of communication. The other is to regularly report on progress so that the incident controller and partner agencies can monitor overall efforts and allocate resources effectively.

In an epidemic, the level of planning, the intensity of surveillance and control activities and consequently the number of people needed to carry out this work dramatically escalates. To effectively fulfil these responsibilities EHOs need the technical skills to manage dengue mosquitoes as well as the logistical and people management skills to manage large numbers of new recruits who help with carrying out inspection activities and other local council departments such as local laws. EHOs and others carry out this work in an environment where any delay can translate into an epidemic. They are not expected to do this alone. Queensland Health provides backup and support but the EHO is the person up close to the action.
Sorting information and setting priorities
In 2009 the speed with which the virus spiralled out of control was unexpected. It soon became clear that existing control measures and resources were not effective in containing the number of cases. EHOs were mobilised to manage the local response.

At the start we just weren’t prepared for how quickly it escalated. Basically it was spreading three times faster than what we had planned for.

When the disaster first started, complaints skyrocketed. We were getting 60–70 complaints a day (Cairns City Council). You have to assess complaints and decide what skills you need to respond, work out priorities, delegate tasks.

Matching work to individual capabilities
EHOs were responsible for coordinating state-wide resources, overseeing response efforts and providing staff training and support.

In a crisis, help is drawn from all over the state. Control activities involve entering private properties, as such workers needed to be properly authorised and anyone applying insecticides needed to be licensed. As extra help was brought in, the task for local emergency coordinators was to make sure that people assigned to tasks were equipped with the skills and resources they needed to do the job effectively and safely. Some people came with experience but others needed lots of mentoring and support. EHOs needed to quickly get to know the capability of the people they were managing and to put some safeguards in place to protect both the public and the officers.

You’re sending people onto people’s properties. You need to have confidence in them.

One of the first tasks was to provide a thorough induction process. Queensland Health put together a basic program that EHOs were involved in delivering. In addition to confirming technical skills and knowledge required for dengue vector control, people involved in the response effort needed to understand the extent of their legal authority to enter, inspect and treat mosquitoes. In carrying out control tasks they also collected information that an EHO might need to rely on when initiating legal enforcement action. They needed to understand what types of evidence are acceptable and how this needed to be collected and documented. Working outside, on private property and around mosquitoes exposes people to a range of occupational health and safety hazards. They need to know how to keep themselves safe. Supplying sunscreen, insect repellent, hats and rehydration fluids is essential. When people are entering private property, they also need to be prepared to handle aggressive domestic animals like dogs.

Early in the response stage, EHOs were involved in heading up field teams to provide support to less experienced workers. As people gained skills and increased in confidence, EHOs pulled back to focus on overall coordination of response activities and to handle the more complex or detailed aspects of the work with property owners and the community.

At one stage we had about 50 technicians straight off the street with a bit of training. You always send people out in pairs and make sure the new ones are teamed up with someone who knows the ropes. Some needed quite a bit of monitoring. It’s important to know your team and know what they can do.

Dogs can be a real problem. We brought in the bylaws officers to work with us – and give people advice about animal management.

You need to parcel the work so you don’t burn people out. We rotated jobs to give people a break. You have to remember, people are working outdoors in the heat. You need to look after them, make sure they’ve got plenty to drink and take regular breaks. We sent out lunches and drinks to the teams to keep up morale.

After initial inspections have been conducted, EHOs do the follow up and deal with more high risk or complex properties that require particular attention. This could be a house with a backyard full of junk, a garden full of bromeliads or other water-holding plants or a high risk industrial activity. Industries such as tyre recycling present particular challenges as used tyres create ideal receptacles
for water to collect and mosquitoes to breed. EHOs work more intensively with the owners of higher risk businesses and properties to explain what needs to be done and to monitor that the appropriate action is taken. In most cases, people are only too happy to cooperate. The relatively low number of public health notices issued during the 2009 outbreak is a testimony to the general public support and goodwill as well as to the powers of persuasion of EHOs. However, in a small number of cases this is not the case. Vacant houses, development sites owned by absentee landlords or people who are unresponsive to public health orders all present a risk to public health that EHOs need to manage.

**Managing data**

Collecting and maintaining reliable data and communicating information quickly is vital. Being able to trace the way the virus develops depends on knowing when evidence of the virus was first identified and how many people were affected; how many properties were identified for inspection, when this was done and what action was taken. In controlling an epidemic, it’s all about timely responses and communicating back to the other stakeholders involved. This depends on establishing strong relationships and clear understanding of roles and responsibilities across all stakeholders, including State and local governments, well before an outbreak occurs.

Streamlining the collection of information leaves more resources available to undertake the work. Different approaches were used by the different agencies involved. Some Queensland Health technicians were supplied with handheld electronic data entry units. They worked in groups of three – two people spraying and one recording data. Other teams recorded information on paper. The problem was that with resources stretched to the limit, there were no data entry people available to do the work of uploading information into databases. In some cases one of the technician team members ended up with the job which meant there were fewer people out on the ground working on control activities. Later the job of data entry was handed over to a couple of admin people.

**Adding a public health perspective**

Dengue control is central to the response activities but one of the unique contributions of EHOs is to add a public health perspective. EHOs are trained to understand communicable diseases. Every day they employ skills to communicate, educate and influence people’s understanding and behaviour as it affects public and environmental health. They are also skilled in holistic responses to managing emergencies that depend on partnering and supporting multi-agency efforts. EHOs working in local government draw on their local knowledge of their communities – its people, economic activities and geography to identify high risk activities and sites where additional effort is required. They understand how to apply methods to trace and report the spread of a communicable disease. They also get involved in passing on aspects of their knowledge to other health professionals.

