

Toolkit 2-3 Community recovery case studies



AUSTRALIAN DISASTER RESILIENCE HANDBOOK COLLECTION

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Toolkit 2-3

Supporting document for the implementation of *Australian Disaster Resilience Handbook 2 Community Recovery* (AIDR 2018).

Case studies have been selected based on their utility as learning resources. Inclusion here should not be taken as an indication that these examples represent current best practice.



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Case studies

Case Study 1 – Community led recover

Renewin' Strathewen (2009 Black Saturday fires)

Strathewen in Victoria was one of many communities devastated by the Black Saturday bushfires on 7 February 2009. In this town of 220 people, 27 died and 80 of a total of 120 homes were destroyed.

In the days following the disaster it became clear that Strathewen had not been specifically highlighted in emergency planning before, during or after the fire. Residents felt that the media also overlooked the plight of Strathewen, and that they were overshadowed by bigger and better-known locations such as Kinglake and Marysville. It was clear that government and non-government agencies had commenced an enormous recovery effort and it was felt that a small community like Strathewen could be subsumed by other disaster recovery imperatives unless they established a strong and legitimate Strathewen voice.

Public meetings were held, and a steering group was established to draft a constitution for an incorporated association. The Strathewen Community Renewal Association (SCRA) came into existence at a public meeting on 28th June 2009.

SCRA applied for funding and set up processes to account for decisions and expenditures. 'One of our greatest achievements has been to nurture an understanding that all of our residents and those in neighbouring Arthurs Creek whose lives are intertwined with Strathewen are part of the same extended fire affected community. Our association is inclusive; the constitution recognizes that living through fire is not the only measure of belonging. There is no them and us ... We've strived from the first public meetings to manage the potential for division by emphasizing a culture of respect, equity and consistency in our processes and transparency in decision-making ... Council's willingness to accept the uncertainties of a community led recovery, their flexibility in proceeding at the community's pace and respect for the SCRA agenda has been fundamental in creating a very positive working relationship'.

Reference: Strathewen Community Renewal Association 2010, *Supporting the recovery, Renewin' Strathewen* Strathewen, Victoria.

Case Study 2 – Community development in recovery—adaptive change

Mackay Community Arts Project (2008 floods)

As part of the long-term recovery process following the 2008 Mackay flood, Tropical Population Health Services initiated a community arts project in collaboration with the Department of Communities and Mackay Regional Council. 'Be kind to your mind ... get involved in the arts' aimed to bring people together, 18 months after the event, to reflect on their experiences, to acknowledge the inspiring community response during and after the flood, and to strengthen individual and community capacity for responding to and recovering from disasters and for preparing for future disasters. The project attracted 455 participants, and 1180 people visited the exhibition spaces.

The project was based on research that suggested that strategies to engage communities in thinking and reflecting on their experiences after a disaster should be undertaken at key points in recovery—in the short, medium and long term—and that these strategies should engage government and community institutions beyond the traditional welfare sector, especially those concerned with the arts and the environment.

The community arts approach was chosen because there is very strong commitment to the arts in Mackay (artists and arts organisations work in visual arts, crafts, film, theatre, dance and music). Local artists and arts organisations were invited to participate in a one-day workshop on the role of the arts in community recovery and mental health promotion to ensure an agenda of inclusiveness for a wide range of audiences and participants. They were then invited to submit an application for delivery of a series of sessions in their particular fields with a focus on working in partnership with other artists and with community support services.

Sessions were planned to take place close to areas most affected by the flood to enable easy access for participants. Showcase events were held locally to attract a wide audience and an exhibition of all works was held at Artspace. Seven local artists were engaged to work with the community.

Projects included:

- artists working with groups at Beaconsfield, Walkerston and the Women's Centre using mixed media, including pastels, felt, fibre and even recycled teacups, to create works celebrating the local neighbourhood and community spirit
- blacksmithing sessions conducted at a property at Balnagowan
- digital photography sessions at Mackay City and Gordon White libraries for people interested in using their personal photographs to create visual stories of their flood experiences
- production of a short film, *Resilience*, to show how people who were affected by the flood have stood together and emerged stronger from the disaster.

Four of the seven artists organised local showcase events and all participated in the culminating showcase at Artspace. Media coverage, including print, television, radio, and print and electronic community newsletters, publicised the projects.

