

Project No: 313306

## Flood Risk Assessment

Prepared for:

### 2ZLF Ltd

West Meadows Industrial Estate  
Derby  
DE21 6HA

### Contents Amendment Record

This report has been issued and amended as follows:

Revision	Description	Date	Signed
1.0	Final	02 June 2023	Graeme Kennett



SAFETY  
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## Acknowledgement

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This report has been prepared by the following Mabbett personnel:

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## Executive Summary

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This Flood Risk Assessment (FRA) identifies the level of flood risk at the site and enables the identification of the measures necessary to make the site safer and to protect the environment from the stored materials on site.

The flood risk summary from the EA<sup>1</sup> indicates that the site has a;

- Medium risk of flooding from rivers and the sea
- Very low risk of surface water flooding.
- Extremely unlikely risk of flooding from reservoirs, and
- Unlikely risk of groundwater flooding

The variation application seeks an increase in the throughput capacity of hazardous waste treatment and the total amount stored within the use of existing structures. It will not involve any new development that is likely to give rise to flood risk issues.

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<sup>1</sup> [Your long term flood risk assessment - GOV.UK \(check-long-term-flood-risk.service.gov.uk\)](https://www.gov.uk/check-long-term-flood-risk.service.gov.uk)

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## Section 1.0: Introduction

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2ZFL Ltd submitted a permit variation application to the Environment Agency (EA) in February 2022 to increase the waste processing capability at their West Meadow site from 10t per day to 100t per day of hazardous waste, along with an increase in hazardous waste storage capacity from 50t to 150t at any one time.

### 1.1 Introduction

This Flood Risk Assessment (FRA) outlines the methods by which the site operator will systematically assess and minimise potential impacts from the operation of the 2ZLF Ltd waste processing site regarding flooding.

The FRA is a working document and forms one component of the overall Environmental Management System (EMS), ensuring that:

- Flood mitigation impacts are addressed as part of routine site inspections;
- Flooding is controlled by effective operational practices, comprising physical and management control measures; and
- All practicable measures are taken to prevent or reduce flood impacts from the site at surrounding sensitive receptors.

