Fire Prevention Plan

Steel Bright Road Metal Recycling Facility

FOR: DUNN BROS RECYCLING LTD

PROJECT NUMBER: ECCS 117 005

PREPARED BY: EC CONSULTANCY SERVICES LTD

Fire Prevention Plan

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Fire Prevention Plan

ECCS 117 005 R 003 A

Project:	Steel Bright Road Metal Recycling Facility
For:	Dunn Bros Recycling Ltd
Status:	**Final**
Date:	December 2025
Author:	Lucinda Hall, Director

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1 INTRODUCTION

1.1 OVERVIEW

This Fire Prevention Plan (FPP) has been created for the Steel Bright Road Metal Recycling Site. The current activities at the site fall under the scope of the Standard Rules Permit SR2015No.14_MRF_75kpta. The Operator of the site is Dunn Bros Recycling Ltd. This FPP has been updated to include the acceptance of additional waste codes, and the newly designed fire detection and suppression system installed at the site.

This FPP has been prepared to support the permit variation application and will comprise a standalone document which will be implemented on-site as part of the Operators Environmental Management System (EMS) following permit issue. All aspects of this FPP including the fire detection and suppression system will be installed prior to commencement of operations.

1.2 AIMS AND OBJECTIVES OF FIRE PREVENTION PLAN

The objectives of this plan are to:

- Minimise the likelihood of a fire happening;
- Aim for a fire to be extinguished within four hours; and
- Minimise the spread of fire within the site and to neighbouring sites.

This document aims to identify all possible sources of combustible materials, potential causes of fire, sets out measures to address those risks and in the event of a fire occurring, ensures that it can be identified and extinguished as early as practically possible.

This FPP is intended to be used as a working document for operational staff on a day-to-day basis and will be reviewed and updated every 4 years or following an emergency scenario on site (whichever is sooner).

1.3 SITE LOCATION AND ENVIRONMENTAL SETTING

The site is situated within the Borough of Sandwell in a heavily industrial area, surrounded by several existing waste management facilities. The warehouse (17,000 square foot in size) is situated on the corner of Steel Bright Road and Rabone Lane, immediately north of the Rugby-Birmingham-Stafford Railway line (which itself is approximately 3 miles northwest of Birmingham New Street Station).

The site is also registered under aT9 Exemption for the recovery of scrap metal (Registration WEX419400), and a S2 Exemption for the storage of waste in a secure place.

The site is situated above a bedrock aquifer which is designated as a high groundwater vulnerability zone / major aquifer. Superficial deposits are designated as a minor aquifer / secondary aquifer. There are no Source Protection Zones in close proximity the site.

The nearest human receptor is The Old Corner House Pub situated 35 m directly West of the warehouse, on the corner of SoHo Street (B4136) and Rabone Lane with residential properties located 100m to the southwest, across a duel carriageway.

The only surface water features close to the site is the Birmingham Canal, located approximately 165 m to the north and 90 m west of the industrial warehouse.

The full site address is:

Unit 1
James Watt Industrial Park
Steel Bright Road,
Smethwick,
Birmingham,
B66 2NW
Grid Reference: SP 03127 88744

Figure 1.3.1 Site Location

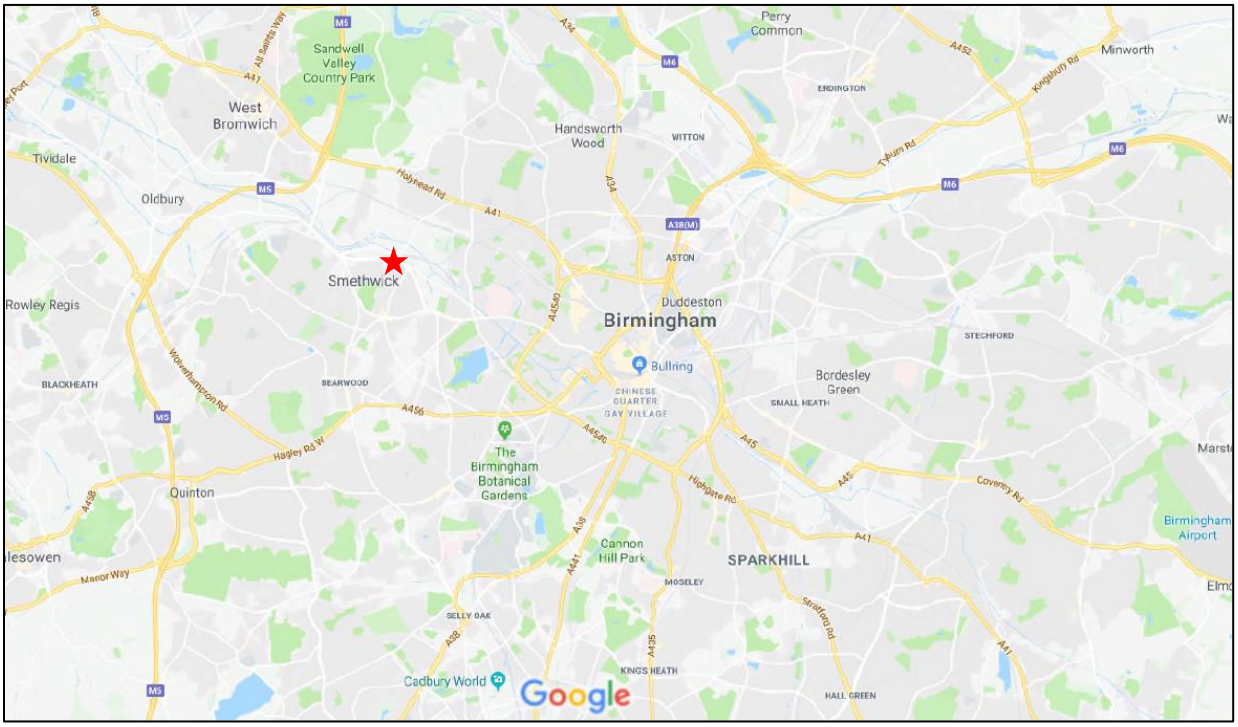


Image sourced from Google Maps ©2025

The Permit Boundary is shown on the site layout plan provided within Appendix B.

1.4 SENSITIVE RECEPTORS

There are a number of human sensitive receptors within close proximity to the site. Due to the site being located in a densely populated area, it is not feasible to list every human receptor within a 1km radius. Therefore, the closest human receptors in proximity to the site are

summarised in Table 1.4.1 below and their respective locations illustrated in drawing referenced DB.001.001.PL.D.008_-_Smethwick_-_Sensitive_Receptors_-_180913.

Table 1.4.1 Human Sensitive Receptors (HSR)

No	Receptor Name	Type	Centroid (x, y m)	Approx. distance from permit boundary (m)	Direction from Site
HSR 1	Carpark	Commercial Premises	403180 288737	Adjacent	E
HSR 2	Railway Line	Commercial Premises	403124 288707	Adjacent	S
HSR 3	Aurubis	Commercial Premises	403118 288821	25 m	W
HSR 4	Birmingham Cas & Carry Warehouse	Commercial Premises	403191 288803	30 m	N
HSR 5	The Old Corner House Pub	Commercial Premises	403046 288738	35 m	W
HSR 6	Energas	Commercial Premises	403134 288646	45 m	S
HSR 7	Ravenace Metals	Commercial Premises	403218 288744	45 m	E
HSR 8	A457 (Soho Way)	Duel Carriageway	403043 288648	65 m	S
HSR 9	Oakfield Close	Residential Properties	403028 288606	100 m	SW
HSR 10	East End Foods	Commercial Premises	403306 288763	114 m	E
HSR 11	St. Phillips Catholic Primary School	School Premises	402973 288548	170 m	SW

Likewise, there are also a number of ecological sensitive receptors within close proximity to the site. These are summarised within Table 1.4.2 below and within drawing referenced DB.001.001.PL.D.008_-_Smethwick_-_Sensitive_Receptors_-_180913.

Table 1.4.2 Ecological Sensitive Receptors (ESR)

No	Receptor Name	Type	Centroid (x, y m)	Approx. distance from permit boundary (m)	Direction from Site
ESR 1	Feeder Canal	Watercourse	403012 288763	100 m	W
ESR 2	Birmingham Canal	Watercourse	403253 288883	125 m	NE
ESR 3	Unknown	Deciduous Woodland	403463 289013	300 m	NE
ESR 4	Woodland	Deciduous Woodland	403661 288508	460 m	ESE
ESR 5	Black Patch Park	Deciduous Woodland	403690 288627	530 m	E
ESR 6	Victoria Park	Deciduous Woodland	402622 288219	613 m	SW
ESR 7	Unknown	Deciduous Woodland	403835 289134	710 m	NE
ESR 8	Woodland	Deciduous Woodland	402196 288729	775 m	W

No	Receptor Name	Type	Centroid (x, y m)	Approx. distance from permit boundary (m)	Direction from Site
ESR 9	Woodland	Woodland	404030 288428	910 m	SE

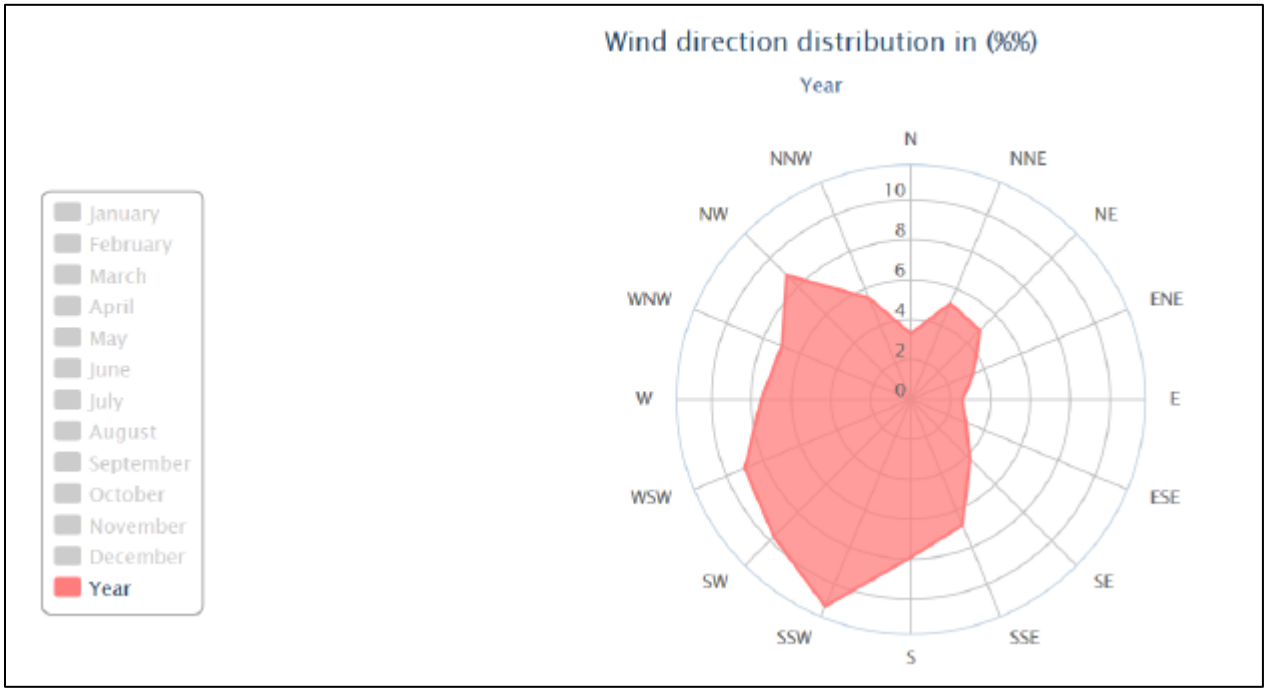
The prevailing wind direction at the site is from the South South West (SSW) and South West based on observational data recorded between January 2020 – May 2025 daily from 7am to 7pm local time and obtained from the nearest weather station located at Birmingham International Airport (www.windfinder.com).

Figure 1.3.2a Birmingham International Airport Weather Station Data

Month of year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
	01	02	03	04	05	06	07	08	09	10	11	12	1-12
Dominant wind direction													
Wind probability >= 4 Beaufort (%)	32	32	35	33	34	24	28	28	25	25	28	26	**29**
Average Wind speed (kts)	9	10	10	9	10	9	9	9	9	9	9	9	**9**
Average air temp. (°C)	6	6	8	11	15	18	19	19	16	13	9	6	**12**

Source: Windfinder.com

Figure 1.3.2b Birmingham International Airport Weather Station Windrose



Source: Windfinder.com

1.5 Relevant Legislation and Guidance

This FPP has been prepared in conjunction with the format prescribed by the Environment Agency and detailed in the Environment Agency Guidance – Fire Prevention Plans: Environmental Permits[1].

Best practice has also been derived from the Waste Industry Safety and Health Forum (WISH) on reducing fire risk at waste management site[2]. Consideration has also been given to the following relevant guidance:

- Environment Agency's Environment Management Guidance 'Control and monitor emissions for your environmental permit;
- Environment Agency's Environment Management Guidance 'Develop a management system: environmental permits'; and
- CIRIA 736: 'Containment Systems for the Prevention of Pollution'.

[1] Environment Agency (2016) Fire prevention plans: environmental permits. Available from: https://www.gov.uk/government/publications/fire-prevention-plans-environmental-permits/fire-prevention-plans-environmental-permits

[2] WISH (2017) Reducing fire risk at waste management sites. Available from: https://wishforum.org.uk/wp-content/uploads/2017/05/WASTE-28.pdf

2 SITE DETAILS

2.1 PERMITTED ACTIVITIES

This permit currently allows the operator to carry out the sorting, separation, grading, shearing, shredding, baling, compacting, crushing, granulating and cutting of ferrous metals or alloys and non-ferrous metals for recovery. The total quantity of waste that is permitted to be accepted at the site under the existing standard rules set is less than 75,000 tonnes per annum, however the operator is applying to vary their permit to increase the annual throughput which will exceed 75 tonnes per day (Section 5.4 Part A(1)(b)(iv) of the Environmental Permitting (England & Wales) Regulations (2016) as amended, and add additional waste codes. The primary waste activities will not fundamentally change as a result of the changes proposed.

The activities being applied for are further described within Table 2.1 below.