Added to a public health perspective is their experience in law enforcement. Ground crews carried out basic inspection work but more difficult cases were referred to EHOs who monitor when and where they need to step in to manage more complex problems and behaviours or initiate legal action. Often in the course of conducting inspections, other public health issues were identified.

EHOs get in and do yard inspections and trap placement and monitoring when needed. Most importantly, they need to have technical skills and knowledge to assess public health impact, to work out priorities and manage work allocation.

Emergencies are often a trigger point for other issues. When they (members of the public) see someone from council they want you to fix all their problems. Rubbish and neighbour disputes are big ones. You need to be ready for this.

EHOs are used to looking for patterns and working out solutions. It’s not just about ticking boxes. You have to do it right so you don’t have to come back again.
Communicating, educating and influencing

As with all environmental health work, effective dengue containment activity is underpinned by an ability to communicate, educate and influence people.

You can’t be there 24/7 to see what people are doing. You need to help people to understand what needs to happen and what they can do.

The job of educating people about dengue starts well before an outbreak occurs and continues as an ongoing part of prevention once an outbreak is contained. EHOs are the local public face to support state-wide education campaigns. They visit local schools, attend public meetings and go out to high risk sites to explain the risks and the action people can take to keep themselves and their communities safe.

One example illustrated how essential effective communication is to underpin this work. In this case, traps were placed in the form of buckets containing liquid, positioned around properties. The property owners didn’t know what they were and why they were important. The technicians noticed after a few weeks that the buckets were being tipped out. This put the control program back and emphasises the importance of engaging and involving people in managing their risks.

Communicating with residents, business and property owners about the action they need to take is only one element of the communication effort. In the height of an epidemic, members of the local community need to be kept informed about what is happening. Responding to media inquiries and presenting the public face of the response was centrally coordinated through Queensland Health. Departmental media contacts directly issued media statements as well as providing briefings and support to local spokespeople.

Getting out a consistent message is critical – people are confused enough as it is. Although EHOs were not usually directly involved in media presentations, EHOs in local government played an important role in keeping their council members informed. They prepared presentations and reports to council detailing the activities and resources allocated so that council members are well placed to explain and publicise council’s contribution to managing the outbreak.

In turn, EHOs needed regular and reliable access to information.

Queensland Health sent through a readout updating progress. In the height of the disaster this happened twice a day. It worked really well, we had these updates on the intranet, response operations updates and weekly local meetings that provided informal opportunities for debriefs.

Recovery

Once the epidemic was under control, EHOs oversee a trap monitoring program to check that the control effort has been successful and report this to medical entomologists who check that the numbers of adult female mosquitoes have been reduced to a point where they can’t support a viable population. Once the immediate crisis has passed the focus shifts to debriefing within their own organisations and across agencies to learn from the experience and capture lessons that leave agencies, EHOs and their communities better prepared to handle future outbreaks. From there, EHOs revert to their substantive jobs which incorporate prevention and education as part of their role in protecting and promoting public and environmental health.

3.4 Skills and experience

Dengue fever is a public health issue that is directly influenced by environmental conditions. Understanding and managing these kinds of hazards is the core skill set of an EHO. EHOs were asked to describe the skills, knowledge and attributes of EHOs that equip them to make an effective contribution in emergency situations. This included:

- Technical skills in environmental health and vector control. Previous experience in emergency management is useful and helps develop incident management, incident mapping and analysis and current IT/GIS knowledge and skills.
• Knowledge of the local environment. Knowing where high risk sites are located is important when deciding how to allocate the work - whether to send a technician or an EHO.

• Understanding of the local community. Knowing who in the community might have special needs and linking them with the support they need.

• Good people and communication skills. This includes the ability to build and motivate work teams; engage and influence people in the community; to present environmental health information to public forums; to inform and influence agency managers and local councillors.

• Understanding of the skills and capacity of the team so that work is delegated to match work requirements with individual skills.

• Ability to solve problems, conduct root cause investigations and troubleshoot to find solutions that work.

• Ability to work under pressure, manage stress and know when to call for help.

In addition to understanding environmental health EHOs need to understand the principles of emergency management as they apply to managing an outbreak. Emergency management is not addressed by most of the undergraduate or post graduate academic courses undertaken by EHOs as a condition of entry to the profession. Most EHOs surveyed had undertaken dedicated emergency management training which was most often the emergency management course conducted by the EHA. By their nature, emergencies are unpredictable and maintaining current knowledge of emergency management is a challenge. Although most people surveyed had completed emergency management training, some drew a distinction between having the theoretical knowledge and even experience in responding to small outbreaks compared to handling a rapidly escalating epidemic. A criticism of existing emergency management courses is that they don’t specifically cover disease outbreak responses.
The role of environmental health officers in emergencies: stories from the front line

4 The big wet: the Role of EHOs in the Northern Territory

Nobody thinks environmental health is a problem until we have a disaster... it’s funny how quickly people get upset if there’s a problem with the drinking water!

The climatic conditions of the Northern Territory give rise to frequent dramatic events such as cyclones and torrential rainfall causing flooding that can put the major cities, but more frequently small communities with vulnerable infrastructure, at risk. In the case of emergency and disaster events in the Northern Territory, response efforts are made more difficult by the isolation of towns and remote communities. Frequently areas are inaccessible and assistance is delayed and communities manage as best they can until external help arrives.

This case study describes how extreme weather conditions impacted on two remote Indigenous communities of Oenpelli and Palumpa. These examples highlight the vulnerability of geographically remote communities serviced by poor infrastructure. The case study profiles the role and contribution that EHOs make in these communities.

Approach

This study was prepared following a visit to Darwin where interviews were undertaken with representatives of the Environmental Health Branch of the NT Department of Health and Families, the Centre for Disease Control, the Medical Entomology Branch and the Disaster Co-ordinator for the NT Department of Health and Families.

