

A metropolitan metal waste and resource recovery facility with high material turnover.

This example aims to help you apply the fire risk management principles outlined in [Management and storage of combustible recyclable and waste materials – guideline](https://www.epa.vic.gov.au/about-epa/publications/1667-3) (publication 1667) (the guideline) (<https://www.epa.vic.gov.au/about-epa/publications/1667-3>) for *a metropolitan waste and resource recovery facility with high material turnover*.

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) to comply with [Victorian environment protection laws \(https://www.epa.vic.gov.au/newlaws\)](https://www.epa.vic.gov.au/newlaws).

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 \(https://www.epa.vic.gov.au/for-business/find-a-topic/environmental-consultants\)](https://www.epa.vic.gov.au/for-business/find-a-topic/environmental-consultants) or other trusted source if your activities are not covered, or are not adequately addressed, in this example.

About the site

Matt runs a metal recycling facility situated in a busy metropolitan industrial area and holds an [EPA licence \(https://www.epa.vic.gov.au/for-business/new-laws-and-your-business/permissions/licences\)](https://www.epa.vic.gov.au/for-business/new-laws-and-your-business/permissions/licences):

- The facility receives recyclable and waste metal contaminated with other combustible materials prior to processing.
- Pre-processed metal is stored in a large, concreted area adjacent to the processing plant.
- Matt has an outdoor area for storing shredder floc, which generally consists of combustible textiles, plastics, and rubber.
- A fire hydrant is situated next to the outdoor shredder floc pile.



The volume of pre-processed material onsite can fluctuate greatly on a weekly basis. However, Matt often receives over 4,000 tonnes of pre-processed waste metals that contain CRWM materials onsite in one month.

