

Guidelines for Preparing for Waste Management during and after an Emergency



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Contents

1. Executive Summary
2. Background
3. Components of a Disaster Waste Management Plan
4. Pre Planning Activities
5. Coordinating External Assistance at Government Level
6. Operational Requirements for Waste Sites
7. List Applicable Environmental Regulations and Determine Risks
8. Identify Types of Debris and Forecast Amounts
9. Inventory Current Capacity for Waste Management and Determine Waste Tracking Mechanisms
10. Pre select Debris Management Sites
11. Identify Equipment and Administrative Needs
12. Debris Removal Strategy
13. Create a Disaster Waste Reduction Strategy
14. Communications and Communicating with the Public
15. Harmful Materials Identification and Hazardous Waste Management Recommendations
16. Hazardous Material Disposal
17. Appendix 1: Risk Assessment Matrix
18. Appendix 2: Identification and Forecasting of Disaster Waste
19. Appendix 3: List of Existing Resource Recovery and Reprocessing Infrastructure in the Grampians Central West Region
20. Appendix 4: Map of Existing Resource Recovery and Reprocessing Infrastructure in the Grampians Central West Region
21. Appendix 5: Reuse and Recycling Options for Common Disaster Wastes
22. Appendix 6: Procedure for Handling Asbestos
23. Appendix 7: Relevant Contact and Further Information

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1. Executive Summary

Many of our councils are required to manage a range of disaster scenarios ranging from fires and floods through to severe storms. All of these disasters will result in additional waste that will need to be dealt with. A Disaster Waste Management Contingency Plan, recognised under the relevant Municipal Emergency Management Plan (MEMP) provides council staff the guidance needed when dealing with waste in a post-disaster situation.

This document provides guidance to assist councils to develop their own Disaster Waste Management Plan (DWMP) that reflects local conditions and based on local knowledge. The guidelines are designed to be a practical sub plan to support councils' Municipal Emergency Management Plan (MEMP) and should be adapted by council to meet their specific needs.

Communities struggle to deal with the aftermath of a disaster. Having a plan to manage the debris clean-up in an efficient and effective way is an important part of the recovery process.

Without strategic planning, decisions about managing debris may be somewhat ad hoc and not in the best interests of the Council, the community or the environment in the longer term.

2. Background

The Emergency Management Manual Victoria describes the role that Council plays in the development of the Municipal Emergency Management Plan (MEMP).

“Emergency management contributes to community safety through the reduction of the impact of emergency related events that can cause death, injury, loss of property and community disruption. The planning for, and the management of, emergencies is a shared responsibility involving many people and organisations in the community. It is not something done by one organisation or sector of the community although some organisations have specialist roles in dealing with emergencies.”

Municipal emergency management planning involves the identification and documentation of the overall multi-agency arrangements in place for the prevention of, response to and recovery from emergencies that affect the municipal district.

The planning process includes the identification of risks that are likely to affect the assets and people in the municipal district and the steps to be taken to address those risks. It also allows organisations involved in dealing with emergencies and their impacts the opportunity to discuss and better understand the capabilities of other organisations (including councils) that have a role in dealing with emergencies, and develop a comprehensive plan.

The MEMP is not a static document and while it is the outcome of the planning process conducted at a point in time, it must be maintained, regularly revisited and up-dated.”

Emergency Management Victoria (EMV) provide guidelines and toolkits to assist councils in developing their MEMP. <https://www.emv.vic.gov.au/our-work/disaster-recovery-toolkit-for-local-government> Booklet 8 of this toolkit is titled Recovery Tools and Other Resources. It contains templates that identify a range of issues facing local government after a disaster event under the headings of social, built, natural, environment and agricultural impacts. There is reference to facilitating the clean-up of homes but no specific templates or advice for how local government should approach this issue.

Recovery management suits a structure that allows for the community recovery response to be grouped into areas with common themes. The structure recommended by EMV is represented by the graphic below. The management of post-disaster waste has the potential to have an impact in all the recovery environments.

Social Environment	Economic Environment	Built Environment	Natural Environment
<ul style="list-style-type: none"> •The social environment considers the impact an event may have on the health and wellbeing of individuals, families and communities. •This environment is primarily concerned with safety, security and shelter, health and psychosocial wellbeing. 	<ul style="list-style-type: none"> •The economic environment considers the direct and indirect impacts that an event may have on business, primary producers and the broader economy. 	<ul style="list-style-type: none"> •The built environment considers the impacts that an event may have on essential physical infrastructure including essential services, commercial and industrial facilities, public buildings and assets and housing. 	<ul style="list-style-type: none"> •The natural environment considers the impact that an event may have on a healthy and functioning environment, which underpins the economy and society. • Components of the natural environment include air and water quality; land degradation and contamination; plant and wildlife damage/loss; and national parks, culturaland heritage sites.

The management of waste post-disaster is a key issue for councils. The Guidelines for Developing a Disaster Waste Management Plan has been developed by GCWRRRG to assist council in the development of a practical sub plan to their MEMP for disaster waste management.

Natural disasters, as well as large fires on site, can devastate natural and built environments which results in the generation of tremendous quantities of waste. Communities and national, state and local agencies will find it easier to manage disasters if they have an up-to-date DWMP that describes the types, locations, and capacities of existing solid waste management facilities, as well as the practices and policies to be followed in order to tackle disaster waste. A DWMP can:

- reduce the impacts of disaster waste in future emergencies;
- save money;
- increase control over waste management;
- improve administrative efficiency;
- protect the environment; and
- serve as a resource document in negotiating technical and financial assistance.

A DWMP should address issues beyond initial waste removal, help to prioritize waste management options, and include a strategy for recycling and reuse of materials. The DWMP should be used by all authorities in a disaster-prone or disaster-affected area or by outside experts who have been requested to provide assistance to the local authorities and communities.

The output should be a commonly understood plan for how to manage waste in the event of a disaster. Normally, the DWMP would be an adjunct to, or consistent with, a larger disaster planning process.

3. Components of a Disaster Waste Management Plan

The DWMP needs to meet the requirements of the responsible authorities and the affected communities and take into account immediate and long-term issues.

The plan is a supporting document for council's Municipal Emergency Management Plan. The development of the plan should, as a minimum, include the following elements:

- Pre-planning activities
- Coordinating external assistance at government level
- Operational requirements for waste sites
- List applicable environmental regulations and determine risks
- Identify types of debris and forecast amounts
- Inventory current capacity for waste management and determine waste tracking mechanisms
- Pre-select debris management sites
- Identify equipment and administration needs
- Addressing the issues of debris removal and disaster waste reduction
- A communications plan
- Communicating with the public
- Harmful materials identification and hazardous waste management recommendations
- Hazardous materials disposal

Each of these elements is described in more detail below. Users of these guidelines should work through each of the applicable elements.

4. Pre planning Activities

The following activities are recommended before starting on the DWMP. Once developed it should be updated at least annually to ensure that it reflects current practice.

1. Understand state and national requirements for public assistance eligibility and possible approval processes for international assistance.
2. Assemble a team - identify a team of individuals who will work together to prepare the plan. The team should include planning officials, emergency management officials, environmental officials and first responders. If possible, the team should also include officials from communities that have experienced disasters in the past.
3. Design a process for review and development. The team should establish how the plan will be created and who, beyond the team, should review it, such as neighbouring communities and NGOs, waste contractors and other stakeholders.
4. Develop a schedule for updating to be incorporated in the DWMP to ensure that it reflects current practices, policies and organizational structures if a disaster occurs.

5. Coordinating External Assistance at Government Level

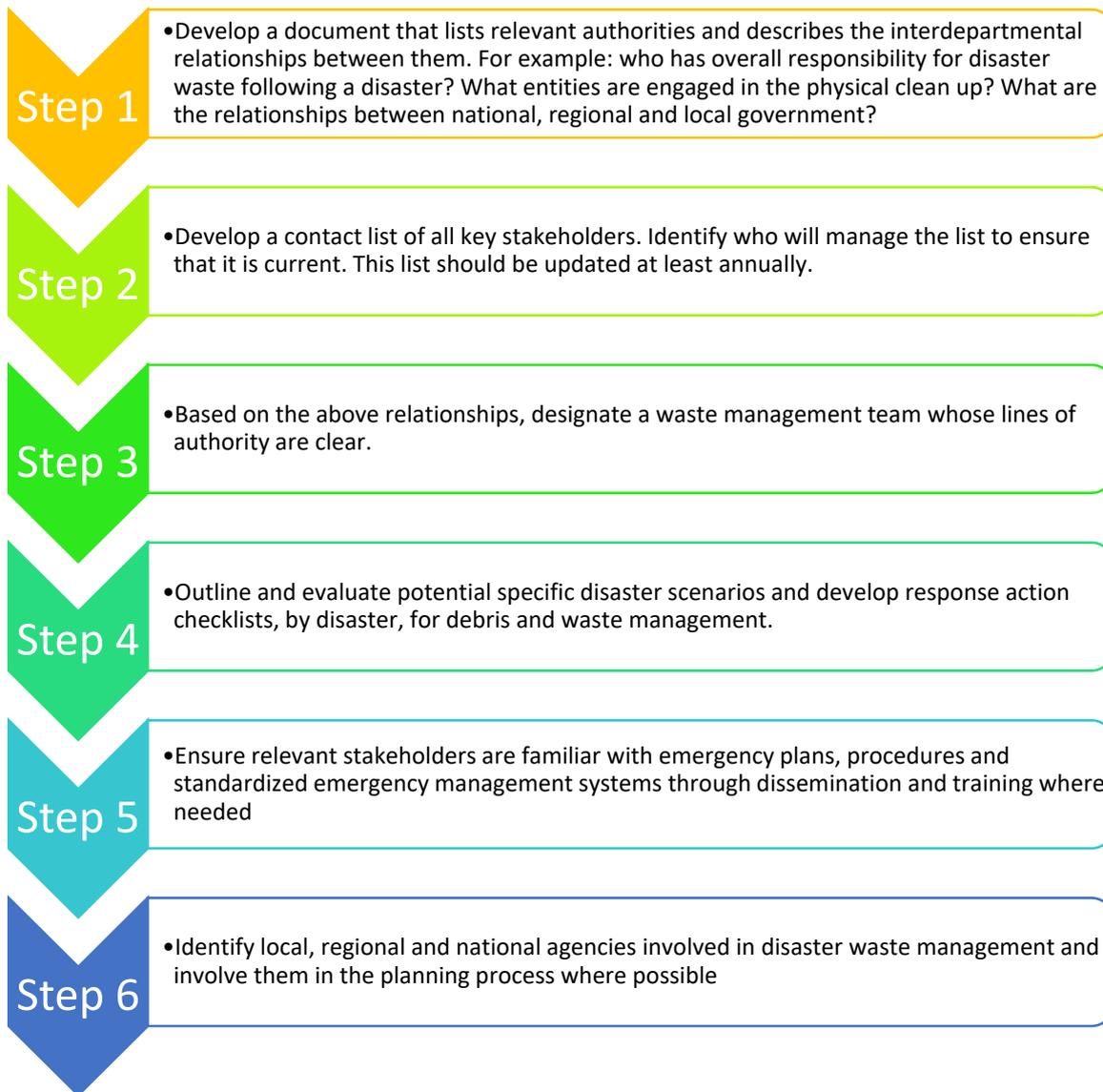
In an event of disaster, local officials must know whom to contact for assistance and understand the roles and responsibilities of external agencies involved in the response to effectively coordinate recovery efforts.