One-off projects such as the Mackay Community Arts Project can assist with the strengthening of individuals and communities after a disaster and assist with characteristics that build resilience. The immediate impact on individuals that emerged from participant feedback suggested individual empowerment and community connection; for example:

- Many participants commented on how much easier it was to talk about their flood experiences while doing something creative and that the environment/atmosphere made it feel safe to do so.
- Groups continued to meet after the official end of the project to further develop their skills— individuals indicated that they would participate in further art classes.
- Participants indicated that they were interested in becoming volunteers in the community.

Mackay Regional Council libraries had increased participation in their courses as a direct result of the project.

More stories of how the creative arts can contribute to community disaster recovery can be found here: <http://placestories.com/community/creativerecovery#!v=about>

Case Study 3 – Communication within one jurisdiction and multiple agencies or locations

ACT Bushfire Recovery communication model (2003 Canberra fires)

The ACT Bushfire Recovery communication model, which reflected the management structure, is an example of a structure set up to support a communications strategy. The ACT [Australian Capital Territory] Bushfire Recovery Taskforce, answerable directly to the Chief Minister of the ACT, was set up within days of the bushfire.

Headed by Sandy Hollway, former Canberra resident, senior Commonwealth public servant and CEO [Chief Executive Officer] of the Sydney Organising Committee for the 2000 Olympic Games, it consisted of five other prominent Canberra people representing the ACT community sector, ACT business, the ACT Government and the directly fire-affected community.

The Taskforce was informed by a Community and Expert Reference Group (CERG) of 15 people representing a wide range of interested and affected groups in the community, including business, professional and trade organisations, unions, community groups and local politicians. The Taskforce and CERG were served by a Secretariat consisting of six functional areas. One of the functional areas was the Communications and Community Relations Group, which was responsible for the communication effort. CERG's advice was channelled through the Taskforce to the Secretariat for action. The Secretariat was also able to call on all other ACT departmental agencies for support and drew staff from all areas of the ACT public service during the intensive period in the first months after the bushfire.

Reference: Beckenham A & Nicholls S 2004, 'Government communication strategies for community recovery following the ACT Bushfires, January 2003', *Australian Journal of Emergency Management*, vol. 19, no. 4.

Case Study 4 - Communication across multiple jurisdictions, between multiple agencies and locations

Hume region communication model (2009 Black Saturday fires)

Another example of a communications strategy, this time at a regional level in Victoria, comes from the Hume region. This communication strategy focussed communications between multiple geographic communities.

'To support the multiple recovery processes operating within Hume region after the February 2009 bushfires, it was critical to ensure that responses remained coordinated; that communication and linkages between all local, regional and state authorities was clearly defined; and, that recovery was facilitated in an integrated manner for all communities, regardless of boundaries.

'A regional strategic communication model was developed for all recovery agencies tasked with recovery in Hume region, inclusive of the interface between the urban or rural fringe and departmental boundaries.

'This model further enhanced the recovery management process implemented by the Hume Regional Recovery Committee on 18 February 2009 which was facilitated and fostered by the Executive Committee through:

- Inclusion—bringing together all relevant personnel, authorities and agencies across all boundaries

- Education—informing people and committees of all participant roles and responsibilities
- Accountability—ensuring committees can deliver what they agree to provide.'

The communication strategy identified linkages between the various recovery committees and authorities operating within Hume region. The strategy also clarified how each recovery provider could directly or indirectly communicate with one another and with impacted municipalities, without replicating process or undermining existing regional structures.

The Regional Recovery Executive Committee included representatives from the following: Alpine, Indigo, Mitchell & Murrindindi Shires; Department of Sustainability and Environment, Regional Development Victoria, Department of Primary Industries, Department of Planning and Community Development, State Emergency Services, Victoria Police, Country Fire Authority and Department of Human Services.

Reference: White, K, 2010, *Post incident analysis of recovery management February 2009 bushfires*, Hume Region, Hume Regional Recovery Committee, Victoria.

Case Study 5 – Psychosocial impacts on workers

Case studies on the psychosocial impacts on workers are forthcoming. Case study suggestions are also welcome.

Case Study 6 - Effects in the built environment—practical strategies

Drinking water and waste water (2009 Black Saturday fires)

After the Black Saturday bushfires on 7 February 2009, the Victorian Bushfire Reconstruction and Recovery Authority worked with local water authorities to ensure that drinking water and wastewater services were maintained while damaged systems were returned to pre-fire operations.

Many properties in fire-impacted areas use rain water tanks as their primary water supply. In the wake of the fires the Department of Sustainability and Environment, in conjunction with the relevant water corporations, provided free temporary water tanks and cleaning and water carting services in and around the Kinglake area. During the recovery phase, access to free reticulated drinking water was provided at nine locations by Gippsland Water, Goulburn Valley Water and Yarra Valley Water at temporary standpipes and community water tanks.