Table 2.1. Waste Activities

Permitted Activities at Metal Recycling Site			
Activity Reference	**Activity listed in Schedule 1 of the EP Regulations**	**Description of specified activity and WFD Annex I and II operations**	**Limits of specified activity and waste types**
A1	S5.4 A(1) (b) (iv) Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day involving treatment in shredders of metal waste, including waste electrical and electronic equipment	Shredding of non-hazardous metal waste. R4: Recycling/reclamation of metals and metal compounds	From treatment of waste by shredding to storage of treated waste. Treatment consisting only of shredding of waste containing ferrous and non-ferrous metals for recovery.
Directly Associated Activities			
A2	Storage of non-hazardous waste pending treatment	Storage of non-hazardous waste pending treatment by shredding. R13: Storage of waste pending the operations numbered R1 to R12 (excluding temporary storage, pending collection, on	From receipt of waste to storage of waste prior to treatment by shredding

		the site where it is produced)	
A3	Physical treatment for the purpose of recycling	Manual and mechanical sorting, separation, grading, shearing, plasma cutting, and gas cutting. R4: Recycling/reclamation of metals and metal compounds	From treatment to shredding within AR1 to dispatch off site for recovery. Treatment consisting of sorting, separation, grading, shearing, plasma cutting, and gas cutting of ferrous and non-ferrous metals into different components for recovery.
A4	Raw material handling and storage	Handling and storage of raw materials	From the receipt of raw materials to despatch for use within the facility
A5	Site surface and process water collection and recirculation	Collection of site surface water and process water from treatment process	From the collection of sites surface water and process water from treatment process to re-use within the facility or discharge to sewer

2.1.1 Operational Hours

Waste materials will be delivered to the site during the following operational hours:

Monday – Friday	07:00 – 18:00;
Saturday	07:00 – 13:00.

The site will be closed on Sunday's and Bank Holidays.

2.2 INPUT MATERIALS

Waste types will be restricted to the waste codes stipulated in the varied bespoke Permit, however the intention is for the site to continue to primarily accept just one waste stream (19 10 02 - wastes from shredding of metal-containing wastes consisting of non-ferrous waste).

All materials will be tipped directly into the building, with all treatment activities taking place inside the building. Materials loading for export will be stored in the yard in contained skips.

2.3 PLANT AND EQUIPMENT

Site infrastructure consists of a single industrial unit and concreted yard area to the front of the building. The site is accessed from Rabone Road via shared access into the Industrial Estate. The site is secured with palisade fencing along the northern and Eastern boundary of the site, with the fence connecting to a brick wall along the western and southern perimeter of the site. The brick wall forms part of the bridge which is located immediately south / south-west of the site.

All plant and equipment will be located within the industrial unit and will include:

- 3 x Gas forklift;
- 1 x Telescopic Loader;
- 1 x Small Mobile Generator;
- 3 x Feed Hopper;
- 8 x Conveyor Belt;
- 1 x Mechanical Processing Machines;
- 2 x ECS Metal Separators with ferrous magnets;
- 2 x waste storage area;
- 1 x loading area
- 2 x Fire Water Tank;
- 1 x Bag Loader
- 2 x 360 degree crane
- Office & Welfare Area
- 1 x Container Loader
- 1 x Radioactive detection unit

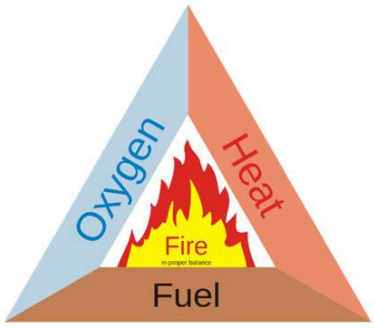
2.4 Site Layout Plan

All activities treatment activities will take place inside the building. Site layout plans are provided within Appendix B.

2.5 Potential Sources of Ignition

The three elements that combine to create fire are fuel, oxygen and heat, shown in Figure 2.5 below.

Figure 2.5 Fire Triangle



2.5.1 Common causes of Fire

Common causes of fire have considered as part of this Fire Prevention Plan are summarised within Table 2.5 below.

Table 2.5. Common Causes of Fire

Potential Ignition Source	Description
Heat Source	Arson or vandalism
	Spontaneous combustion of waste (incompatible wastes)
	Unintentional sources such as hot exhausts or smoking
	Hot works
	Discarded smoking materials
	Overheating of site plant, mobile and fixed infrastructure
	Dust accumulation / hot exhausts

	Batteries
	Electrical items including exposed electrical cables
Fuel Source	Fuels & Lubricants
	Poor housekeeping, dust, litter accumulation
	Fuel leaks or spillages
	Self-combustible waste stockpiles
Oxygen Source	General Atmosphere

3 SUMMARY OF MEASURES TO MITIGATE RISKS OF FIRE

The following table provides a summary of the mitigation measure to be put in place to reduce the likelihood of a fire.

Table 3.1 Mitigation Measures to reduce Likelihood of Fire

Factor	Mitigation Measures to be Employed	Meets FPP Guidance?
Security Measures to prevent Arson	Fires are often started deliberately or due to malicious intent. Site security measures are in place to prevent unauthorised access. The site is serviced with 2m high palisade fencing along the northern and eastern boundary of the site, with the western and southern perimeter secured by a 2m high brick wall. Security gates are kept locked when the site is not in use. The unit itself is fitted with a security alarm system. The wider Industrial Estate is monitored 24/7 by CCTV.	Yes
Plant & Equipment must have a maintenance and inspection programme for static and mobile plant and equipment; must be fit with fire extinguishers and operator must keep mobile plant that isn't being used away from combustible waste	All site vehicles will be fitted with fire extinguishers and will be parked away from combustible materials when not in use. The main equipment used on the site will be a gas forklift truck and telescopic loader. The later will be powered by diesel, however it is not the operator's intention to store any diesel fuel on site. All equipment will undergo routine maintenance. All mobile and fixed plant used have a planned preventative maintenance programme based upon hours of operation. Part of the programme involves undertaking daily checks and all maintenance records are stored and maintained as part of the sites management systems. Any breakdowns or issues are logged in the site diary and repairs undertaken as soon as practicable.	Yes

Factor	Mitigation Measures to be Employed	Meets FPP Guidance?
Electrics on site must be fully certified by a qualified electrician, and you must have written procedures in place that set out the regular maintenance.	All of the electrics on the site are certified by a qualified electrician with a schedule in place to record when they have been checked and to ensure that they receive regular maintenance.	Yes
Apply a no smoking policy or ensure designated smoking areas are situated away from combustible materials	Smoking is not permitted on site, thus there are no designated smoking areas. If staff or visitors wish to smoke, they will be asked to leave the premises before doing so.	Yes
Hot Works	Visitors / Contractors will be informed of the correct safety and fire prevention procedures. Information will be provided during induction by appropriate signage on-site. No hot works will be carried out on-site routinely. Should maintenance require hot works to be carried out, procedures will be in place to minimise fire risk via use of operational hot works permits/permits to work. No hot work will be carried out within 6m from combustible waste sources. A copy of the Hot Works Permit Form is provided within Appendix E to this FPP	Yes
Hot Exhausts	At the end of each shift (when dust from processing operations could settle onto hot exhausts and engine parts) all waste processing areas will be visually inspected and cleared of any debris prior to the Facility being vacated. Good housekeeping procedures will be followed.	Yes
Control sources of ignition such as heating pipes, naked flames, light bulbs, space heaters, furnaces and incinerators	Industrial heaters will not be used at the Facility. No waste or other materials will be burnt on site, electrically operated equipment, which may present an ignition source, will be at least 6m from combustible waste sources. Ignition sources during non-routine activities e.g. during maintenance activities, will be kept at least 6m from combustible materials.	Yes

Factor	Mitigation Measures to be Employed	Meets FPP Guidance?
	Smoking is not permitted on site	
Keep sources of ignition at least 6m away from piles of combustible and flammable materials	Ignition sources will be kept greater than 6m from combustible materials.	Yes
Reinforce fire prevention messages using signs	Visitors will be informed of the correct safety and fire prevention procedures during site induction and appropriate signage will be provided on-site.	Yes
Ensure staff and contractors follow safe working practices when undertaking hot working, such as welding and cutting	No hot works will be carried out on-site routinely. Should maintenance require hot works to be carried out, procedures will be in place to minimise fire risk via use of operational hot works permits/permits to work. No hot work will be carried out within 6m from combustible waste sources.	Yes
Ensure all visitors follow the correct safety and fire prevention procedures	Visitors will be informed of the correct safety and fire prevention procedures during site induction and appropriate signage will be provided on-site.	Yes
Batteries	Waste deliveries will be pre-arranged and from specified waste streams / suppliers. As such the risk of batteries being found within the wastes delivered to site is considered to be very low. In the event any batteries are discovered, they will be removed and isolated into the quarantine area for onward treatment/disposal at a suitably permitted facility.	Yes
Leaks and spillages of fuels	Waste deliveries will be tipped inside the building within designated storage bays and inspected on the floor prior to loading onto into the hopper. The building is serviced within impermeable floor and sealed drainage system which discharges to sewer. There is a surface water drain that runs underneath the building, however the manhole located within the building has been sealed to prevent any pathway into the surface water drain from inside the building. There will be no fuels stored on site, with only minimal lubricants stored within a sealed COSHH container. Electronic equipment has been specifically selected. As there will be no hydraulics or gear boxes etc, there is no requirement for oils to be stored on site. Belts used on site will be electronically powered.	Yes
Reactions between wastes	Wastes delivered to site will remain segregated and subject to inspection upon arrival as per waste acceptance criteria. As the site will primarily only accept a single waste stream, there will be no possibility of mixing of non-compatible waste types.	Yes

Factor	Mitigation Measures to be Employed	Meets FPP Guidance?
Introduce a regular maintenance and inspection programme for all site areas (including site machinery) and minimise fibre and paper in buildings and around the site	An inspection programme is incorporated into the Environmental Management System as part of the waste acceptance procedures. Plant and equipment will be maintained in accordance with the manufacturer's requirements and in accordance with the facilities maintenance programme.	Yes
Deposit of hot loads	Due to the nature of the waste type to be delivered to site, it is not anticipated that the operator will encounter any hot loads upon arrive onto site. All deliveries will be inspected to ensure they are not 'hot' or at risk of self-combustion. There will be no hazardous waste stored on site.	Yes
Make sure separation distances are observed between plant and material when the site is not staffed	Separation distances will be maintained at all times between waste piles and machinery. Before the site is vacated at the end of the day a check will be carried out to ensure separation distances are correct.	Yes
Provide a dedicated emergency or quarantine area big enough to cope with a major incident, with a clear area of at least 6m around the perimeter (this must be available at all times and identified on your site plan)	Quarantine area is marked on the site plan. This area is large enough to accommodate 50% the largest stockpile of combustible waste so 125m³. A 6m buffer zone will be maintained around the quarantine area. Visual inspections of incoming loads of waste will take place to identify potential hot loads. Hot loads are defined as waste which is either actively on -fire or showing visible signs of smoke/heat. In the unlikely event that there is any smoke, heat, odour or other evidence of fire, the temperature of the waste will be taken using I-R thermometer. If temperature is >10°C above ambient, the load will be quarantined or removed immediately from site.	Yes
Documented waste acceptance procedure to identify incompatible wastes/ hot loads	Waste acceptance and pre-acceptance procedures which meet EA Guidance Note S5.06 *'Guidance for the Recovery and Disposal of Hazardous and Non-hazardous Waste'* will be employed to ensure that only the permitted waste codes, which do not include any hazardous wastes, including those with oxidising or flammable risk phrases, are accepted. Rejected wastes will be stored in a quarantine area as detailed above.	Yes

Factor	Mitigation Measures to be Employed	Meets FPP Guidance?
Mitigate and reduce risk from hot exhausts	Vehicles will not have exhausts at ground level. Site plant will be inspected at the end of each day prior to locking up for accumulation of dust and other materials. Staff are trained to watch out for signs of smouldering or smoke at all times and the area around and vehicle exhausts will be checked as part of the fire-watch which occurs at the end of each working day.	Yes
Building electrics fully certified by a qualified electrician and documented maintenance schedule in place	Testing will be carried out on electrical equipment by fully and appropriately qualified electricians when required and inspection of electrical cabling at the Facility will be included in the facilities maintenance programme. Where plant and machinery are electrically powered, safety checks will be incorporated into the machine specific inspection and maintenance programme referred to above.	Yes
Gas containers/flammable items in an isolated location	In the unlikely event that any hazardous materials are found in incoming waste these will be temporarily stored in the quarantine area before being removed off site for disposal.	Yes
Routinely turn waste piles	Wastes delivered to site will be stored on site for no longer than 48 hours before processing. Piles will be turned at least once every two days to reduce exposure of metal content to the atmosphere or fines within the waste, to prevent oxidisation of the metals which may generate heat or self-combustion.	Yes
Prevention of fire within building outside operational hours	The site will be inspected at the end of each working day and before gates are closed and locked. The building is fitted with a fire alarm system.	Yes

4 STORAGE OF MATERIALS TO REDUCE RISK OF FIRE

4.1 STORAGE OF WASTES

The location and layout of the waste storage areas are illustrated within the drawings provided in Appendix B. Upon delivery to site, waste materials will be stored in two separate storage areas located within the main building. All drainage from this bay will be directed to a central drain, and internal drainage within the building connects to a storage tank located outside of the building, which can be used to collect fire water in the event of the water cannons being activated as all fire water contained within the building.

Materials that will undergo separation treatment will be left to cool prior to being stored in one of the contained bins outside, prior to dispatch.

Waste storage areas maintain a 6m distance from fixed plant and equipment. The forklift truck will be stored overnight within the building, maintaining at least 6 metres distance from any other combustible materials. All plant will be moved to the yard at the start of the day, prior to any waste deliveries to site.

Staff on site will ensure good housekeeping practices are implemented on site and the site is regularly swept to remove excess dust.

4.2 WASTE STORAGE TIMES AND SEPARATION DISTANCES

The site will operate a first in, first out policy to reduce the storage time of material held on site. Routinely wastes delivered to site will be processed the same day, however stored for no longer than 48 hours before processing. The longest duration of storage of any stockpile will be 1 month.

Materials will arrive in small volumes that will be delivered to an empty storage bay (Bay 1 or Bay 2). Once in the bay the material will be given a batch number. Material will be processed through the site in batches, with each batch number tracked through the treatment process. All batch data records will be recorded electronically and made available for inspection.

