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RTB/EH/sb
Ref: 241071_Let1_Rev1
02 August 2024

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Julie Horder
Director
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Dear Tyler and Julie,

**Re: 1% AEP Flooding Event – Floodwater Cause Contamination Downstream**

The purpose of this letter is to provide advice regarding contamination impacts of the proposed scrap metal facility during a 1% AEP Flooding Event and recommendations for the Flood Emergency Response Procedure.

It is understood that a portion of the external storage area of the site is affected by the 1% AEP Flooding Event and that the potential impacts may be significant. Given that there may be some potential for error in these models, this advice will assume all external storage areas may be affected by a 1% AEP Flooding Event.

Most waste stored in the external areas are as follows:

- Baled and pre-baled stainless steel
- Baled and pre-baled aluminium
- Car radiators (copper or aluminium)
- Car wheels (barrels only, not tires) made of corrosion-resistant steel or aluminium
- Wire insulation/poor quality wires with insulation
- Air conditioning heat exchangers (carbon steel/copper tubes)

These materials are considered low risk for contamination due to their resistance to corrosion. Stainless steel, aluminium, and copper are all known for their excellent corrosion-resistant properties, which makes them suitable for outdoor applications where they are exposed to environmental elements. Stainless steel contains chromium, which forms a passive layer of chromium oxide on the surface, preventing further corrosion. Aluminium forms a natural oxide layer that protects it from further oxidation and corrosion. Copper, although it can develop a patina over time, is highly resistant to corrosion, especially in marine and industrial environments. Carbon steel used in heat exchangers is typically treated or coated to enhance its resistance to corrosion.

Given their corrosion-resistant properties, the floodwater coming into contact with these materials during a 1% AEP Flooding Event is unlikely to liberate significant amounts of dissolved or undissolved metals. Additionally, the volume of floodwater in such an event is massive, which would result in any concentrations of contaminants being extremely low. This makes these metals suitable for outdoor storage and applications where they are frequently exposed to moisture and other potentially corrosive elements.

However, lead acid batteries stored externally (in transit storage) pose a risk of downstream contamination. Therefore, the Flood Emergency Response Procedure must **include moving these pallets inside the facility** as part of the flood preparation protocol.

Some car parts, particularly those with oily residues, are stored within a building previously used as a wash bay. The flood preparation procedure should ensure that any oily parts are **securely stored in this location or within the building** to prevent contamination.

In accordance with the HIPAP No. 4 Risk Criteria for Land Use Safety Planning, the criteria for sensitive environmental areas relate to the potential effects of an accidental release or emission on the long-term viability of the ecosystem or any species within it. The guidelines state:

> *"Industrial developments should not be sited in proximity to sensitive natural environmental areas where the effects or consequences of the more likely accidental emissions may threaten the long-term viability of the ecosystem or any species within it."*

and

> *"Industrial developments should not be sited in proximity to sensitive natural environmental areas where the likelihood or probability of impacts that may threaten the long-term viability of the ecosystem or any species within it is not substantially lower than the existing background level threat to the ecosystem."*

Risk from the floodwater coming into contact with external storage materials and liberating dissolved/undissolved metals or hydrocarbons in the event of a 1% AEP Flooding Event would not threaten the long-term viability of the ecosystem or any species within it.

However, it is crucial to ensure that the waste materials are not carried off by the flood. If this were to occur, the waste would be deposited downstream, potentially impacting the environment. Therefore, the perimeter fence must be designed to contain the waste during a flood, ensuring it does not leave the site.

Yours faithfully,
for Benbow Environmental

Emma Hansma
Senior Engineer

R T Benbow
Principal Consultant