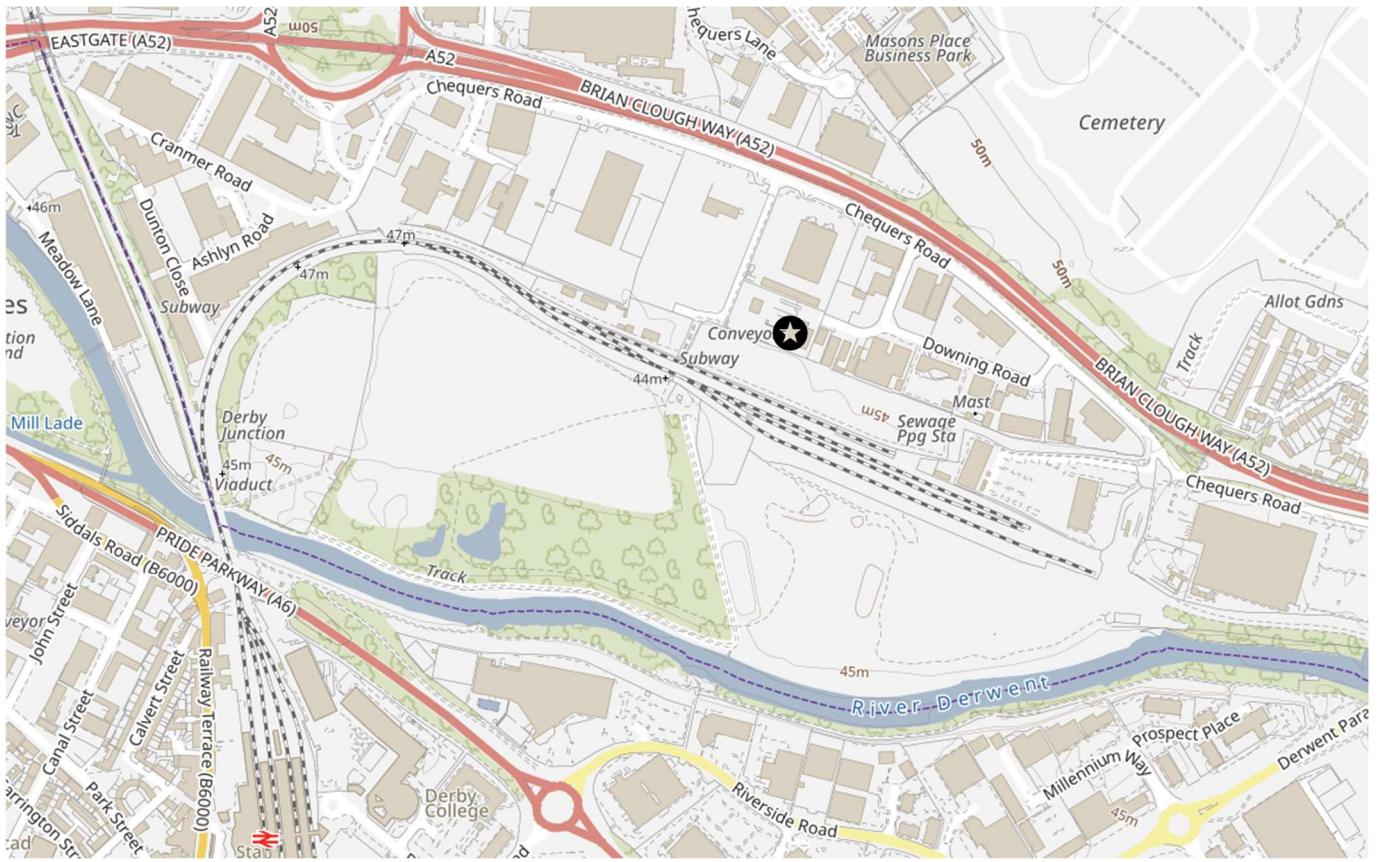
### 1.2 Flood risk

The site sits in a 'medium' risk zone of river flooding and the area last flooded in 1965. However, since then, there has been significant investment in flood protection. The flooding action plan, Appendix A, details the measures to be taken by 2ZLF should a flooding event occur to prevent pollution of the environment and minimise further flooding.

## Section 2.0: Site setting

### 2.1 Site area

Figure 2-1 Site location



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The site is 360m from the River Derwent, which lies to the South and flows W-E.

### 2.2 Site operations

The site consists of designated waste reception and storage areas for the hazardous and non-hazardous waste activities. Amenities for the entire site include a weighbridge for incoming wastes and a quarantine area for non-conforming incoming wastes (which will ensure that quarantined wastes do not contaminate those which have been deemed suitable for treatment) as well as two soil washing plants – one for hazardous wastes and one for non-hazardous wastes.

Most of the waste for the hazardous line is interceptor waste from 3<sup>rd</sup> party tanker companies. On entering the site hazardous waste tankers are first sampled to check the degree of contamination and approximate solids content.

Tankers containing a low solid loading of mainly fine material can be processed directly through the plant by hooking up to a connection at the primary screen. The operator dictates the flow from the tanker to ensure it remains within the plant capability. For tankers with higher solids, or for tipping the remnants of the solids from the tanker, there is a concrete bunded unloading bay parallel to the plant.

*Figure 2-2 Wet waste unloading bay*



When required, a loader will lift the material from the unloading bay into a screw feed hopper. The feed hopper will control the speed at which the waste is introduced to the plant.