The waste bays are located > 6 metres distance from each other and all plant or equipment. Any lubricants / grease stored on site for maintenance of equipment will be held within a secure container and stored > 6 metres distance from any waste stockpile. A COSHH cabinet is located within the office rooms, which is separate from the main processing area by a fire wall.

4.3 PILE SIZES / VOLUMES AND DIMENSIONS

The maximum stockpile sizes and volumes of waste storage areas are summarised within Table 4.3 below.

Table 4.3 Stockpiile Size, Volume and Dimensions

Stockpile Reference	Waste Type	EWC Code	Maximum Stockpile Size (LxWxH)	Stockpiles Size (M^2)	Stockpile Size (M^3)	Maximum Weight (tonnes)
Storage Area 1	Wastes consisting of non-ferrous waste Loose 80mm	Various Predominantly 19 10 02	TBC	TBC	224	75
Storage Area 2	Wastes consisting of non-ferrous waste Loose 80mm	Various Predominantly 19 10 02	TBC	TBC	150	50
Loading Area	Wastes consisting of non-ferrous waste Loose 80mm	Various Predominantly 19 10 02	TBC	TBC	150	50
Quarantine 40-yard Skip	Various	Various	6 x 2.4 x 2.7	14	30	-

The size of the largest stockpile is well below the maximum requirement specified within the Environment Agency's Fire Prevention Plan Guidance (450 cubic metres).

4.4 QUARANTINE AREA

The site has a designated quarantine skip located outside the main building, as illustrated within the site layout plans. Whist the EA's guidance states that quarantine areas should large enough to accommodate 50% of the largest stockpile of waste (a maximum of 112m^3), the dedicated skip at this facility is sized to hold less than 50%, however this is considered appropriate for the level of fire risk at the site (which is considered very low due to the nature of waste streams accepted at the site). The placement of water cannons within the building also make it extremely unlikely that the quarantine skip will need to be used in the event of a fire, as fire extinguishing measures will effectively put out any fire at the source. A dedicated water cannon will however be located adjacent to the quarantine skip as well, which can be activated in the event of a fire. This allow for effective and efficient fire extinguishing measures in smaller batch sizes if required. The use of the quarantine area will be determined by the Technically Competent Manager (TCM) at the time and will be dependant to the nature of the material to be quarantined / nature of the incident.

5 REDUCING THE IMPACTS IN EVENT OF A FIRE

5.1 FIRE DETECTION SYSTEM

A new fire detection system will be installed at the site (FORADE Fire Detection System). This system will monitor waste storage areas continuously and will initiate fire response procedures if triggered when the system detects a fault, heat, smoke, or flame signature. The system has been designed by Warmetechnik Ltd (a German based engineering company). The system utilises an automated water-based fire detecting sensors, which trigger strategically placed water cannons, located adjacent to each waste storage area. Detection zones are pre-programmed based on high-risk areas (e.g. storage areas, shredder bay, sorting line). Further details of the fire detection system are provided within Appendix G of this report.

5.2 FIRE SUPPRESSION SYSTEM

Within the building there is a new fire suppression system which will cover all areas of the building, as well as the quarantine skip located immediately outside of the warehouse building. The water cannons will be directed over each storage area as illustrated within the site layout plans provided in Appendix B to this FPP. The automatic water cannon system will consist of 5 water cannons designed to disperse $36m^3$ of water per minute. Further details of the cannon specification is provided within Appendix G to this report.

Two water storage tanks with the capacity of $25m^3$ each (25,000 litres) are located adjacent to the main warehouse in the yard area, along the western perimeter of the building. In consideration of the stockpile size, and the size of material being 150mm, the proposed volume of water to be dispersed is considered to be sufficient to suppress any fire within the storage bay, allowing sufficient time for the Fire Response Service (FRS) to arrive on site.

The water cannon system will have autorecognition, so will either emit a direct cannon or mist spray to the designated area depending on whether a naked flame is shown or whether a high heat spot is detected. This system will automatically notify the site manager as well as send phone alerts to the directors of the business.

The maximum waste pile size within the building will be $224m^3$. The cannon system has the capacity to cover the maximum stockpile due to operating at:

- 36 m^3 of water per minute;
- 180,000 litres of water per half hour.

In the event that a fire starts within any containers with a greater capacity than 1,100 litres, material will be made accessible so that fires contained inside the container can be put out. On-site plant (either the forklift or the telescopic handler will be used to isolate / move the container away from any other equipment, to allow firefighting equipment to be used to put out the fire.

5.3 WATER SUPPLY

The fire suppression system is provided via two 25,000-litre water tanks located adjacent to the building.

Calculations are provided in Appendix F, with the new fire suppression system being able to operate the following:

- 36m^3 of water per minute / 6,000 litres per minute;
- 1080m^3 of water per ½ hour / 180,000 litres per ½ hour.

5.4 FIREWATER CONTAINMENT

The building is serviced with an impermeable surface. Within the building there is an internal drainage system that will collect all fire water should the water cannons be activated, or the FRS douse the fire with additional water. All fire water run-off within the warehouse building will be captured within the internal drainage system, and pumped to two 20,000l tanks located at the side of the building. Fire water can be held within these two tanks and re-used as an additional water source. Once the fire has been extinguished, the fire water will be tested prior to either discharge to sewage (subject to consent from the sewerage undertaker) or removed off site via tanker to an appropriate facility for treatment. The outside yard has an interceptor located at the bottom of the yard by the site entrance, which (during normal operations) collects any rainwater that falls onto the outside yard. In the case of a fire within the building or outside yard area the interceptor valve can be shut off, sealed all fire water drainage on site. The fire water can then be pumped to either of the two 20,000l storage tanks located on site. The roof gutters which collect clean rainwater which falls onto the roof of the building link to a separate storm drain which goes underground and is not linked to the outside yard containment area. It is not possible for any contaminated run-off to enter this drain. The impermeable hardstanding area immediately adjacent to the building entrance doors drains to sewer, through the interceptor as illustrated on the site drainage plan provided within Appendix B.

In a worst-case scenario of the largest stockpile catching fire, the suppression system will deliver water to the storage via an 110mm galvanised pipe and distribute water evenly over the storage area via cannons at a rate of 6,000 litres per minute at 10bar of pressure.

A sump (1 m x 1m sump pit) is located to the west of the building where fire-run off water will be collected. A submersible pump will transfer the run-off to the two 20,000l storage tanks located outside the building, to allow one of two things:

- To contain the run-off water on-site prior to a Short-Term Discharge Authorisation being obtained from Severn Trent Water Ltd to allow discharge to sewer; or
- In the event discharge to sewer is not possible, collected run-off will be removed from site using road tankers, for onwards treatment or disposal at a suitably authorised facility.

5.5 CONTINGENCY ARRANGEMENTS IN EVENT OF A FIRE

The In the event of an incident, waste deliveries will cease and be diverted if required to another facility for storage and onward treatment/disposal.

During any incident, with consideration to the conditions of the day those situated closest to the site such as nearby human receptors will be contacted to advise them on the situation. This would be coordinated with the Emergency Services and carried out by door knocking if required.

Emergency Contacts and other useful contact information are included within Appendix A.

Senior Management will engage suitable waste management contractors to remove and clear the site of all waste materials and debris following a fire. The waste hierarchy will be applied, and Waste Transfer Notes / Consignment Notes obtained and held on site for all material removed. These will be made available for inspection upon request. Building structures, equipment and machinery will be inspected to establish if they are safe to use or require repair / replacement prior to re-commencement of Operations. A record of all repair work will be maintained.

5.6 FIRE DRILLS

Fire drills are a vital part of workplace fire safety and an effective exercise for operators to test how well a fire emergency procedure works. A fire drill procedure is provided within Appendix H to this report.

Location of Emergency Pack will be in a ground safe on the outside of the main site entrance.

6 MONITORING, RECORDS AND REPORTING

6.1 MONITORING

Waste materials will routinely be processed on the same day that they are delivered to site, however the maximum length of time for processed material to be stored on site will be no longer than 6 months.

The site will be visually inspected on a daily basis by the Site Manager as part of normal routine daily tasks. In the event that any issues are identified such as damage to walls or drainage system etc, repairs will be made, and the event recorded in the site diary.

All duty of care documentation of waste deliveries and dispatched materials will be held for a minimum period of 3 years.

Training and plant maintenance records will also be held on site and will be made available on request. Any records held electronically will be backed up on a regular basis.

6.2 RECORD KEEPING

Waste Records will be maintained for the following activities on-site:

- Any changes to the as built design throughout the life of the site;
- Hours of operation;
- Abnormal Events or Emergencies and actions taken;
- Complaints and actions taken;
- Plant/equipment failure;
- Periods of Maintenance or Downtime;
- Security failures;
- Incidents including post-incident investigations;
- Waste acceptance and duty of care documentation;
- Training Matrix;
- Site inspections;
- Monitoring;
- Testing of firefighting equipment, fire drills; and
- Complaints.

All records of events and actions taken will be retained as required by the Environmental Permit.

6.3 REPORTING

In the event of a fire, the Operator will notify the Fire Rescue Service (FRS) as well as the Environment Agency using the emergency 24hr phone line (0800 80 70 60) as soon as practically possible thereafter.

Following the incident, the Site Manager will advise what remedial measures or actions have been taken to prevent further incidents, in accordance with reporting requirements and the Fire Prevention Plan will be reviewed to ensure it remains fit for purpose.

6.4 REVIEW

This Fire Prevention Plan will be reviewed and updated by senior management every 4 years or immediately following any major fire incident / event.

Any technical and managerial changes on site will also initiate a review of the Fire Prevention Plan to ensure that the control techniques remain appropriate for the site.

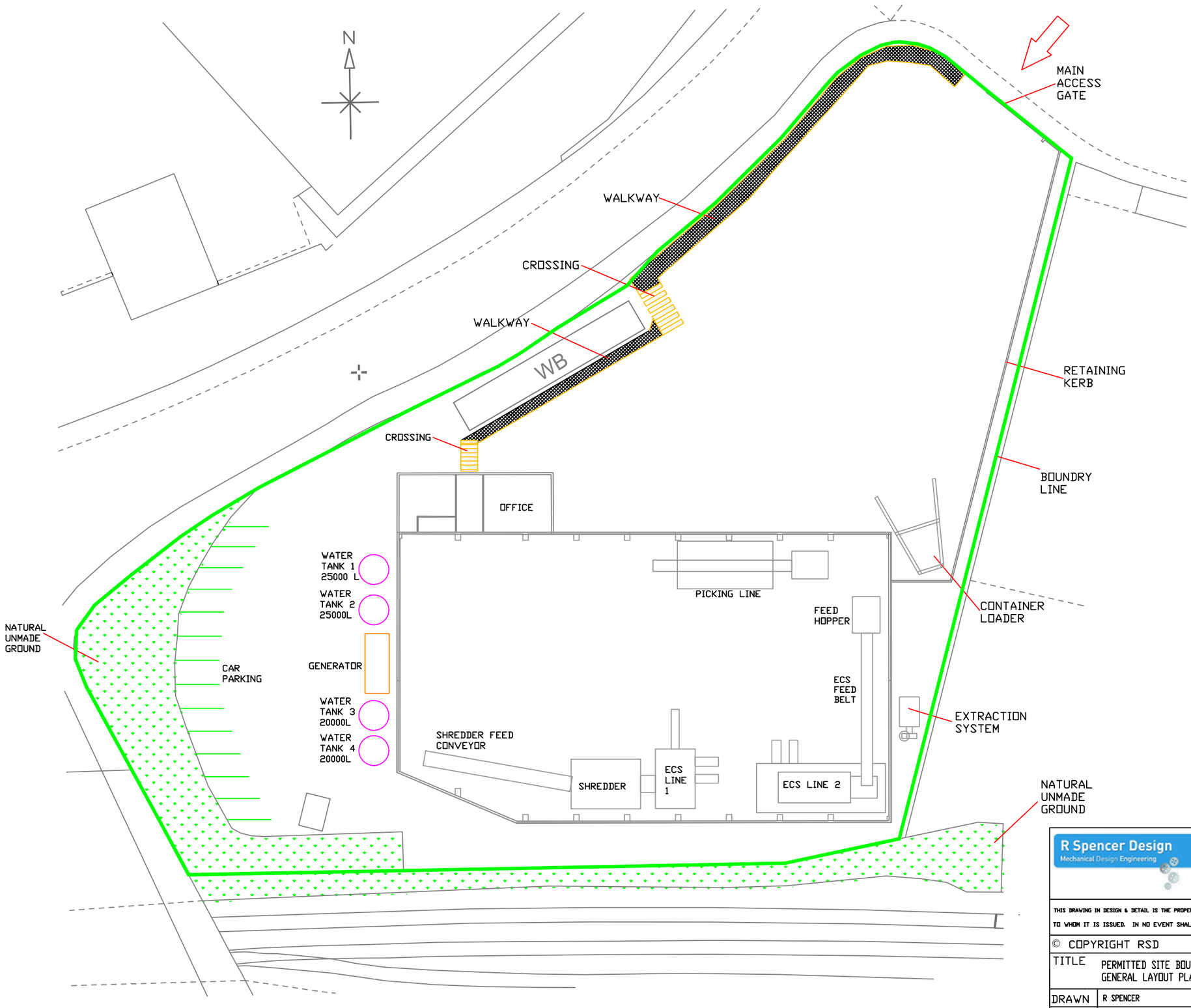
APPENDICES

APPENDIX A – KEY SITE & EMERGENCY CONTACTS LIST

SITE DETAILS		
Location: Unit 1, James Watt Industrial Park, Steel Bright Road, Smethwick, Birmingham		
Postcode: B66 2NW		
Site Access Grid Reference: SP 03127 88744		
SITE CONTACTS	Office Hours 8am-4pm	Out of hours
Technically Competent Manager (Karl Dunn):	07742 514 938	07742 514 938
Site Supervisor (David Dunn):	07714520826	07714520826
Security Contact:	07742514938	07742514938
EMERGENCY SERVICES	Office Hours	Out of hours
Emergency	999	999
Medical:	111/999	111/999
Police:	999	999
Fire:	999	999
West Midlands Fire Service	0800 389 5525	0800 389 5525
Birmingham City Hospital (Dudley Rd, Birmingham B18 7QH)	0121 554 3801	0121 554 3801
REGULATORS	Office Hours	Out of hours
Health and Safety Executive (HSE)	0845 300 9923	0151 922 9235
Local Planning Authority (Borough of Sandwell):	0121 569 4054	N/a
Environment Agency (Local)	03708 506 506	0800 80 70 60
Environment Agency (24-hour emergency hotline)	03708 506 506	0800 80 70 60
UTILITY AND KEY SERVICES	Office Hours	Out of hours
Water provider (Severn Trent)	0800 783 4444	0800 783 4444
Sewerage provider (Severn Trent)	0800 783 4444	0800 783 4444
National Gas Emergency Service:	0800 111 999	0800 111 999
Electricity supplier:	0345 303 3040	0345 303 3040
Oil supplier:	01543 50117	01543 50117
Maintenance contractor:	07964 295220	07964 295220
Electrician:	07734 192392	07734 192392
Plumber:	0808 274 8060	0808 274 8060
Locksmith:	0800 0518724	0800 0518724
Joiner:	07583 268939	07583 268939
OTHER KEY CONTACTS	Office Hours	Out of hours
Adjacent landowners:		
Ravenace Metals Ltd	0121 555 6662	0121 555 6662
East End Food Plc	0121 555 6868	0121 555 6868
Aurubis UK Ltd	0121 555 1199	0121 555 1150
Neighbours:		
The Old Corner House Pub	0121 238 2644	0121 238 2644
Energas	0121555 5050	0121 555 5050