Example 4: How to apply the CRWM guideline

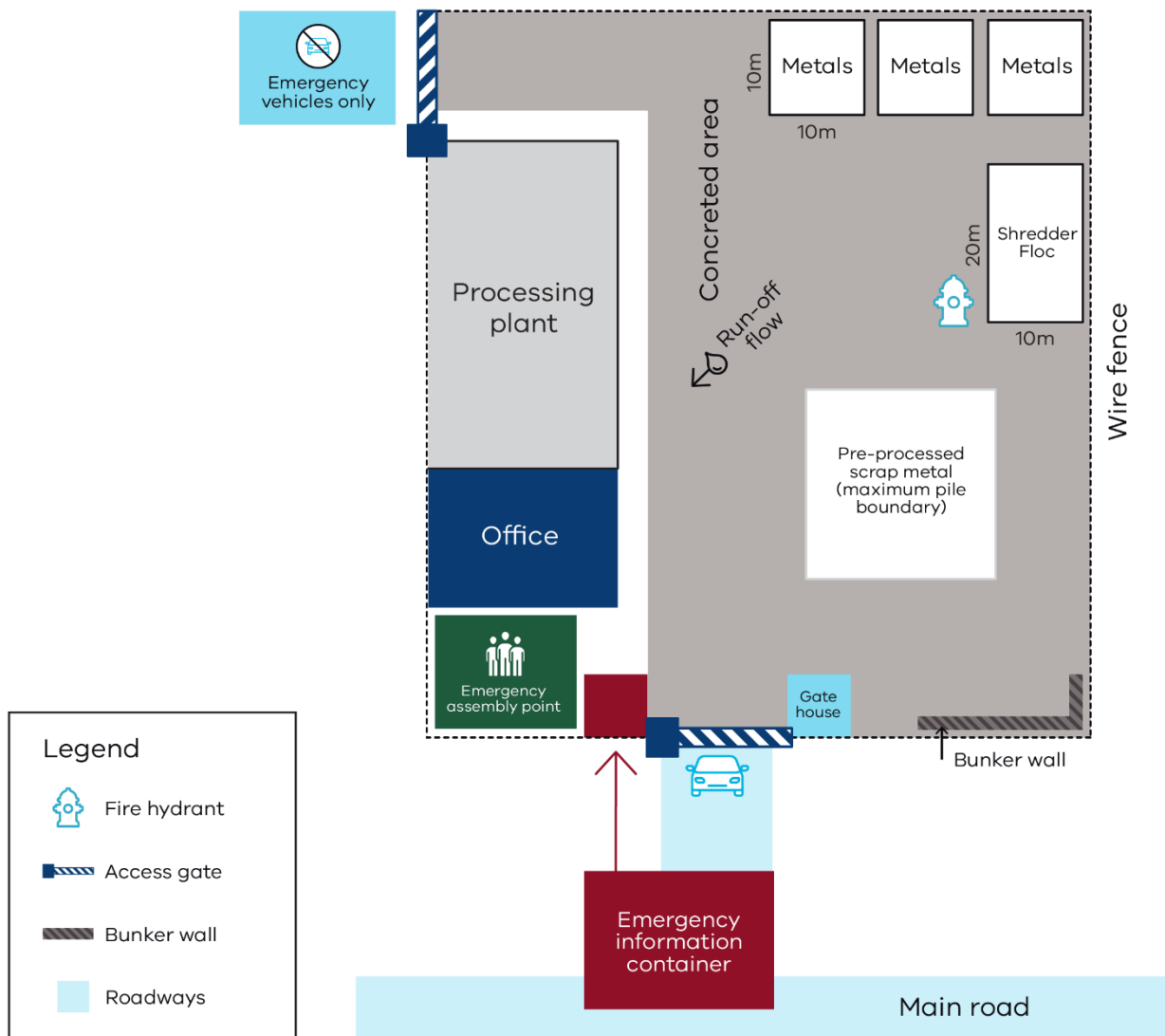


Figure 1: Matt's metal recycling facility **before** completing his fire risk assessment.
Note the figure is not drawn to scale.

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

To comply with [the Victorian environment protection laws \(http://www.gazette.vic.gov.au/gazette/Gazettes2018/GG2018S397.pdf\)](http://www.gazette.vic.gov.au/gazette/Gazettes2018/GG2018S397.pdf), Matt must:

- understand the fire hazards associated with his facility's activities
- conduct and document a fire risk assessment
- take all reasonable steps to manage and store 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 his licence

Example 4: How to apply the CRWM guideline

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

There are four continuous steps Matt needs to follow to manage his risks. 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](https://www.epa.vic.gov.au/about-epa/publications/1667-3)) (<https://www.epa.vic.gov.au/about-epa/publications/1667-3>), can be used to support the identification and selection of controls by providing a prioritisation framework.

Matt follows the four steps and takes these actions:

Step	Action	What Matt does
1	Identify hazards – what hazards are present that might cause harm?	<p>Matt identifies machinery failure in the processing plant as one of the most significant hazards in the facility. A machinery failure could cause a fire and would stop the processing of waste materials at the facility. This would result in a buildup of waste metals containing combustible materials, onsite.</p> <p>Matt already has a regular maintenance and inspection schedule for the plant machinery. However, Matt notes that the maintenance schedule does not have a plan with contingency measures for a credible worst-case fire scenario of the plant machinery. This should include planning for actions to take if the plant breaks down and repairs are delayed.</p> <p>Matt identifies the critical ignition source hazards at the facility. Some of these include hot loads, discarded cigarettes and sparks from hot works that may start a fire in the pre-processed waste pile. He also identifies that outdoor piles are heated by the sun. Matt notes this as a hazard.</p> <p>Matt identifies that in the event of a fire, water or foam used to fight the fire may become contaminated where dangerous goods are present. The run-off from any firefighting activities onsite is a risk to stormwater.</p>

Example 4: How to apply the CRWM guideline



Step	Action	What Matt does
2	<p>Assess risks – what is the risk, based on the likelihood of the hazard occurring and causing harm, and the consequence of that harm (the impact)?</p>	<p>For each hazard Matt has identified, he considers the likelihood and consequence associated with that hazard. Matt captures this information in the site hazard and risk register as documentation of this risk assessment process.</p> <p>He assesses that a fire starting in the pre-processing area could easily engulf the contents of the yard and spread to the processing area. The consequences of this happening would have negative impacts for his business and the health of his staff. It would also negatively impact neighbouring businesses, community, and the environment.</p> <p>Matt assesses there is a likelihood that contaminated run-off from firefighting activities would impact the stormwater network, as the facility does not have any infrastructure to contain run-off in the event of a fire.</p>
3	<p>Implement controls – what controls are suitable and available to the business to eliminate or reduce a risk so far as reasonably practicable?</p>	<p>Matt ensures he separates his hot works from the pre-processing storage area. He enforces a no-smoking policy onsite and maintains a zone adjacent to storage as a quarantine area for any hot loads brought onsite.</p> <p>To minimise the risk of a potential fire spreading onsite, he stores the shredder floc in bunkers and separates it from other waste piles adequately, according to recommendations in the guideline (https://www.epa.vic.gov.au/about-epa/publications/1667-3) (p. 56 - 60).</p> <p>Due to the size and logistical constraints of his facility, Matt cannot use storage dimensions and free air gaps as his only controls to reduce his fire risk (pp. 57 – 60) in his pre-processing storage area. Bearing in mind the high pile volume and proximity to buildings, he takes additional steps to reduce the risk of fire starting and spreading. This includes engaging a fire safety specialist to design a fire protection system that will meet the requirements of a credible, worst-case fire scenario at his site.</p> <p>The fire safety specialist designs a firewater ring-main with firewater cannons surrounding the pre-processing pile. Trained staff will be able to use the firewater cannons to quickly and safely extinguish a fire in Matt's facility.</p> <p>As part of this design, Matt installs a large static water tank onsite to provide additional water supply for their first response firefighting capabilities.</p> <p>While this is not a low-cost solution, it allows Matt to continue accepting a larger volume of materials for processing at the site. Matt understands the risks of storing large volumes of CRWM with no controls onsite. Without controls, there would be very little to prevent or reduce the severity of fire at the site. A severe fire could cost his business much more than the controls he has invested in.</p> <p>Matt also has a sump constructed for contaminated firewater to drain into.</p> <p>Emergency management plan</p> <p>Matt documents the fire risk assessment and emergency management plan. He ensures details of the fire protection systems and drainage sump, including diagrams, are available to the fire services and are included in the Emergency Information Book. All emergency information is stored in the re-located Emergency Information Container <i>in front of the boom</i> at the front gate.</p> <p>Matt sets up an emergency planning committee with his staff to maintain the emergency management plan, response procedures and related training. The committee nominates a site fire warden and roles for other staff during an emergency.</p>