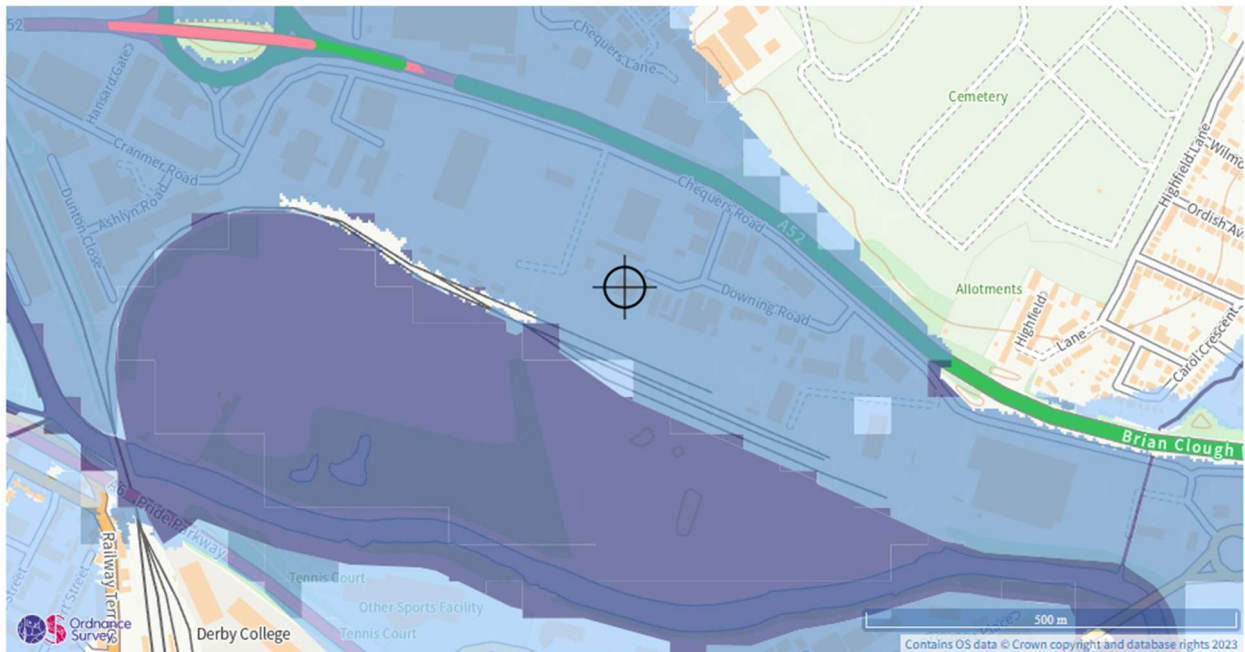
Wastes contaminated with heavy metals and/or hydrocarbons/oils are brought onto site in enclosed/sheeted vehicles. After initial inspection at the weighbridge, vehicles are directed to the reception area and physically inspected. Once accepted, the loads are loaded into specially provided bays/tanks prior to treatment.



## Section 3.0: Flood risk

### 3.1 River flooding

Figure 3-1 Extent of flooding from rivers or the sea



#### 3.1.1 Flood risk summary

##### Medium risk

This flood risk summary is not property specific<sup>2</sup>.

Medium risk means that this area has a chance of flooding of between 1% and 3.3% each year.

This information is suitable for identifying:

- which parts of towns or streets are at risk, or have the most risk
- the approximate extent and depth of flooding

It's likely to be reliable for a local area but not for identifying individual properties at risk.

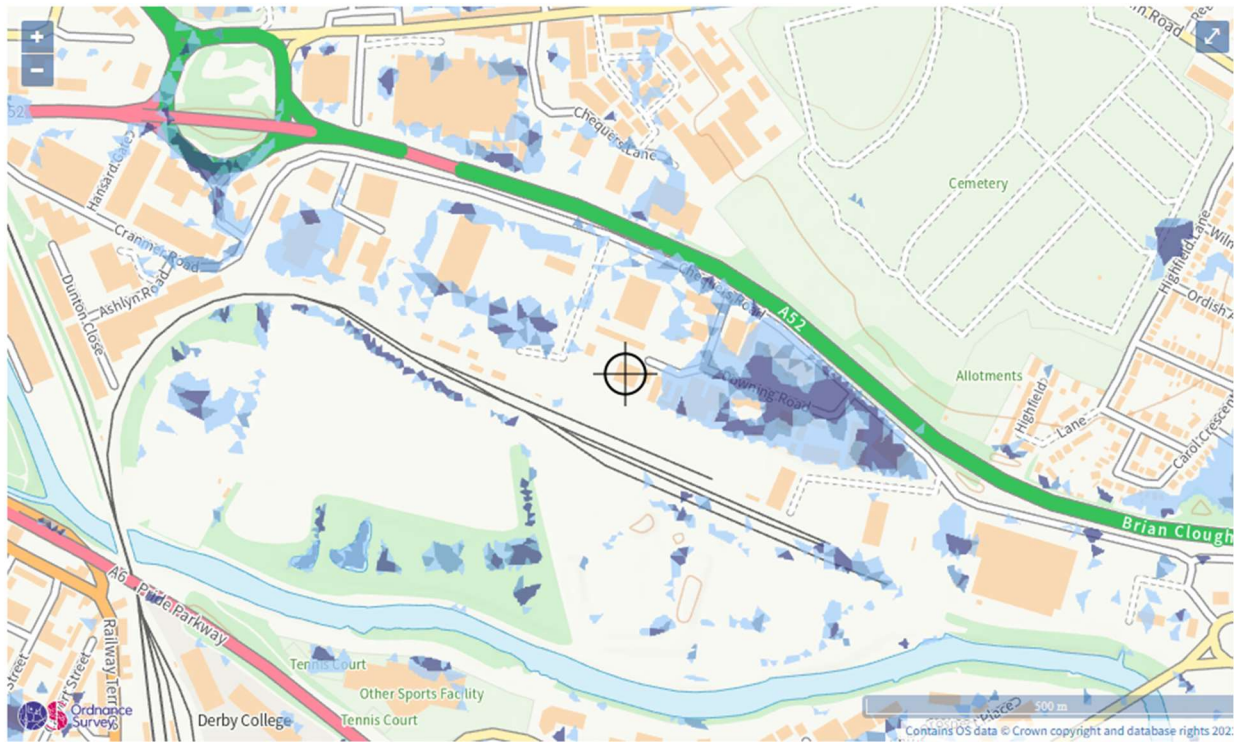
This service report takes into account any flood defences.