APPENDIX B – SITE PLANS

IF IN DOUBT - ASK



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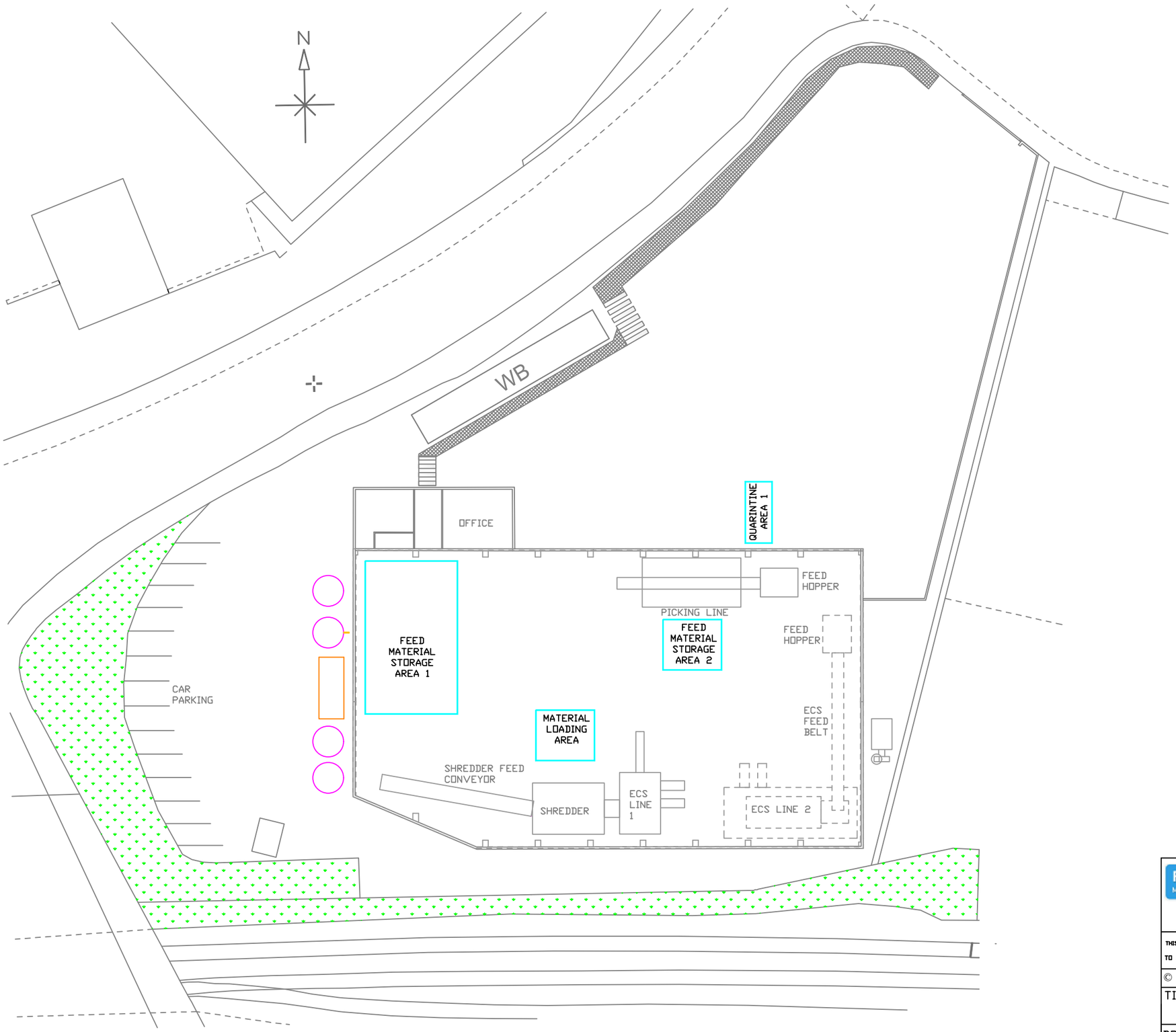
FIRST ANGLE PROJECTION

TITLE: PERMITTED SITE BOUNDRY AND GENERAL LAYOUT PLAN

CLIENT

DRAWN	R SPENCER	SCALE 1:200 (A1)	DRG No PV1
DATE			

IF IN DOUBT - ASK



KEY

- WASTE STORAGE/ LOADING AREA
- NATURAL UNMADE GROUND
- PEDESTRIAN WALKWAY

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FIRST ANGLE PROJECTION

TITLE WASTE STORAGE LOCATION PLAN

CLIENT

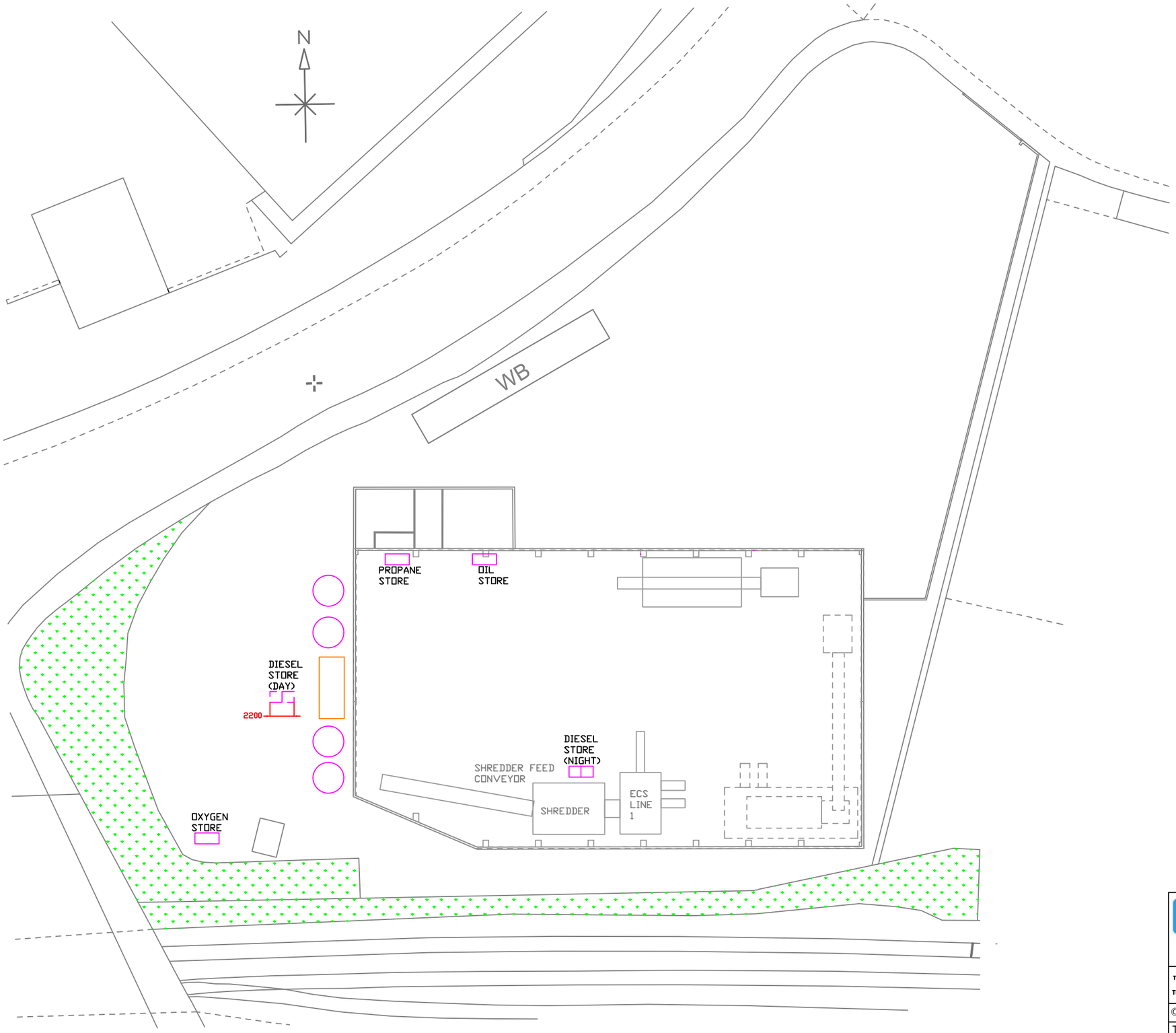
DRAWN R SPENCER

DATE

SCALE 1:200 (A1)

DRG No PV 5

IF IN DOUBT - ASK



KEY

- STORAGE COMPOUND
- NATURAL UNMADE GROUND
- PEDESTRIAN WALKWAY

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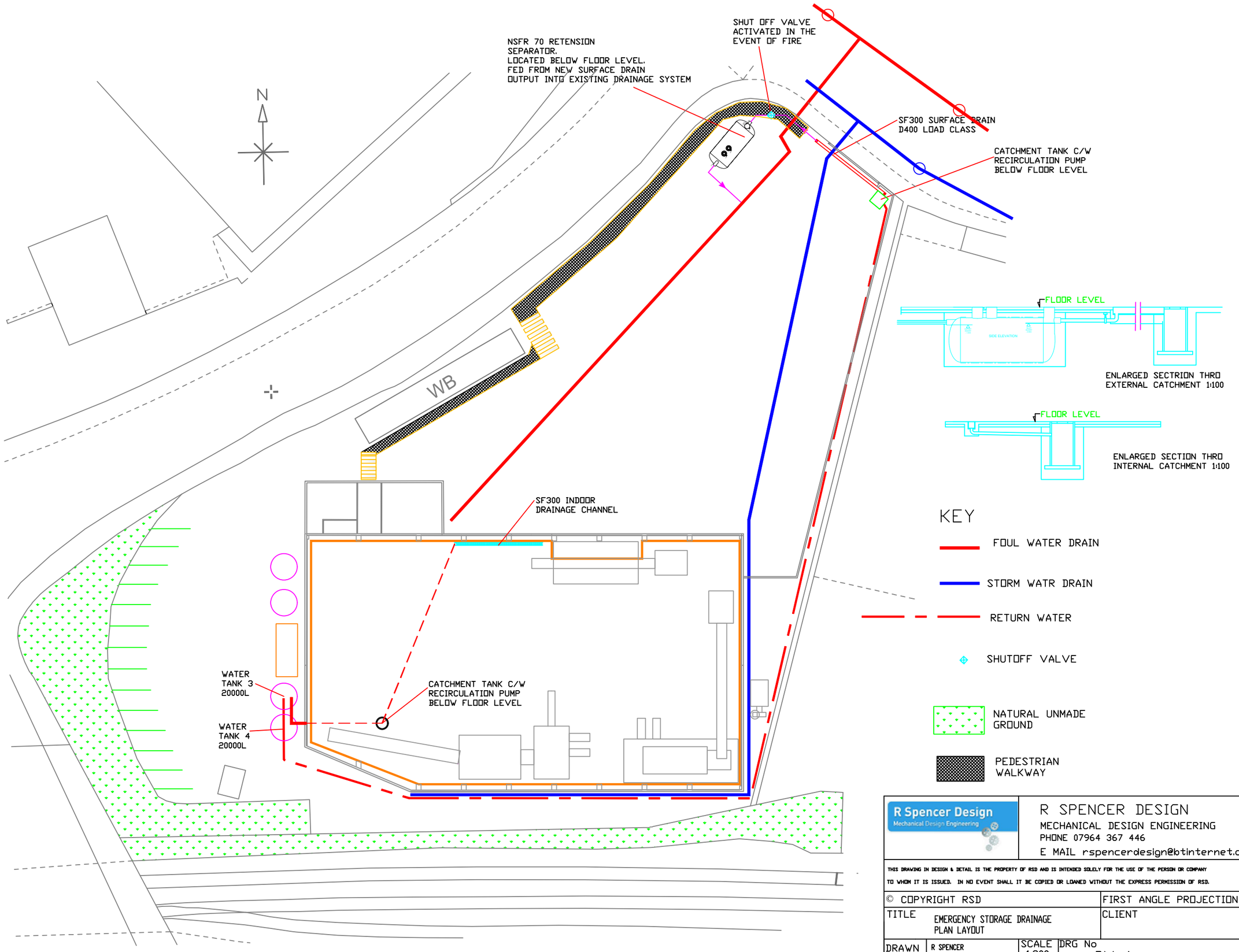
FIRST ANGLE PROJECTION

