A HOLISTIC PERFORMANCE-BASED FRAMEWORK TO ADDRESS FIRE SAFETY IN WASTE MANAGEMENT FACILITIES

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The Australian Federal Government introduced the **Recycling and Waste Reduction Act [2]** in early December 2020, banning the export of unprocessed waste overseas. In 2022, the NSW Government introduced the Remanufacture NSW Grant Program [6] to recycle items such as paper, plastic, cardboard and tyres that were subject to the export of unprocessed waste overseas.

Recycling waste could range from plastic bottles to Aluminium cans which are typically processed at **Materials Recovery Facilities (MRF)**.

Building waste prior to being processed at **WMF**.

Municipal solid waste prior to being processed at **WMF**.

Waste Management and Treatment Facilities (WMF) come in various shapes and sizes, each processing different types of waste products ranging from household chemicals to organic waste. The nature of these facilities and the materials stored within present a unique set of risks, in relation to site and building fire safety.

Many of these **WMF** operate in a manner that allows a large deposition of waste material to be collected and piled up. The waste collected here is then sorted into various segments for further treatment including recycling or disposal. Such segregated waste is then held on site until collection, transfer or further treatment is viable.

WMFs may also operate based on exclusively accepting certain waste streams, such as chemical waste, paints, Lithium ion batteries and e-waste products. Such facilities present a unique set of risks where both, the building and process risk need to be considered along with the installed fire

Waste classified as Dangerous Goods in accordance with various standards (e.g. AS 1940) present a unique set of risks during processing at **WMF**.

WMFs AND BCA

WMF fire risks are not readily covered by the prescriptive Deemed-to-Satisfy (DtS) provisions of the **Building Code of Australia (BCA)** necessitating a Performance-based approach. The application of **BCA Clauses E1.10 (E1D17)** and **E2.3 (E2D21)** referring to **Special Hazards**, states that additional provision must be made if problems of fighting a fire could arise because of certain aspects, i.e. nature or quantity of materials stored, displayed, or used in a building or on the allotment; or water supply needed for fire-fighting purposes.

WMF FIRE SAFETY

The overall fire safety strategy for a WMF is governed by a combination of the following four (4) design subsets:

- Step 1: **Dangerous Goods Compliance**
- Step 2: **Process Risk Assessment**
- Step 3: **Fire Safety Study**
- Step 4: **Building Code Compliance**.

A holistic fire engineering assessment considering the above four (4) items would be required to assess the unique fire safety aspects of WMFs.

Step 1. Are Dangerous Goods being stored on the site?
If yes, then a Dangerous Goods Compliance review would need to be undertaken.
The DG Review would potentially dictate the fire services required on site.

Step 2. Review the process
This forms a vital part of the fire safety strategy as it allows the analysis of hazards and risks from the process equipment and stored waste.

Step 3. Prepare a Fire Safety Study
The Fire Safety Study [5] provides tangible design outcomes to be implemented to address the likely consequences from a fire incident and bring the fire safety level in a WMF to an acceptable level.

Step 4. Building Code Compliance
Fire brigade and Government guidelines nominate that BCA Clauses E1.10 (E1D17) and E2.3 (E2D21) need to be considered for WMFs.

- FRNSW Guideline Waste Management Guideline [4]
- QLD Government Guideline "The Prevention of Fires in Waste Stockpiles" [7]
- EPA Victoria "Management and storage of combustible recyclable and waste materials – guideline [3]
- AFAC Waste Management Guideline [1]

REFERENCES

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