<sup>2</sup> [Your long term flood risk assessment - GOV.UK \(check-long-term-flood-risk.service.gov.uk\)](https://www.gov.uk/check-long-term-flood-risk.service.gov.uk)



## 3.2 Surface water flooding

Figure 3-2 Extent of flooding from surface water



Extent of flooding from surface water

● High ● Medium ● Low ○ Very low ⊕ Location you selected

### 3.2.1 Flood risk summary

#### Very low risk

This flood risk summary reports the highest risk from surface water within a 15-metre radius of the site. Very low risk means that this area has a chance of flooding of less than 0.1% each year.

This information is suitable for identifying:

- which parts of counties or towns are at risk, or have the most risk
- the approximate extent and depth of flooding

It's unlikely to be reliable for a local area and very unlikely to be reliable for identifying individual properties at risk.

Surface water flooding happens when rainwater cannot drain away through the normal drainage systems. Instead, it lies on or flows over the ground. Surface water flooding is sometimes known as flash flooding. It can:

- be difficult to predict as it depends on rainfall volume and location
- happen up hills and away from rivers and other bodies of water
- affect areas with harder surfaces, like concrete, more severely

The Lead Local Flood Authority (LLFA) is Derby council.

## Section 4.0: Climate change risk assessment

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The following possible impacts and mitigation measures were considered when preparing this risk assessment.

### 4.1 Daily extreme rainfall

*Daily rainfall intensity could increase by up to 20% on today's values.*

#### 4.1.1 Potential for increased site surface water and flooding.

The mitigation for this is to prepare flood plan with reference to the guidance Preparing for flooding: A guide for sites regulated under EPR and COMAH<sup>3</sup> as shown in Appendix A.

2ZLF has measures in place to ensure that:

- Anticipated surface water and flood waters are managed by the site drainage system and effluent treatment plant which has sufficient storage and treatment capacity. Drainage systems are inspected and maintained.

#### 4.1.2 Potential for increased incidents involving hazardous wastes.

2ZLF has measures in place to ensure that:

- external areas where wastes are handled or stored are provided with contained drainage.
- hazardous wastes are stored in appropriately bunded tanks and bays.

### 4.2 Average winter rainfall

*Average winter rainfall may increase by over 40% on today's averages.*

This could lead to increased site surface water and localised site flooding.

The mitigation for this is to prepare flood plan with reference to the guidance Preparing for flooding: A guide for sites regulated under EPR and COMAH as shown in Appendix A.

The plan includes:

- risk assessment of process equipment and services at greatest risk from flooding;
- provision of emergency pumps to remove floodwater and identification of lowest risk location for discharge of floodwaters;
- protection of control and electrical systems;
- identification and protection of flat bottom tanks at risk of floating in floodwater.

There is potential for increased incidents involving oil-containing wastes.

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<sup>3</sup> [Preparing for flooding: a guide for regulated sites - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/preparing-for-flooding-a-guide-for-regulated-sites)

The mitigation for this includes:

- external areas where wastes are handled and/or stored are provided with impermeable surfacing and contained drainage, and that these are maintained in good condition;
- hazardous wastes are stored in appropriately contained tanks and bays.

