EP0025/22/DOC4

SHIELD CONSULTANTS LTD

Fire Risk Assessment

JAC Steel Ltd.

Waste Treatment Complex Qasam Industrijali,
Marsa, MRS 1000

Update: 13th March 2023
Follow up from report dated: 22nd October 2022

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0.1 Introduction

This document is a flow up from the previous report carried out in October 2022. It follows meetings with the competent authority and consultations from other fire safety professionals to further improve the situation after the improvements that have already been implemented.

The main changes in this report are the improvements that have been implemented since the last report, but most importantly the details of the firefighting system that is being planned for the site. Details of this are in **section 3.4 – 3.8**.
NOTE: These improvements require the purchase and installation of new equipment and the required services to supply it.

- Quotations for equipment are already being sought, and plans for implementation are being structured.

0.2 Aim

The aim of this document is to propose mitigation measures to the fire risk that exists at the plant. This will continue the communication with the competent authorities to ensure that an acceptable solution can be implemented.

0.3 Consideration and Limitations

- **Increasing space separation between stacks**

The footprint of the building is enclosed between other facilities and is therefore unable to expand in any direction. To achieve greater space separation stacks would need to be made narrower, but this would mean that they would end up having to rise higher.
This might create an even greater risk and therefore this measure was not pursued further.

The decrease the chances of fire spreading between stacks, the facility will be improved by dividing combustible material by stacking less flammable waste in between.

See plan layouts page at the end of this report.

- **Decreasing types of materials processed**

Where end-of-life vehicles are involved, there are numerous materials that need to be extracted and one cannot choose to process only part of them.
While decreasing throughput is not an option for the company in terms of business as well as the fact that ELV's, the facility's mainstream, come as one part and dismantled in various materials, the Company instead focus more on being pro-efficient and move waste more frequently keep the facility with the lowest stocks possible

- **Increasing the firefighting capability**

Given that the above-mentioned methods cannot be fully implemented as a stand-alone solution, it is being proposed to deal with the fire safety situation by increasing the firefighting capabilities within the site.
The suggested system is detailed in section 3 of the report below.

1. Implemented and Suggesting improvements

No.	Title/ Issue	Action Required / Details
1	**Fire Prevention**	
1.1	**Storage of combustible material**	Most of these are stored in the open-air yard to be processed either by hand or by machine depending on the process that is required to be undertaken.
1.2	**Storage of flammable liquids**	Bulk storage of fuels is carried out in the basement in IBC tanks. These are protected from hot temperatures but might be exposed to products of hot works that might be going on around this area. This will be minimised by carrying out hot works in other areas as much as possible, and by protecting the tanks from hot sparks and flying debris. Fire blankets or other fire rated fabric can be used here. • See section 1.4 below for details about the training received by workers.
1.3	**Oil contaminated materials**	Just like the section above regarding the protection of flammable liquids.
1.4	**Training and Drills**	**Workers have been trained in fire safety** and including the use of all firefighting equipment on site. Fire safety **training included information about hot work fire safety**. This is a particular requirement for this site since a lot of this type of work is carried out and this presents a substantial ignition hazard for materials stored. Evacuation drills are mandatory by law to be carried out every 6 months. These must be conducted, **and the use of equipment must be included in these drills** in addition to the evacuation of workers from site.

2	Fire Detection/ Alarm	
2.1	**Fire Detection**	Heat alarms are installed throughout the building. The alarm is loud enough to alert about a fire during the normal working day, however its main intention is to alert the security guard during the night. The alarms must be tested regularly to ensure that they all still function correctly.
2.2	**Manual Alarm**	An addition to the alarm system mentioned above, a number of **Manual Call Points (MCPs) should be installed in various areas**. These will enable workers who become aware of a fire to raise the alarm quickly and make others aware of the emergency without delay. ***See the plans below for the suggested location of these points.***

3	Fire Fighting Equipment	
3.1	**Fire Hose Reels**	Additional hose reels have already been installed as had been identified in the report of October 2022. These are supplied by 9m^3 water supply each. Each hose reel has an independent water tank which is not connected to the water reservoir mentioned in 3.5 below. With a working pressure of 2 bar, standard hose reels operate at 144Lt/min would provide water for 60min each.
3.2	**Fire Extinguishers**	Fire Extinguishers have been better positioned and distributed along the facility. These have been installed in accessible areas and mounted on wall brackets that will allow them to be easily accessed by workers. • A small (1kg) powder fire extinguisher should be fixed to every oxy-acetylene set.
3.3	**Automatic Fire Fighting (Fire Balls)**	This product is a good solution when they are positioned in areas where a fire/ heat would reach them during its initial stages. Following the previous report, these have been installed in the required positions and are now ready to operational in case of a fire in the building.