Effective coordination requires:

- A commonly understood description of who is responsible for what, where and when and an identification of relationships between relevant authorities and/or departments;
- The maintenance of an up-to-date contact list with the names and emergency contact details of relevant people;
- Designation of a waste manager and support team;

- Knowledge of available resources (staff and equipment);
- Description of any existing mutual aid agreements with agencies/organizations involved in response.

The following steps are suggested for preparing a coordinated response:



6. Operational Requirements for Waste Sites

General environmental, safety, and logistical considerations include:

- Environmental monitoring: areas to be used to stage vegetative debris do not typically require groundwater monitoring, but should be monitored for fire risk. Areas to be used to stage mixed rubble or hazardous waste may need more extensive monitoring. Consult with the State and Regional agencies for recommendations.
- Removal of debris from the site in a timely manner: bio-degradable, mixed, harmful, and hazardous waste should not be stored for extended periods of time. These types of waste should be removed daily or as soon as possible to prevent odours, vermin infestation, human health hazards, and/or harmful emissions.

- Limiting site access: some wastes that present higher levels of concern should have additional storage controls and security measures.
- Evaluating traffic logistics on and around the storage site.
- Minimising noise disruptions to acceptable hours.

Consider the following safeguards for hazardous waste sites:

- Area should be covered with two layers of plastic sheeting, tarps, or a concrete pad.
- Fence off the area.
- If possible, surround fenced off area with absorbent booms (to absorb any potential leaks) or sandbags (to prevent spills from seeping into the ground).
- Use wooden pallets to raise collection bins off the ground. This also assists when identifying the location of leakages.
- Provide adequate space for walking/carrying items between pallets.
- Segregate containerized gases, liquids, or solids by material type (e.g. corrosive wastes, reactive wastes). Place each material type in a separate bin or barrel, and label the bin or barrel appropriately.
- Cover collection bins or barrels with plastic liners/lids or cover the entire hazardous waste collection site with a tent to prevent water collecting in bins.
- Cylinders containing compressed gas should be placed upright and be secured.
- Provide sufficient fire extinguishers (suitable for the specific waste/fire hazards on site) for the site in case fire breaks out. UN guidelines recommend 4 fire extinguishers per 1000 square metres. They should be in easily accessible locations

7. List Applicable Environmental Regulations and Determine Risks

Emergency management planners must be familiar with relevant state and local environmental and planning regulations. An effective DWMP lists regulations and explains how to manage waste according to those regulations.

This part of the DWMP must include an up-to-date contact list of relevant waste management and environmental officials who can be contacted in the event that guidance on the regulations is needed during clean up.

A risk assessment should be undertaken prior to the commencement of any recovery program in the affected area. Appendix 1 has a template to provide guidance for this task.

8. Identify Types of Debris and Forecast Amounts

The materials that will likely make up the disaster waste stream should be evaluated so that appropriate measures can be put in place to address them in the event of a disaster.

Most disasters will have many of the same issues and infrastructure damage but to different degrees. All will impact on utilities and communications; most will have people displacement and camps etc.; most will have stock loss and structural integrity reduction.

Refer to Appendix 2 for tables to assist in identifying and forecasting disaster waste.

Rubble: forecasting the amount and types of rubble generated during disasters helps planners to understand the scope of effort that will be required to ensure effective handling. These estimates can be based on previous experience or be made using forecast tools.



The following can be used as a guide for the amount of rubble that be expected per building:

Wooden house	80 kg/m ²
Single storey modern brick house	736 kg/m ²
Single storey commercial building	746 kg/m ²
Multi-storey commercial building	817 kg/m ²

Using these figures, a modern brick house with a 200 m² (21.5 squares) floor area, will generate an estimated 147 tons of debris and rubble.

The Office of Green Industries SA commissioned a study into disaster waste management in 2015. To estimate the amount of post-disaster debris that could be expected from different scenarios they did some modelling based on bushfire, earthquake, flood and severe storms. For more detail see appendix 5 in the SA report.

http://www.zerowaste.sa.gov.au/upload/resource-centre/publications/disaster-waste-management-plan/Disaster%20Waste%20Management%20Scoping%20Study_final%20-Sept%20without%20map.pdf

Example of data in SA report: Estimated volumes of disaster debris from 300 ARI (Average Recurrence Interval) bushfire in Adelaide Mount Lofty Ranges

	<i>Medium scenario</i>		<i>Small Scenario</i>		<i>Large scenario</i>	
	<i>Tonnes</i>	<i>m³</i>	<i>Tonnes</i>	<i>m³</i>	<i>Tonnes</i>	<i>m³</i>
<i>Masonry</i>	733,200	917,000	366,600	458,000	1,466,000	1,833,000
<i>Metals</i>	6,000	14,000	2,810	7,000	11,000	28,000
<i>Vegetative waste</i>	452,284	1,005,000	287,678	639,000	535,000	1,189,000
<i>Hard waste</i>	28,400	114,000	14,200	57,000	57,000	228,000
<i>Whitegoods</i>	500	1,200	230	600	900	2,000
<i>E-waste</i>	400	1,000	200	500	800	2,000
<i>Soil & sediment</i>	-	-	-	-	-	-
<i>Vehicle bodies</i>	300	750	150	380	600	2,000
Total	1,221,000	2,053,000	670,000	1,162,000	2,071,000	3,284,000

9. Inventory Current Capacity for Waste Management and Determine Waste Tracking Mechanisms

Solid waste management facilities for disposal, recycling, reuse and combustion must be inventoried, along with their capacity to handle different types of waste.

The Grampians Central West Waste & Resource Recovery Group Implementation Plan 2016 provides details of landfill and resource recovery facilities and will assist Councils to select the most appropriate facilities for their needs. The list of existing resource recovery and reprocessing facilities in the Grampians Central West region is provided in Appendix 3, and is mapped in Appendix 4.

After the amount and type of disaster waste is estimated, waste management capacity in the region or disaster-prone area must be evaluated.

The capacity of the facilities that manage waste in excess of normal or permitted daily load should also be evaluated. Contact details for solid waste facilities within reasonable distance of disaster prone areas should be listed along with the facilities' locations, including global positioning system (GPS) coordinates. Lists of other relevant service providers (e.g. demolition contractors, refrigerant removers, electronics processors, etc.) should also be included.

Natural disasters can impact transportation routes. It is therefore necessary to evaluate a range of options for transporting waste. Depending on the local context, consider other forms of transportation beyond trucks. Depending on the expected amount of waste, long distance transportation needs can be considered.

If there is insufficient capacity to manage the predicted amount of waste, facilities outside of the immediate area can be contacted, and ad hoc solid waste management facilities can be identified.

Identifying these areas in advance allows time to undertake any necessary environmental assessments.

Mutual aid agreements can be established with neighbouring communities or municipalities in advance of a natural disaster to ensure additional waste management capacity.

The DWMP should identify how waste can be monitored and tracked. Tracking is important to:

- Determine the amount of waste from the disaster.
- Determine the capacity being used and remaining at various waste management locations.
- Pay waste haulers, who are normally paid according to the quantity of waste transported.

Waste Haulage Contractors can be identified in the plan, based on the Waste Contracts currently held by Council. The number of trucks, and their carrying capacity should be identified, and incorporated into the plan. Trucks can be monitored at the receiving facility, and the post-disaster waste tonnage can be better tracked and counted.

10. Pre-select Debris Management Sites

A single severe storms, bushfire or flood can generate more waste than some communities typically manage in a year, making it important to pre-select temporary sites for storing, sorting, and processing waste. Closed landfills, quarries, parks, playgrounds, sport-fields may be suitable and can be designated for this purpose.

As a general rule, 400,000 square metres (40 Hectares) of land are needed to process one million cubic metres of waste. This will vary according to the processing method used.

Sites should:

- Be accessible by relevant transport modes;
- Not be in a floodplain or wetland;
- Be of appropriate size for anticipated waste;
- Have appropriate topography and soil type - work with national, state and local environmental agencies to determine what this means in the area under consideration;
- Be located at a safe distance from potable water wells and rivers, lakes, and streams.
- Work with national and local environmental agencies to determine appropriate setback distances;
- Have controls to mitigate storm water runoff, erosion, fires and dust;
- Be free from obstructions such as power and pipe lines;
- Have limited access with only certain areas (e.g. for drop-off) open to the public;
- Be located close to the disaster-prone area, but at a safe distance from residences, infrastructure, and businesses that could be affected by site operations during the recovery period; or
- Preferably be on public land because approval for this use is generally easier to obtain. However, private land may be convenient and logistically necessary. In this case, consider agreements with private land owners in advance to ensure the use of the areas needed.