Plans had been set in place to visit Oenpelli as part of the information gathering process of this project, with the purpose of interviewing community members involved in the floods. However upon arrival in Darwin, a death had occurred within the community, and, in accordance with custom, the community was closed to outsiders. The immediate consequence for this case study is that planned consultation with Indigenous community members most severely affected by the floods did not occur. However, it also gave us a firsthand experience of some of the differences that EHOs working with Indigenous communities encounter. Understanding, working with and respecting cultural differences is an essential part of the job.

4.1 Northern Territory counter disaster arrangements

The Northern Territory Disaster Act establishes the formal counter disaster arrangements for the Northern Territory. A State of Disaster or State of Emergency can be declared in the NT if a disaster or impending disaster is beyond the resources of normal government or privately owned resources available, or because special powers are needed. Under a State of disaster, requests can be made, via Emergency Management Australia, for manpower and equipment beyond the State or Territories resources such as those of the Department of Defence not normally available to civil authorities.

The effectiveness of counter disaster arrangements rely on the development of local, regional and special counter disaster planning committees. These committees work to ensure the preparedness and resilience of local communities and services to cope in an emergency or disaster situation. A similar framework exists for disaster recovery.

Counter disaster arrangements are administered through regional areas which develop and implement emergency plans. Responsibility for
environmental health, and as such the employment and deployment of environmental health officers, sits within the NT Department of Health and Families. This arrangement contrasts with the structure in the states where local government is responsible for managing the frontline environmental health workforce.

There are fewer people in the Territory to cover the work and the distances involved so EHOs are expected to take on more responsibility than they might have in other jurisdictions and this certainly applies to emergency management. For example, the whole of the Territory is split into five disaster zones. EHOs take on the role of public health group leader responsible for implementing the local emergency plan in each zone. When an emergency event occurs, all EHOs are expected to play a part, whether it’s flying into a flooded community or coming into the office to pack emergency kits.

4.2 The contribution of EHOs

People have to be prepared to respond. This is not a job for the faint-hearted. [Emergencies are] business as usual up here… it’s not like applying for an office job.

In most other states and territories emergencies or extreme events that threaten public health are relatively rare. In the NT, responding to these events is part of normal business and is an integral aspect of the EHO role. The climate presents its own challenges – things decompose quickly so that any disruption to power supplies that provide air conditioning and refrigeration has an immediate impact. Wet seasons with torrential rain and occasional cyclones make flooding a regular event, isolating communities and outstations as roads become impassable. On top of this, vast distances and intermittent communication networks add to the logistical problems. This all makes for some interesting learning opportunities that build the knowledge base of what to do and how to handle public health issues in emergencies.

In this environment it is impossible to predict what’s going to happen next and the environmental and public health issues that could arise. Every incident is different and provides new learning.

A truck carrying cyanide (used in gold mining) turns over in the middle of nowhere. You’ve got cyanide running into the stormwater drain. It’s hot and the driver’s clearly distressed.

From an environmental health perspective, the challenge is to contain the spill and assess the risk. Some of the questions they need to find answers to are: How much cyanide has already spilled; What can be done to contain and clean up the spill; Is the driver carrying a spill kit or do they have to get one to the site – and if so, where from and how long will that take; Where does water from the stormwater go; Has the spill occurred near crop cultivation?

They will carry out their investigation with other stakeholders although each one will have a different focus and agenda. In this case environmental health officers liaised with the local police, Worksafe and the EPA. The chemical company was also clearly concerned about minimising adverse publicity and assisting where necessary.

In a power outage people’s freezers stop working so they start throwing frozen food out – into the plastic wheelie bins. The problem is that frozen food weighs a lot more than fresh food because it’s full of ice crystals so when the truck comes along to pick them up, the bins fall apart. Then you’ve got flies, maggots – a real mess.

The learning here was straightforward. The Environmental Health Branch now issues advice following power failures not to fill up wheelie bins with frozen items.

All emergency response work is a team effort. EHOs are part of a multidisciplinary team of professionals and work alongside other key emergency stakeholders. This usually includes the police, welfare officers, medical and health workers, Centrelink and Power and Water. Because environmental health overlaps with so many other departments and agencies a basic working knowledge of the legislative responsibilities of partner agencies is essential to be clear on respective roles and responsibilities. EHOs have a role to play across all stages of emergency
management and are often the common thread linking all stages of emergency management:

We’re there in the planning, during the event – the response and we’re there for the recovery. It’s only us and welfare who are in it for the long haul. Every other group have come and gone in the first week and a half… and we’re still there, after the limelight’s come and gone. We’re still talking to insurance companies about seized goods… to the local food business who wants to get his shop open. The work goes on and on until everything gets up and running.

Emergency events such as cyclones and prolonged power outages have devastated the city of Darwin as well as wreaking havoc on remote communities. The particular focus of this case study is on the impact of emergency events in remote Indigenous communities. One of the examples – Oenpelli, was declared a state of emergency. Palumpa was described as a localised incident, although one that attracted significant public attention in response to significant and entrenched public health risks.

All work in Aboriginal communities is really emergency work.

Aboriginal communities are unique and challenging environments for undertaking environmental health work. They are often characterised by unstable governance arrangements, poor quality housing and infrastructure and insanitary living conditions. EHOs need to understand and work within the cultural structure and operation of communities to act as a facilitator, educator and advisor.

A prerequisite for EHOs working in the NT and especially for those working with remote communities is a love of long distance travel. The distances between communities are often vast and access is variable, depending on weather conditions. The common method of travel is by 4WD and occasionally by boat, but in an extreme weather event it is more likely to be by air. When responding to an emergency or incident, safety is the number one priority. Environmental conditions are challenging and sometimes dangerous. In these circumstances personal safety management requires that EHOs work in pairs or larger teams and maintain regular contact with the incident coordinator.