More than 950 properties had their rainwater tanks cleaned and about 1100 properties received one-off 5000-litre water carting. Another 14 drinking catchments are under restoration, rehabilitation and

recovery, and 16 water treatment facilities that were affected are back in operation.

Reference: Victorian Bushfire Reconstruction and Recovery Authority, 2009, *100 day report*, State Government of Victoria, Melbourne at https://www.rdv.vic.gov.au/___data/assets/pdf_file/0004/1203457/VBRRR_-_100_Day_Report1.pdf.

Case Study 7 - Effects in the economic environment—indirect economic impacts

Cyclones Larry and Yasi - economic impacts including the banana industry (Cyclone Larry 2006 and Cyclone Yasi 2011)

Cyclone Larry crossed the coastline of Far North Queensland on 20 March 2006 causing widespread damage to an area of more than 17,000 square kilometres. The cyclone was reported to have caused more than \$1 billion damage, including about \$550 million in economic damage, \$370 million in insurance claims and \$216 million in disaster relief payments to councils.

Cyclone Yasi made landfall in Far North Queensland on 3 February 2011, again causing widespread damage to affected areas and covering a much larger proportion of Queensland, compared to previous cyclones including Larry. Due to the size of the cyclone system and its strong core, Yasi maintained cyclonic intensity further inland than normal, and finally dissipated near Mount Isa 22 hours after it first crossed the coastline. Total losses from the storm are estimated at \$3.5 billion, which makes it the costliest cyclone to ever hit Australia. By 5 February, \$2 billion was confirmed to have been lost in agriculture, mining and local government. An additional \$1 billion was lost in the tourism industry.

A great deal of preparation and public notification took place in the days prior to both cyclones, enabling some minimisation of property damage and preparations resulting in the low injury and death toll attributed to the cyclones. However, the damage to property was considerable and the impact was strongly felt on the economy of the region and the lives of its people.

Both cyclones had severe implications for the banana industry in Far North Queensland and therefore the economy of the entire region. Banana growers lost an estimated 75-100 per cent of their crops in each event.

The industry took at least 12-18 months to return to full production, and then additional years to sufficiently recover from economic losses in each case. The extensive workforce attached to the industry was severely impacted (for example, the casual workers who were to harvest the crops, the suppliers of the bagging for the bananas, the packers of the fruit, the transporters of the fruit). Backpacker workers and other transient/casual workers left the region to find work elsewhere, which further impacted the economic stability of the region. Without the workers and other visitors to the region, many hotels, cafes, restaurants, retail outlets and tourist attractions were no longer able to trade at their usual capacities.

Further impacts were the increased market cost of the fruit, which had to be sourced from other states or imported. The costs of bananas soared to as much as \$15 per kilogram, changing the fruit from an everyday item affordable to most families, to more of a luxury item.

Both cyclones significantly affected other industries as well. Cyclone Yasi destroyed 15 per cent of all sugar crops in Australia (50 per cent in QLD), 20 per cent of the avocado crop, and approximately 40 per cent of the pawpaw and papaya crops. Additional losses arose from damage to pumping stations, roads, bridges and other infrastructure. Coal ports were closed for a week at a cost of \$100 million a day.

'Employment, a social and community well-being issue, also became a significant economic question in supporting the economic viability of the region'. Businesses and individuals had access to Natural Disaster Relief Arrangements including concessional loans. This was accompanied by a variety of employment support programs, designed firstly to enable employers to pay a viable wage to their work force and secondly, under special employment programs to afford meaningful cyclone recovery related work to the unemployed, notably, those who might have expected seasonal employment if the cyclone had not intervened. These employment programs met a dual need—to provide jobs in the region and to provide a workforce for reconstruction.

A year on, employment in the region had been sustained despite the impact of the cyclone on the economy and was once again solid. The impact on primary producers was severe with banana plantations, sugar cane, dairy, timber, tree crops, aquaculture and tourism industries all severely adversely affected. However, after a year the economy was on a viable and self-sustaining footing, with some sectors such as retail and rental enjoying a boost to their business. Full recovery was considered to be some way off into the future for many businesses. Some long-term casualties remain such as producers of tree crops, where trees had been destroyed and new trees were expected to take a number of years to produce cash crops.

Further information and analysis undertaken by Deloitte about the economic costs of the social impact of natural disasters can be found at <http://australianbusinessroundtable.com.au>

Reference: Operation Recovery Taskforce, 2007, *The final report of the Operation Recovery Task Force, Severe Tropical Cyclone Larry, April 2007*, Queensland State Government, Brisbane.