The condition of temporary sites should be evaluated and documented prior to use. It is advisable to assess the soil, groundwater and/or surface water prior to receiving waste and to re-establish pre-existing conditions once the site is no longer needed.

11. Identify Equipment and Administrative Needs

DWMPs should identify the types of equipment and supplies needed. An indicative list is provided below. If a large number of vehicles and fuel-dependent equipment is needed, consider possible implications from a fuel shortage due to the disaster.

Primary needs for initial response

Safety

- Safety items/personal protective equipment (first aid kits, safety vests, work gloves, protective boots etc.)
- Flares;
- Road signs to direct debris hauler traffic;
- Flags, small and brightly coloured;
- Vehicle repair equipment

Lighting and Utilities

- Torches and flashlights;
- Generators;
- Batteries
- Fuel;
- Water tankers

Cutting Equipment

- Chainsaws;

Earthmoving Equipment

- Excavators
- Dump trucks and roll-off trucks;

Communications

- Handheld Geographical Positioning System (GPS) units to record waste locations;
- Handheld radios, cell phones, satellite phones, and/ or wireless handheld devices;
- Notebooks and cameras;
- Remember to have a strategy for communication if mobile towers are down

Stock and wildlife



In rural areas, appropriately trained and qualified personnel may be required to handle injured stock and wildlife. Access for these people should be facilitated as soon as possible. Concern about the welfare of pets and livestock causes considerable stress to residents who have been evacuated. Ensuring that prompt attention is given to these animals assists residents to cope with the situation



Secondary needs for waste processing

- Mobile incinerator for infectious waste or construction material to build a temporary incinerator;
- Cranes with cables and magnets;
- Dumpsters and hoppers;
- Forklifts;
- Jack hammers;
- Jaw crushers and/or compactors;
- Pallets;
- Sealable plastic drums;
- Plastic sheeting;
- Wood grinders; and
- Air quality monitoring equipment.
- Replacement waste and recycling bins



Tertiary needs for processing large volumes of rubble

- Crushers;
- Conveyors;
- Vibrating screen sorters; and
- Air curtain incinerators.

Administrative needs

In the aftermath of a natural disaster, communities need to increase numbers of telephone calls concerning waste management. They also need more staff to train and monitor debris collection contractors and to troubleshoot. Waste management sites require additional staff to ensure that waste is being managed properly. Councils should consider cross-training their existing staff to carry out several responsibilities related to disaster response. They should also identify sources of temporary labour, which can contribute to post-disaster livelihood.

Pre-negotiated contracts

Pre-negotiated contracts should be considered for additional services that communities cannot provide, for example debris removal, storage, sorting, recycling, processing, marketing, and disposal. Pre-negotiated contracts will help to guarantee capacity and may result in cost savings compared to post-disaster price negotiations, furthermore, waste management can begin more quickly than if contract negotiations are required after the natural disaster. If pre-negotiated contracts are not feasible, consider including a list of prequalified contractors from whom bids can be solicited directly after the disaster.

Mutual aid agreements may allow equipment, services, and expenses to be shared with communities which have the necessary capacity. Consider contacting other local governments in advance to establish mutual aid agreements.

12. Debris Removal Strategy

There are numerous ways to handle and transport waste for processing or disposal.

The main transportation options are:

- Push mechanisms: paying a contractor to bring the debris to the treatment site; or,
- Pull mechanisms: paying per load of debris brought to the treatment site at a set rate.

During the planning phase, both options should be considered since post-disaster constraints would be unknown and options would need to be left open.

If debris quantities are likely to be spread throughout a geographical area and the transportation of the waste to a single area is not feasible, then temporary storage sites can be established. Once enough waste has been collected (generally more than 1,500m³) the waste can be processed.

Non-recyclable debris such as furnishings, personal belongings, packaging, mixed waste and some hazardous materials are typically disposed of at the local landfill.

Sites where hazardous materials have been located should also undergo soil testing to ensure there is no contamination. In instances where the soil has been contaminated provisions should be made to have the soil removed to an appropriately licensed location.

13. Create a Disaster Waste Reduction Strategy

Disaster waste reduction and prevention should be considered in the DWMP. Full prevention may not be possible, but some measures can at least reduce waste. These include an outreach program to educate the public on how they may decrease the amount of damage that their property might suffer in a natural disaster. An evaluation of building codes and planning by local officials may be prudent and help to determine whether the community can withstand disasters anticipated in that area.

Examples of actions include:

Bushfires: Residents can be advised to trim back yard trees on their property and remove dead or diseased trees. Utility crews can trim vegetation around power lines and remove trees that may interfere with important power and pipe lines. Advice can be given on what to do for roofs, windows and doors, screen enclosures, attic vents and other openings, home structure, the surrounding environment, and other features of a house. These measures will also help to reduce the quantity of falling branches, uprooted trees, and vegetation that can cause damage to infrastructure.

Earthquakes: In some cases, houses can be anchored to their foundations to help prevent them from moving. Strengthening weak walls, foundations and chimneys can prevent horizontal movement of homes and subsequent damage.

Floods: Outdoor belongings such as patio furniture and grills can be brought inside or secured outside using ground anchors or straps. Waste from drains, culverts, streams and channels should be removed to allow floodwaters to flow freely.

Severe storms: Residents can be advised to secure outdoor belongings such as patio furniture and other loose items that could become projectiles. Keeping backyard trees trimmed and removing dead or diseased trees will also help to reduce the possibility of these causing damage to residents and their property.

Household chemicals: Residents can be advised to participate in household and rural chemical collection programs to reduce the amount of hazardous material on their property.

Rural landholders: Rural property owners can be advised about programs such as drumMUSTER and ChemClear® to enable them to reduce hazardous materials on their property that have the potential to become waste in the event of a disaster.

Reuse and Recycling Options for Disaster Waste

There are many options for recycling of disaster waste. Appendix 5 identifies common waste materials (non-hazardous) and identifies reuse and recycling options that may be suitable.

14. Communications and Communicating with the Public

Each Municipal Emergency Management Plan will have a communications sub-plan.

The Communications sub-plan should include plans for internal and external communications. Communication about waste management issues, with emergency response stakeholders and communicating with the public, should be integrated into the broader planning document. During recovery, the responsible authorities will have to communicate with stakeholders including waste management teams, government agencies, commercial enterprises, residential waste haulers and the public, regarding waste removal. The communications plan should describe what information will be provided and how communication will occur.

Elements of an internal, operational waste communications plan include:

- Describing the chain-of-command, as well as how decisions will be communicated;
- Providing instructions to the waste/debris team in order to ensure proper debris management;
- Distributing the DWMP to ensure it can be implemented quickly and smoothly. Electronic versions on CDs or memory sticks should be distributed as well as hard-copies in the event computers are not accessible after the disaster;
- Ensuring that the waste/debris management team is familiar with the DWMP ahead of the disaster;
- Developing a communication mechanism with relevant government agencies (e.g. police, health officials, and other emergency responders) to ensure waste is collected in a way that protects public safety;
- Ensuring that the DWMP is shared with the region, State Government Agencies and neighbouring communities. This will ensure that the plan is accessible post-disaster; and
- Establishing a communication strategy with major commercial enterprises that may generate large amounts of disaster waste. This could include contact information, physical location, and a list of hazardous and nonhazardous waste that could be generated.

Properly informing the public is one of the most important elements in planning for disaster waste management. The community must understand the clean-up process, and feel ownership over it.

Consider placing the DWMP on your website and seeking public comment, or seek comment in other ways. Allow the public to review the document and understand how debris and other management will occur after a natural disaster. This can provide time for discussion and revisions to the plan based on public concerns.

A post-disaster waste information program can follow these steps:

- Ensure that any public information centre established to handle questions from the public has information on how waste is going to be managed.
- Ensure that the public can call a hotline number regarding disaster waste management issues and/or debris pickup.

- Ensure coordination of outreach materials for waste/debris management programs with relevant authorities.
- Advertise recycling and diversion programs.
- Produce and provide fact sheets on waste management to the public.

15. Harmful Materials Identification and Hazardous Waste Management Recommendations

A wide variety of hazardous materials may need to be dealt with in the aftermath of a disaster event. The DWMP should include measures for controlling and diverting hazardous waste from general waste, including handling procedures and training. This helps to avoid the release of hazardous materials.

Relevant officials should be contacted to determine if an emergency hazardous waste storage permit or other facility approval is required. All regulated hazardous wastes should be managed in an appropriate facility that complies with the regulations.

Household items such as motor oil, automobile batteries, paints and solvents, household cleaners and drain openers, pesticides, and compressed gas tanks should be segregated for special handling. Residents can be directed to bring hazardous waste to specified locations and be advised not to mix hazardous waste with other waste.

Asbestos-containing material, such as asbestos pipe wrap, siding, ceiling tiles and other building materials may be present. There are often regulations governing the removal and management of asbestos. These may affect the demolition of buildings and waste removal. This must be considered in advance.

Regulated asbestos-containing material must be removed prior to demolition under the supervision of an appropriately licenced operator. To the extent that an entity is dealing with debris from structures already demolished by a natural disaster (as opposed to human demolition), asbestos regulations may not be applicable or may be relaxed but safe procedures must nevertheless be followed. See Appendix 1 for further guidelines on Asbestos handling.

16. Hazardous Material Disposal

Disposal of Dead Stock from Bushfires or Floods:

EPA encourages the removal of dead stock from the fires to landfill facilities in the first instance. Where stock can't be moved to landfill, they should be disposed of by burial at the site in accordance with EPA Victoria's publication "Farm Waste Management" 30 June 2009 <http://www.epa.vic.gov.au/~media/Publications/IWRG641.pdf>

Provided this is done on private land and in accordance with EPA guidelines, landowners don't need a permit to bury stock. Large communal burial sites may require authorisation from the EPA.