Working with remote Indigenous communities centres on relationship building. Before even beginning to address public health issues, the EHO needs to establish credibility and trust. This means understanding the structure and key authority figures in the community; knowing who and how to approach people; appropriate dress and ways of interacting with community members; and, effective ways of influencing and building community capacity rather than offering prescriptive solutions. This can be complex and challenging work and if not managed carefully, can mitigate the effectiveness of the environmental health message. Cultural understanding and sensitivity is a prerequisite to effective environmental health work in the Northern Territory. EHOs receive induction training as well as having access to resources and cultural advisers before going out to communities.

It’s a matter of walking the line – respecting choices and lifestyles different from our own.

Building relationships is so important. You need to encourage people to talk to you – otherwise you’ll never hear what’s going on. People in these communities don’t like to complain.

Because EHOs visit communities rather than live there permanently, their scope to influence environmental health priorities and standards is reliant on community capacity building. This involves providing information and training sessions and working alongside community members to raise awareness and understanding about environmental health issues and how behaviour influences outcomes. It also extends to supporting and building advocacy skills to promote awareness and responsiveness to the needs of Indigenous communities.

enHealth has produced a dedicated DVD resource for EHOs with the support of the NT Department of Health and Families: Introduction to engaging with Aboriginal and Torres Strait Islander communities: an environmental health resource.
Given the complexities of distance, access and the sheer number of communities and outstations, EHOs need to identify and direct their efforts to those communities that are at greatest risk. In some regions, the work of EHOs is supported and reinforced by Indigenous Environmental Health Workers.

In an emergency or extreme event the community context for the work remains the same but more intense. People are often exhausted and relationships become strained. Public health issues which are always present threaten to become serious risks and require urgent attention. In these communities there is a surprisingly short distance between business as usual and a major public health problem. A contaminated water supply or failure of the sewage systems not only raises the risk of disease but also contributes to a loss of community confidence. At the same time, events in Aboriginal communities often become politicised. There is enormous pressure to respond quickly and appropriately and every action is closely scrutinised by the media. This is the environment that EHOs learn to navigate.

You can break down the anatomy of a disaster. On day one everyone is there working together – there’s plenty of goodwill and energy. Three days later, it’s a different story. There’s the administrative red tape and by then if things aren’t managed properly, you’ve got real risks of disease like cholera and typhoid… and you’ve got the media watching everything you do.

In this environment, the EHO foundation work of building solid working relationships with the community is critical and provides a bridge to link external resources and support into the community. This places the local EHO as a central player in coordinating the input of the response team with the local community.

People who come here (to take up environmental health work in the NT) want to effect change.

4.3 Oenpelli (Gunbalanya)

Early in March 2007 a cyclonic low developed into Tropical Cyclone George. Nine hundred and thirty millimetres of rain fell in just seven days, causing significant flooding of Oenpelli (Gunbalanya). Oenpelli is located about 330km east of Darwin and 60 km north east of Jabiru near the East Alligator River in Arnhem Land. The community population is estimated at around 1100 (including outstations).

Late Friday night and early Saturday morning, residents from the lower lying areas were evacuated from their flooding homes. Sixty-seven houses were affected by floodwaters, forty-seven were completely inundated, ninety-seven people were displaced and accommodated in three shelters. The floodwaters isolated the community with road access being completely blocked and the only way in being by air.

The ABC news media reported the events that followed:

### Mop up begins after NT flooding

Posted Tue Mar 6, 2007 7:11 am AEDT

Residents in the Northern Territory Aboriginal community of Oenpelli will start cleaning up today after the worst flooding in decades inundated homes. Almost 900 millimetres of rain has fallen in the area over the past week and 47 houses have been flooded.

Representatives from various government departments and the Power and Water Corporation flew into the community yesterday to assess what the locals needed and possible health risks.

Health Department spokesman Xavier Schobben has praised residents for their handling of the flood.

“The community effort’s been absolutely fantastic and they’ve responded to it magnificently, and all events are under control,” Mr Schobben said.

“As I said, there are still some houses that are prone to flooding and fortunately, the water is subsiding.” He says residents will soon be able to return to their houses.
“As it recedes further, the CDEP [Community Development Employment Projects] coordinator with his workers will go in to clean up those houses and as soon as they do and the yards dry out, people will be invited to go back to their places,” he said.

“And, I should add, once the electrical contractor has ascertained that in fact all the electrics are safe, then people can go back and it’s business as usual.”

The EHO response at Oenpelli

The response to these events is always a joint effort. The police are responsible for overall emergency response coordination and established a control centre at the local police station. The other key players in this event involved government departments responsible for health and families, housing, welfare, infrastructure – in particular Power and Water and Centrelink.

As soon as weather conditions were safe, the response assessment team including the Director of Environmental Health, the local Regional EHO, officers from Power and Water Corporation, the Department of Planning and Infrastructure, Department of Employment, Education and Training and the Teacher’s Union flew in to the community to begin the process of damage assessment. This assessment would extend beyond the community itself and EHOs also visited each of the outstations attached to the community.

Securing the basics

The flood damage was substantial to individual homes, businesses and community facilities including the local school. The initial focus from an environmental health perspective was to make sure people had access to the basics – shelter, clean water, functioning sewerage systems and safe food. The response team confirmed that the water supply was not compromised; sewage pumps were in working order, although some were submerged and subject to water ingress. The tip site for rubbish disposal, although initially cut-off by flood waters was accessible within a couple of days of the initial flood. In the meantime, trench rubbish dumps had filled with water, creating ideal breeding sites for mosquitoes and other pests.

Families whose houses were flooded bedded down wherever they could find space. Some moved in with family and friends – houses were already overcrowded and people were sleeping on verandahs. Others made a bed in sections of the Arts Centre that were still dry or in the sports hall – a good hall but without fly screens so open to mosquitoes.