Case Study 8 - Effects in the economic environment—intangible economic impacts

Uncertainty and its impacts—some economic impacts for Port Arthur (1996 Port Arthur)

On Sunday 28 April 1996, 35 people were killed and 22 injured by a gunman in Port Arthur and surrounds.

The economic impact of this disaster was significant for both the state and the Tasmanian municipality. Port Arthur itself was subsequently closed for three weeks. Some businesses received additional short-term income as a result of the media and government department personnel who came to the area, and the negative impact was delayed. Other businesses were very negatively affected, immediately.

The estimated net effect of the loss of approximately 130,000 visitor nights is estimated to have meant \$15.6 million less for the Tasmanian economy in 1996. Around 400 jobs were lost as a result of this downturn in tourism business. At a regional level, business revenue was around 28 per cent less during the year after the disaster. A 28 per cent drop in revenue is approximately \$5.32 million or 166 jobs—a significant impact on the regional economy.

The local council recorded an additional \$56,000 in expenses (telephone costs, salaries etc.), which was a burden on the 2200 permanent residents and rate-payers. The State Government contributed to these expenses. In addition, the local council attributes some of the subsequent increase in rates to the disaster, although they 'realised that everyone in the community was hurting, and ... endeavoured to keep any increases down to a minimum'.

References: Noye, N, 1997, 'The local government response to the Port Arthur incident,' in *Port Arthur seminar papers: a record of the proceedings of the Port Arthur seminar, 11–12 March 1997*, Melbourne, Victoria, EMA, Canberra.

Wells, M, 1997, 'The impact of the Port Arthur tragedy on the regional economy,' in *Port Arthur seminar papers: a record of the proceedings of the Port Arthur seminar, 11–12 March 1997*, Melbourne, Victoria, EMA, Canberra.

Case Study 9 - Effects in the economic environment—intangible economic impacts

Uncertainty and its impacts—foot and mouth disease potential impact

The Productivity Commission published a report in 2002 on the potential impact of a foot and mouth disease outbreak in Australia. In this report they assessed the potential economic, social and environmental impacts of a range of scenarios, on the agricultural sector in rural and regional Australia and on the national economy.

Eradication and control of the disease potentially has a number of adverse impacts on the natural environment. These are primarily associated with the disposal of animal carcasses. Other natural environmental impacts could arise from:

- the disposal of other livestock products (such as milk)
- widespread use of disinfectants to decontaminate infected properties
- a reduction in on-farm environmental improvement measures such as soil conservation, tree planting and

salinity reduction arising from decreases in farm cash flow.

The Productivity Commission found that uncertainty would relate to:

- market effects—e.g., how long will markets be closed and how reflective of next seasons prices are current prices;
- income effects—e.g., the availability of short-term cash flow and the duration of expected impacts on cash flow from market closures;
- scientific aspects of the disease—e.g., how it started, how it spreads, the possibility of recurrence, the role of livestock farmers in the initial outbreak, and the role of livestock farmers and public authorities in the spread and elimination of the disease; and
- governmental effects—e.g., the timing and extent of assistance and the effectiveness and consistency of policy interventions designed to control the spread of the disease.

Uncertainty would be highest early in the outbreak prior to knowledge about the extent of the outbreak and control measures being established.

References: Productivity Commission 2002, *Impact of a foot and mouth disease outbreak on Australia*, Research Report, AusInfo, Canberra, at <https://www.pc.gov.au/inquiries/completed/foot-and-mouth/report>.

Case Study 10 - Effects in the economic environment—economic impact assessment

Great Divide Bushfires 2006–07, Shire of Wellington, Victoria

The Socio-Economic Impact Assessment Model for Emergencies was designed to provide an 'impact assessment framework and related templates to analyse the impact of future emergencies on regional districts'. To test the model, an analysis was undertaken of the 2006–07 Great Divide bushfires in the Shire of Wellington, Victoria.

The analysis looked at key costs, benefits and impacts including:

- direct costs (total \$40.8 million) such as infrastructure, crops and buildings
- indirect costs (total \$25.2 million) such as business disruption, disaster response and clean up
- intangible costs (total \$7.4 million) such as injuries, cultural and environmental heritage
- benefits (total \$7.7 million) such as government and insurance payments within the shire
- the net cost of the fires to the Shire of Wellington, which was determined to be approximately \$65.7 million.

These figures are used in contexts such as government budgetary considerations occurring in relation to mitigation initiatives and risk management strategies.