The EPA requires burial sites to be on high ground, which is reasonably flat and at least 100 metres from any surface waters including any watercourse, drain, dam, spring/soak or swamp. The highest seasonal water table should not be within two metres of the bottom of the burial pit.

Burial pits should not be dug in highly permeable soils and not be situated within 300 metres of a neighbour's house. Carcasses should be covered by at least one metre of earth.

EPA discourages burning and this should only occur as a last resort and in consultation with local fire authorities.



Burnt vehicles / scrap metal

Metal recyclers will look to recover this material. Councils should liaise with recyclers to arrange.

Transformers

Transformers are equipment used in the supply of electricity, generally located on power poles but also may be encountered in sub-stations. Some older transformers may contain Polychlorinated Biphenyls (PCB) oil as the coolant contained within. PCB oils are a known hazardous substance and have strict management requirements as listed below. Newer transformers do not contain PCB oils.

Transformers should therefore be mapped, and the DWMP should include provisions for waste management personnel to notify relevant electrical supply company if they are damaged in a disaster. If a transformer appears to be leaking and does not have a sticker declaring that it is PCB-free, personnel should immediately notify the council environmental health officer and the electrical supply company and restrict access to the area. In the absence of information to the contrary, it should be assumed that all transformers contain PCBs

If PCB contaminated waste is suspected council should contact the EPA immediately for advice on the management and disposal of PCB waste.

Chemical drums

Chemical drums and containers may have been damaged on many farms by the fires. Due to this damage, circumstances exist where the contents of chemical drums are unknown, and they may pose a threat to community safety. All such chemical drums should be disposed of to landfill. Precautions must be taken to minimise the risk of exposure to workers handling these wastes (i.e. gloves, overalls, respirators, etc. – please see Worksafe website)

Unexploded gas bottles

The vast majority of cylinders involved in these sorts of fires will have vented their contents and do not constitute any danger on the site or issues regarding handling of LPG. Your gas supplier will have trained personnel who will be able to collect the cylinders, and they will correctly handle any that may have remaining LPG as is their usual practice.

CCA (copper chrome arsenate) contaminated timber waste

CCA is used to treat timbers as protection against pests and water damage. CCA treated timber is commonly used in pergolas, decking, cubby houses, fencing, gates, posts, landscaping etc. Dispose as solid inert waste to landfill; there is no need to separate from other waste streams. Clean up areas should be kept damp, to help in reducing risks from handling ash from burned CCA treated timber.

Asbestos

Asbestos can be disposed of at the Smythesdale and Doon landfills and at Statewide landfill in Stawell. Refer Appendix 6 for detailed procedures for handling asbestos for transport to the landfill.



Fuel storage tanks

Storage tanks may contain hazardous substances, which can pose health, safety, and environmental risks. These should always be handled with care. If, for example, gasoline pumps or vent pipes are present near a damaged building, or if an unknown tank or cylinder is discovered, waste removal activities should be stopped, the area sealed off, and local authorities contacted for assistance.

Firearms

Firearms, ammunition and other weapons may be part of the waste stream and prompt collection is important to ensure safety.

Victoria Police provide instructions for the safe disposal of firearms and ammunition. Updated January 2015. http://www.police.vic.gov.au/content.asp?Document_ID=34334

Human Effluent

Sewage and septic systems may also be impacted by the disaster. Council should work closely with the relevant water authorities to develop a strategy to manage this waste as the impact on human and environmental health has the potential to be significant.

17. Appendix 1: Risk Assessment Matrix

A risk assessment should be undertaken prior to the commencement of any recovery program in the affected area. The Risk Assessment Matrix template below provides guidance for this.

#	Risk Area	Risk Description	Controls in place	Risk Rating (H, M, L)	Likelihood of Risk	Impact of Risk
1	Financials	Over expenditure on budgetary expectations				
2	Operational Risk	Liabilities associated with unstable structures	Public and Professional Liability Insurance current			
3	Operational Risk	Risk of hazardous material		High		
4	Operational Risk	Risk to public health and safety due to waste				
5	OHS	Risk of accident or to safety of staff could result in litigation or injury	Staff encouraged to report any potential risks or hazards on an ongoing basis	High		
6		Add or delete risks as required				

18. Appendix 2: Identification and Forecasting of Disaster Waste

The following tables have been adapted from the UNEP/UNOC Disaster Waste Management Guidelines 2011)

Table 1 describes the principle characteristics of debris that can be expected from a variety of disasters. Some types of debris result more frequently from certain types of natural disasters. Bushfires, for example, create different waste and different volumes of waste than floods. Councils should consider any unique aspects of their community that may create specific waste issues.

Also, Councils may already have templates to record infrastructure and waste assessment needs, if not, the following templates (Tables 2, 3 & 4) may be of assistance.

Major industries/organisations should be encouraged to have their own disaster management plans.

In the case of floods, Councils need to also consider the impact of debris coming “down stream” from an adjacent municipality and the possibility of debris travelling away from their municipality to another.

Table 1	Disaster types and their principle waste characteristics
Earthquakes	<ul style="list-style-type: none"> Structures collapse in-situ, i.e. floor slabs collapse on top of each other, trapping waste within damaged buildings and structures. This can lead to challenges in sorting out hazardous waste (e.g. asbestos) from non-hazardous (e.g. general building rubble). Handling waste often requires heavy machinery, which communities may not be able to afford or have difficulty to access. Collapsed buildings may overlap across streets, making access difficult for the search and rescue and relief operations. Quantities of waste are high compared to other disaster types since all building contents are included.
Flooding	<ul style="list-style-type: none"> Floods often lead to mass displacement, which in turn requires shelters and camps and leads to large volumes of household wastes. Initial damage depends on the structural integrity of infrastructure, while building contents are normally damaged extensively. Mould may be present and timber may have begun to rot. Buildings are typically stripped by owners and waste placed on roads for collection. Flooding adds weight to items placed for collection. Waste is often mixed with hazardous materials such as household cleaning products and electronic goods. Flooding may bring mud, clay and gravel into affected areas, making access difficult once the floodwater recedes. Removal may be required for relief and recovery operations. The mud, clay and gravel may be mixed with hazardous materials.
Bushfire	<ul style="list-style-type: none"> Bushfires can cause widespread damage to infrastructure. Fire debris such as house and farm structures can be unstable and can contain hazardous materials such as chemicals and asbestos. Rural properties may have farm chemicals such as pesticides that need to be dealt with especially if the container holding them has been compromised – is there is the potential to leach into the water supply? There is the additional problem of disposing of dead stock and wildlife in rural areas and appropriate disposal methods need to be considered.
Severe Storms	<ul style="list-style-type: none"> Strong winds can tear the roof off buildings, after which walls may collapse. Poorly constructed houses and huts can ‘fold’ under roof tops. Even brick and concrete walls may collapse. Waste is spread across over open land, streets, and public places. This includes roofing materials, small items and dust carried by the wind. This may cause serious problems where asbestos is present. Electrical and telephone grids as well as transformers containing oil and PCBs may be destroyed.

Table 2

Waste needs assessment				
Hospitals and health care centres	Yes	No	#s	Comments
Are hospitals and clinics functioning?				
Is their waste being managed under this plan?				
Is there information about infectious waste?				
Is there information about other health-care waste?				
Are there temporary clinics/hospitals?				
If so, many beds (capacity) do they have?				
Is there any information about waste collection from the temporary hospitals/clinics				
Immediate needs				
Industries and other commercial activities	Yes	No		Comments
What kinds of industries are located in the disaster area?				Give details on the industrial waste sheet
Are they intact?				
Is there any information about chemicals?				Give details on the industrial waste sheet
Is there any information about hazardous waste?				Give details on the industrial waste sheet
Immediate needs				

Municipal waste management	Yes	No		Comments
Are waste management vehicles available?				
Have dump sites for waste been identified?				
Are the access-roads to the dumpsite intact?				
How many clean-up crews are required				
Have collection sites for dead livestock and wildlife been identified?				
Have the number of structures damaged been identified?				
Is there a need for contingencies regarding fences on rural properties that have stock?				
Immediate needs				

Hazardous waste	Yes	No		Comments
Is there hazardous waste among industrial debris and rubble?				
Is there hazardous and electronic waste from the electrical grid?				
Is there asbestos, farm chemicals and electronic waste from private properties?				
Immediate or prompt needs				The nature, location and amount of hazardous waste will determine the immediacy of action necessary

Table 3	
Infrastructure debris assessment	
Major roads	
Sealed road debris	
Unsealed road debris	
Local roads	
Sealed road debris	
Unsealed road debris	
Water distribution system	
Debris from water works	
Pipes	
Wastewater collection system	
Debris from waste water treatment plants	
Pipes	
Other drainage systems	
Debris from broken drains	
Waste clogging the drains	
Landline telecommunication	
Poles	
Underground cable	
Overhead cable	
Mobile telecommunication	
Antennae	
Towers	
Internet	
Underground cable	
Overhead cable	
Television	
Towers	
Electricity grid	
Poles	
Underground cable	
Overhead cable	
Transformers	Electronic waste, transformer oil
High voltage cables and towers	

Table 4

Industrial waste assessment

This form is to map the most immediate facts about the industries. Fill in for all facilities for which you can gather details. The information will serve as indications for waste prioritization.