Maintaining a supply of fresh food is a challenge at the best of times. Store managers are used to planning around prolonged wet seasons when stores are dependent on flying in goods for up to seven months at a time. They become experts at estimating food quantities and managing stock rotation. Fortunately the store operated out of a Queenslander style building on stilts and escaped the flood waters although the power was off so the fridges were not operating. The EHO assessed the remaining food and worked out what was safe and could be cooked up to start feeding people. The store manager confirmed that the supplies of most of the basic foods would hold up. Fresh bread was helicoptered in from Jabiru – the largest nearby town and arrangements were made to fly staples like fresh meat and fresh fruit and vegetables in from Darwin. Having ensured food supplies were adequate, EHOs also oversaw the way food was stored and prepared. People were already tired. This environment presented a heightened risk of illnesses like gastroenteritis caused by poor food handling practices.

Getting food to the store was only the first step. The next step was to get it to the people who needed it. The police ran a boat across the floodway to bring people across to the store and take orders from people still stranded. The police had evacuated most outstation residents but a few still remained. Getting food to them was more difficult but food drops of non perishable foods were arranged.

EHOs teamed up with welfare officers to visit and assess the state of each house and the needs of each family. In this instance, their focus was on assessing the needs of families for the replacement of goods and supplies lost in the floodwaters. Essential items such as bedding, clothing and white goods and other utensils had been destroyed, damaged or lost. Once an inventory of items was drawn up the
next task was to find retail suppliers and manage the logistics of bringing these items into the community. All items had to come from Darwin and some items, including mattresses had to come from interstate.

**The cleanup**

Having secured basic services and assessed needs, the environmental health team turned their attention to the monumental task of cleaning up. They had already seen a number of septic tanks with no lid covers. They knew the waters were contaminated by effluent. On top of that, there was the risk of melioidosis. This is a disease caused by bacteria that normally live below the soil’s surface but after heavy rains, can be found in surface water and mud. The most common way people become infected is that the bacteria enter the body through cuts and skin sores. Anyone infected needs urgent medical attention, otherwise the results can be fatal.

EHOs advised community members and workers cleaning houses and surrounding areas on the risks and the reasons why people needed to wear footwear and avoid wading in muddy water, particularly people with cuts or sores on their feet or legs. The Environmental Health team distributed floodwater advice notices to the Council, Clinic and Police station about melioidosis.

The primary focus of cleanup efforts was to clean houses so people could move back and regain at least a sense of normality. A team of young community members started the cleaning process using high pressure cleaning equipment belonging to the community council. In the first instance EHOs made sure people had access to cleaning materials and equipment and most importantly, appropriate equipment and advice about health risks associated with contaminated water. They also met with health clinic staff to explain the public health risks of returning to flood affected houses.

The cleaning process was slow and arduous with each house taking around 4 to 5 days to clean. The task of cleaning every affected home started to look impossible and spirits were heading for a new low point.

Everyone there was affected – no one was left untouched. So you’re there, trying to clean other people’s houses and you’ve got to face the same when you go to your own house. It’s not like us (environmental health staff) – we can fly in and fly out. These people are just there and they were exhausted.

EHOs assessed the situation and made the call to bring in contract cleaners from Darwin. They found a contractor with experience working on communities. They flew in armed with heavy duty cleaning equipment and in addition to cleaning, they also trained community members in how to use it. Instead of taking 4–5 days, it was now taking only 4–5 hours per house. This was a much improved turnaround but tensions were mounting. Some community members felt that bringing in external cleaners implied that the local cleaning teams were not doing a good enough job. At the same time, the pressure to move people back into their homes was unrelenting, particularly from the media.

There’s an assumption by the press that it’s easy. You just go to Bunnings and hire some cleaning equipment. But it’s 800 kilometres away (from Darwin), you have to fly all the gear in – you can’t drive, the roads are all flooded. It’s just not that easy.

In the midst of the response, the then Minister for Aboriginal Affairs in the NT used this event as an opportunity to provide beds to all community members to replace mattresses on floors. Emergency events can provide a good opportunity to upgrade or undertake other improvements but in this instance it also created some unforeseen problems. Many houses were already overcrowded and the beds take up more space than mattresses. The beds arrived before houses were ready to reoccupy, adding further to the pressure to get people back into their homes. EHOs often have to manage the unintended impact of well intentioned but poorly targeted support to these communities.

Cleaning houses was only a first step. Each house then needed to be inspected to assess whether it was safe to reoccupy. Damaged houses had had to be repaired and all electrics had to be tested and
signed off by an electrician. People could only move back once the house condition was approved by the EHO and the electrician. Even then, the problems continued. Mould started appearing on surfaces once the houses had started drying out after the pressure cleaning process. EHOs prepared a second wave of public health information giving practical advice to householders on the removal of the mould.

Cleanup efforts then shifted focus to other buildings and facilities. The social club recycled beer cans that had floated away during the flood, along with the empty kegs; flood contaminated alcohol, drug supplies and chemicals had to be destroyed; and, the water in the local swimming pool had turned brackish and was likely to be contaminated. In a community dependent on a limited ground water supply, the prospect of emptying the pool is not a decision to be taken lightly. The environmental health team worked with professionals and community members to find solutions to these and many other public health issues that arose.

The monitoring of mosquito breeding sites following a flood event is also a priority for EHOs as part of an effort to minimise the risk of disease outbreak. Ten days after the initial flood waters inundated the community; the environmental health team undertook a mosquito larvae survey of the community and surrounding areas. There was no evidence of mosquito breeding within the flooded areas of the community and no immediate public health threat from increased mosquito breeding. However as a precautionary effort, the environmental health team provided mosquito repellent for workers and community members.

"People were so grateful – smiling, just happy to get any kind of help."