## Section 5.0: Flood mitigation

The site currently operates under an Environmental Permit [EPR/AB3904UQ] [WML400948], issued by the Environment Agency in 2015, that allows it to accept wastes as described within the permit.

The permit allows for the acceptance and treatment of hazardous and non-hazardous waste materials. The proposed variation is to increase the proportion of hazardous interceptor wastes etc., that are accepted and treated. These wastes are hazardous by virtue of their TPH content that are typically below a 1%` threshold.

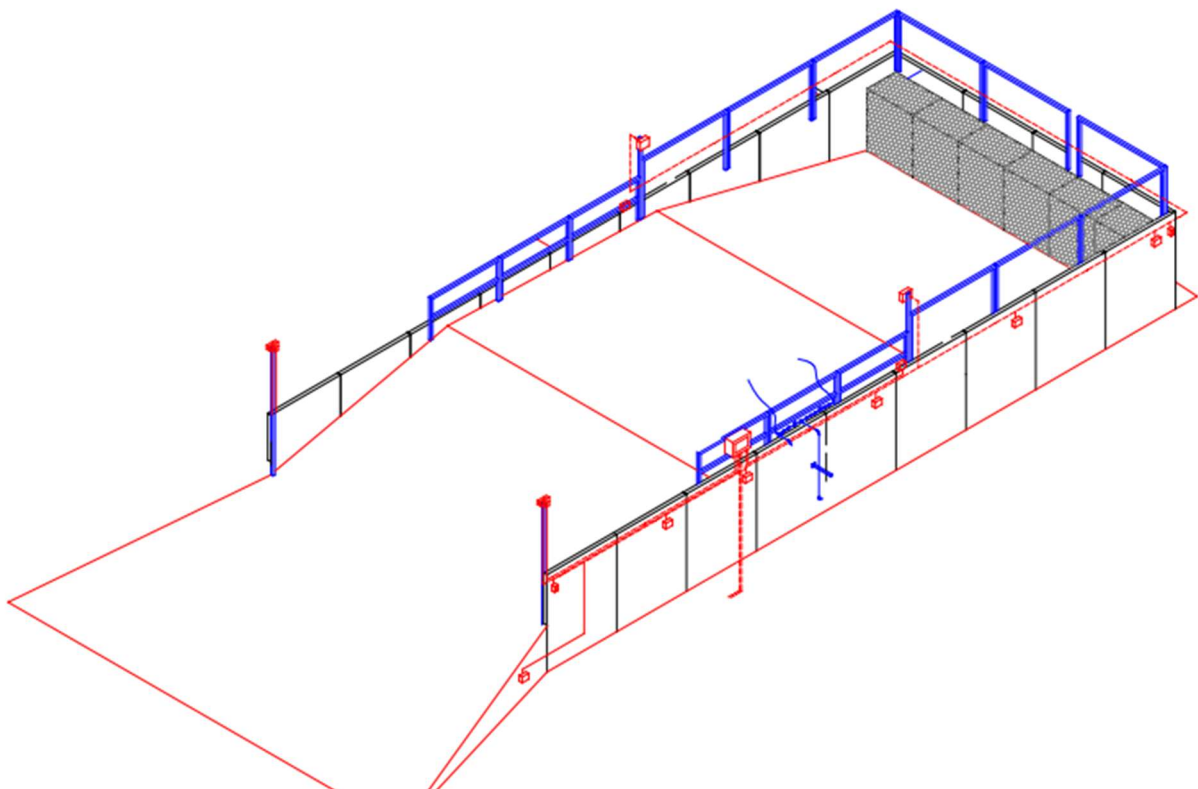
### 5.1 Liquid wastes

These are discharged at the site in to the bunded tanks. These tanks not only protect from spillages, but also protect their contents from flooding by virtue of their construction. The tanks are round in cross section which means they are less likely to suffer the same sort of disturbance as flat-bottomed tanks.

### 5.2 Sludgy/caked wastes

These are discharged in to the specially designed and constructed, above ground, wet waste bay.

*Figure 5-1 Wet waste discharge bay*



Where the TPH content is determined to be more than 1%TPH they are reloaded and rejected from site. As the bay is of above ground construction, they are protected from flooding at the site.