	Yes	No	Indication	Part of disaster waste	List
Name of the business/industry:					
raw material used					
energy sources used					
Products					
Normal flow of waste					
General waste					
Known generation of hazardous waste					
Source of disaster waste?			m ³		
Disaster rubble			m ³		
Name of the:					
raw material used					
energy sources used					
Products					
Normal flow of waste					
General waste					
Known generation of hazardous waste					
Source of disaster waste?			m ³		
Disaster rubble			m ³		
Name of the:					
raw material used					
energy sources used					
Products					
Normal flow of waste					
General waste					
Known generation of hazardous waste					
Source of disaster waste?			m ³		
Disaster rubble			m ³		
Name of the:					
raw material used					
energy sources used					
Products					
Normal flow of waste					
General waste					
Known generation of hazardous waste					
Source of disaster waste?			m ³		
Disaster rubble			m ³		

19. Appendix 3: List of Existing Resource Recovery and Reprocessing Infrastructure in Grampians Central West Region

The following is taken from the Grampians Central West Waste and Resource Recovery Implementation Plan 2016. The information was correct at the time of publication.

SITE NAME	OWNER / OPERATOR	GIS LOCATION	ADDRESS	TOWN / SUBURB	COUNCIL	PRINCIPAL MATERIAL STREAM ACCEPTED ¹
Resource Recovery Drop-off Facility						
Carranballac Drop-off	Pyrenees Shire Council	-37.700261 143.161541	Darlington Carranballac Road	Carranballac	Pyrenees Shire Council	Domestic sources
Crowlands Drop-off	Pyrenees Shire Council	-37.146136 143.115156	Spring Flat Road	Crowlands	Pyrenees Shire Council	Domestic sources
Kiata Depot	Hindmarsh Shire Council	-36.364485 141.786363	Reserve Road	Kiata	Hindmarsh Shire Council	Domestic sources
Netherby Depot	Hindmarsh Shire Council	-36.106224 141.642858	Netherby Baker Road	Netherby	Hindmarsh Shire Council	Domestic sources
Yanac Depot	Hindmarsh Shire Council	-36.126679 141.452183	Netherby Yanac Road	Yanac	Hindmarsh Shire Council	Domestic sources
Resource Recovery Centre (RRC) or Transfer Station (TS)						
Apsley Transfer Station	West Wimmera Shire Council	-36.974928 141.070452	Off Apsley - Langkoop Road	Apsley	West Wimmera Shire Council	Domestic sources, Solid Inert
Ararat Resource Recovery Centre	Ararat Rural City Council	-37.297078 142.929638	Surface Hill Road	Ararat	Ararat Rural City Council	Domestic sources, Solid Inert
Avoca Transfer Station	Pyrenees Shire Council	-37.087216 143.482997	Russell Street	Avoca	Pyrenees Shire Council	Domestic sources, Solid Inert
Bacchus Marsh Transfer Station	Moorabool Shire Council	-37.691544 144.423131	Moore Street South	Bacchus Marsh	Moorabool Shire Council	Domestic sources, Solid Inert
Ballan Transfer Station	Moorabool Shire Council	-37.60205 144.269757	Montville Lane	Ballan	Moorabool Shire Council	Domestic sources, Solid Inert
Ballarat Regional Industries	Ballarat Regional Industries	-37.516269 143.804161	6 Neerim Crescent	Wendouree	City of Ballarat	Paper / Cardboard
Ballarat Scrap Metal and Recycling	Ballarat Scrap Metal and Recycling	-37.589066 143.827465	8-18 Kossuth Street	Sebastopol	City of Ballarat	Metals
Ballarat Transfer Station	City of Ballarat	-37.566292 143.814864	Gillies Street	Ballarat	City of Ballarat	Domestic sources, Solid Inert

¹ Further information on waste and material streams accepted and managed at the facility can be found on the respective Council or Company website.

SITE NAME	OWNER / OPERATOR	GIS LOCATION	ADDRESS	TOWN / SUBURB	COUNCIL	PRINCIPAL MATERIAL STREAM ACCEPTED ¹
Bealiba Transfer Station	Central Goldfields Shire Council	-36.794912 143.547063	Whitehills Road	Bealiba	Central Goldfields Shire Council	Domestic sources, Solid Inert
Beaufort Transfer Station	Pyrenees Shire Council	-37.42504 143.39575	Racecourse Road	Beaufort	Pyrenees Shire Council	Domestic sources, Solid Inert
Beulah Transfer Station and Resource Recovery Centre	Yarriambiack Shire Council	-35.931123 142.441291	Birchip - Rainbow Road	Beulah	Yarriambiack Shire Council	Domestic sources, Solid Inert
Carisbrook Transfer Station and Resource Recovery Centre	Central Goldfields Shire Council	-37.064722 143.791748	Potts Lane	Carisbrook	Central Goldfields Shire Council	Domestic sources, Solid Inert
Chetwynd Transfer Station	West Wimmera Shire Council	-37.278912 141.382666	Chetwynd Cemetery Road	Chetwynd	West Wimmera Shire Council	Domestic sources, Solid Inert
Creswick Transfer Station and Resale Centre	Hepburn Shire Council	-37.414729 143.886057	32 Anne Street (off Ring Road)	Creswick	Hepburn Shire Council	Domestic sources, Solid Inert
Daylesford Transfer Station and Resale Centre	Hepburn Shire Council	-37.334377 144.130618	Ajax Road	Daylesford	Hepburn Shire Council	Domestic sources, Solid Inert
Dergholm Transfer Station	West Wimmera Shire Council	-37.368648 141.218439	Off Casterton - Naracoorte Road	Dergholm	West Wimmera Shire Council	Domestic sources, Solid Inert
Downes Recycling	Downes Recycling	-37.274516 142.935056	2 McLean Street	Ararat	Ararat Rural City Council	Paper / Cardboard
Dimboola Transfer Station	Hindmarsh Shire Council	-36.441219 142.020489	Dimboola - Warracknabeal Road	Dimboola	Hindmarsh Shire Council	Domestic sources, Solid Inert
Dunolly Second-hand Timber Yard	Dunolly Demolition Salvage	-36.872558 143.749033	96 - 1060 Betley Road	Dunolly	Central Goldfields Shire Council	Wood / Timber
Dunolly Transfer Station	Central Goldfields Shire Council	-36.88062 143.751477	Maryborough Dunolly Road	Dunolly	Central Goldfields Shire Council	Domestic sources, Solid Inert
Edenhope Transfer Station	West Wimmera Shire Council	-37.038263 141.279649	Moss Street	Edenhope	West Wimmera Shire Council	Domestic sources, Solid Inert
Goroke Transfer Station	West Wimmera Shire Council	-36.721414 141.465108	Kylie Street	Goroke	West Wimmera Shire Council	Domestic sources, Solid Inert
Grampians Recycling	Grampians Recycling	-37.052389 142.764994	9 Houghton Street	Stawell	Northern Grampians Shire Council	Paper / Cardboard
Halls Gap Transfer Station	Northern Grampians Shire Council	-37.130377 142.544589	4300 Ararat - Halls Gap Road	Halls Gap	Northern Grampians Shire Council	Domestic sources, Solid Inert
Harrow Transfer Station	West Wimmera Shire Council	-37.135337 141.594073	Off Nhill / Harrow Road	Harrow	West Wimmera Shire Council	Domestic sources, Solid Inert
Hopetoun Transfer Station and Resource Recovery Centre	Yarriambiack Shire Council	-35.736704 142.346648	Hopetoun - Yaapeet Rd	Hopetoun	Yarriambiack Shire Council	Domestic sources, Solid Inert

SITE NAME	OWNER / OPERATOR	GIS LOCATION	ADDRESS	TOWN / SUBURB	COUNCIL	PRINCIPAL MATERIAL STREAM ACCEPTED ¹
Horsham Transfer Station and Resource Recovery Centre	Horsham Rural City Council	-36.741434 142.190929	Kenny Road	Horsham	Horsham Rural City Council	Domestic sources, Solid Inert
Jeparit Transfer Station	Hindmarsh Shire Council	-36.130898 141.99624	Jeparit East Road	Jeparit	Hindmarsh Shire Council	Domestic sources, Solid Inert
Jung Transfer Station and Resource Recovery Centre	Horsham Rural City Council	-36.609738 142.372024	Jung Recreation Reserve Road	Jung	Horsham Rural City Council	Domestic, Solid Inert
Kaniva Transfer Station	West Wimmera Shire Council	-36.384723 141.225702	South Lillimur Road	Kaniva	West Wimmera Shire Council	Domestic, Solid Inert
Kings Marine Stores	Kings Marine Stores	-37.570212 143.851089	Corner South and Skipton Streets	Ballarat	City of Ballarat	Metals
Landsborough Transfer Station	Pyrenees Shire Council	-37.023621 143.1248	Ararat St and St Arnaud Road	Landsborough	Pyrenees Shire Council	Domestic, Solid Inert
Manhari Metals	Manhari Metals	-36.737979 142.204591	52 Henty Highway (Hamilton Road)	Horsham	Horsham Rural City Council	Metals
Minyip Transfer Station and Resource Recovery Centre	Yarriambiack Shire Council	-37.292028 142.735257	Minyip - Rich Avon Road	Minyip	Yarriambiack Shire Council	Domestic, Solid Inert
Mt Egerton Transfer Station	Moorabool Shire Council	-37.631535 144.106686	Corner Ballan Egerton Road and Yendon Egerton Road	Mount Egerton	Moorabool Shire Council	Domestic, Solid Inert
Mt Zero (Laharum) Transfer Station and Resource Recovery	Horsham Rural City Council	-36.871306 142.355129	Wonwondah - Dadswells Bridge Rd (SW Corner Winfields Rd)	Laharum	Horsham Rural City Council	Domestic, Solid Inert
Murtoa Transfer Station and Resource Recovery Centre	Yarriambiack Shire Council	-36.62325 142.49726	Murtoa - Rupanyup Road	Murtoa	Yarriambiack Shire Council	Domestic, Solid Inert
Nhill Transfer Station	Hindmarsh Shire Council	-36.318595 141.663464	Netherby Road	Nhill	Hindmarsh Shire Council	Domestic, Solid Inert
Onesteel Recycling	Onesteel (Arrium Limited)	-37.52725 143.847137	5 - 7 Coronet Street	Wendouree	City of Ballarat	Metals
Paper Freight Australia	Paper Freight Australia	-37.535915 143.813114	28 Grandlee Drive	Wendouree	City of Ballarat	Paper / Cardboard
Pimpinio Transfer Station and Resource Recovery Facility	Horsham Rural City Council	-36.582421 142.117892	Banyena Road	Pimpinio	Horsham Rural City Council	Domestic, Solid Inert
Quantong Transfer Station and Resource Recovery Centre	Horsham Rural City Council	-36.737652 142.02133	SW Corner Hutchinson Road and Lanes Avenue	Quantong	Horsham Rural City Council	Domestic, Solid Inert
Rainbow Transfer Station	Hindmarsh Shire Council	-35.908306 141970568	Off Rainbow - Nhill Road (Rainbow Rises Road)	Rainbow	Hindmarsh Shire Council	Domestic, Solid Inert
Rokewood Transfer Station	Golden Plains Shire Council	-37.912242 143.714996	Meadows Road	Rokewood	Golden Plains Shire Council	Domestic, Solid Inert