As the floodwaters subsided and life started to return to normal, EHOs revert to their ongoing role of working alongside community members, providing environmental health advice, training people in basic skills like food handling, listening to their issues and working with them to improve standards of public health.

### 4.4 Palumpa (Nganmarriyanga)

Palumpa is a small Indigenous community of just around 450 people, located east of Wadeye. The community is situated on a lagoon and is structured in two parts. The older part of town is to the north and is linked by a causeway to the newer part on the southern (wet) side of town. This side of town can’t support any further housing development which is a problem as it is also where all services including the school, community store, health clinic and rubbish dump are located. The infrastructure supporting the community is unsophisticated and barely adequate. The sewerage system operates on septic tanks that discharge into pits which are then pumped to low-lying effluent ponds. The flat topography makes effective drainage a problem at the best of times.

The role of the EHO is to work with the community and shire managers to identify environmental health risks that threaten the community, provide information and advice so that environmental health issues are accorded the priority they deserve and support them through education and advocacy to improve public health outcomes. The work involves regular visits both to the community and its outstations which can be a particular challenge in the wet. Building community capacity takes on many forms. EHOs get involved in everything from food preparation through to the design of sewerage systems and often the work is undertaken in partnership with other community leaders. For example:

- The local teacher raised concerns about the quality of food available to children at the school. She wanted the women to have more choice about the food they prepared but the school canteen was not equipped for any increased food preparation. The EHO provided advice on the necessary equipment and facilities required to prepare the number of school lunches required.
- The EHO advised the Shire on the development of a solid waste management plan.
• After inspecting a local outstation, the EHO proposed a Work Safe inspection of the station to organise a cleanup of the surrounding area.

Most of the improvements occur in the quiet time between extreme events when attention is directly focused on responding and recovering.

Every wet season water levels rise, threatening to inundate houses and other buildings. The wet season of 2008-09 was a ‘big wet’. Under typical wet season conditions water levels fluctuate, allowing at least temporary access to essential services on the other side of the causeway. This time the waters rose and stayed high, isolating people and cutting them off from services, access to the tip to dispose of rubbish and access to the store to buy food.

Although the prolonged period of high water was unusual, this state of affairs is far from exceptional for this community. Early in 2009 the Shire Manager invited the EHO in to assess the situation. His findings while not unexpected, made for depressing reading:

• A total of four houses were inundated by floodwaters.
• Water was pooling around houses and other buildings making access difficult and hazardous. For example, a visit to the health clinic involved wading through knee-deep green, slimy water.
• The causeway was impassable and short of wading through floodwaters, people on the north side of the community were cut off from services.
• The school playgrounds had notoriously poor drainage and were either under water or deep in mud.
• Some of the septic tanks were under water and the size of the sewer line was too small to handle the extra floodwater flowing into the system, causing effluent to back up in toilets and sinks.
• People were not able to cross the causeway to get to the tip and rubbish was building up around the community. Animals also became a problem. Horses that normally graze on land outside the community moved in to find somewhere dry and some food to eat. Packs of hungry dogs roamed the streets to scavenge what they could, ripping bags of rubbish open and spreading the contents. The tip also became a haven for dogs scavenging for food. Pooling water became contaminated by animal faeces.
• Children continued to swim in the billabong on the edge of the causeway where they ran the combined risks of ingesting contaminated water and being taken by crocodiles.

The situation presented a number of immediate public health risks. Contaminated water can cause gastroenteritis as well as more serious diseases such as cholera and typhoid; rubbish provides a breeding ground for cockroaches and other pests that can spread disease; the abundance of water provides breeding grounds for mosquitoes; wading through floodwaters always carries the risk of being infected by melioidosis which can be deadly. Ironically the only way into the health clinic required people to run this risk. If all this isn’t enough, there was the added risk presented by crocodiles swimming in the billabong.

Although these findings were not news to the community, they made it into news across the Territory when the report was leaked to the media. Here’s how it was reported by the ABC:

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**Ministers admit not reading Palumpa report**

*Posted Thu Mar 5, 2009 5:18pm AEDT*

The Northern Territory Chief Minister Paul Henderson and the Essential Services Minister Rob Knight both say they haven’t read a Territory health department report on flooding in Palumpa.

The report highlights potential problems with sewage, power cuts, rubbish collection, and major flooding in a school yard and around the local health clinic. Children in Palumpa have been unable to go to school because of the flooding and several crocodiles in the river.

Two young children who have been swimming in the town’s waterway are being treated for stomach problems at the Royal Darwin Hospital.

Rob Knight is also the local member for the region. He says Power and Water will look at addressing the sewerage problem in the dry season.

“I haven’t personally seen the report.”
“But I would expect recommendations from that report to go to the appropriate authorities to take appropriate action.

“The Shire has a responsibility for the houses. Essential services come through Power and Water and I would expect recommendations that are health related to come to those agencies to take appropriate action.”

The resolution of issues at Palumpa is not easy. This is a relatively small community and residents have elected to stay that way rather than following in the footsteps of neighbouring Wadeye where the increased size of the community is regarded as contributing to some of the other health and social problems experienced there. Fixing most of the problems requires significant financial resources although money is not the only hurdle. For example, funding was recently provided to establish a new rubbish dump but a lack of consultation meant that it was poorly situated and inaccessible in the wet. This highlights some of the complexities that arise when multiple agencies and funding bodies are involved and where decisions are made without considering potential environmental health consequences. EHOs need to work with and influence many different stakeholders. The work can be frustrating and slow.

In this case, media attention was drawn to the public and environmental health issues at Palumpa which prompted government to act. An inter-agency heads of department committee was established and worked in partnership with the local Shire to assess needs and establish priorities. Major fund expenditure has now been allocated to upgrade the causeway, improve roads and improve drainage of the school grounds. Other strategies are being considered to relocate some services, upgrade the sewerage system and expand and improve housing stock.

