

## A waste and resource recovery facility with large operational space, but limited fire protection systems

This example aims to help you apply the fire risk management principles outlined in [Management and storage of combustible recyclable and waste materials – guideline](#) (publication 1667) (i.e. the guideline) for **a waste and resource recovery facility with large operational space, but limited fire protection systems**.

We have developed this example to help you, as a waste and resource recovery facility manager, better understand how to manage the fire risk associated with combustible recyclable and waste materials (CRWM) and to comply with the [new Victorian environment protection laws](#).

This example:

- is intended for use as a guide only. Your own risk assessment and risk management process may require considerably more detail. Where appropriate, you may also need to obtain legal advice or consult with a fire safety specialist
- demonstrates how to follow four basic steps to assess and control the main fire risks present at facilities of varying size and type
- includes some measures you could introduce to eliminate or reduce the risk of fire, especially where the example shares things in common with your own site and operations
- includes a site map that illustrates the controls discussed within the text. This site map does not represent site layout plans for emergency management purposes
- focuses on critical risks and controls. It does not necessarily provide an exhaustive list of risks and controls in relation to every situation. You may need to seek additional or more tailored advice from a [suitably qualified person](#) or other trusted source if your activities are not covered, or are not adequately addressed, in this example.

## About the site

Nicole's facility processes a large volume of CRWM each year in a major regional centre and holds an [EPA permit](#):

- At any one time, she has roughly 6,500m<sup>3</sup> of CRWM onsite.
- Nicole's facility receives and sorts various waste streams. Sorting and processing occur inside a shed, and sorted materials are stockpiled outdoors.
- Depending on type, some materials may be stored for three to six months before they are moved off site. See Figure 1 for the layout of Nicole's resource recovery facility.
- Her site is located in an industrial area. A steel fence separates Nicole's facility from the neighbouring business, where wood products are stockpiled.
- Nicole's facility has power and access to mains water.
- Fire protection systems are installed in buildings (sprinklers and alarms).
- While she has adequate hydrants to ensure coverage of her outdoor storage, she does not have a monitored automatic fire alarm system.