Example 4: How to apply the CRWM guideline



Step	Action	What Matt does
4	<p>Check controls – review controls to ensure they are effective.</p>	<p>Matt has recorded the site hazards, risks and controls, and how each control will be checked for its effectiveness in the risk register. This becomes documented evidence of his risk assessment.</p> <p>The onsite ring main system and hydrant will need to be checked regularly by qualified inspectors in accordance with manufacturer’s specifications and any maintenance or issues should be documented and signed off by senior staff. Matt keeps a record of the design and specifications of the ring main, as well as inspection and maintenance records. These documents are part of the risk assessment documentation for the site. Matt ensures these documents are available for the authorities.</p> <p>Matt schedules frequent site walks, toolbox talks and self-audits to help the staff identify whether standard operating procedures around hot works, smoking and housekeeping are being followed. Senior staff will sign off on self-audits and updates to standard operating procedures.</p> <p>Matt needs to make sure his staff are aware of the site emergency management procedures. He will check this by running fire drills with his staff every three months. This will ensure that staff are aware of their roles during a fire and can respond to the requirements that fire services may have if they attend a fire.</p>

Documenting the four-step process

See Table 11 in [the guideline \(https://www.epa.vic.gov.au/about-epa/publications/1667-3\)](https://www.epa.vic.gov.au/about-epa/publications/1667-3) for an example of how Matt might document the hazards, potential causes and impacts at his metal recycling facility, and how he will effectively manage them.



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

Meeting the performance objectives and expected outcomes

Matt demonstrates how he 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.

Matt will need to review his fire protection system with the support of his fire safety engineer if the circumstances of the site operational activities change. This will ensure it still meets the requirements of a credible worst-case fire scenario.