This case study demonstrates some of the key elements of emergency work undertaken by EHOs working with Indigenous communities. It provides an insight into some of the complexities of the role in terms of the varied factors that influence public and environmental health as well as the community and political environments that EHOs learn to influence and work within.

Progress at Palumpa will continue to be slow and even simple logistical challenges are difficult to solve. For example, there is a commitment to refurbish houses so they can better withstand future wet seasons. The problem is that houses are already overcrowded. The average number of people living in a house in Palumpa is 13 – one of the highest occupancy levels in the Territory. Nor are there many alternate accommodation options. These issues are not insurmountable but they take time to work through. Once the state of disaster has been lifted, EHOs continue to work closely with the affected communities. They become experts at juggling the competing demands of community public health with ongoing environmental health programs and of course, managing their own health and wellbeing.

EHOs are the first to acknowledge the frustrations they encounter. However the rewards and successes outweigh the frustrations. The work of the EHO with the community at Palumpa shows how public and political attention was focussed and resources mobilised to respond to environmental health challenges in this community. When asked to describe what they enjoyed about the work, here’s how some EHOs described it:

Going out and assessing all the different risks – that’s pretty interesting. You’ve come across septic tanks and you’ve come across water problems, and dogs, and rubbish but in this is where they all come together.

All the things we do during a disaster can become major issues. The stakes are much higher. It’s all the things you learn about and they’re all happening at once.

I get to work with some pretty colourful characters with different ways of looking at life. People in these communities are incredibly respectful and generous.

Some of the things we write can make a big difference.
5 Applying the case studies

The case studies provide material that can be used in a range of ways to describe, publicise and promote the environmental health role. Developing a detailed strategy on how best to do this is outside the scope of this project however some of the suggestions made during this project provide some starting points to guide this process.

Attracting people to environmental health

One of the drivers for this project was an interest to attract more people to the environmental health profession. It is also worth noting that addressing labour shortages means doing more than adding to the total number of people with an appropriate environmental health qualification. A significant aspect of labour shortages is the uneven geographic spread of EHOs with rural and remote communities facing the greatest barriers to attracting and retaining environmental health professionals. Consequently strategies need to both increase the numbers drawn to this profession and at the same time, attract people who are more likely to be drawn to working in regional and country locations. Other occupations including health professions and agrifoods businesses face similar challenges and can provide some useful insights into strategies. These include specifically targeting people who already live in regional areas; providing practicum opportunities to people from metropolitan locations; and, providing intensive support to locate and integrate into local communities.

Promoting professional occupations as attractive career options is a well worn strategy Generic campaigns designed to ‘talk up’ their job offerings have generally proven unsuccessful, particularly in a crowded marketplace. Applying the case study material to attract people to the profession requires a more nuanced, targeted approach. The two obvious recruitment targets are school leavers and mid career professionals. Experienced EHOs provided some personal views and experience that could help to refine and shape a targeted strategy.

Targeting school students: A consistent comment from EHOs advocated targeting students before they reach year 12. By then they are more likely to have started to lock in career choices. Ideally students with a keen interest in science should be targeted by year 10. One approach to target this group is through school based apprenticeships and traineeships. Students typically enter into a traineeship in year 10 which allows them to combine completion of schooling with work-based learning and paid work. They generally graduate with a vocational certificate. Although this qualification would not be adequate to equip them to undertake an environmental health role, it could provide a targeted pool from which to promote prospective environmental health candidates. With appropriate recognition for prior learning it could then articulate into an accredited environmental health qualification. Each jurisdiction determines eligible school-based traineeships and apprenticeships. A promotion strategy could identify which traineeships have a science emphasis and target these to promote the field of environmental health as a career option.

While careers information is a crowded field, one approach being investigated by other professions is to train career advisors and teachers. For example, this could involve providing a short intensive exposure to selected aspects of the role. This approach aims to provide stimulating and inspiring experiences that educators can then incorporate back in the classroom and use to promote related work opportunities.
Reaching mid career recruits: This profession provides a unique combination of environmental science and public health expertise. Work variety, the opportunity to ‘make a difference’ and contribute to community wellbeing were among the key attractors cited by people interviewed who entered environmental health from other professions. Graduates from fields such as food technology and quality assurance have a good grounding in aspects of the EHO role and may be interested to expand their skills and work options by combining this technical knowledge with an understanding of environmental health. Career promotion campaigns could specifically target these groups.

Diverse services and support are available for people considering a career transition. Private and government websites offer to link prospective career seekers to information on a range of professions yet based on an initial review, environmental health is not a listed option\(^{21}\). A targeted approach could focus on influencing key providers of information and referral to provide support to people considering a mid career change.

The other important target group to capture are women returning from family leave. The survey of EHOs conducted in Queensland recommended the need to develop strategies to attract qualified women back into the profession.\(^ {22}\) Understanding more about the retention of qualified female EHOs who leave for family reasons and the factors that underpin decisions to leave or return would help to focus strategies to retain this skills base.

Improving the visibility of EHOs

Attracting new people to the profession is one part of a response to labour shortages. The other part is retaining talent. Given the gender profile of the workforce where the bulk of younger workers are female, this includes attracting people back into the role after they take a break for family leave. Providing job roles that are engaging, challenging and stimulating plays a significant part in motivating and retaining good people. As qualification and professional standards have increased, role perceptions and job design have not always kept pace. Raising the profile of EHOs within the agencies they work in aims to prompt a rethink about the way environmental health skills are applied to achieve agency outcomes. It is timely to do this following an emergency or public health incident as this is when agencies are most dependent on the skills and knowledge of their EHOs.