### Example 3: How to apply the CRWM guideline

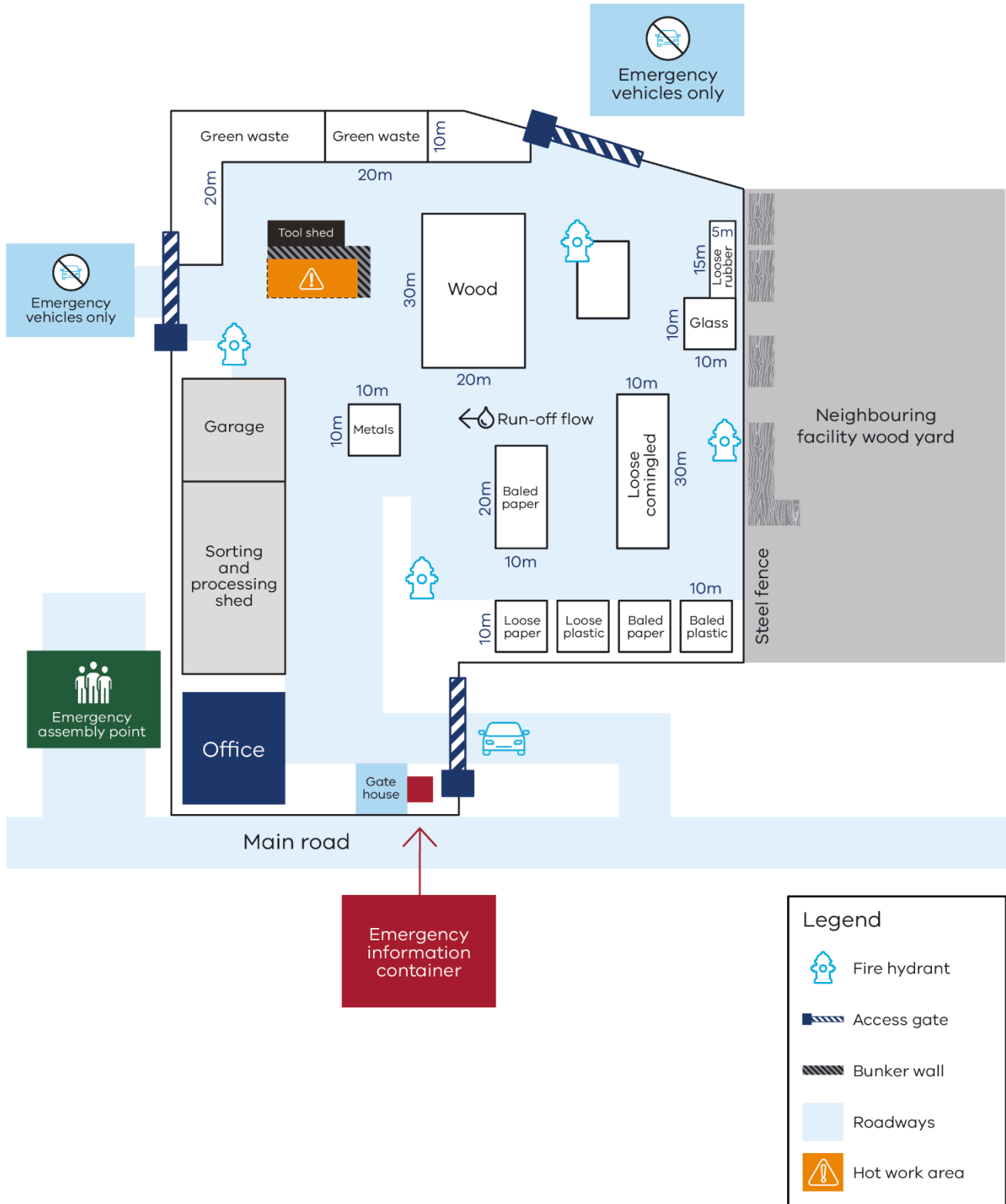


Figure 1: Nicole's facility *before* completing her fire risk assessment. Note the figure is not to scale.

## Example 3: How to apply the CRWM guideline

### Using the guideline to minimise risk and comply with the Victorian environment protection laws

To comply with the Victorian environment protection laws Nicole must:

- understand the fire hazards associated with her facility's activities
- conduct and document a fire risk assessment
- take all reasonably practicable steps to store and manage CRWM in a manner that minimises the risk of harm to human health and the environment
- prepare an emergency management plan
- comply with [conditions](#) stipulated in her permit.

### Four-step process to manage risks to human health and the environment

There are four continuous steps Nicole needs to follow to manage her risk. They form the fire risk assessment process.



### Definitions

**Hazard:** Something that has the potential to cause harm through, for example, the air, water or soil.

**Risk:** The threat that a hazard poses to human health or the environment.

**Control:** Prevents harmful events from happening in the first place (preventative control) or limits the consequence or damage from a harmful event (mitigating control). The hierarchy of controls (Figure 8 in [the guideline](#)) can be used to support the identification and selection of controls by providing a prioritisation framework.

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Nicole follows the four steps and takes these actions:

Step	Action	What Nicole does
1	<b>Identify hazards</b> – what hazards are present that might cause harm?	<p>Nicole identifies the large volume of CRWM onsite as one of the main hazards, especially her largest piles and those stored for longer than three months.</p> <p>She identifies that a fire onsite could spread into the neighbouring business. The neighbouring business stores large piles of wood and timber that are combustible.</p> <p>The properties are separated by a steel fence, but the neighbouring wood piles are often stacked much higher than the fence, and sometimes right up to Nicole’s boundary.</p> <p>Nicole identifies that in the event of a fire, water or foam used to fight the fire may become contaminated where waste piles and dangerous goods are present. Contaminated run-off from potential firefighting activities would be a risk to stormwater.</p>
2	<b>Assess risks</b> – what is the risk, based on the likelihood of the hazard occurring and causing harm, and the consequence of that harm (i.e. the impact)?	<p>For each hazard Nicole has identified, she considers the likelihood and consequence associated with that hazard. Nicole captures this information in the site risk register as documentation of this risk assessment process.</p> <p>She notes that large piles and long-term storage can lead to a higher risk of fire. Some materials self-heat when stockpiled over a long period of time. Stockpiling of these materials exposes them to potential ignition sources onsite.</p> <p>She assesses that a fire could spread rapidly throughout her storage area to the processing shed and other buildings, and to adjacent properties.</p> <p>As a fire on Nicole’s site could burn for a long time, she determines that it would have impacts on surrounding businesses (e.g. forcing temporary closures). It would also have impacts on the health of nearby workers and residents.</p> <p>Nicole also determines that she will have difficulty managing a large volume of burning material in the event of a fire.</p> <p>Nicole assesses there is a likelihood of contaminated run-off from firefighting activities impacting stormwater.</p>
3	<b>Implement controls</b> – what controls are suitable and available to the business to eliminate or reduce a risk so far as reasonably practicable?	<p>Nicole arranges her CRWM piles according to the storage dimensions and free air gaps in <a href="#">the guideline</a> (pp. 57–60).</p> <p>She sits down with her operations staff, and they redesign their storage layout to separate the larger, high-risk piles into smaller piles. This makes the individual piles more manageable. In some cases, she uses concrete bunkers and fire walls to save space while still creating a gap to limit the spread of any fire in the storage area.</p> <p>Nicole reduces or caps pile heights at four metres and manages the stockpiles in bunkers to be at least one metre from the top of the bunker wall. She leaves an adequate free-air gap between her CRWM piles and the boundary fence of the wood yard (applying the distances defined in Figure 18 and Figure 19 in <a href="#">the guideline</a>). This reduces the risk of fire spreading between the CRWM and neighbouring properties.</p> <p>Nicole sees that she's reduced the CRWM stockpiled outside and feels more comfortable knowing that she can better manage the risk of fire onsite. The new waste pile arrangement will also help her comply with the Victorian environment protection</p>