Reference: OESC (Office of the Emergency Services Commissioner), 2008, *The development of a socio-economic impact assessment model for emergencies*, OESC, Victoria.

Case Study 11 - Effects in the natural environment – plants and animals

Coorong, Lower Lakes and Murray mouth recovery—the importance of ecosystem function to social, economic and built recovery (drought and water)

The Coorong, Lower Lakes and Murray mouth ecosystem has suffered drought and long-term impacts due to the allocation and use of Murray–Darling Basin water resources in the upper reaches of the river system. This case study demonstrates the role of natural systems and the services they provide in underpinning economic, social and built environments.

The region is protected as a Ramsar Wetland of International Importance. It contains a wide range of flora and fauna (including many migratory wading birds that spend summer in Australia), many of which are endangered or threatened. The area is a popular tourist destination, and in 2008 approximately 138,000 people visited the Coorong National Park. Nearly 28,000 people live in the region, and because a majority of people are employed in industries that rely on water from the Lower Lakes, the local economy is heavily dependent on the health of the whole Lower Lakes system.

The region and surrounding areas are the central homelands of the Ngarrindjeri people. Creation stories about Yarluwar-Ruwe (sea country) reveal the significance of the relationship between the country and the people both physically and spiritually.

The flow-on effects of ecosystem decline in this region include impacts on the following areas:

- fishing: low water levels prevent commercial fishing—fishers identify that this results in a halving of their income and lay off of staff
- agriculture: dairy farmers and graziers have to reduce genetic breeding livestock, begin feed lotting cattle, or have bought and carted water—there is now less employment on farms (which negatively impacts town businesses and essential services) and some land managers have sold out, while others have undergone major changes
- viticulture: local growers and irrigators have experienced significant emotional, physical and financial strain and job losses with ongoing water management issues
- business: small businesses and town businesses report business downturn, and economic and employment loss (particularly in businesses directly associated with water activities and tourism) and property values decreased
- boating: the boating, tourism and recreation industry was severely impacted, in some cases with 80 per

cent loss of business and subsequent business closure and loss of employment

- infrastructure: water-based infrastructure (for example, jetties and pipelines) was 'marooned' above the water line and was unable to be used, and infrastructure was damaged (levy banks damaged by drying phase, river banks slump, boats stranded on dry land)
- health: reported increase in mental health issues due to economic impacts and an increase in physical health complaints (skin and eye irritation) due to contact with lake water; concern about increased mosquitoes; concern about an increase in dust storms; Indigenous community identified at risk by medical practitioners
- education: a loss of jobs and families moving out of the region resulted in a drop-in school enrolment numbers and a reduction in teaching numbers
- community: increasing demand on community services; tensions and conflicts between community groups with competing interests and changes to the demographics of communities
- environment: native fish translocated then taken into captive breeding facilities to ensure survival of the species/populations, lake and river fringe habitat degraded, change in water quality, exposure of acid sulphate soils, frog species decline, migratory birds affected.

Reference: DEH (Department for Environment and Heritage), 2010, *Securing the future: a long-term plan for the Coorong, Lower Lakes and Murray Mouth*, Department for Environment and Heritage, Adelaide.

Case Study 12 - Project cycle—needs assessment

Rapid Impact Assessment

Some states and territories have developed the Rapid Impact Assessment (RIA) framework/tool to assist agencies with providing recovery services to affected communities during the initial stages of an emergency.

The RIA life cycle begins with collecting data about the impact of an emergency—gathering and verifying this data during the first 48 hours of an emergency. Data includes information on people, residential property, environment and community infrastructure affected by the emergency event. RIA provides a standard process for collecting, collating, analysing and distributing information for all agencies involved with emergency response and recovery.

Arrangements for activation vary. Usually, control agencies can initiate RIA when the size and scale of the emergency requires additional resources for assessment of the impact of an emergency.

[NB: Specific case studies are welcome to provide further insight into how this framework has been implemented in their jurisdiction.]

Case Study 13 - Implementation of services/ activities—case management

Canberra bushfire recovery—case management in the recovery process (2003 Canberra bushfires)

After the 2003 Canberra bushfires, case management provided an individual or family-level service response, which was complemented by community work. This meant that issues reflected in family units could be responded to with community-wide information, support and education programs.

In non-disaster circumstances, these interventions are provided by separate government agencies applying different criteria. After the Canberra bushfires, case management and community development approaches were integrated to provide whole-of-community service to individuals, families and communities. This model provides dedicated, flexible, accessible and quick service to people in distress. Pathways were sought for people through organisational silos, and 'red tape' was unravelled or cut.