### **5.3 Haz filter cake storage**

These wastes are stored within a covered bay (7.8m x 12m) in the yard. The storage bay is protected from inundation by being covered and a 300mm containment kerb at the front of the bay to protect from any flooding.

## Section 6.0: Conclusions

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The EA's flood mapping website states that, although the flood risk summary is not property specific, the area is at 'medium' risk from flooding which means that this area has a chance of flooding of between 1% and 3.3% each year.

However, with increasing threats from climate change it is considered that, with site design and total containment of the hazardous wastes on site, there is no extra risk from the increased storage capacity or site throughput of hazardous materials.



## Appendix A: Flooding action plan

In extremely wet weather the following actions will take place:

- Met office and EA severe weather warnings monitored twice daily.
- Weather conditions noted in the site diary along with any prolonged heavy precipitation.
- Sand bags checked for number and condition (minimum of 100 ready for service & on site).
- All drainage points (see site plan) will be monitored closely by operational staff and cleaned if required.
- Visual check on gullies in Downing Road adjacent to entrance, request cleaning if required.
- If conditions show no sign of abatement the organics and sand bays will be sand bagged at their base to prevent egress of material in a flood condition.
- The filter bags in the ATS systems will be checked for condition and the ATS chambers for silt levels and replaced/cleaned as necessary. This is also part of the routine maintenance programme detailed in the SPMP.
- If the yard's impermeable surface begins to flood and act as a basin for flood waters the plant will be temporarily shut down and the unloading of incoming material ceased until the water has drained away in to the discharge point. The local Environment Agency office will be notified.
- Any flooding on site will be recorded in the site diary.
- If the water level rises sufficiently to threaten any electrical equipment within the building the power will be switched off and all equipment made safe.
- If there is the potential for overnight flooding the plant will be shut down along with the power supply. Security will be increased to protect the site in these conditions.
- Post flood; all drainage points, filter bags (ATS), gullies, pits and sumps will be checked and cleaned.
- Any materials that have been moved by the flood will either be swept back into the appropriate bay or re processed.
- The yard surface will be swept and cleaned.

### Training

Staff will be trained to act as detailed above before, during and after a flood event. Record of the training will be kept in the training file.