TITLE HAZERDOUS MATERIALS OVERNIGHT STORAGE LOCATION

CLIENT

DRAWN	R SPENCER	SCALE 1:200 (A1)	DRG No PV 7
DATE			

IF IN DOUBT - ASK



ENLARGED SECTRION THRO
EXTERNAL CATCHMENT 1:100

ENLARGED SECTION THRO
INTERNAL CATCHMENT 1:100

KEY

- FOUL WATER DRAIN
- STORM WATR DRAIN
- RETURN WATER
- SHUTOFF VALVE
- NATURAL UNMADE GROUND
- PEDESTRIAN WALKWAY

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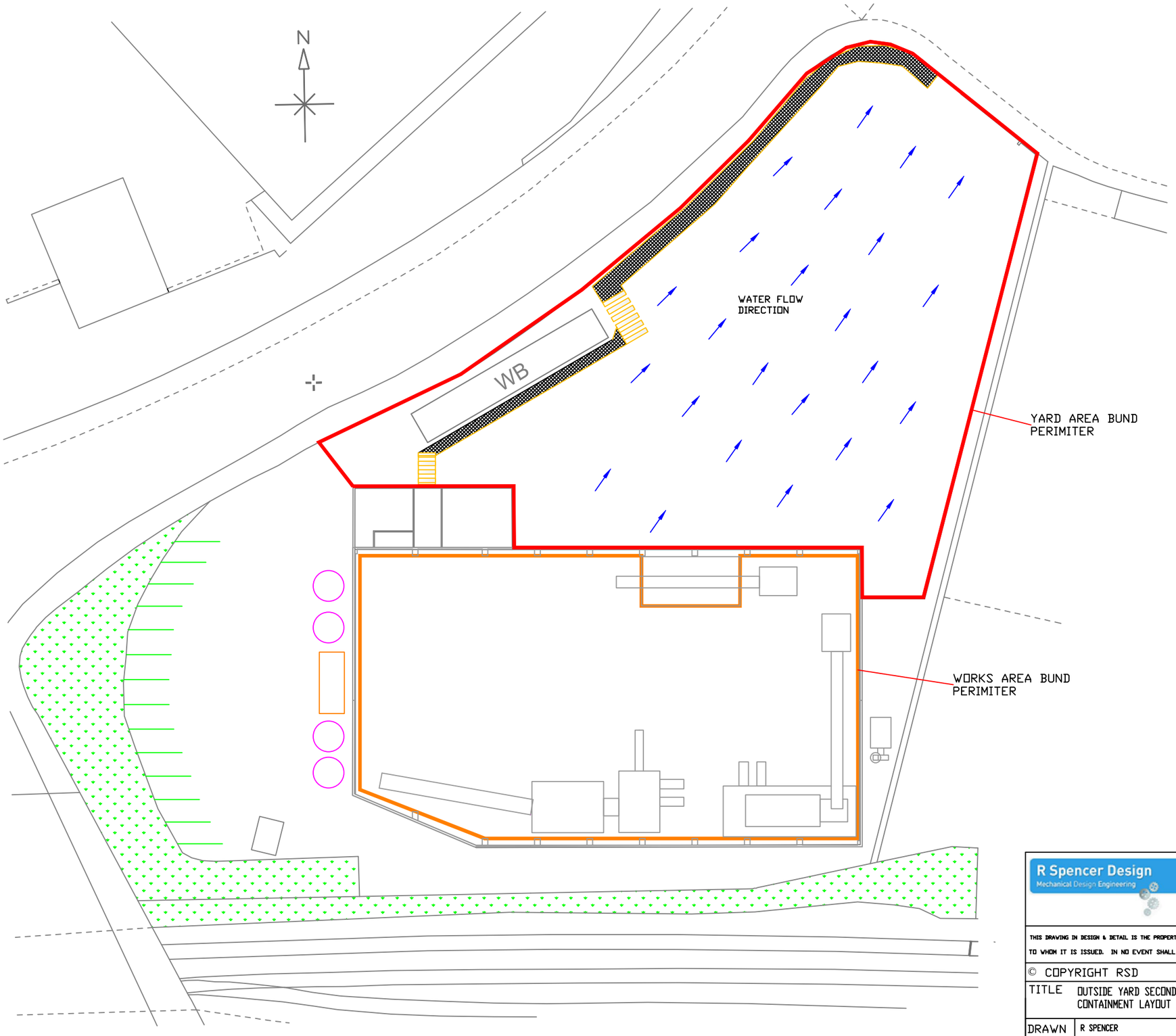
FIRST ANGLE PROJECTION

TITLE: EMERGENCY STORAGE DRAINAGE PLAN LAYOUT

CLIENT

DRAWN	R SPENCER	SCALE 1:200 (A1)	DRG No PV 4
DATE			

IF IN DOUBT ASK



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E MAIL rspencerdesign@btinternet.com

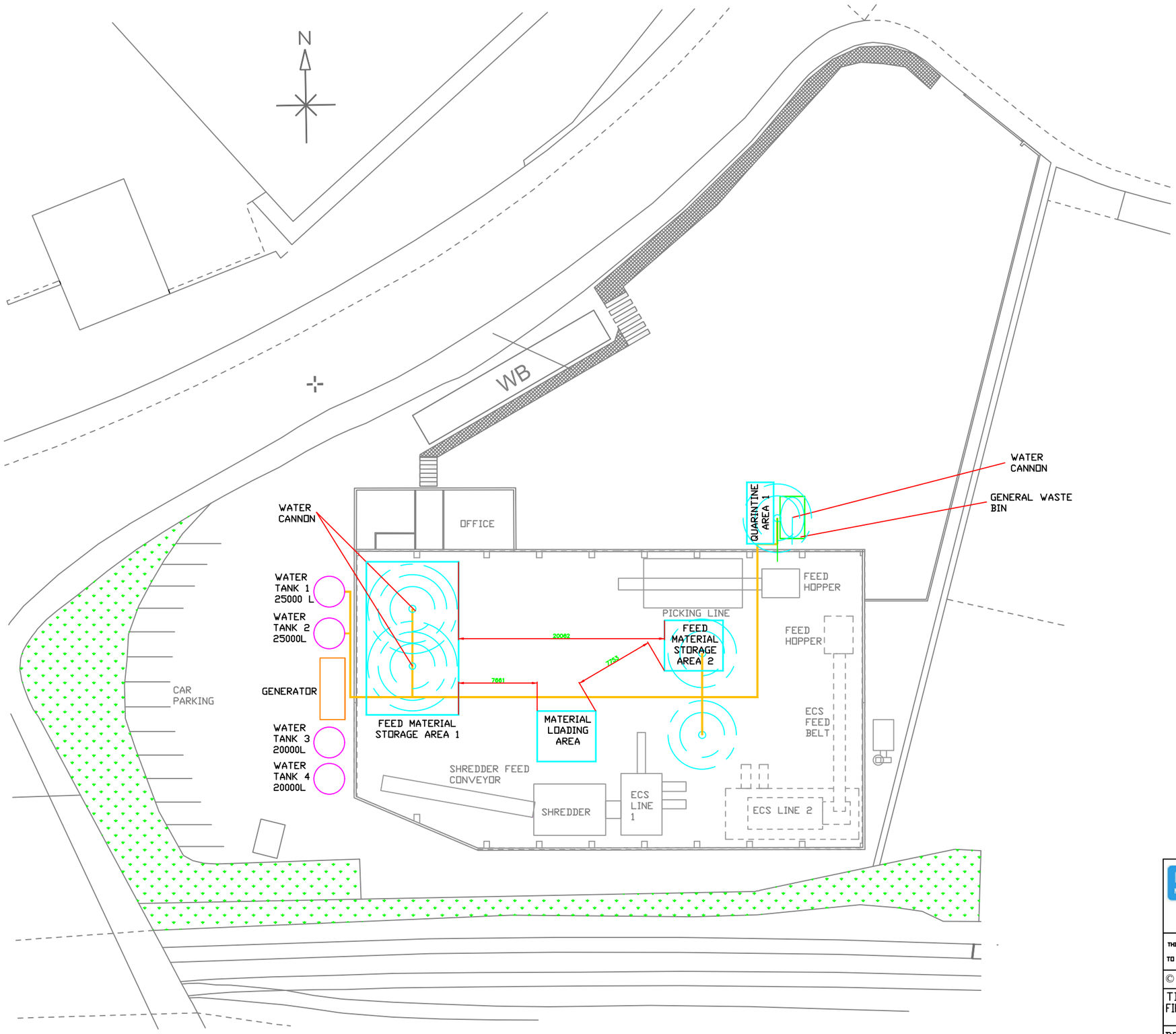
FIRST ANGLE PROJECTION

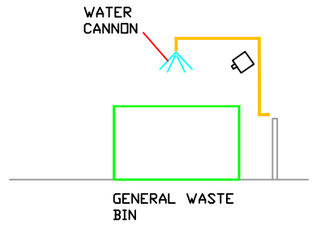
TITLE OUTSIDE YARD SECONDARY CONTAINMENT LAYOUT PLAN

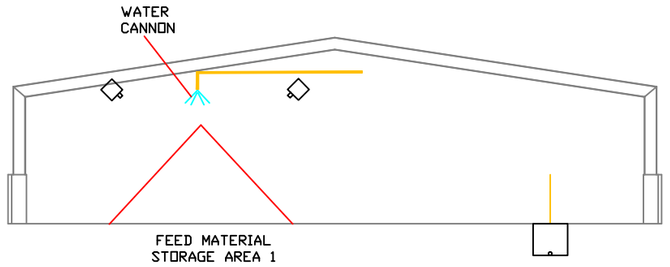
CLIENT

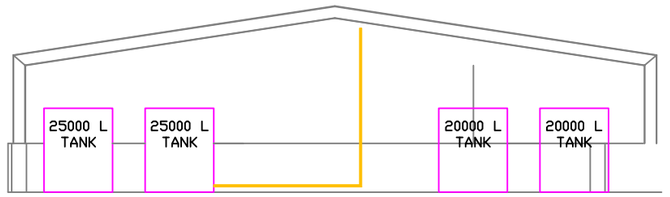
DRAWN	R SPENCER	SCALE 1:200 (A1)	DRG No PV 2
DATE			

IF IN DOUBT - ASK









KEY

- WASTE STORAGE AREA
- NATURAL UNMADE GROUND
- PEDESTRIAN WALKWAY
- WATER CANNON

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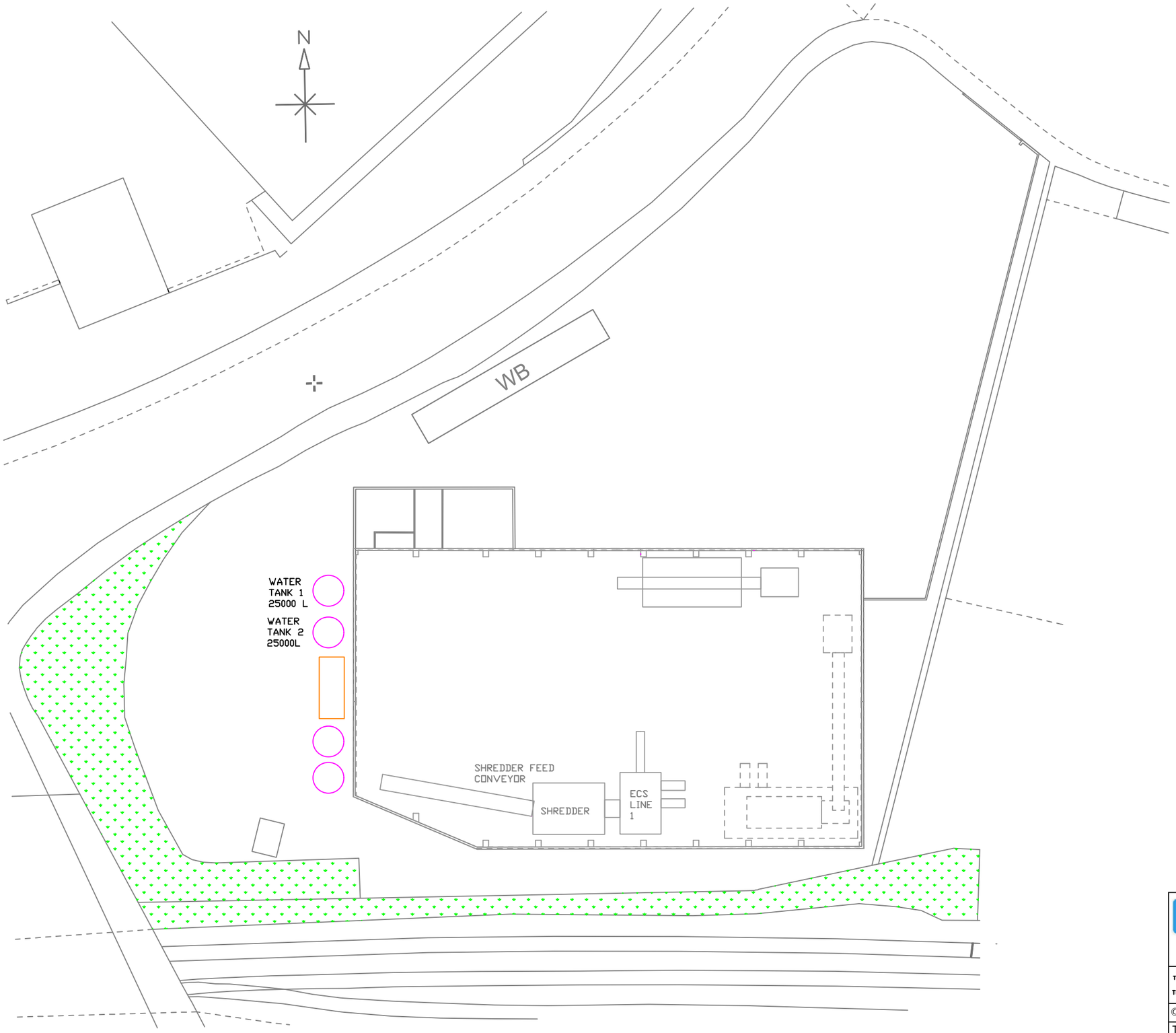
FIRST ANGLE PROJECTION

TITLE
FIRE SUPPRESSION LAYOUT

CLIENT

DRAWN	R SPENCER	SCALE 1:200 (A1)	DRG No PV 6
DATE			

IF IN DOUBT - ASK



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FIRST ANGLE PROJECTION

TITLE
EMERGENCY WALTER LOCATION

CLIENT

DRAWN	R SPENCER	SCALE 1:200 (A1)	DRG No PV 8
DATE			

APPENDIX C – WASTE ACCEPTANCE PROCEDURE

Waste Acceptance Procedure

A formal inspection procedure will be used to determine if the delivered material is in compliance with the environmental permit as well as the plants treatment capabilities. The delivered feedstock will first be inspected once tipped on the floor of the reception bay.

1.1.1. Stage 1: Initial assessment of wastes prior to delivery

Pre-acceptance procedures will involve information being obtained on the waste characteristics and process that produces the waste. This will enable the operator and technical advisors to determine the suitability of the waste for processing and will provide comparison information for wastes received at site. This will consist of determining the following key points:

- Nature of the process producing the waste, including the variability of the process;
- Specific details of the process producing the wastes including any storage and preservatives used;
- The chemical composition of the waste (the operator may need to take samples if the producer does not have this information);
- Description of waste type;
- Waste handling requirements;
- The waste EWC codes.