Case managers, known as Recovery Workers, provided:

- personal support to individuals, families and community through the recovery process via home visits, office drop ins and telephone contact
- assessment of the social, emotional, financial and practical needs of individual, families and the community in the short, medium and long term
- information about services and support available and smooth access to these services
- advocacy for flexibility in service provision by government and non-government agencies, and a conduit between affected individuals and the management structure through provision of information and feedback on concerns and issues.

Reference: ACT Bushfire Recovery Taskforce, 2003, *The report of the Bushfire Recovery Taskforce*, Australian Capital Territory, Publishing Services for ACT Bushfire Recovery Taskforce, Canberra.

Case Study 14 - Local community consultation groups

East Coast bushfires, Tasmania, 2006

This case study provides an example of the non-government organisation sector and all three levels of government working together and with the community. This approach has now become a common one in affected communities.

The Affected Area Recovery Committee (AARC) for the East Coast area of Tasmania was set up to feed community information to a Community Recovery Reference Group, which was made up of one community representative from each of the local communities affected by the fires. Each of these representatives

engaged with and represented their local communities. The AARC identified that the local government involved had been stretched. The AARC wanted to provide resources to support leadership of the community recovery.

A Disaster Recovery Coordinator (DRC) was appointed to provide executive support to facilitate priorities for the Community Recovery Reference Group and to feed back into the AARC. This position was:

- funded through Natural Disaster Relief and Recovery Arrangements
- supported by local government through provision of an office and administrative support
- under the auspice of the Australian Red Cross.

Advantages of this model are that the:

- DRC can be someone the community can trust to articulate its concerns to the AARC (dependent on the selection process for the position)
- Where the DRC comes from outside the region, they are less likely to represent one locality within that particular local government
- DRC can bring disaster recovery and community development experience, including the recognition that the community might not want to replace (or might not be best served by replacing) what was there before
- DRC can be established early in the recovery operation and can then transition out of the role to enable local facilitation of the Community Recovery Reference Group and the recovery process.

Case Study 15 - Cultural and spiritual factors

Social recovery via a regional arts project (Cyclone Ului 2010)

Tropical Cyclone Ului crossed the Queensland coast just north of Mackay in March 2010. It tracked across the coast and was caught in the hinterland at the small township of Eungella. The immediate effects were that up to 50,000 households were without electricity for as many as 12 days. This area was flooded two years previously, so the community was anxious about the events that occurred.

After initial assistance measures, including support from local nongovernment organisations, the emergence of a group of people who were homeless or at risk of becoming homeless was identified. The medium-term activity included the partnering of two organisations (Red Cross and Lifeline) to case manage this group, to expedite any rebuilding with them and to engage with the community in relation to its experiences of the cyclone. This engagement occurred primarily through women's arts and crafts groups and some one-off visits to small townships for lunch at local hotels. The partnership of the two organisations received a regional arts grant, with the support of the local council, to continue an arts project within the community. This case study

illustrates community development that started with the emergence of a small group of people at risk of homelessness and developed into a regional arts project that ran until December 2010.

Through development of a multi-agency management group and engagement with the council, the community is better prepared for coming cyclone seasons and support has been offered to a variety of groups and people to continue to assist their recovery.

Case Study 16 - Donated goods and services and material aid

Black Saturday and pallets of toothbrushes (2009 Black Saturday Fires)

Immediately after the 2009 Black Saturday bushfires in Victoria, 25,000 pallets of material aid were donated and delivered to metropolitan Melbourne. Semi-trailers and individuals arrived in the fire-affected areas, having driven from interstate, and on arrival looked for food and accommodation—and warehousing and materials handling equipment to offload the goods. The donated goods were not sorted or categorised.

The role of the media in relation to material aid cannot be underestimated, but they can provide a conduit for misinformation or ill-informed requests for goods. A caller to a radio station stated that no toothbrushes were available. Later that day 25 pallets of toothbrushes—or approximately 100,000 pieces—were donated. It took 18 months to distribute them even though these items were required immediately after the event.

National guidelines for managing donated goods have now been endorsed (2011) and are a useful guide to the process and how to address related issues.

Case Study 17 - Principles of ecologically sustainable development

Ecologically sustainable development and marine pests

In the case of marine pest incursions, pests often become established before they are detected, and in most cases, they are unable to be eradicated. There is normally no concept of recovery. In certain circumstances, pests may be detected early, or may be confined within a restricted area, which enables eradication to be attempted. When implementing interventions for marine pest incursions, public benefits should be maximised, and intervention not applied unless there is a clear case (or likelihood) that benefits exceed costs.