Image 1 – Oxy-acetylene set with fire extinguisher

Image 2 – Foam Fire extinguisher

3.4	**Water Monitor**	Water monitors offer firefighting from a distance using large amounts of water. They have the advantage of being able to continue to operate unmanned after the initial setting up.
3.4.1	**Fixed Pillar Monitors**	These monitors have the advantage of not requiring any setting up and only minimum skill and training is required to operate the system. This would be ideal in an area close to the fire pump or above buildings, where it would not run the risk of being obstructed by material. See section 3.5 below related to the water supply for the monitors.
3.4.2	**Portable Floor Monitor**	Portable monitors have the same advantages as fixed monitors; however, these require setting up on location and hose needs to be laid to supply them with water from a hydrant. This takes more time to set up, and workers need to be trained in the correct process of setting up the equipment for it to be effective. The portable monitor will be set up according where necessary according to the location of the fire. The required equipment and infrastructure required to operate a portable monitor is described in 3.5 – 3.8 below.

Image 3 – example of fixed fire monitor

Image 4 – example of portable water monitor

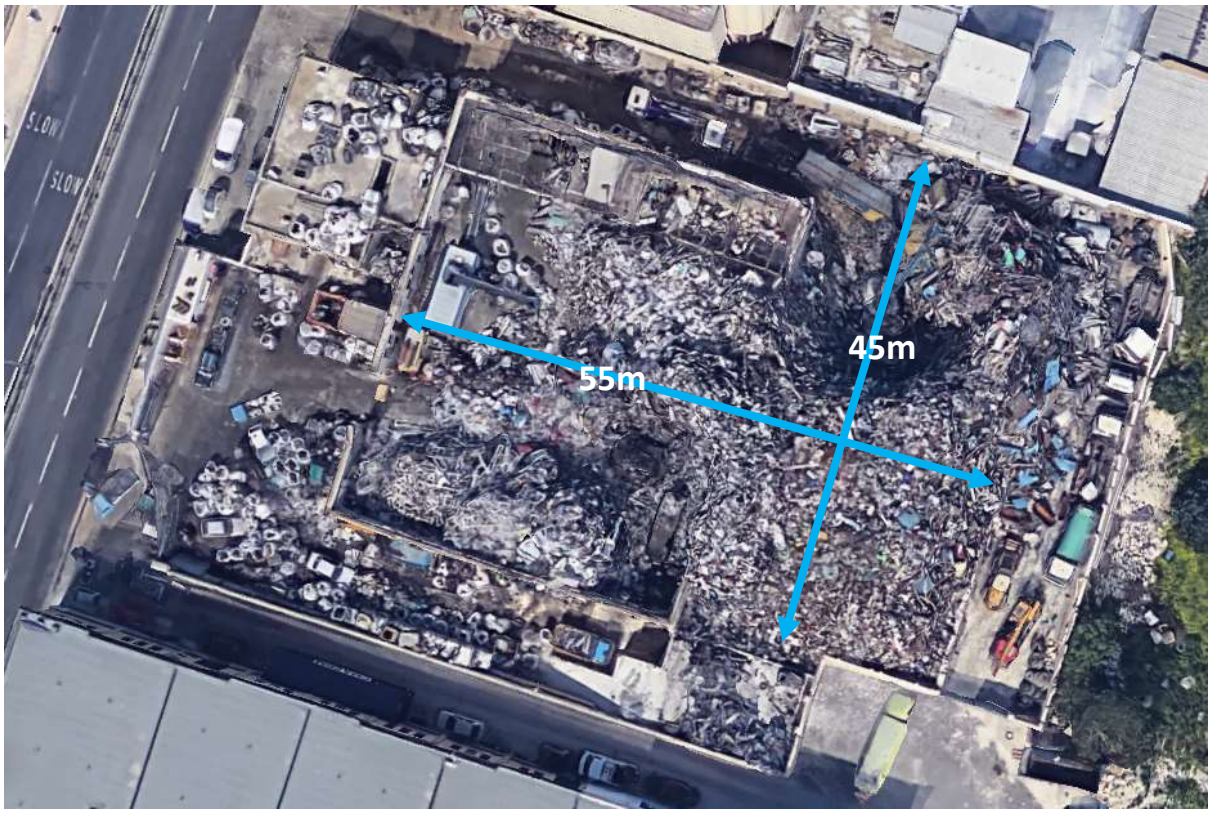


Image 5 - dimensions of site

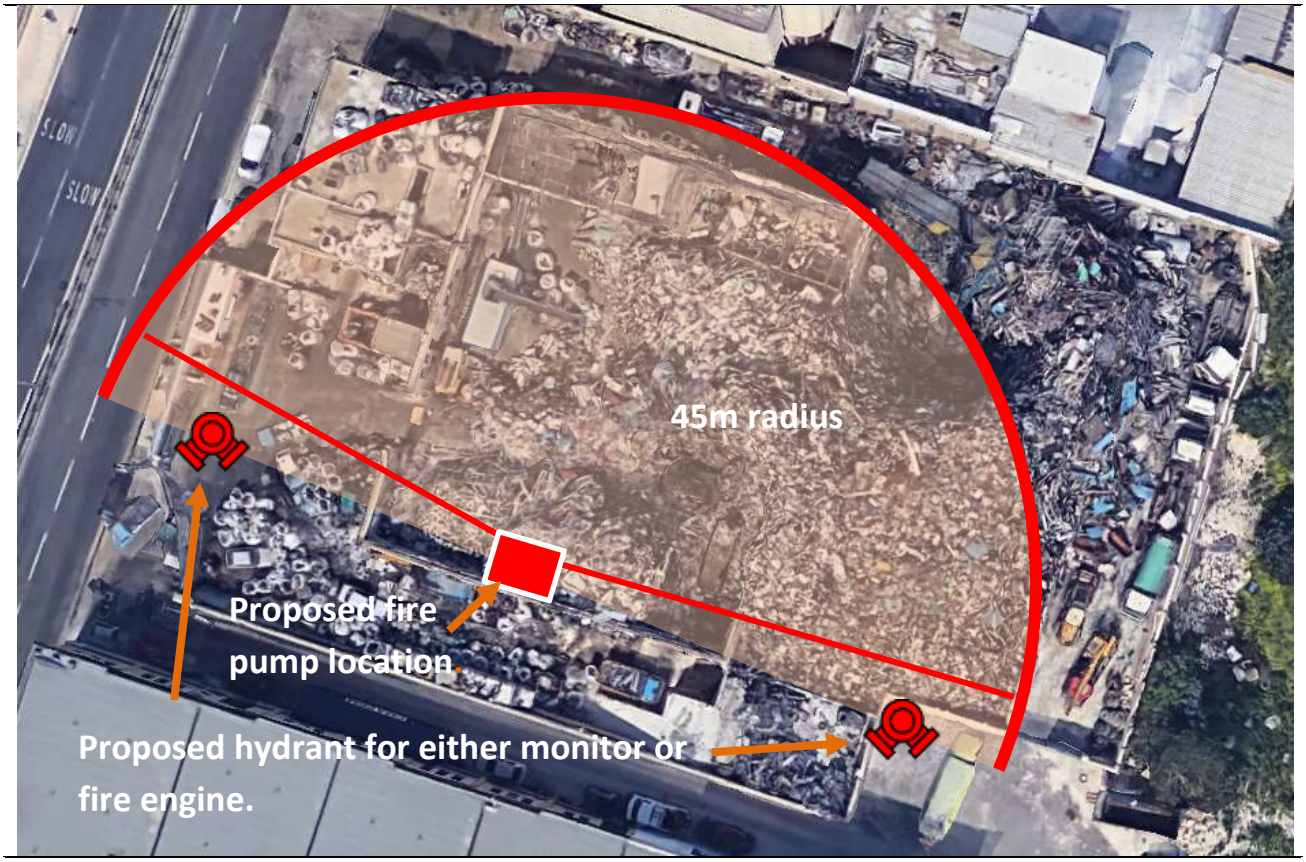


Image 6 – areas covered by water jets from proposed water monitor positions

3.5	**Water reservoir**	An existent water reservoir holds **65,000lt (65m³) of water**. This amount of water would serve one of the proposed monitors to be able to be supplied with water for about 35min, according to the calculation shown below. **65m³ / 1420Lt/min = 45min** One fixed monitor and one portable monitor is being proposed so that at maximum coverage together with flexibility can be achieved.
3.6	**Fire Pump**	Since the hose reels are already catered for by separate pumps for each reel, the fire pump will need to provide water for the water monitors and hydrants.

		This means that the pump would need to provide **1420lt/min at 7bar** (or as much as the chosen water monitor requires).
3.7	**Pillar Hydrants**	Pillar hydrants will be necessary for two reasons. To supply water to the portable water monitor, and to provide a filling point for fire engines. Two positions have been identified for the location of these hydrants. See location in image 8 above. For each hydrant to serve both these purposes, they will require an outlet that has **a pressure reducer to at least 3 bar.**
3.8	**Delivery hoses**	If a portable monitor is chosen, water would need to be supplied to the monitor via firefighting delivery hoses such as the example in image 9 below. These would need to be stored in a position that can be easily accessed and deployed by workers in an emergency, while being protected from the elements and from the work environment. A hose storage box like the example in image 10 is recommended.

Image 7 – lay flat firefighting hose

Image 8 – lay flat firefighting hose

Image 9 – lay flat firefighting hose

Image 10 – equipment cabinet

Image 11 – Automatic fire extinguisher

Image 12 – Automatic fire extinguisher in holder

Image 13 –

Image 14 -

4	**Fire Engine**
	A fire engine carries 3,000 litres of water and can be used to operate as a **portable fire hose reel**. Workers use the fire engine regularly during to ensure that they know how to drive and operate it and to ensure that it is ready to be used in case of a fire. Some requirements for the upkeep of this as a suitable firefighting system are: • The fire engine must **be parked in an area where it can be driven away promptly**. • The **schedule of preventive maintenance** must be established and carried out. • The **tank must always be kept full**. • Workers must be **trained in the use of fire engine and its equipment**.