The above information will enable the TCM to screen out unsuitable materials and will also provide information to verify the quality of waste materials later on when being delivered to site. Wastes will not be accepted on site if the pre-acceptance information has not been collected, if the waste may have adverse effects on the process or if there is not a clearly defined route for the waste type.

1.1.2. Stage 2 – Acceptance procedures at Site

Acceptance procedures when the waste arrives at site will be put in place to confirm the characteristics of the wastes being delivered to the site. The main characterisation of the wastes will have been carried out in the waste pre-acceptance stage. There are several key issues that the operator must address during the arrival of wastes at the site, to determine if the waste can be accepted. The details at each stage must be recorded and copies kept at the site. The procedure for the acceptance of wastes at the site will be as follows:

- The operator will record the details of each batch of delivered material. This will include details of the type of material, the amount of material, the waste producer, the waste haulier, the driver and vehicle details, the delivery time and date of the waste;
- The operator must then check if they have the pre-acceptance data for the particular waste;
- The operator must check the delivery has the correct paper work and has been assigned the correct EWC code;

- Once satisfied that the paperwork is in order and that the facility is permitted to take the waste the operator can direct the driver to the appropriate discharge point within the waste bays;
- At this point the member of staff can make a visual assessment of the waste and identify if the delivery shows signs of self-combustion / heat. If the waste material delivered does not conform to the paperwork, or appears to be too hot, the waste will either be rejected in its entirety or moved to the quarantine area on site to allow to cool before being processed further.

APPENDIX D – EMERGENCY FIRE PROTOCOL

EMERGENCY FIRE PROTOCOL

Within the building there are various different fire detection systems in place and all link back to the Fire Alarm Panel in the Control Building. This panel is set to send out one of two signals:

- Out of hours, the signal is linked to ADT's RedCare Service, meaning that if activated, the Fire Service will automatically attend, and all the local alarms will sound.;
- To minimise the likelihood of spurious false alarms during working hours, the RedCare Service is only activated when the Building's intruder alarm is set. This means that during normal working hours, when there is a presence on site, only the local alarms will be activated, and a 999 call is required to summon the Fire Brigade.

The detection systems in place that will sound the alarms are:

- Activation of the sprinkler system;
- Activation of any manual call point "break glass" which are situated throughout the main building, the control building and various kiosks;
- Activation of ceiling mounted smoke/heat detectors that are situation throughout the control building and various kiosks.

Once a fire has been detected Emergency Procedures will be implemented which details the potential consequences of a fire and outlines the following actions:

Individual

- Upon discovery immediately notify all personnel and evacuate the area;
- Activate Fire System using Emergency Fire Push Button;
- Contact Technically Competent Manager (TCM) as soon as safe to do so;
- Account for all personnel and assess any personal injuries, notifying TCM of personnel status;
- Evaluate incident for location and type of hazards, determine response based on risk. Do not place self at risk;
- If possible and safe to do so, attempt to tackle the fire by proper use of locally available fire extinguishers.

Technically Competent Manager (TCM)

- Determine the best course of action based on the size of the fire, the availability of fire suppression equipment, number of personnel involved. Note, sometimes the best course of action is to leave the area rapidly;
- If the fire suppression efforts require it, summon the Fire & Rescue Service (FRS);
- If appropriate meet the emergency services and direct them towards the incident location;
- Notify the EA;
- If necessary, close the site and notify neighbouring properties;
- Mount an inquiry into the incident and review the findings. Get as much information from witnesses as possible;
- Implement any further control measures if necessary. E.g. if fire has prompted leakages/surface water run-off then implement the leaks and spillages and non-conformance waste procedures;
- Document incident in the site diary and complete incident report.

Once the fire has been extinguished, liquid waste arisings will already be sent to the sewer and solid waste will be disposed of at a suitably permitted disposal facility.

APPENDIX E – HOT WORKS PERMIT FORM

Hot Work Permit

The Supevisor, in issuing this permit, certifies that all safety factors have been considered and cared for satisfactorily. Upon completion of works, supervisor to write COMPLETE across the face of permit initialing with date.

Area of Hot Work

Work to be undertaken

		YES	NO	N/A
1	Read the hotwork procedure			
2	Work Area and equipment has been made free of flammable, combustible and hazardous materials			
3	Is a Fire Extinguisher or Fire hose on the job			
4	Fire Banket to be used			
5	Fire watch to be in attendance			
6	Gas test required			
7	Adjoining equipment / operations considered			
8	Other necessary precations - **SPECIFY**			

APPROVAL

I have personally checked the conditions necessary and as specified
I authorise this 'HOT' work to begin

APPROVED BY _____ DATE _____ TIME _____

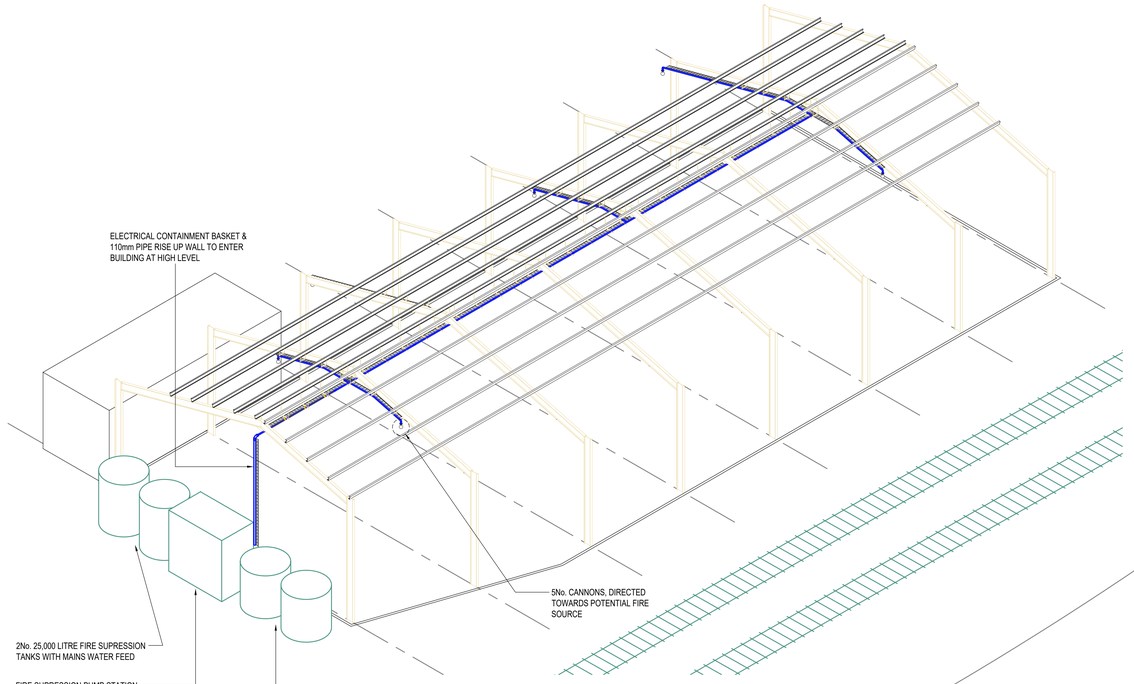
HOT PERMIT IS GOOD FOR _____ HRS ONLY

APPENDIX F – FIRE SUPPRESSION CALCULATIONS

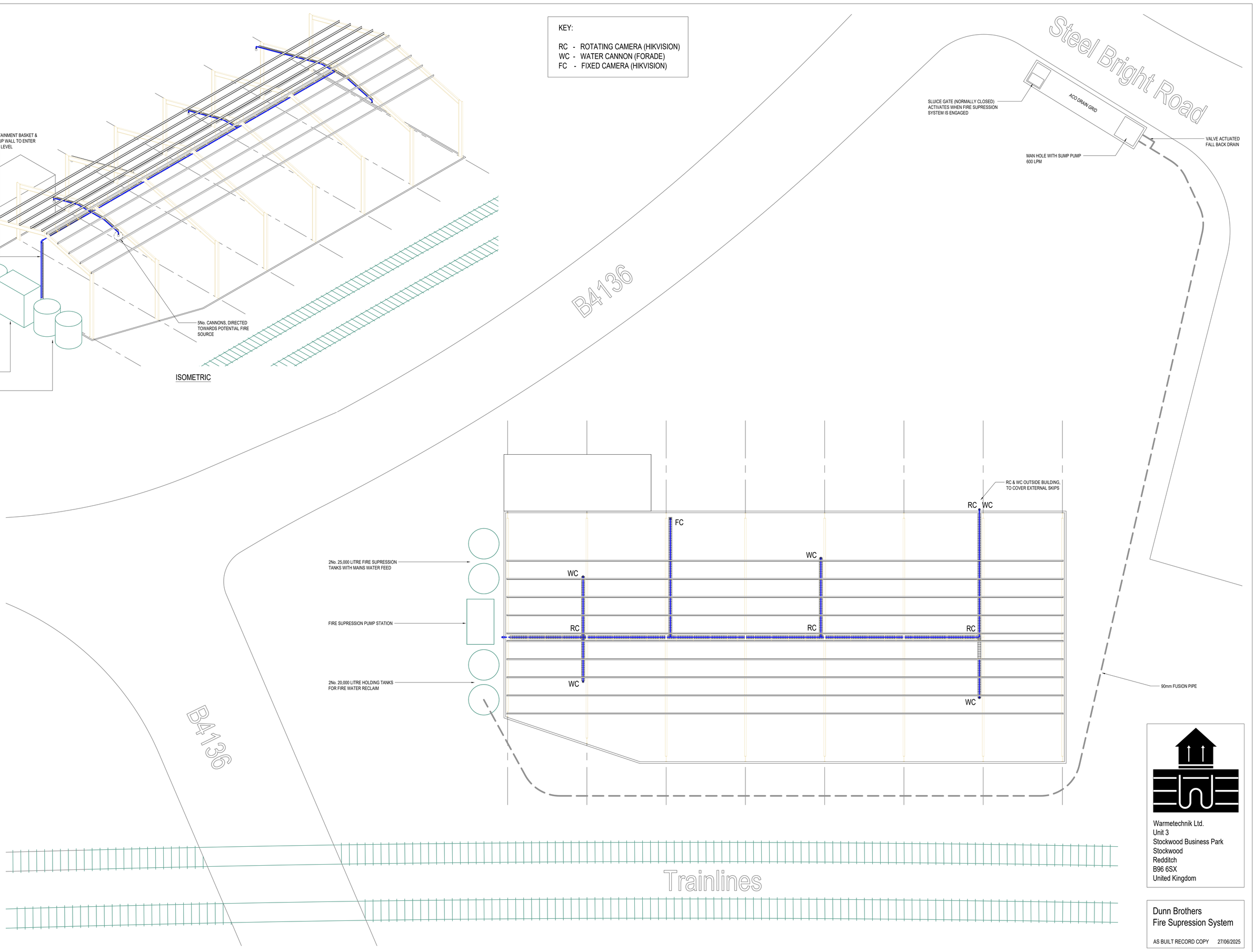
APPENDIX G – FIRE SUPPRESSION SYSTEM

KEY:

RC - ROTATING CAMERA (HIKVISION)
WC - WATER CANNON (FORADE)
FC - FIXED CAMERA (HIKVISION)



ISOMETRIC



Warmetechnik Ltd.
Unit 3
Stockwood Business Park
Stockwood
Redditch
B96 6SX
United Kingdom

Dunn Brothers
Fire Supression System

AS BUILT RECORD COPY 27/06/2025

Dunn Brothers Fire Suppression & Water Management Flowchart

1. Fault Detection

System: FORADE Fire Detection System

- Monitors facility continuously.
- Trigger: Detects fault, heat, smoke, or flame signature.
  → Initiates fire response protocol.

2. Fire Suppression Activated

System: Automated Water/Fire Suppressant Cannons

- Cannons activated in affected zone.
- Targeted suppression to control flames.
  → Prevents spread and mitigates heat zones.

3. Water Recapture System Prepped

System:

- Sluice Gates open.
- Recapture Sump Pumps engaged.
  → Prepares to collect runoff for environmental safety and analysis.

4. Stakeholder Notification Sent

System: Automated Communication

- Sends Email & SMS alerts to:
  - Stakeholders
  - Monitoring Company
    → Ensures immediate awareness and response coordination.

5. Emergency Access Enabled

System: Access Control Integration

- Automatic Door Release triggered.
  → Allows Fire Brigade & First Responders access to facility.

6. Containment and Water Testing Prep

System: Water & Fire Control Systems

- Fire is contained to designated sectors.
- Captured runoff water is retained for environmental and chemical analysis.
  → Ensures compliance and post-incident review.

7. Post-Incident Analysis & Risk Mitigation

System: Surveillance & Planning

- Recorded video reviewed.
- Incident report compiled.
- Corrective action plan implemented to reduce future risk.
  → Supports safety improvements and regulatory compliance.

forede®

AUTOMATIC FIRE WATER MONITOR/CANNON

ZDMS 0.6/5S ZDMS 0.8/10S

QUANZHOU FOREDE FIREFIGHTING EQUIPMENT CO.,LTD.

www.forede.com

CONTENTS

PRODUCT SAFETY INFORMATION

- All personnel who may be expected to operate this equipment must be thoroughly trained in its safe and proper use.
- Before flowing water from this device, check that all personnel (fire service and civilian) are clear of the stream path. Also confirm stream direction will not cause avoidable property damage.
- Become thoroughly familiar with the hydraulic characteristics of this equipment, as well as the pumping system used to supply it.
- Whenever possible, this equipment should be operated from remote location to avoid exposing personnel to dangerous fire conditions.
- Always open and close valves slowly to avoid water hammer.
- After each use, and on a scheduled basis, inspect equipment per instructions in the maintenance section.
- Keep fingers and hands clear of moving parts.
- Disconnect power before servicing and electric valve or electric valve controller.

! WARNING
Do not attempt to disconnect or work on any electrical equipment in this system unless power is removed or the area is known to be non-hazardous.
! ATTN
Before installing and operating this equipment, read this manual thoroughly. Proper installation is essential to safe operation.

STSTEM INTRODUCTION

ZDMS Series Automatic Tracking And Positioning Fire Water Monitor/Cannon is an organic combination of infrared / ultraviolet sensing technology, signal processing technology, communication control technology, computer technology and mechanical transmission technology.