An example of a marine pest in Australia is the incursion of black striped mussels into the Port of Darwin. Some interventions (for example, the use of poison or biocide to kill the mussels) will result in collateral environmental damage for which there may be a recovery process.

Long-term effects of serious marine pests (which are usually prolific ecosystem engineers) are normally an irreversible change in the ecosystem community structure and lead to the formation of a new order of biological assemblage (pers. comm., John Barker, Marine Policy Officer, Department of Sustainability and Environment Victoria, 8 March 2011).

Case Study 18 - Guiding questions and principles of natural environment recovery—treat risks

An action to treat risks—and the benefits of action (2005 Eyre Peninsula fires)

During the Eyre Peninsula bushfires of 2005, loss of fences led to stock encroaching on areas of native bush that were environmentally sensitive. The issue was managed by re-establishing fences to contain and look after stock. A side benefit of this quick action was that it provided protection for native vegetation.

Later in the recovery process agreements and a grants program were put in place between the Department of Environment and Heritage and local communities to fence off heritage areas specifically to protect the native vegetation.

[NB: Additional case studies from other jurisdictions are welcome to provide further insight.]

Case Study 19 - Guiding questions and principles of natural environment recovery—communicate and consult

Bellevue hazardous waste fire, 2001

The hazardous waste facility fire at Bellevue, Western Australia, on 15 February 2001 has been described as the biggest hazardous materials fire in Australian history. Hundreds of thousands of litres of mixed hazardous waste were burned. The dense smoke plume rose into the sky and travelled towards the central business district of Perth. Residents were evacuated. More than two million litres of water were applied to extinguish the fire.

During the fire decisions had to be made to manage environmental impacts and recovery. Initial clean-up costs were about \$5.6 million.

Air: air monitoring was not possible during the fire; however, air-monitoring units were set up around the site in the days after the fire to determine the hazards to public health. Swabs were taken of nearby properties to test for contaminated fall out. Significant community concerns arose relating to possible contamination. Testing of soils, sheep wool and other environmental media was undertaken over an extended period.

Water: run off from the fire entered street drains that went under a primary school and led towards the Helena River. Damming of drains protected the river during the incident. Hundreds of thousands of litres of contaminated water had to be pumped from drains after the fire and all drains had to be thoroughly decontaminated.

Ground water: the firefighting water, contaminated with chemicals, sank into the ground water. A significant monitoring program over a number of years determined the spread of the three ground water contamination plumes, which were heading towards the river. About nine years after the fire, a reactive membrane was installed to intercept the plume and protect the river.

Soil: a large amount of contaminated soil was removed from the site and surrounds, and a large contaminated site investigation was undertaken to determine any risks and limitations on land use.

Waste: a specialised drum shredding and waste collection machine was designed and constructed. Six months after the fire, the drums were processed, and the waste encased in concrete, painted in impervious paint and disposed of in a class 4 landfill.

Social impacts: there was significant and extended media coverage and a resultant stigma to the suburb name. A Parliamentary Inquiry was conducted and made numerous recommendations. A dedicated Pollution Emergency Response Unit was set up to monitor air emissions during hazardous materials incidents. A health register was set up for those possibly exposed to the fire.

Economic impacts: the company received the majority of Perth's hazardous liquid wastes. The only other facility was shut down by the government in 2003, resulting in waste having to be transported at least 800 kilometres for disposal. Property values in the suburb were affected. Increased regulation of hazardous waste and chemical industries was introduced.

Reference: Four Corners, 2002, 'Too hot to handle', Australian Broadcasting Corporation, at www.abc.net.au/4corners/stories/s478800.htm.

Case Study 20 - Natural environment recovery

Natural environment recovery - Lower Eyre Peninsula fire, 2005

Bushfire on 11 January 2005 burned more than 83,000 hectares in one day, crossing from one side of Eyre Peninsula to the other and consuming nearly everything in its path. Tragically, nine lives were lost. More than 42,000 livestock perished, more than 90 homes were destroyed, and nearly \$17 million worth of primary production was lost. The total estimated cost was more than \$100 million.

The Department of Primary Industries South Australia (PIRSA), along with a major collaborative approach across government and community, responded to the needs of

the community with an organised, prepared and equipped response team with established protocols, systems and personnel. PIRSA responded to the immediate needs of primary producers and landholders. Teams immediately assisted landholders in assessing stock and destroying animals. Local livestock agents were quick to coordinate transport and agistment for surviving animals.