Example 4:
How to apply the CRWM guideline

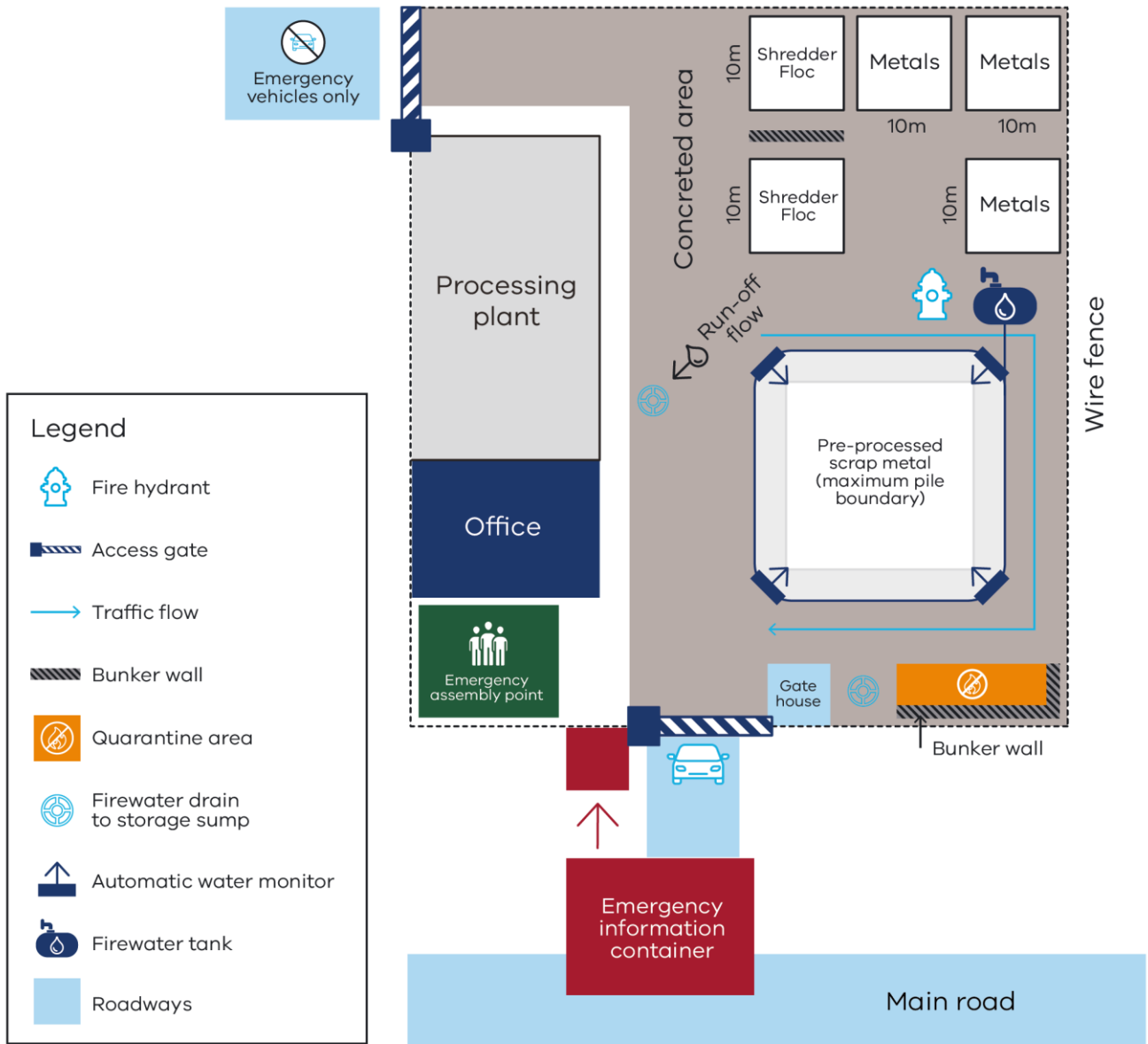


Figure 2: Matt's metal recycling facility **after** controls have been implemented.
Note the figure is not drawn to scale.

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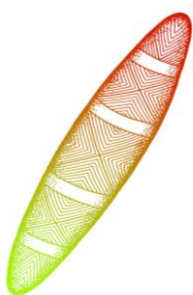
More information

- [Assessing and controlling risk: a guide for business](https://www.epa.vic.gov.au/about-epa/publications/1695-1) (https://www.epa.vic.gov.au/about-epa/publications/1695-1) (publication 1695)
- [Combustible recyclable and waste materials](https://www.epa.vic.gov.au/for-business/find-a-topic/manage-industrial-waste/crwm) (https://www.epa.vic.gov.au/for-business/find-a-topic/manage-industrial-waste/crwm)
- [Management and storage of combustible recyclable and waste materials – guideline](https://www.epa.vic.gov.au/about-epa/publications/1667-3) (https://www.epa.vic.gov.au/about-epa/publications/1667-3) (publication 1667)
- [Fire prevention: combustible recyclable and waste materials](https://www.epa.vic.gov.au/about-epa/publications/1759-1) (https://www.epa.vic.gov.au/about-epa/publications/1759-1) (publication 1759)
- [Industry guidance: supporting you to comply with the general environmental duty](https://www.epa.vic.gov.au/about-epa/publications/1741-1) (https://www.epa.vic.gov.au/about-epa/publications/1741-1) (publication 1741.1)
- [Reasonably practicable](https://www.epa.vic.gov.au/about-epa/publications/1856) (https://www.epa.vic.gov.au/about-epa/publications/1856) (publication 1856)
- [Permissions scheme – policy](https://www.epa.vic.gov.au/about-epa/publications/1799-2) (https://www.epa.vic.gov.au/about-epa/publications/1799-2) (publication 1799.2)
- [Summary of waste framework](https://www.epa.vic.gov.au/about-epa/publications/1756-2) (https://www.epa.vic.gov.au/about-epa/publications/1756-2) (publication 1756.2)
- [Management and storage of combustible recyclable and waste materials – indoor storage guideline](https://www.cfa.vic.gov.au/documents/20143/204281/Management+and+Storage+of+Combustible+Recyclable+Waste+Indoor+Storage+Guideline.pdf/830e82bb-c882-41bf-0641-719fe65dd7b0?t=1590468204469) (https://www.cfa.vic.gov.au/documents/20143/204281/Management+and+Storage+of+Combustible+Recyclable+Waste+Indoor+Storage+Guideline.pdf/830e82bb-c882-41bf-0641-719fe65dd7b0?t=1590468204469)

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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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