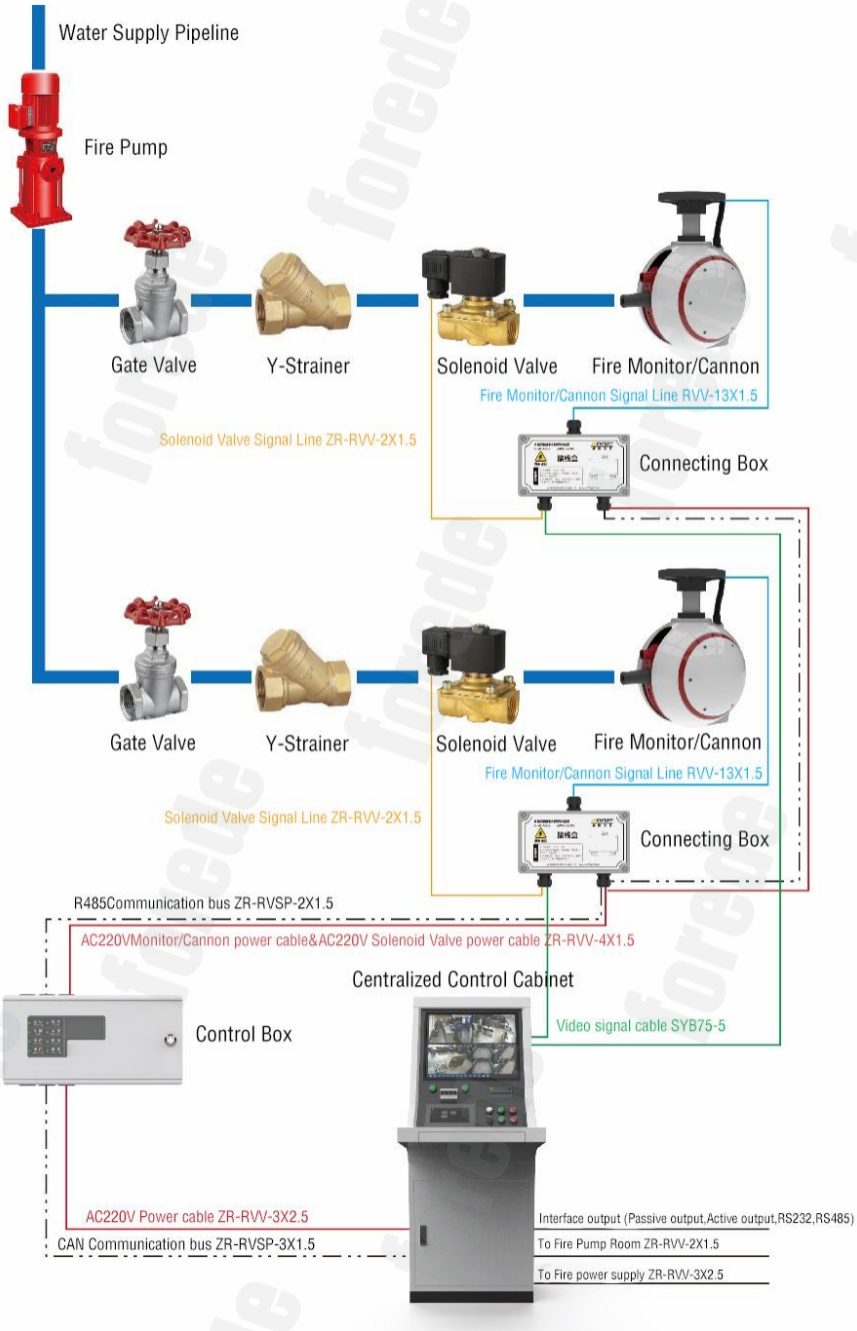
Once a fire occurs, the device starts immediately. Two-dimensional scanning of the fire source in the horizontal and vertical directions is performed. After determining the two directions of the fire source, the central controller issues a command and sends out a fire alarm signal. At the same time, the water pump, valve and device are started Fire the water by aiming at the fire source. After the fire source is extinguished, the central controller will issue a command to stop the water spray. If there is a new fire source, the device will repeat the above process, and will return to the monitoring state after all the fire sources are extinguished.

The water injection form of this device is cylindrical water injection, with long range, wide protection range, and very powerful fire extinguishing ability. It can be widely used in indoor buildings with large area and large space, such as: station waiting room, airport, passenger terminal, sports hall, Convention and exhibition center, movie theater, dance hall, exhibition hall, shopping mall, etc.

COMPONENT LIST

IMAGE	NAME	MODEL	DESCRIPTION	REMARK
	ZDMS Automatic Tracking And Positioning Fire Water Monitor /Cannon	ZDMS 0.6/5S ZDMS 0.8/10S	Fire detection, positioning and fire extinguishing	Standard
	Solenoid Valve (DN50)	DCF-SX(DN50)	Turn on and off water flow	Standard
	Connecting Box	JXH-SX-5	Wiring terminal for easy wiring	Standard
	Control Box	XCKZ-SX	Installed in the protection site, used to receive and send relevant instructions, control devices and solenoid valves. Controllable 4 devices	Standard
	Centralized Control Cabinet	YCKZ-SX	Security in the central control room, remotely monitor the status of the protection site and control any connected device. Up to 240 units can be connected control box	Optional
	Y-Strainer	GLQ-SX	Installed in front of solenoid valve	Optional

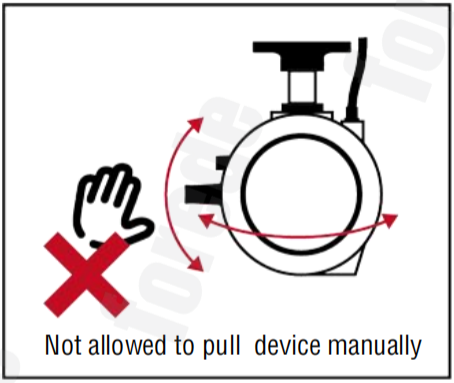
SYSTEM WIRING



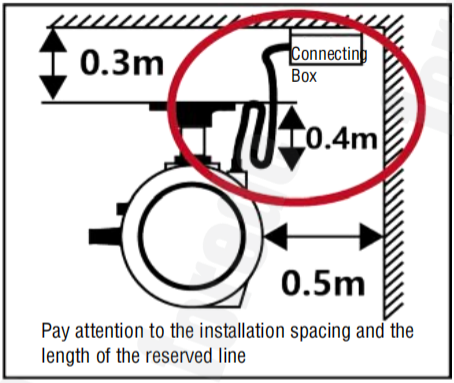
INSTALLATION

DEVICE INSTALLATION:

! WARNING



Not allowed to pull device manually

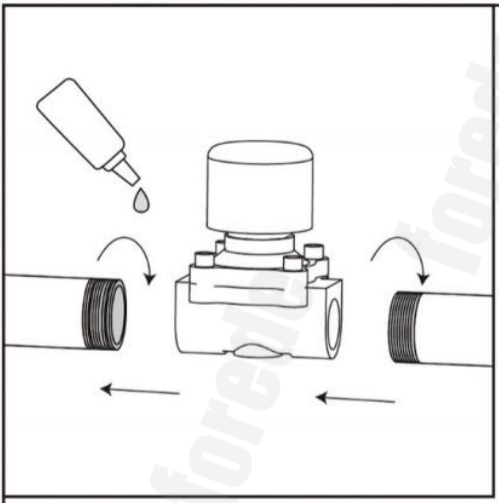


Pay attention to the installation spacing and the length of the reserved line

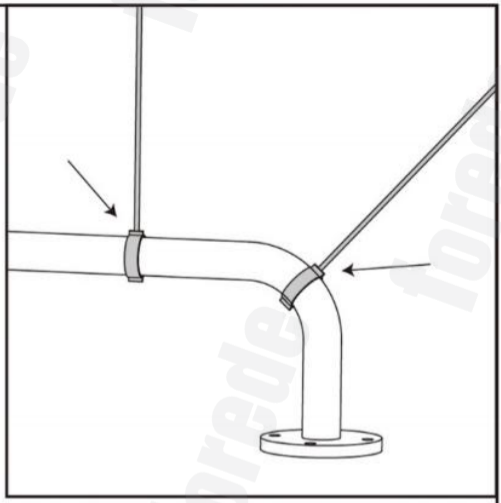
- When installing, it is forbidden to directly rotate the device shell or forcefully pull the water nozzle to avoid damage to the gear transmission structure and the motor.
- The installation point of the device must not have any obstacles within 0.5 meters in diameter, so as not to affect the rotation of the device body; the horizontal direction of the flange installation surface of the device and the ceiling or beam should be no less than 0.3 meters clearance.
- The fixed position of the Connecting box must ensure that the cable of the device is away from the flange surface of the device The length is more than 0.4 meters, so as to ensure that the device does not tear the cable when rotating 360 °.

! ATTN

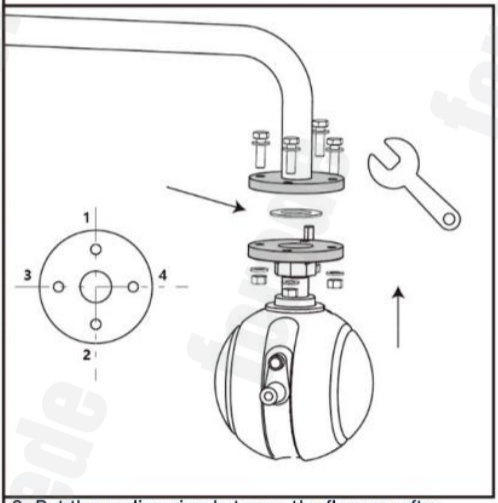
- The device itself has a certain weight, and the load-bearing capacity of the pipe network at the installation point must be considered during installation.
- The device should be installed after the pipeline is installed, after flushing and pressure testing.
- The pipeline connected to the flange of the device should be vertically downward, to ensure that the nozzle is horizontal after the device is installed.
- The flange plane of the pipeline connected to the flange of the device must be level to prevent tilting.
- After installation, the direction of the device head should be away from the protection range.
- Handle gently when installing to prevent impact.



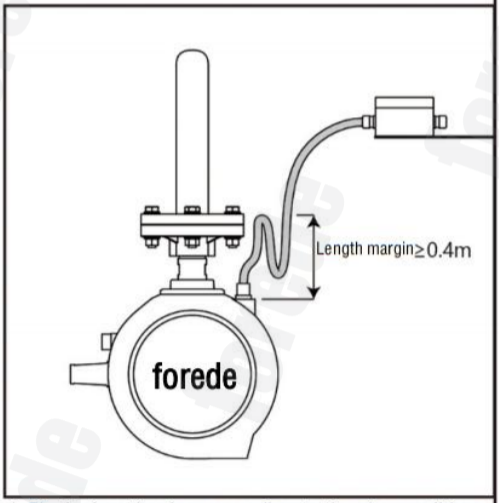
1. Apply sealant to the water pipe thread, screw the solenoid valve clockwise in, then apply sealant to the other end water pipe thread and screw into the solenoid valve. Pay attention to make the solenoid valve coil face up, and install it as horizontally as possible;



2. Install the fixed bracket, the illustrated bracket installation is for reference only. Due to the different installation environment, the fixing brackets are different installation style, please choose according to your site the most suitable installation style;



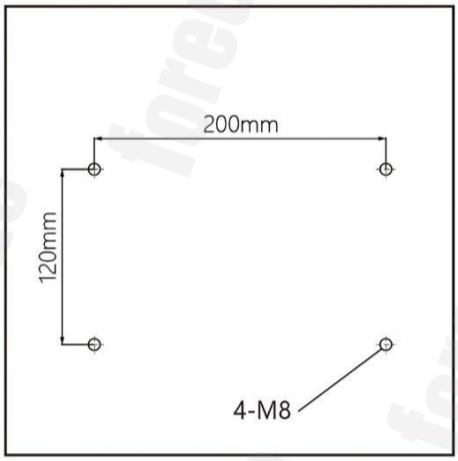
3. Put the sealing ring between the flanges, after alignment and installation insert the M16 bolt (with flat washer) on the other side put on the flat washer, screw on the nut, pre-tighten, repeat the installation The remaining 3 bolts are tightened diagonally in the order shown in the figure;



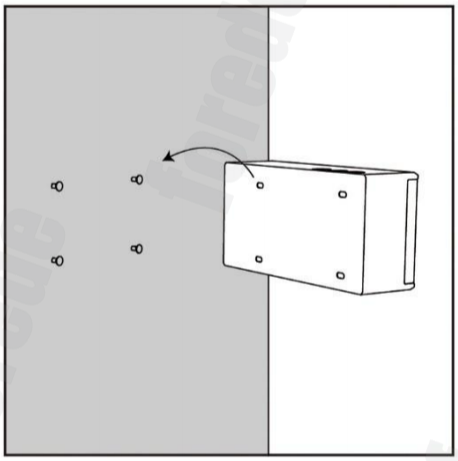
4. Fix the junction box according to the site conditions to ensure the fire monitor lead the cable away from the length of the flange surface of the fire monitor enough 0.4 meters above, to avoid winding when the fire monitor rotates.

CONTROL BOX INSTALLATION:

! ATTN
■ It is recommended to install the control box on the site near the wall and install it near the device. The action of the device can be clearly observed, and it is close to the exit or the place that is easy to evacuate.
■ The installation height of the on-site area control box is 1.5 meters above the ground of the fire protection zone.



Install four M8 expansion bolts on the wall, the installation dimensions are as shown.



There are 4 holes on the back of the control box. Fix the control box with screws or hang it on the wall

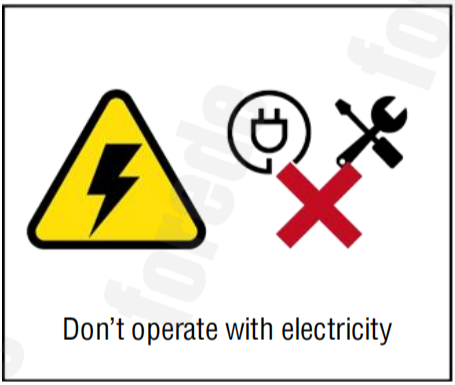
CENTRALIZED CONTROL CABINET INSTALLATION:

The Centralized Control Cabinet is installed and placed in the central control room to centrally control multiple on-site control boxes. The main structure is a cabinet with access line at the bottom.