The Minister for Primary Industries offered grants (\$2 million in total) to assist landholders in paying immediate costs, and funds were made available within 24 hours of their announcement. Within two days of the bushfire, the hot north winds returned, and the second major issue arose with extreme wind erosion events moving soil from the exposed land. In the short- to medium-term recovery phase, landholders were overwhelmed with the list of things to do to prepare their properties for the return of agisted livestock and the coming cropping season. They were also dealing with the emotional and physical trauma of the fire.

State government agencies provided a comprehensive range of support. 'Getting started' workshops were delivered within the first month after the bushfire. These focused on preparation for return to productive agriculture as well as rebuilding. Information assisted landholders to think about the opportunities, not the losses (rethinking fencing locations, reassessing livestock priorities, managing biodiversity return). According to participants, the most valuable element of the workshops was 'looking after yourself and your family'. While working with response and recovery, a long-term re-establishment support program was developed.

In a collaboration between PIRSA, the Eyre Peninsula Natural Resources Management Board, Department for Environment and Heritage, Department of Water, Land and Biodiversity Conservation and the Australian Government, a two-year program of support was developed and funded through the state government and Natural Heritage Trust Program. The package recognised the potential opportunity to increase sustainability, viability and resilience of the affected communities. The program focused on providing a facilitated approach to assist landholders in their longer term, strategic planning while recognising the continued levels of stress and trauma. Grants to assist landholders to develop a business plan and access grants to implement projects to assist in long-term sustainability and viability were also available.

Case Study 21 - Natural environment recovery

Restoring the landscape—the Goulburn Broken region, 2009 (2009 Black Saturday fires)

Over 400 separate fires burned across Victoria on and around 7 February 2009, on what became known as Black Saturday. A total of 255,417 hectares were burned and 173 lives lost. Over 2100 homes were damaged, leaving over 7000 people homeless.

The Goulburn Broken catchment covers 2.4 million hectares from just north of Melbourne to the Murray River. The catchment has dry-land agriculture, intensive irrigation and public land, and is home to more than 200,000 people, including major urban centres at Seymour, Benalla and Shepparton. The region was severely affected by the Black Saturday fires. The aftermath of the fire posed a serious challenge to the ability of the catchment community and agencies responsible for natural resource management to deal with the assessment, planning and restoration of the fire-affected areas.

Responding to the fire, identifying the assets destroyed or at risk on private land and waterways, and developing response plans was the task confronting the Goulburn Broken Catchment Management Authority (GBCMA), along with its partner agencies in private and public land management. At the core was the need to rebuild engagement with the community and to start the long process of restoring ecosystem function. In the immediate post-fire period the main task was to reconnect with the community and to begin the job of reinstating critical assets on public and private land. GBCMA worked with state and federal agencies to get financial support for the recovery program.

The Community Environment Fire Recovery Coordinating Committee was established with representatives from all the agencies and groups contributing to the fire recovery effort to coordinate the natural resource management recovery work. Landcare networks and groups and the Department of Primary Industries (DPI) were the first to engage with the communities. In the post-fire period DPI and Landcare ran a series of field days on issues that were foremost in the minds of landholders. These were held at strategic locations across the burned area to maximise the opportunities for community participation. These were the catalyst for the later rapid uptake of works on private land. Landcare groups and support staff coordinated the volunteer clean-up program. The Landcare groups assisted agency staff to advise and implement service delivery opportunities. They were a critical conduit for information flow to and from the community, and in engendering community support for operational tasks. Landcare was at the forefront, managing some very sensitive issues around illegal clearing and providing much-needed leadership.

The coordinating committee focused on urgent rehabilitation works prior to the onset of winter, and then on specific flora and fauna requirements (for example, assessing impacts on fire-sensitive plant species, and re-establishing nesting boxes for possums). A major focus was on controlling the impacts of pest plants and animals, as the fire opened up vast areas of new 'invade-able' land. In the 12 months after the fire, more than \$6 million was committed to recovery operations. All landholders in the burned area were contacted or had access to specialist advice and community support.

More than 800 hectares of critical habitat has been protected and works have been carried out to translocate or create critical elements of habitat for 15 threatened species. Weed control has been carried out on 400 hectares. Some 500 volunteers assisted

more than 50 landholders to address immediate issues such as fence recovery, tree planting, woody weed control, erosion control and nesting box installation. The magnitude and rapidity of the response was only possible because of the investment in human and social capital in the catchment. The recovery program has been funded through Landcare, Caring for Our Country and state government programs.



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