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Step	Action	What Nicole does
		<p>laws. To decrease her pile sizes, Nicole plans to reduce the long-term storage of some waste piles.</p> <p>Nicole identifies and prioritises separating materials with a high risk of self-heating. This will allow her to more effectively monitor and manage the risk of spontaneous combustion.</p> <p>Nicole's staff measure and record internal waste pile temperatures using a temperature probe. This is done once a week, or daily during hot weather. When internal pile temperatures reach a critical threshold, the piles are sprayed down with water or turned using a loader. When staff turn waste piles, they look out for hot spots using an infrared thermometer.</p> <p>Nicole installs shut off valves to the stormwater drains to prevent firewater and contaminated water entering stormwater.</p> <p><b>Emergency management plan</b></p> <p>Nicole updates the existing hazard and risk register documenting fire risk assessment, which includes the additional hazards, and the controls and checks implemented. Nicole and her four staff nominate a site fire warden and roles for their emergency planning committee. The fire warden will liaise with emergency services in the event of a fire.</p> <p>Nicole adds an updated site layout plan, inventory and emergency procedures to the emergency management plan. The relevant information is included in her Emergency Information Book.</p> <p>The emergency information is stored in the relocated Emergency Information Container. The container is now located <i>in front of the boom</i> at the front gate, instead of inside the premises.</p>
4	<p><b>Check controls</b> – review controls to ensure they are effective.</p>	<p>Nicole has recorded the site hazards, risks and controls, and how controls will be checked for effectiveness in the hazard and risk register. This is documented evidence of the risk assessment.</p> <p>Nicole's site already has a no-smoking policy and hot works policies, as well as a weekly housekeeping schedule to reduce ignition risks. She ensures during the daily shut-down period that these policies are being followed and being signed off by senior staff.</p> <p>She creates a log for inspections and maintenance of controls, and includes equipment used in monitoring pile temperature. Nicole keeps all the documentation, including the essential safety measures report, in a central location for quick access.</p> <p>Nicole keeps documents for the upkeep and maintenance of the annual essential safety measures for the site, which are in accordance with the manufacturer's specifications. This shows that the building's important safety systems are working and operational. Nicole ensures the indoor fire protection systems are being appropriately checked and maintained by professionals.</p>

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### Documenting the four-step risk management process

See Table 11 in [the guideline](#) for an example of how Nicole might document the hazards, potential causes and impacts at her waste and resource recovery facility, and how she will effectively manage them.



Nicole will review and update the hazard and risk register as part of her site fire risk assessment actions. She ensures the implementation of controls is proportionate to the risk that her business activities pose.

### Meeting the performance objectives and expected outcomes



Nicole demonstrates how she has taken reasonable steps to comply with the Victorian environment protection laws by meeting these performance objectives and expected outcomes in the guideline:

- Assessing the risk from fire – see Chapter 3.
- Controlling your fire hazards and risk – see Chapter 4.
- Effective storage management controls – see Chapter 5.

If the circumstances of Nicole's site operational activities change and she can no longer arrange her CRWM storage piles using storage dimensions and free air gaps (pp. 57 - 60), she may need to add additional controls to demonstrate she is minimising her risks to human health and the environment so far as reasonably practicable.

### More information

- [Assessing and controlling risk: a guide for business](#) (publication 1695)
- [Combustible recyclable and waste materials](#)
- [Management and storage of combustible recyclable and waste materials – guideline](#) (publication 1667)
- [Fire prevention: combustible recyclable and waste materials factsheet](#) (publication 1759)
- [Industry guidance: supporting you to comply with the general environmental duty](#) (publication 1741.1)
- [Reasonably practicable](#) (publication 1856)
- [Permissions scheme – policy](#) (publication 1799.2)
- [Summary of waste framework](#) (publication 1756.2)
- [Management and storage of combustible recyclable and waste materials – indoor storage guideline](#)

### Example 3: How to apply the CRWM guideline



Figure 2: Nicole's facility *after* controls have been implemented. Note the figure is not drawn to scale.

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EPA acknowledges Aboriginal people as the first peoples and Traditional custodians of the land and water on which we live, work and depend. We pay respect to Aboriginal Elders, past and present.

As Victoria's environmental regulator, we pay respect to how Country has been protected and cared for by Aboriginal people over many tens of thousands of years.

We acknowledge the unique spiritual and cultural significance of land, water and all that is in the environment to Traditional Owners, and recognise their continuing connection to, and aspirations for Country.



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