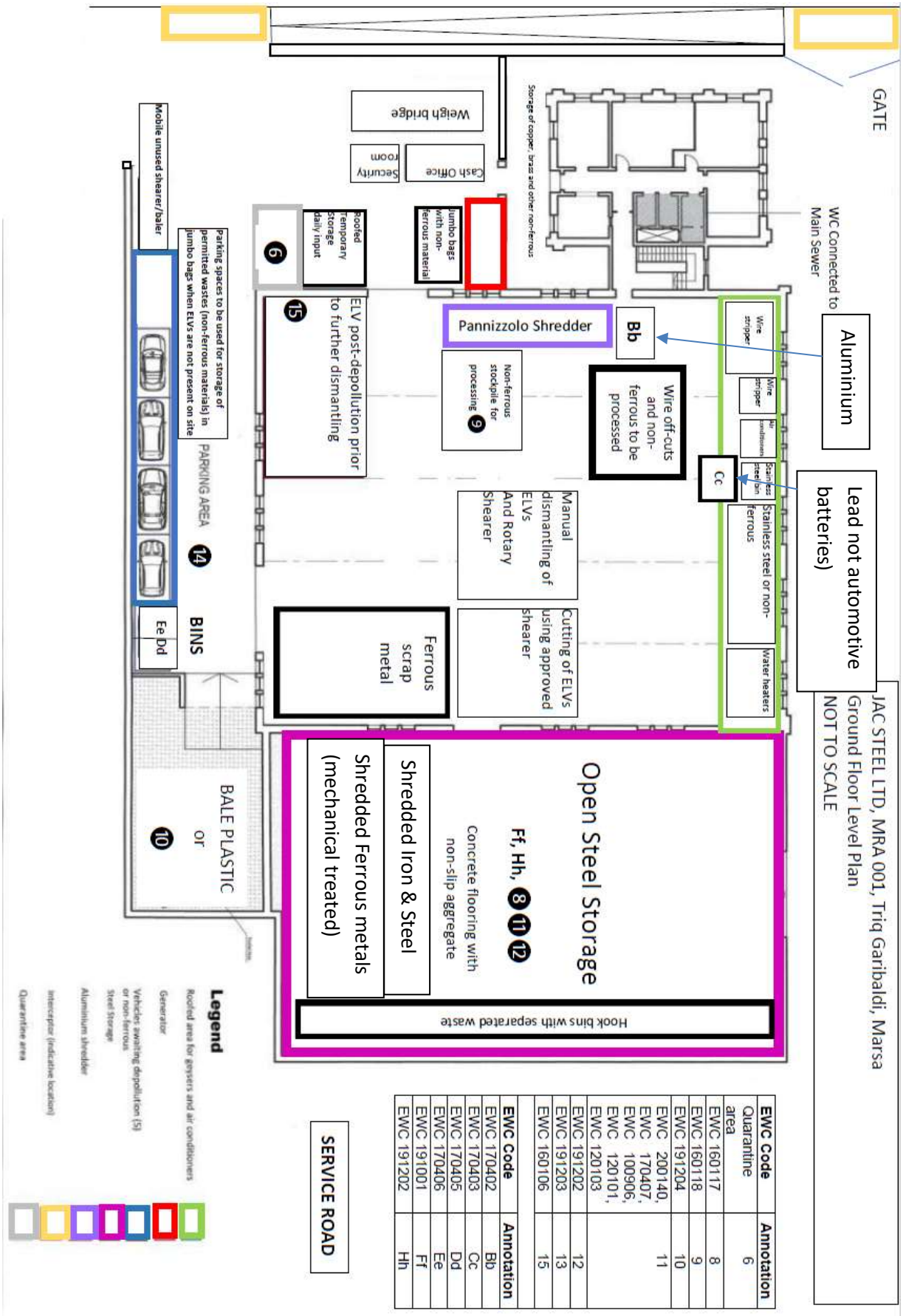
Image 15 –Fire engine

5	**Access to the Fire Service**
	Since the access to the site directly from Triq Giuseppe Garibaldi is no longer accessible, vehicles need to access the site from the rear passing through the single access road leading to the JAC site. This is not an ideal approach for fire service vehicles as the room for manoeuvrability is very limited. Civil Protection (CPD) vehicles would be forced to remain stationed at a distance and display long stretches of hoses to be able to carry out firefighting efforts. This would take considerable time and would result in a fire having time to grow larger and therefore become more difficult to control.

	Since the closing of the front road is not up to the management of JAC steel, *they are not at liberty to open it themselves.* It might be necessary to make the request to the relevant authority for the concrete blocks to be replaced with other blocks that are longer and taller in size so that a fewer number would be required to close off the opening. **These would them be able to be removed, only in case of emergency and in case that the CPD need to attend**, by one of the several forklift trucks operating within the facility.