A generic publication promoting the EHO role to agency managers, politicians and elected councillors is unlikely to influence these views. Different organisations reported very different experiences in the way their work is understood and regarded. EHOs need to argue the case and promote their contribution within their own organisations. The information provided by these case studies can be used to underpin and reinforce these efforts. There are also specific opportunities to highlight the benefits and opportunities for engaging EHOs within the emergency management phases. For example, advice on how and when to do this could be included in guides developed to support local councils in emergency management planning and risk management.

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\(^{21}\) For example, the Victorian Department of Education and Early Childhood Development provides a website on careers and transitions which links browsers to advice on careers including those in ‘health and community’ but makes no mention of environmental health: www.youthcentral.vic.gov.au/ViewPage.action?siteNodeId=238&languageId=1&contentId=-1

Appendix 1: Project method

This project is about telling stories, about seeing the role through the eyes of the people who work in it and those who work alongside EHOs. A scan of legislation and literature was conducted early in the project to provide context and help frame the case study method.

Case study selection
The project reference group selected case studies to reflect a breadth of contexts for EHO work. The three cases reflect very different types of emergencies. The Victorian bushfires were unprecedented, described as *the worst natural disaster Australia has ever faced.* In far North Queensland dengue fever makes a regular appearance. The difference in 2009 was the rapidity with which the virus spread with over 1000 officially confirmed cases. In the Northern Territory, environmental conditions mean that emergencies are a relatively common occurrence. Power outages can last for days, even in the capital city; cyclones; monsoonal rains and a host of health conditions and diseases related to the climate and geography that give rise to a range of public health threats. Unlike the other two case studies, the NT study looks at the Big Wet of 2008-09 to explore the experience of EHOs in tackling environmental health challenges in the remote Indigenous communities of Palumpa and Oenpelli.

In addition to covering a breadth of emergency events, case study selection also locates the environmental health experience in diverse settings. The fires in Victoria impacted most significantly on regional and country communities. The hub of the response to the dengue fever outbreak was managed out of the tropical cities of Cairns and Townsville.

The locations of the events documented in the NT include a capital city and remote Indigenous communities.

Fieldwork
The fieldwork involved structured interviews with managers and EHOs directly involved in the emergency event and with selected partner agencies to provide an arms length perspective on the role. In both the Queensland and Victoria workshops were convened involving EHOs from across the state who were directly involved in the emergency response. A more specific focus on the experience as it unfolded in two individual councils – the Shire of Nillumbik in Victoria and Cairns City Council in Queensland, provides a closer focus on individual EHOs, their managers, other council staff and external agencies who provided different perspectives on the role.

A semi-structured interview schedule was used to allow for the significant variations in the nature of the emergencies. The records of interview were then analysed and themes drawn out to facilitate intra and cross-case analysis. Quality control was achieved by circulating interview records for participant comment and by taking a team-based approach to analysis and reporting. Our research tools were designed to capture the themes of working in the context of emergencies from an environmental health perspective. As far as possible we let participants describe their experiences in their own words and use specific examples to illustrate and profile their views.

In addition, workshops participants were invited to complete a written survey which collected more detailed information about how EHOs prepared for...
and dealt with emergencies. The survey schedule is attached in Appendix 2.

Wherever possible, fieldwork was supported by a review of available documentation including relevant government and academic reports and emergency management plans.

**Analysis**

The fieldwork was analysed in two stages. Individual case studies were written, drawing on the collection of interview, survey and workshop data. Each of the studies provides a unique view of the role and experience of EHOs in emergencies. Cross study themes were then drawn out and developed. These are reported in the main section of the report.
Appendix 2: EHO survey

Survey: EHOs – preparing for emergencies
1. How long have you worked as an AO/EHO?
   - 0–2 years
   - 3–5 years
   - 6–10 years
   - More than 10 years

2. Where are you currently employed?

3. What role did you play in responding to the bushfires of 2009?

4. Did you feel you were adequately prepared to undertake this role?
   - Yes
   - No

   Tell us more about why you felt you were/not prepared. What preparation had you undertaken? What else would have been useful?

5. Have you undertaken training in emergency management?
   - Yes
   - No

   If ‘Yes’:

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<tr>
<th>Name of course</th>
<th>Length (days)</th>
<th>Year completed</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

   Do you have any comments about strengths/gaps in the training you attended?

6. How would you describe ‘what it takes’ to work effectively in an emergency?

7. EHOs play an important role in emergency management. Do you have any comments or suggestions about how they can be better prepared and supported?

Thank you for your participation.
Appendix 3: EHO skills and knowledge

Excerpt from enHealth Environmental Health Officer Skills & Knowledge Matrix:

Emergency and incident management

<table>
<thead>
<tr>
<th>Communication</th>
<th>Risk management</th>
<th>Administering and reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Provide information and advice to communities and individuals on emergency planning, preparation, response and recovery (PPRR) processes</td>
<td>• Apply understanding of principles, policies and procedures to support public and environmental health emergency PPRR processes</td>
<td>• Liaise with and report to partner agencies/departments to develop, review and implement emergency and incident PPRR and disseminate information</td>
</tr>
<tr>
<td>• Facilitate community engagement in planning for, responding to and recovering from incidents and emergencies</td>
<td>• Assess enforcement agency exposure and risk related to incidents and emergencies and develop relevant plans</td>
<td>• Provide advice and leadership within enforcement agencies</td>
</tr>
<tr>
<td>• Apply mediation and front line support skills to communicate with people who may be distressed or hostile</td>
<td>• Identify public and environmental health hazards and risks associated with incidents and emergencies</td>
<td>• Lead/participate in multi-disciplinary teams</td>
</tr>
<tr>
<td>• Develop information strategies and campaigns to promote community capacity</td>
<td>• Determine and prioritise action required to respond to emergencies and incidents</td>
<td></td>
</tr>
</tbody>
</table>
The role of environmental health officers in emergencies

Stories from the front line