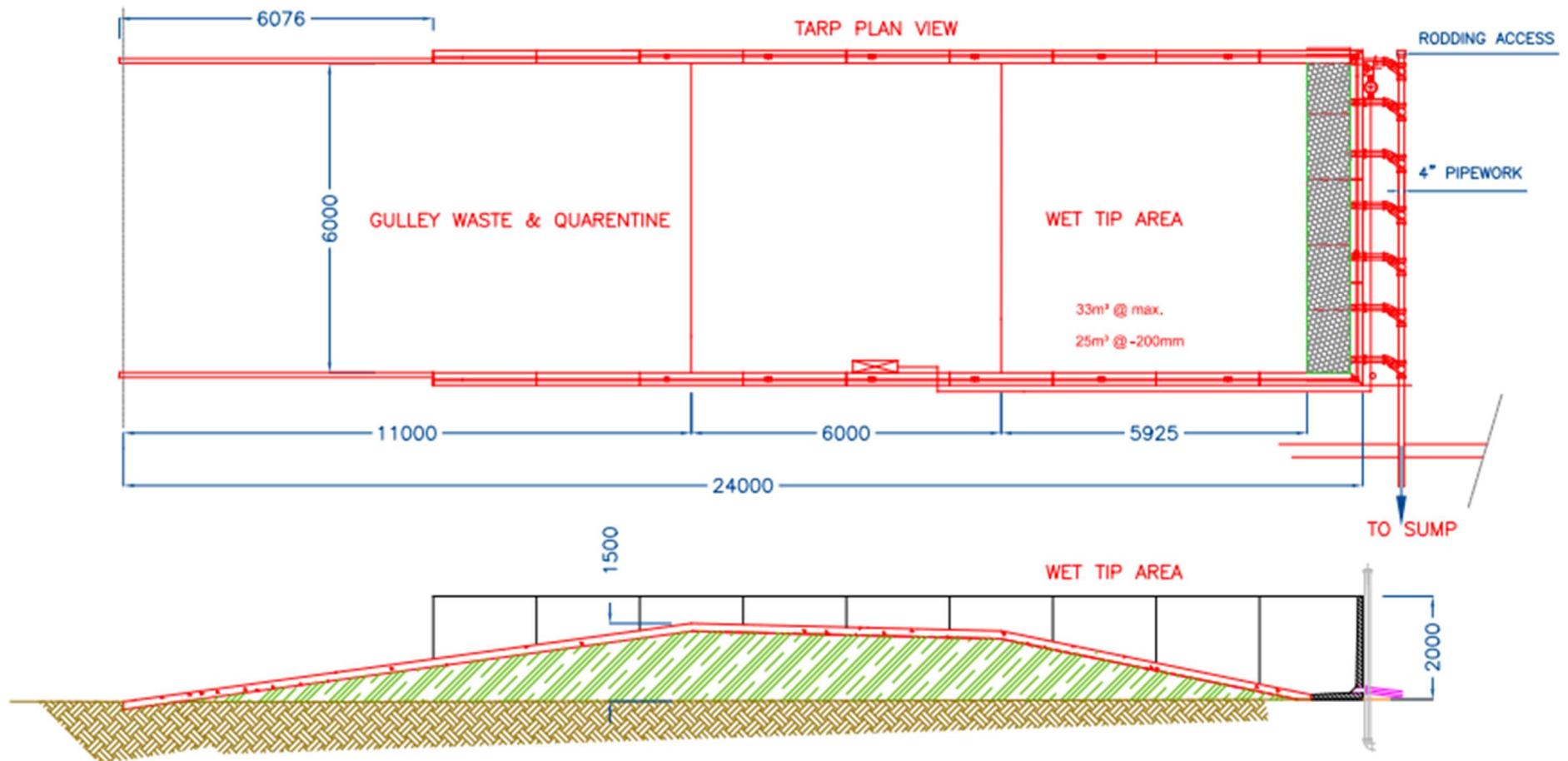
## Appendix B: Risk assessment

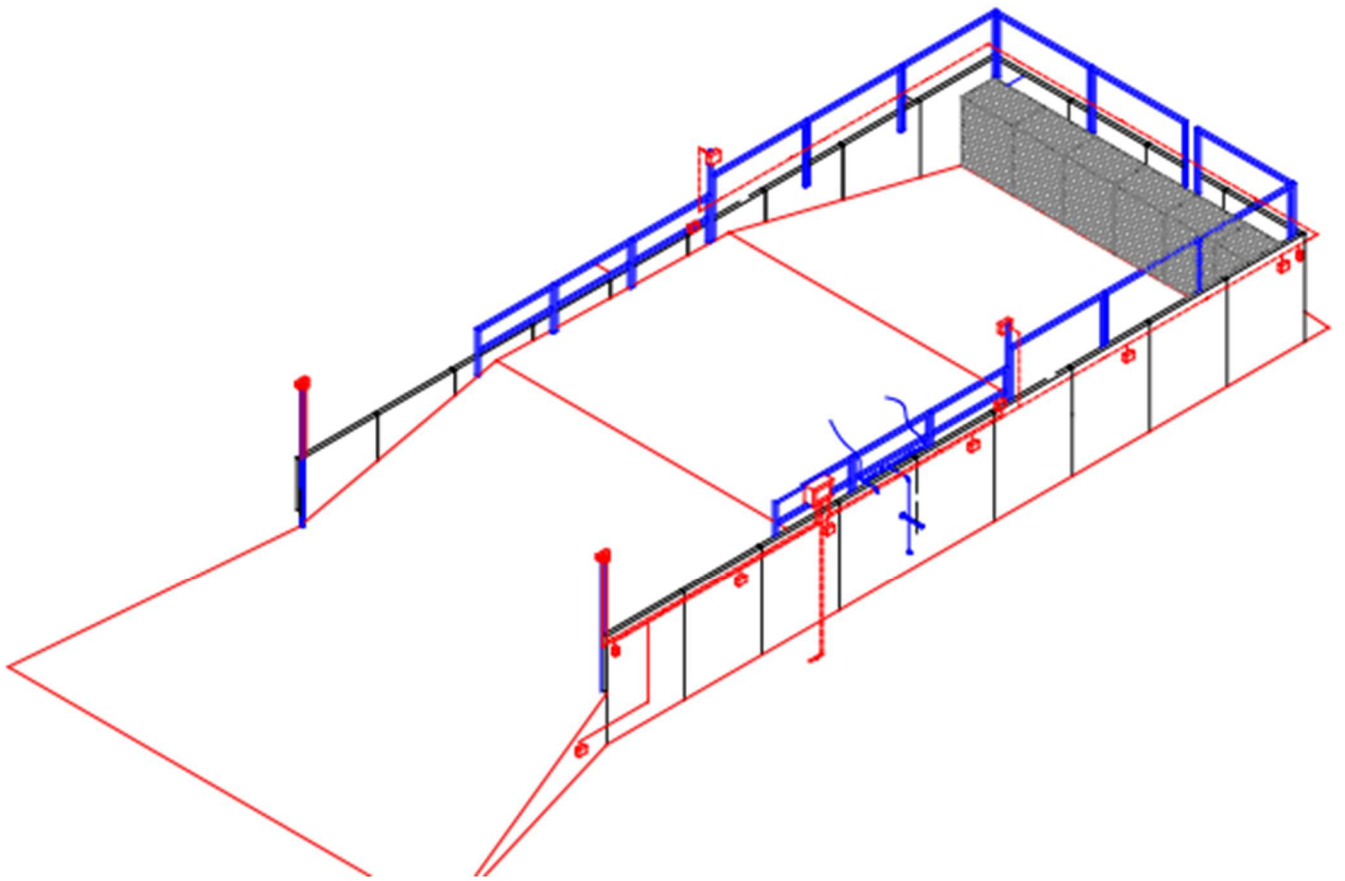
What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Risk Management	Probability of exposure	Consequence	What is the overall risk?
<i>What has the potential to cause harm?</i>	<i>What is at risk? What do I want to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>What measures will you take to reduce the risk? Who is responsible for what?</i>	<i>How likely is contact (1-5)</i>	<i>What is the harm that can be caused? (1-5)</i>	<i>What is the risk that still remains? (Likelihood x Severity)</i>
Flooding of site	Local human population	Contaminated flood waters	<p>The site is situated within an area at medium risk from flooding and has containment systems in place in the event of a flood.</p> <p>Liquid wastes, including hazardous wastes, are contained within bunded tanks.</p> <p>The above ground wet waste discharge bay is constructed to withstand leaks.</p> <p>Non-hazardous and inert waste bays are contained, and bay entrances can be sand bagged to prevent water ingress.</p> <p>Regular inspections of the drainage system is undertaken to ensure drains do not become blocked.</p> <p>If significant flooding occurs, site operations will cease, and incoming vehicles diverted.</p> <p>Existing waste which is stored awaiting treatment may be diverted to another facility</p>	<p>No recent history of flooding in the area.</p> <p>1</p>	<p>Contamination of buildings</p> <p>2</p>	<p><b>Low</b></p> <p><b>2</b></p>