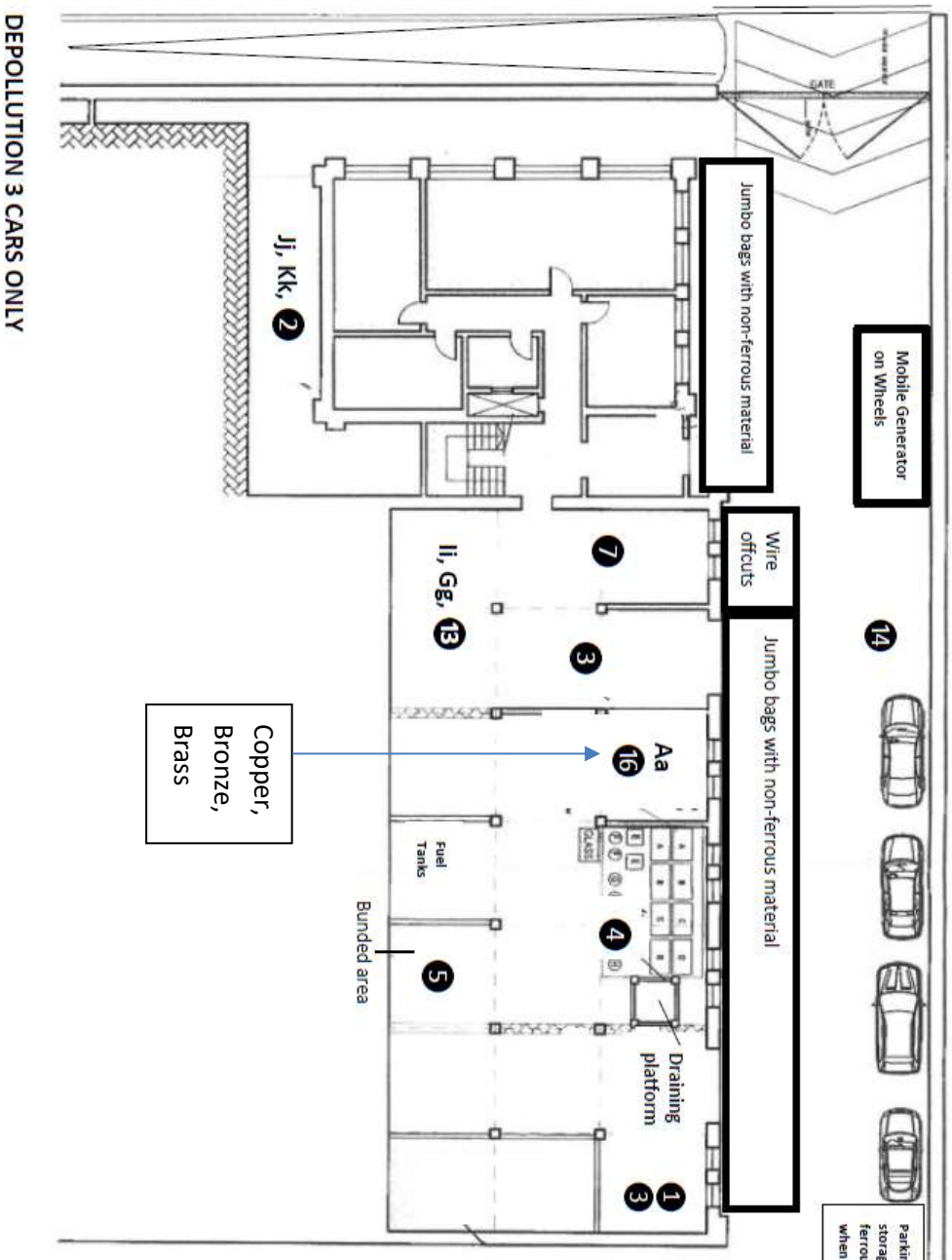
Image 16 – blocked access to the front of the site