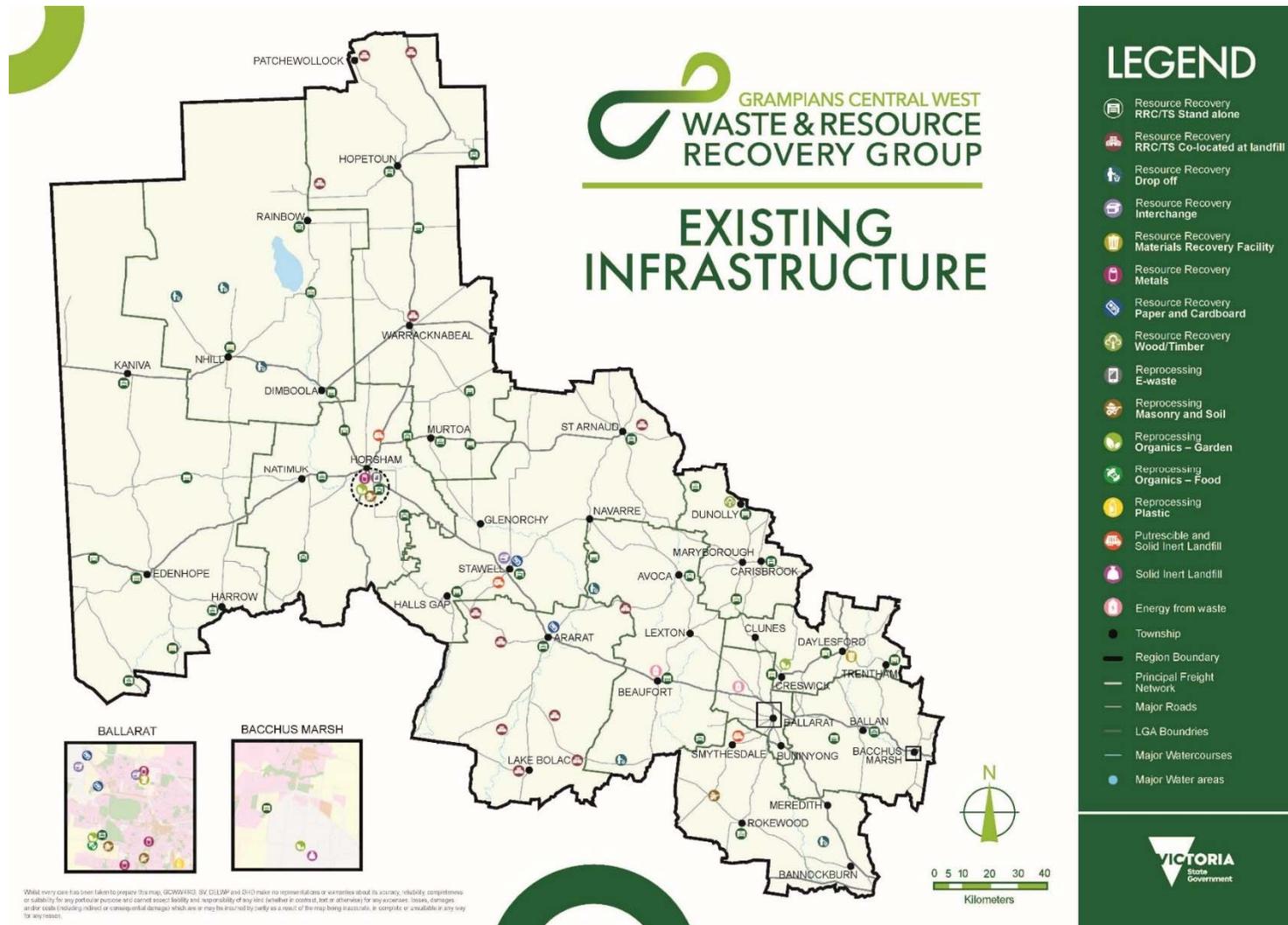
SITE NAME	OWNER / OPERATOR	GIS LOCATION	ADDRESS	TOWN / SUBURB	COUNCIL	PRINCIPAL MATERIAL STREAM ACCEPTED ¹
Rupanyup Transfer Station and Resource Recovery Centre	Yarriambiack Shire Council	-36.639533 142.629282	Dyer Street	Rupanyup	Yarriambiack Shire Council	Domestic, Solid Inert
Snake Valley Transfer Station	Pyrenees Shire Council	-37.62084 143.550339	Snake Valley - Morchup Road	Snake Valley	Pyrenees Shire Council	Domestic sources, Solid Inert
Stawell Transfer Station	Northern Grampians Shire Council	-37.07058 142.800328	Lavett Road	Stawell	Northern Grampians Shire Council	Domestic sources, Solid Inert
St Arnaud Recyclers EcoSwish	EcoSwish	-36.62671 143.266859	10 Phillips Court	St Arnaud	Northern Grampians Shire Council	Domestic sources, Multiple Streams
Talbot Transfer Station	Central Goldfields Shire Council	-37.166119 143.709014	Rockyflat Road	Talbot	Central Goldfields Shire Council	Domestic sources, Solid Inert
Toolondo Transfer Station and Resource Recovery Facility	Horsham Rural City Council	-36.993956 141.933478	Telangatuk East Road	Toolondo	Horsham Rural City Council	Domestic sources, Solid Inert
Trentham Transfer Station and Resale Centre	Hepburn Shire Council	-37.414729 143.886057	Trentham Blackwood Road	Trentham	Hepburn Shire Council	Domestic sources, Solid Inert
Woomelang Transfer Station and Resource Recovery Centre	Yarriambiack Shire Council	-35.696939 142.67586	Off Church St and Duthies Road South	Woomelang	Yarriambiack Shire Council	Domestic sources, Solid Inert
Resource Recovery Centre (RRC) co-located with a Landfill						
Elmhurst Resource Recovery Centre and Landfill	Ararat Rural City Council	-37.191022 143.251242	McKay Street	Elmhurst	Ararat Rural City Council	Domestic sources, Solid Inert
Lake Bolac Resource Recovery Centre and Landfill	Ararat Rural City Council	-37.704218 142.8236	Rubbish Tip Road	Lake Bolac	Ararat Rural City Council	Domestic sources, Solid Inert
Moyston Resource Recovery Centre and Landfill	Ararat Rural City Council	-37.292028 142.735257	Off Moyston West Road	Moyston	Ararat Rural City Council	Domestic sources, Solid Inert
Pomonal Resource Recovery Centre and Landfill	Ararat Rural City Council	-37.195093 142.635344	Pomonal East Road	Pomonal	Ararat Rural City Council	Domestic sources, Solid Inert
St Arnaud Transfer Station and Landfill	Northern Grampians Shire Council	-36.590533 143.327382	329 Old Wedderburn Road (Hard Hills Road)	St Arnaud	Northern Grampians Shire Council	Domestic sources, Solid Inert
Streatham Resource Recovery Centre and Landfill	Ararat Rural City Council	-37.684394 143.040767	Nerrin - Floodway Road	Streatham	Ararat Rural City Council	Domestic sources, Solid Inert
Tatyoan Resource Recovery Centre and Landfill	Ararat Rural City Council	-37.535434 142.951494	Off Porters Bridge Road	Tatyoan	Ararat Rural City Council	Domestic sources, Solid Inert
Willaura Resource Recovery Centre and Landfill	Ararat Rural City Council	-37.576825 142.73492	Wickcliffe - Willaura Road	Willaura	Ararat Rural City Council	Domestic sources, Solid Inert
Patchewollock Landfill and Resource Recovery Centre	Yarriambiack Shire Council	-35.371129 142.20475	Hopetoun - Walpeup Road	Patchewollock	Yarriambiack Shire Council	Domestic sources, Solid Inert