			for onwards treatment or disposal if this waste could cause pollution in the event of a flood – this will be at the discretion of the Site Manager or Site Foreman.			
Flooding of site	Local environment	Contaminated flood waters	<p>The site is situated within an area at medium risk from flooding and has containment systems in place in the event of a flood.</p> <p>Liquid wastes, including hazardous wastes, are contained within bunded tanks.</p> <p>The above ground wet waste discharge bay is constructed to withstand leaks.</p> <p>Non-hazardous and inert waste bays are contained, and bay entrances can be sand bagged to prevent water ingress.</p> <p>Regular inspections of the drainage system is undertaken to ensure drains do not become blocked.</p> <p>If significant flooding occurs, site operations will cease, and incoming vehicles diverted.</p> <p>Existing waste which is stored awaiting treatment may be diverted to another facility for onwards treatment or disposal if this waste could cause pollution in the event of a flood – this will be at the discretion of the Site Manager or Site Foreman.</p>	No recent history of flooding in the area. 1	Contamination of natural habitats 2	<b>Low 2</b>
Flooding of site	Plant and equipment	Rising flood waters	In the event of a flood warning all mobile plant will be readied for removal if required.	No recent history of	Contamination of buildings /	<b>Low 2</b>

			Electrical machinery will be isolated electrically.	flooding in the area. 1	natural habitats 2	
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## Appendix C: Wet waste bay design







## Appendix D: Liquid hazardous waste storage