Image 17 – access road to site



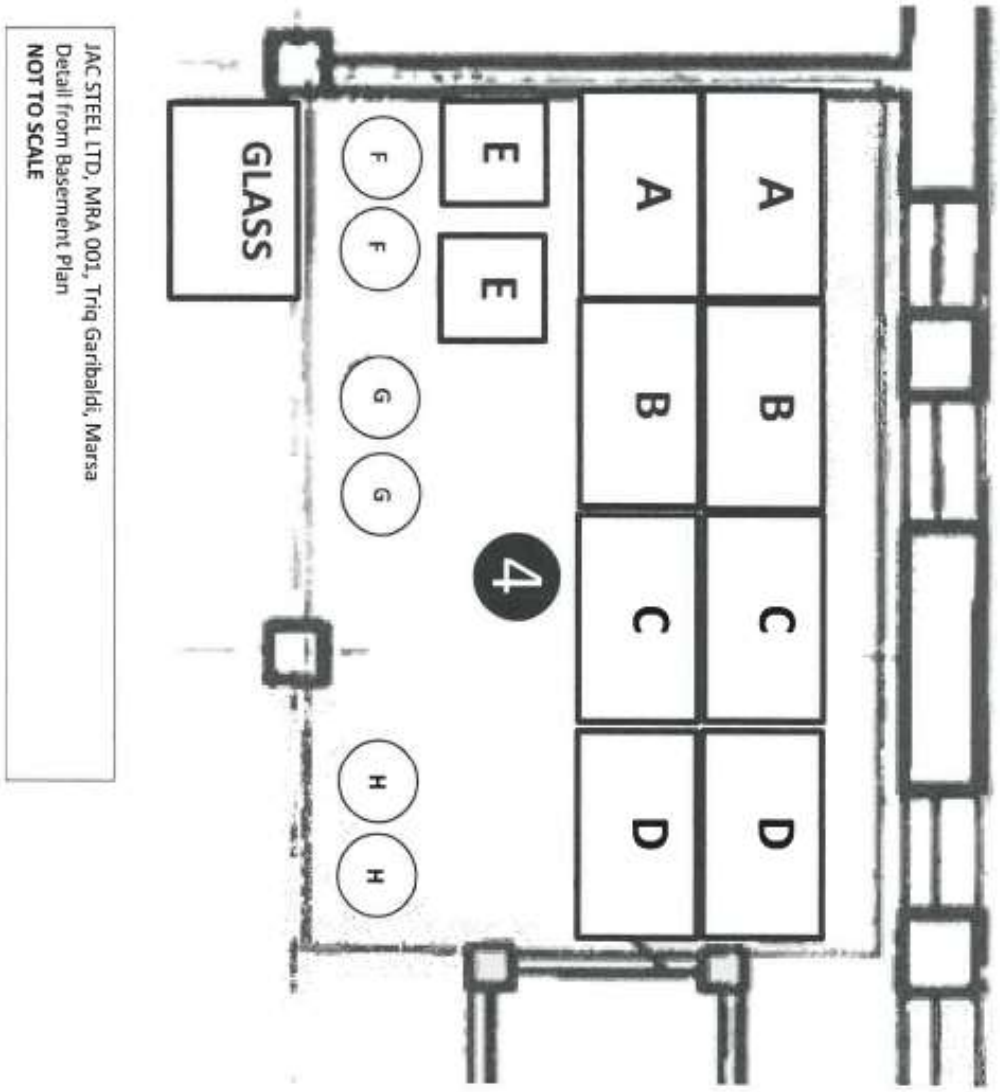
EWC Code	Annotation
Quarantine area	6
EWC 160117	8
EWC 160118	9
EWC 191204	10
EWC 200140, EWC 170407, EWC 100906, EWC 120101, EWC 120103	11
EWC 191202	12
EWC 191203	13
EWC 160106	15

EWC Code	Annotation
EWC 170402	Bb
EWC 170403	Cc
EWC 170405	Dd
EWC 170406	Ee
EWC 191001	Ff
EWC 191202	Hh



EWC Code	Annotation
EWC 160103	1
EWC 160601	2
EWC 170410, EWC 170411	3
EWC 160107*, EWC 160108*, EWC 160109*, EWC 160110*, EWC 160111*, EWC 160112, EWC 160113*, EWC 160114*, EWC 160115, EWC 160116, EWC 160119, EWC 160120, EWC 160199	4
ELV dismantling area	5
EWC 160213*, EWC 160215*, EWC 160216	7
EWC 191203	13
EWC 160104*	14
Copper processing	16

EWC Code	Annotation
EWC 170401	Aa
EWC 191002	Gg
EWC 191203	Ii
EWC 200133*	Jj
EWC 200134	Kk



JAC STEEL LTD, MRA 001, Triq Garibaldi, Marsa
Detail from Basement Plan
NOT TO SCALE

Legend:

A: Diesel

B: Petrol

C: Engine Oils/Oils

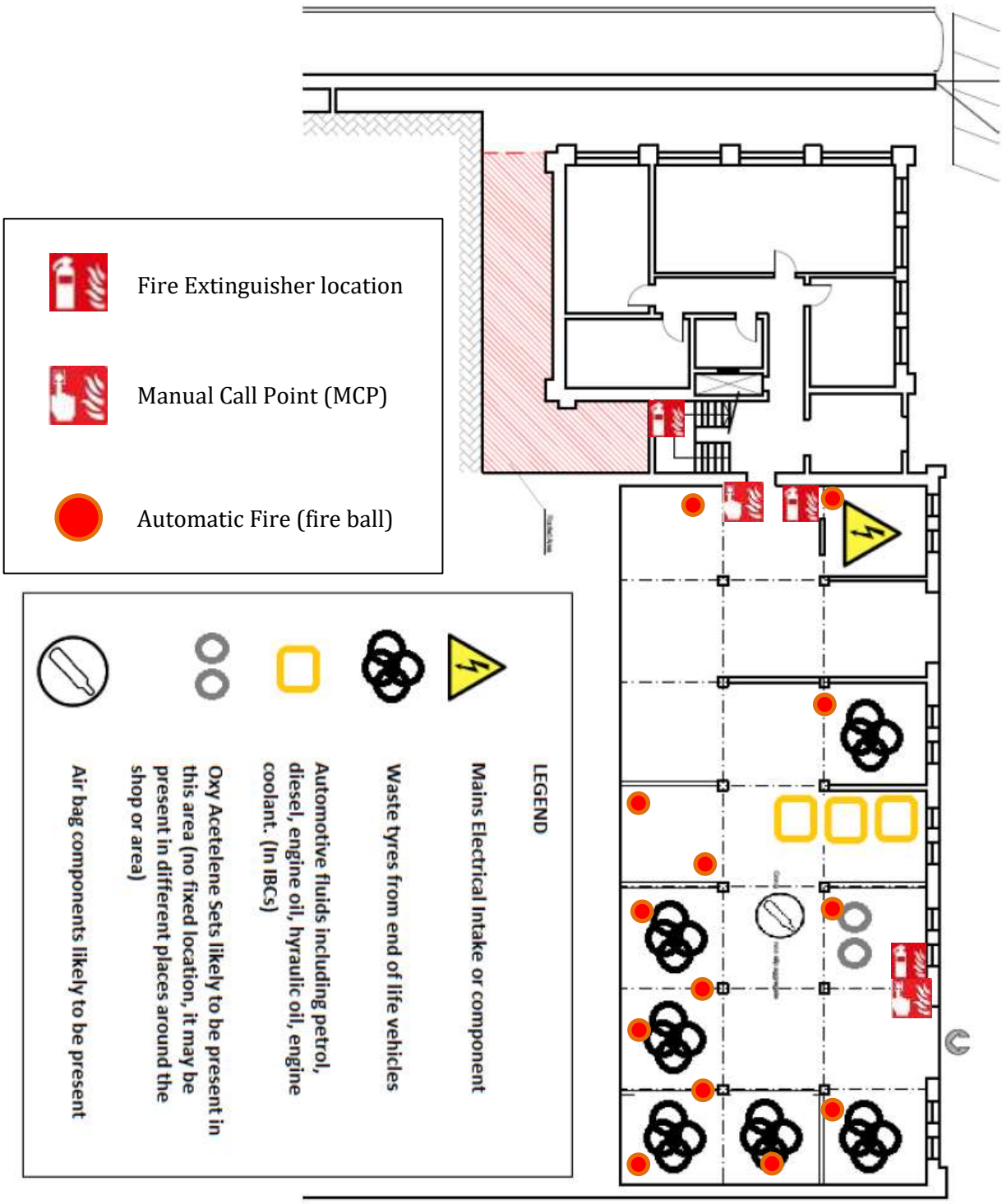
D: Coolant Liquids

E: Oil Filters/Absorbants

F: Mercury Switches

G: Brake Pads with Asbestos

H: Brake Pads without Asbestos


Fire Extinguisher location
Manual Call Point (MCP)
Automatic Fire (fire ball)
LEGEND
Mains Electrical Intake or component
Waste tyres from end of life vehicles
Automotive fluids including petrol, diesel, engine oil, hyraulic oil, engine coolant. (In IBCs)
Oxy Acetelene Sets likely to be present in this area (no fixed location, it may be present in different places around the shop or area)
Air bag components likely to be present

Ground Floor Plan

Fire Extinguisher location

Manual Call Point (MCP)

Hose reel

LEGEND

Mains Electrical Intake or component

Waste tyres from end of life vehicles

Automotive fluids including petrol, diesel, engine oil, hyraulic oil, engine coolant. (in IBCs)

Oxy Acetelene Sets likely to be present in this area (no fixed location, it may be present in different places around the shop or area)

Air bag components likely to be present

Green line shows access to fire brigade due to closed off access from Triq Giuseppe Garibaldi

Access to fire brigade

Evacuation route

[redacted]

[redacted]