SITE NAME	OWNER / OPERATOR	GIS LOCATION	ADDRESS	TOWN / SUBURB	COUNCIL	PRINCIPAL MATERIAL STREAM ACCEPTED ¹
Speed/Tempy Landfill and Resource Recovery Centre	Yarriambiack Shire Council	-35.359321 142.428256	Sunraysia Highway	Tempy	Yarriambiack Shire Council	Domestic sources, Solid Inert
Warracknabeal Landfill and Resource Recovery Centre	Yarriambiack Shire Council	-36.226349 142.407726	Golf Links Road	Warracknabeal	Yarriambiack Shire Council	Domestic sources, Solid Inert
Yaapeet Landfill and Resource Recovery Centre	Yarriambiack Shire Council	-35.780134 142.044088	Off Rainbow - Yaapeet Road	Yaapeet	Yarriambiack Shire Council	Domestic sources, Solid Inert
Resource Recovery Interchange Facility						
City of Ballarat Green Waste Interchange Facility	City of Ballarat	-37.512167 143.783926	(Western Side) Ballarat Airport, Airport Road	Mitchell Park	City of Ballarat	Kerbside Organics Garden
Recycling Interchange Facility	Ace Metals	-37.52725 143.847137	5 - 7 Coronet Street	Wendouree	City of Ballarat	Kerbside Recyclables
Stawell Interchange	Wheelie Waste	-37.052355 142.764150	11 Houghton Street	Stawell	Northern Grampians Shire Council	Kerbside Recyclables
Material Recovery Facility (MRF)						
Daylesford MRF	Hepburn Shire Council	-37.334377 144.130618	Ajax Road	Daylesford	Hepburn Shire Council	Kerbside Recyclables
KKC Recycling	KKC Property Pty Ltd	-37.52866 143.847068	3 Hammer Court	Wendouree	City of Ballarat	Aggregates, Masonry and Soil
Reprocessor – Organics						
Calleja Transport	Calleja Transport (Maddingley Brown Coal Pty Ltd)	-37.702770 144.435411	East Maddingley Road	Bacchus Marsh	Moorabool Shire Council	Organics Garden
Castlegate James (James and Son)	Castlegate James Australia Pty Ltd	-37.570511 143.809236	4 Wiltshire Lane	Delacombe	City of Ballarat	Organics Food
Davo's Worm Farm	Davo's Worm Farm	-37.379105 143.905744	54 Henders Road	Broomfield	Hepburn Shire Council	Organics Garden
Garden Recycling Centre	Garden Recycling Centre	-37.567453 143.809877	154 Learmonth Street	Alfredton	City of Ballarat	Organics Garden
Horsham Green Waste Processing	Horsham Green Waste Processing	-36.739019 142.19043	Golfcourse Road	Horsham	Horsham Rural City Council	Organics Garden
Reprocessor – Plastics						
Replas	Repeat Plastics Australia	-37.583846 143.873733	50 Elsworth Street	Ballarat	City of Ballarat	Plastics
Reprocessor – Aggregate, Masonry and Soils						
Ballarat Concrete Recycling	Ballarat Concrete Recycling	-37.579591 143.848181	3 Tannery Lane	Ballarat	City of Ballarat	Aggregates, Masonry and Soil

SITE NAME	OWNER / OPERATOR	GIS LOCATION	ADDRESS	TOWN / SUBURB	COUNCIL	PRINCIPAL MATERIAL STREAM ACCEPTED ¹
Chris Bev Pty Ltd	Chris Bev Pty Ltd	-37.573796 143.820391	Wallis Street	Delacombe	City of Ballarat	Aggregates, Masonry and Soil
Western Gypsum	Western Gypsum	-37.806752 143.603428	2265 Scarsdale - Pitfield Road	Cape Clear	Golden Plains Shire Council	Aggregates, Masonry and Soil
WestonVic Waste	WestonVic	-36.740451 142.195221	8 Turnbull Drive	Horsham	Horsham Rural City Council	Aggregates, Masonry and Soil
Reprocessor – E-waste						
Axis Worx	Community Axis Enterprises Incorporation	-36.737625 142.19116	134 Golf Course Rd	Horsham	Horsham Rural City Council	E-waste
Energy from Waste – Anaerobic Digester						
Berrybank Farm	CIFE	-37.462110 143.710254	Hendersons Road	Windermere	City of Ballarat	Organics -Other
Energy from Waste – Other						
Beaufort Hospital Bioenergy Plant	Beaufort Skipton Health	-37.431691 143.382470	Walker Street	Beaufort	Pyrenees Shire Council	Wood / Timber

To the best of the knowledge of the Grampians Central West Waste and Resource Recovery Group, all relevant existing facilities have been included on this schedule. Please note that inclusion of an existing facility in this schedule should not in any way be construed as a warranty or representation as to the quality, compliance (approvals and permits), effectiveness or suitability of the facilities included. Whilst Grampians Central West Waste and Resource Recovery Group has made every effort to compile this information accurately and completely, the list of facilities included, information and comments in the 'other considerations' section are not exhaustive, and are provided to generally facilitate the achievement of the objectives of the Environment Protection Act 1970 (Vic). Further information about individual facilities should be sought from the Environment Protection Authority, or (where appropriate) owners or operators of facilities.

20. Appendix 4: Map of Existing Resource Recovery and Reprocessing Infrastructure in Grampians Central West Region



21. Appendix 5: Reuse and recycling options for common disaster wastes

Table 5			
Waste material	Description & Source	Reuse	Recycle
Food and organic waste	Present in household waste. Shrubs, trees, cuttings etc. can also be included in this category	Limited scope for reuse	Can be composted. Compost can then be used to assist in rehabilitating the land.
Plastics	Present industrial and household waste streams	Limited scope for reuse	Plastics may need to be sorted into various types. They can then be baled.
Excreta	Excreta from septic tanks can be composted under certain conditions	No scope for reuse	Currently there are no composting facilities in the Grampians Central West region that are licensed to take this waste
Paper & cardboard	Present in industrial and household waste streams	Limited scope for reuse except as kindling	Pulp the paper and cardboard with subsequent dewatering. Dried pulp can be compressed into bales.
Glass containers	Present primarily in household waste streams	Limited scope for reuse	Can be collected and recycled where facilities exist
Window glass	Generated anywhere buildings are demolished	No scope for reuse of broken glass	No scope for recycling
Debris / rubble	Generated anywhere buildings are demolished	Reuse bricks and stones for reconstruction	Concrete, bricks and stones can be crushed for road base and construction material.
	Timber (untreated)	Timber can be reused for furniture and firewood some may still be fit for building purposes	Shredded timber can be composted
	Metals	Limited reuse since strength of metal cannot be guaranteed	Scrap metal sold for smelting into new metal products

22. Appendix 6: Procedures for Handling Asbestos

Asbestos is a building material that was used in many building products prior to 1988. Any house constructed after this time can be considered asbestos free. EPA publication on asbestos (Asbestos Transport & Disposal, EPA publication No: IWRG611-1 (2009)) can be found here.

<http://www.epa.vic.gov.au/~media/Publications/IWRG611%201.pdf>

Asbestos Collection

Please contact your local Environmental Health Officer / Worksafe Office prior to cleaning up for up to date advice and assistance.

Licensed asbestos removalists are recommended for the handling of all asbestos contaminated wastes. These specialists will undertake activities in accordance with Worksafe standards.

Householder Initiated

Asbestos can be collected and removed, but the waste is required to be double wrapped in thick plastic sheeting (0.2mm thick polythene i.e. “builder’s plastic”), transported and disposed of appropriately.

Personal safety is premium (breathing mask ‘P3’ should be worn to filter out fine particles along with disposable overalls). Safety kits should be made available upon request at any recovery centre.

Clean up areas should be kept damp, to help in reducing risks from handling Asbestos.

Commercial Operators

Worksafe Regulations and advice applies to on ground work and loading of skips & vehicles. The removal of any amount over 10m² requires Worksafe notification. These regulations require at least a ‘Class B’ licensed removalist (there are approximately 400 of these in the state).

The following link provides a list of licensed asbestos removalists:

<http://www1.worksafe.vic.gov.au/vwa/serviceproviderdirec.nsf/category?openForm&List=Asbestos+-+Licensed+Removalists&ListType=Sub>

Transportation and disposal of material must be in EPA approved vehicles.

Transport of Asbestos

EPA regulations require all asbestos be double wrapped in plastic. Waste should be contained to ensure no loss of load during transport – this includes particular focus on dust suppression.

Disposal of Asbestos

Asbestos must be disposed of at an appropriate licensed landfill. Health issues at landfills are to be managed by the operator.

Dooen and Smythesdale landfills and Statewide landfill (Stawell) are licenced to accept asbestos.

Asbestos, in particular friable asbestos products, poses health risks during removal, transport and disposal. It is important, therefore, that asbestos be handled appropriately during these operations. The disposal of waste asbestos, whether of industrial or domestic origin, is controlled by EPA. In addition, EPA controls the transportation of asbestos of industrial (including commercial or trade) origin.

Under the Environment Protection (Prescribed Waste) Regulations 1998, asbestos from industrial origins (including commercial or trade activities) is a prescribed industrial waste. EPA regards any material containing more than 1 per cent asbestos by volume as an asbestos-containing material. Processing and handling asbestos in the workplace is subject to the Occupational Health and Safety (Asbestos) Regulations 2003. Concerns about asbestos in the workplace should be discussed with the Victorian Workover Authority. If there are concerns about asbestos in domestic situations, contact should be made with the Department of Human Services.

The transportation of domestic-sourced asbestos, unless removal is undertaken by a licensed asbestos removalist, does not fall within EPA's statutory responsibilities. Thus, a householder may transport their own asbestos to a licensed landfill for disposal without transport certificates or a permitted vehicle. It is recommended, however, that the practice as outlined in this publication for handling and packaging is applied to domestic sourced asbestos.

When a commercial contractor (i.e., a licensed asbestos removalist) undertakes the removal of the asbestos from a domestic source, transport certificates and a permitted vehicle are required.

Types of asbestos

The three main asbestos types are white, blue and brown asbestos, used mainly before 1980 in the production of asbestos cement sheeting and piping. Asbestos was also used in the manufacture of insulation material, brake linings and disc pads. Only white asbestos is now used in the automotive industry, in brake linings and disc pads.

Ceramic - based fibres

These guidelines may apply to the disposal of synthetic mineral fibres, including ceramic-based fibres. Ceramic-based fibres with physio-chemical characteristics similar to those of asbestos are listed as a prescribed waste.

Waste management options

Asbestos wastes arise in a variety of forms, ranging from fine fibres to large asbestos-cement sheets. Industry must ensure that asbestos, whether in the form of raw material or contained within products, is handled and disposed of without releasing asbestos fibres to the air. If the use of alternative materials is not possible, industry should implement effective waste minimisation techniques to reduce its overall consumption of asbestos.

While landfilling of waste asbestos is generally appropriate, situations may arise where pre-treatment before landfilling should be considered. Acid treatment of white asbestos appears to be the cheapest form of treatment applicable to asbestos fibres – this changes the nature of asbestos fibres. Other treatment methods include thermal processes, chemical coagulation and immobilisation.

Transport and disposal of waste asbestos

Packaging material must be protected and remain intact during transport and unloading. Damaged packaging must be replaced or repaired prior to disposal of the consignment. Vehicles should be carefully cleaned after transporting waste asbestos.

Owners of vehicles that transport industrial or commercially sourced waste asbestos must hold an EPA waste transport permit. The permit will stipulate necessary controls for the safe handling, transport and disposal of waste asbestos.

The waste producer must generate a waste transport certificate. The waste transporter and disposal/receiving site operator must complete the appropriate sections of the certificate in accordance with the Environment Protection (Prescribed Waste) Regulations 1998. Information bulletin 395, Instructions for Completion of Waste Transport Certificates, should be consulted for detailed instructions on how to complete and deal with the waste transport certificates.

Disposal of Waste Asbestos

Asbestos must be disposed of only at a site licensed by EPA to accept waste asbestos. Persons intending to dispose of waste asbestos (both industrial and domestically sourced) should contact the disposal site operator to check whether the site is appropriately licensed to accept the waste.

License conditions require waste asbestos to be handled and covered in such a manner that asbestos dust is not generated. This and the long-term security of the disposal operation are to be achieved by the following measures or equivalent practices.

- Prior to compaction, immediate coverage with a layer of soil at least 300 mm thick or by a layer of waste at least 1 m thick.
- No deposition of asbestos within 2 m of the final tipping surface of the landfill.
- Coverage of any container used for temporary storage at a site when not receiving waste.

It is preferable that a dedicated area of a landfill be used for asbestos disposal and that this area is clearly designated on site maps.

Packaging of Waste Asbestos

In relation to workplaces, packaging of waste asbestos must comply with the Occupational Health and Safety (Asbestos) Regulations 2003 and should follow the guidelines set out in the Worksafe Australia Asbestos Code of Practice. For non-workplaces, where such instructions are not available, the following guidelines should be observed. These are based on the Code of Practice.

Asbestos Cement Sheeting (AC Sheeting) and Asbestos Cement Pipes

- Thoroughly wet the articles and maintain in a wet condition until packaged for transport.
- Minimise cutting or breaking of articles to be packed.
- For packaging, place two layers of polythene sheeting, approximately 200 μm (0.2 mm) thick, in the cargo-carrying compartment of the vehicle.
- Place articles carefully on polythene sheeting to a height of less than 1 m and completely wrap the articles. Seal with adhesive tape. Packages should be small enough to be handled easily.
- Mark the packages to indicate the presence of asbestos.

Insulated Lagged Pipes, Boilers, Heaters and Equipment

- Triple-wrap the entire article with polythene sheets, approximately 200 μm (0.2 mm) thick, and seal with adhesive tape.
- Label the package with the asbestos warning mark.

Asbestos Dust and Friable Asbestos

- Discharge dust into drums. (This should be carried out in wet condition, except where wetting down is not practicable.)
- Fix the drum lid securely using a suitable device (e.g., toggle clips, screws, or bolt).
- Label each drum with a dangerous goods label.
- Label each drum with the asbestos warning mark at least three times on one side of each bag.

OR

- Discharge dust directly into triple polythene bags approximately 200 µm (0.2 mm) thick.
- A maximum bag size of 1200 mm (length) x 900 mm (width) should be used. The bagged dust should be wetted before the bags are tied and the loaded weight should not exceed 30 kg. Bags should be filled to not more than 50 per cent capacity.
- Tie each bag.
- Label each bag with a dangerous goods mark
- Label each bag with asbestos warning marks at least three times on one side of each bag.

Slurry Containing Asbestos Fibre and Dust

- Remove fibres through chemical coagulation followed by filtration.
- Place residue into drums, as above.
- Label the container with a dangerous goods label
- Label each container with asbestos warning mark least three times on one side of each drum.
- Or other methods of packaging, transport and disposal as approved in writing by EPA.

Asbestos Tiles, Gaskets, Brake Linings, Clutch Plates, Acoustic Insulation, Non-bonded Textiles, Gloves, Protective Clothing and Respirators

- Place material in triple polythene bags, approximately 200 µm (0.2 mm) thick.
- A maximum bag size of 1200 mm (length) x 900 mm (width) should be observed.
- Tie each bag.
- Mark each package to indicate the presence of asbestos (see Appendix A (b)).
- Place the packages in an enclosed skip for transportation.

Contaminated Soil

Soils containing greater than 1 per cent by volume of asbestos require management in accordance with the Regulations.

Contaminated soil must be wet before any packaging is done.

Transfer soil carefully to a suitable container, which should then be sealed.

Mark the container to indicate the presence of asbestos.

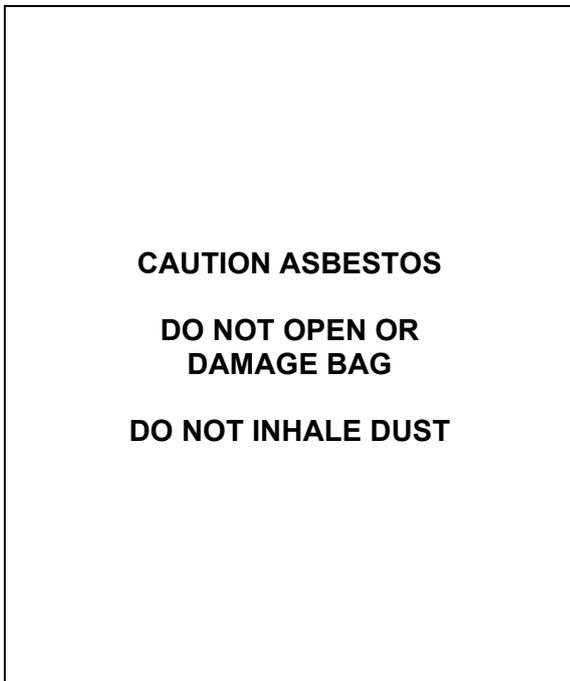
Every package containing friable asbestos in excess of 2 kg or 2 L shall be clearly marked on the outside.

(a) Proper Shipping Name as shown below

Proper Shipping Name	White Asbestos	Brown Asbestos	Blue Asbestos
UN Number	2590	2212	2212
Packing Group Number	III	II	II
Hazchem Code	2X	2X	2X
Class Label	9	9	9

Note: Packaged Dangerous Goods only need to be marked with UN Number, Proper Shipping Name and Dangerous Goods Class Label.

(b) Asbestos warning marking as shown below



The height of this marking should be approximately 75 mm x 90 mm (dimensions as shown).

(c) Placarding of road vehicles

Every vehicle which has aboard asbestos wastes in a quantity of 1000 kg or 1000 litres is considered a placarded load and must display Dangerous Goods Class labels as shown below, at the front and the rear of the vehicle.



The Class label shall not be less than 250 mm square. It shall be firmly affixed to the vehicle.

This guidance forms part of the Industrial Waste Resource Guidelines, which offer guidance for wastes and resources regulated under the *Environment Protection (Industrial Waste Resource) Regulations 2009*. Publication IWRG611.1 – July 2009. This replaces publication IWRG611, published June 2009.

23. Appendix 7: Relevant Contacts and Further Information

Asbestos Removalists

<http://www1.worksafe.vic.gov.au/vwa/serviceproviderdirec.nsf/list?openForm>

Landfill Operators

Horsham Rural City Council (Dooen Landfill) contact Kelvin Howe: 0427 861 993

Statewide Waste (Landfill, Pomonal Rd, Stawell) contact Nick Kephala: 0419 309 737

City of Ballarat (Smythesdale Landfill) contact Customer Service: 5320 5500

Other Contacts

EPA's Pollution Hotline (1300 EPA VIC)

Grampians Central West Waste & Resource Recovery Group: 0409 093 382 (Ballarat office) or 0409 874 805 (Horsham office).

Household Chemical Collections phone 03 8626 8700

<http://www.sustainability.vic.gov.au/services-and-advice/households/waste-and-recycling/detox-your-home/detox-your-home-mobile-service>

Farm Chemical Collection

<http://chemclear.com.au/>

Vic Emergency Information

<http://www.emergency.vic.gov.au>

Gas cylinders

Most Council Transfer Stations accept degassed cylinders (non-automotive) as part of their scrap metal collection.

For Further Information:

Emergency Management Victoria (established 2014)

<https://www.emv.vic.gov.au/>

Emergency Management Manual Victoria <https://www.emv.vic.gov.au/policies/emmv>

Disaster Recovery Toolkit for Local Government

<https://www.emv.vic.gov.au/how-we-help/disaster-recovery-toolkit-for-local-government>

EPA Victoria – various publications

<http://www.epa.vic.gov.au/our-work/publications>

e.g. "Farm Waste Management" 30 June 2009 (publication No: IWRG641)"

<http://www.epa.vic.gov.au/about-us/news-centre/news-and-updates/news/2014/february/11/bushfire-waste-management>

<http://www.epa.vic.gov.au/your-environment/waste/hazardous-waste-management-in-victoria>

Attorney General's Department – Emergency Management

<https://www.ag.gov.au/EmergencyManagement/Pages/default.aspx>

Australian Journal of Emergency Management

<https://ajem.infoservices.com.au/>

A search of AJEM database will bring up many relevant articles.
e.g. The Australian Journal of Emergency Management Volume 26, No 2 April 2011
– a range of articles on the recovery from the Black Saturday 2009 fires

Office of Green Industries SA (Government of South Australia)
Disaster Waste Management Scoping Study – final report September 2015
http://www.zerowaste.sa.gov.au/upload/resource-centre/publications/disaster-waste-management-plan/Disaster%20Waste%20Management%20Scoping%20Study_final%20-Sept%20without%20map.pdf

United Nations Office for the Coordination of Humanitarian Affairs – Environmental Emergencies Section – Disaster Waste Management Guidelines.
<http://docs.unocha.org/sites/dms/Documents/DWM.pdf>