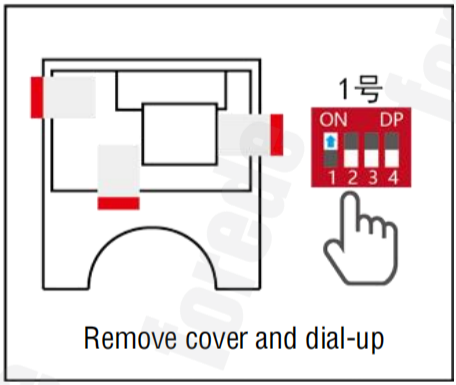
WIRING STEP

CONNECTING BOX WIRING:

! WARNING



Don't operate with electricity



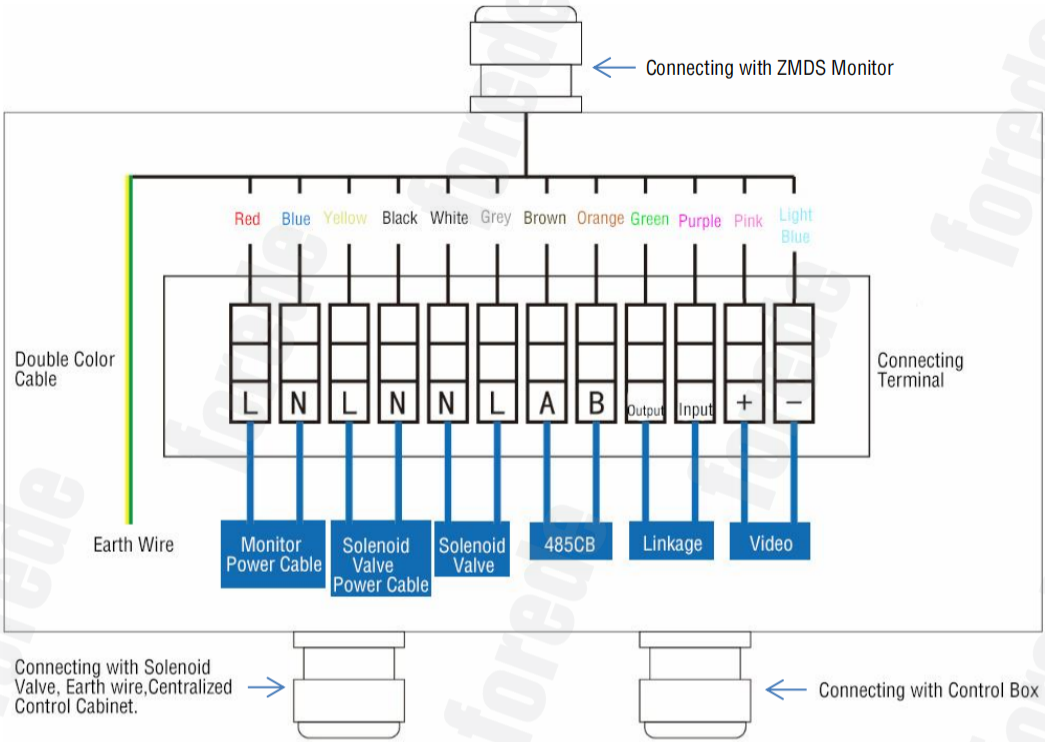
Remove cover and dial-up

- The Connecting box contains 220V high voltage and strong electricity, and with electricity operation is prohibited during installation.
- Before wiring, you must tear off the sticker on the bottom protective cover of the device, remove the protective cover, and then dial the bottom dial switch according to the dial code on the monitor body.

! ATTN

- The 485 control cable of the Connecting box uses twisted-pair shielded cable. When connecting each wire end, you must strictly connect the wire according to the attached cable label. The shielding layer must be connected. This cable is a weak current cable and cannot be laid in the same pipe as the power line. When using a wire channel, a separate wire channel must be used.
- When wiring, make sure that the length of the cable of the device is sufficient to leave the flange surface of the device 0.4 meters or more, so that the device does not tear the cable when rotating 360 °.
- Keep the detection component of the device clean when wiring, and do not directly wipe the light-receiving surface of the detection component with your hands.
- When one area control box is connected to multiple Connecting boxes on site, between the Connecting box and the Connecting box 485 communication lines need to be connected hand in hand.
- The outgoing video cable must use copper core copper mesh, select SYB75-5 within 300 meters Cable, if more than 300 meters, you need to use optical fiber.

The wiring steps are as follows:



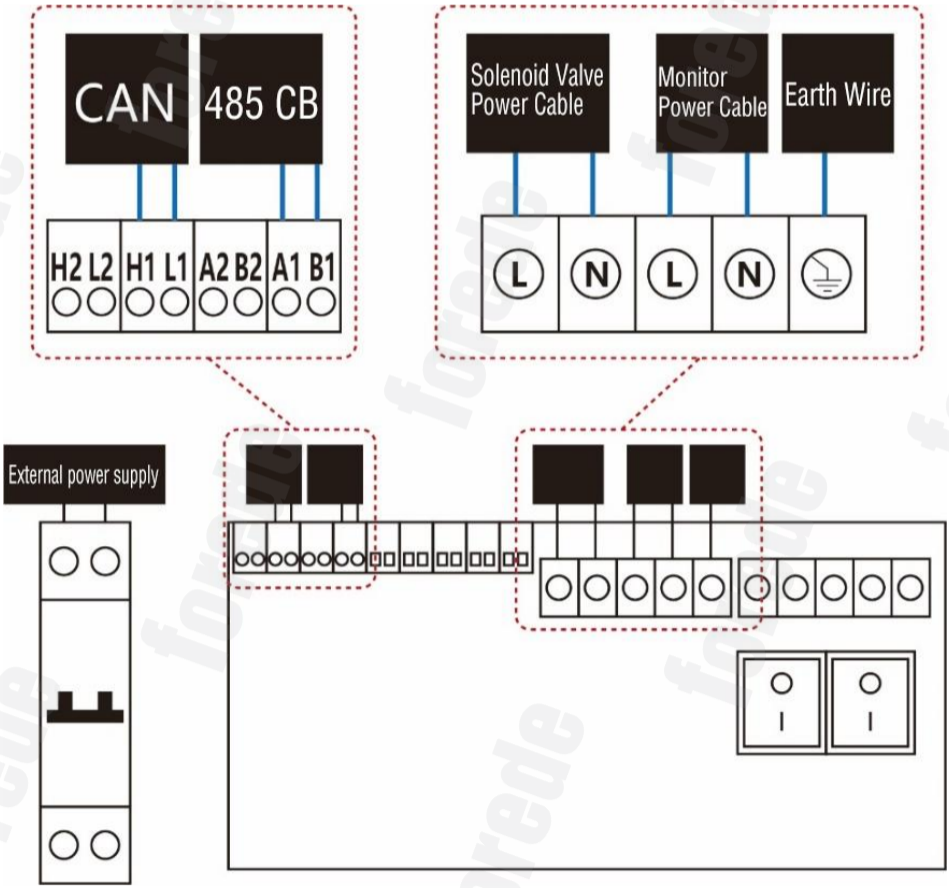
Wiring Diagram Of The 12-Bit Terminal Of Connecting Box

1. The device leads a cable into the connecting box, the wiring method is shown in the above figure;
2. The connecting box leads 3 cables into the control box, which are 485 communication line ZR- RVSP2 × 1.5 (shielded twisted pair), Monitor power cable ZR-RVV2 × 1.5 and solenoid valve power cable ZR-RVV2 × 1.5, the connection method is shown in the picture above;
3. A solenoid valve signal cable ZR-RVV2 × 1.5 leads to the solenoid valve from the connecting box, the wiring is shown in the above figure;
4. A video signal cable SYB75-5 is led out of the connecting box to the centralized control cabinet, the wiring is shown in the above figure;
5. Earth wire, the Double-color earth wire ZR-RVV1 × 1.5 that leads the device into the connecting box, then leads from the connecting box to the flange of the pipeline equipment, and can also be grounded through the internal circuit.

CONTROL BOX WIRING:

! ATTN
■ Same as the connecting box, the site area control box contains 220V high-voltage strong current, live operation is prohibited during installation.
■ When multiple area control boxes on site are connected to the centralized control cabinet, between the control box and the control box CAN industrial bus needs to be connected hand in hand.
■ The Earth wire must be grounded.

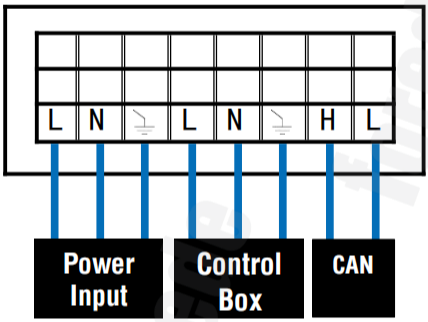
The wiring steps are as follows:



Wiring diagram of the air switch and wiring board of control box

1. Lead 3 cables into the connecting box from the control box, which are 485 communication cable ZR-RVSP2 × 1.5 (shielded twisted pair), Monitor power cable ZR-RVV2 × 1.5 and Solenoid Valve power cable ZR- RVV2 × 1.5, see schematic diagram for wiring method;
2. Two cables from the control box are connected to the centralized control cabinet, which are AC220V power cord ZR-RVV-3 × 2.5 (connect to other external power supply when no centralized control cabinet is installed) and CAN industrial bus ZR-RVSP3 × 1.5 , See wiring diagram for wiring method;
3. Grounding, the Earth wire and the shell must be effectively grounded.

CENTRALIZED CONTROL CABINET WIRING:



Wiring diagram of the terminal of Centralized Control Cabinet

1. The Centralized Control Cabinet is equipped with wiring terminals, introducing 1 cable AC220V power cable ZR-RVV-3 × 2.5, and leading 2 cables into the control box, which are AC220V power cable ZR-RVV-3 × 2.5 With CAN industrial bus ZR-RVSP3 × 1.5, the wiring is shown in the figure above;
2. Grounding, the Earth wire and the shell must be effectively grounded;
3. Connect the video signal cable from each device to a special video plug, and then insert the plug into the video input port of the recorder.

OPERATION INTRODUCTION

The device is mainly controlled by the control panel in the on-site area control box. The operation instructions are as follows:

1. The left side of the panel is the status indicator, the corresponding status is as follows:

Marking	Color	Description	Status
Working	Green	Control Box Working status	Lights on: Working; Lights off: Power off
Fault	Yellow	Fault or not	Lights on: Fault Occurs; Lights off: Normal
Silenced	Green	Alarm sound status	Lights on: No alarm; lights off: Alarm
Valve	Green	Working state of solenoid valve	Lights on: Working; Lights off: Power off
E-Stop	Red	E-Stop status	Lights on: Button pressed; Lights off: Button pops up
Fire Alarm	Red	Fire alarm report	Lights on: System Fire Alarm; lights out: No Fire Alarm
Valve On	Green	Valve status	Lights on: Valve open; Lights off: Valve closed
Pump On	Green	Pump status	Lights on: Pump open; Lights off: Pump closed

2. The upper middle of the panel is the LCD screen;
3. Direction buttons at the middle and bottom of the panel are up, down, left and right, which can control the rotation of the ZDMS monitor up and down and left and right and the up and down selection of the content of the LCD screen;

4. The right side of the panel is the control buttons, corresponding to the specific operations are as follows:

Marking	Description
Valve	Open or close solenoid valves
Pump	Opening and closing of pumps
Silenced	Eliminate alarm sounds
SS/Fog	Switching water straight and fog (not available for this ZDMS Model)
M/A	Switching Device Control Manual / Automatic
Testing	Testing Device
Verify	Confirmation of operations
Reset	Reset the device to standby
Locating	Automatic locating fire
Settings	Set the internal parameters of the device (used by the debugger)
Back	Return to the previous layer

*The Centralized Control Cabinet is mainly controlled by the touch screen on the host. For operation instructions, please refer to the manual of the Centralized Control Cabinet.

DEBUGGING METHOD

The debugging steps of the fire extinguishing system are as follows:

! ATTN
■ System debugging must be carried out after pressure test and flushing of water supply system. ■ System debugging must be carried out before the scaffolding is removed on site (except when the scaffolding is removed does not affect the location where the debugger contacts the system's high-altitude equipment or the site where the equipment is on the ground). ■ The water source and power supply of the device system must meet the debugging conditions. ■ Substances in the test area that may be damaged by water should be transferred or waterproofed, and flammable substances should be transferred to a safe area. ■ Due to the large jet flow and high impact force of the device, on-site drainage measures must be taken, safety measures for on-site participants and unpredictable incident handling plans must be done. ■ Electrical circuits and electrical equipment in the test area that are careless or must be damp due to water are not tested after the test can send electricity immediately, and it should be identified and processed by professional technical personnel before sending electricity.

1. Check In Advance

A. Check whether the system wiring is correct;
B. Ensure that the start pump line between the centralized control cabinet and the fire pump group is temporarily disconnected;
C. After confirming that the system wiring and wiring are normal, supply AC220V power to the system;
D. Test whether the basic functions of the buttons on the control box are normal.

2. Single Device Debugging

A. Single device manual function simulation debugging-set the device to manual state, use a lighter as a test fire source at close range to test whether all the detection parts of the device body work normally;
B. Single device automatic function simulation debugging-set the device to the automatic state, disconnect the power supply of the solenoid valve, and use the lighter as a test fire source for close-range simulation simulation debugging of the automatic positioning function;
C. Single device automatic positioning and debugging-After the simulation and debugging is normal, turn on the power of the solenoid valve, the central control host and the fire pump control cabinet are set to the automatic state, choose one in the protected area of the device use a standard oil pan with a diameter of Φ570mm and a height of 70mm, inject 40mm of clean water into the oil pan, and then add 500ml of car gasoline to ignite it as a fire. Debug the automatic positioning and aiming function of the device. After the positioning and aiming is normal, special attention should also be paid. Check whether the feedback of signal lights such as valve opening and pump starting after positioning is normal.

3. Monitoring And Monitoring Equipment Debugging
Mainly adjust the monitoring range, installation angle and picture quality of the surveillance camera.

4. System Linkage Programming And Fire Pump Linkage Debugging
A. After confirming that the communication between the host and the pump set is correct, use the induced fire inspection linkage program and the feedback records of the action feedback information and fire alarm information of each device;
B. Check the positioning jet accuracy of each device. If adjustment is needed, the data in the on-site area control box shall be modified accordingly by setting to ensure that each device will extinguish normally.

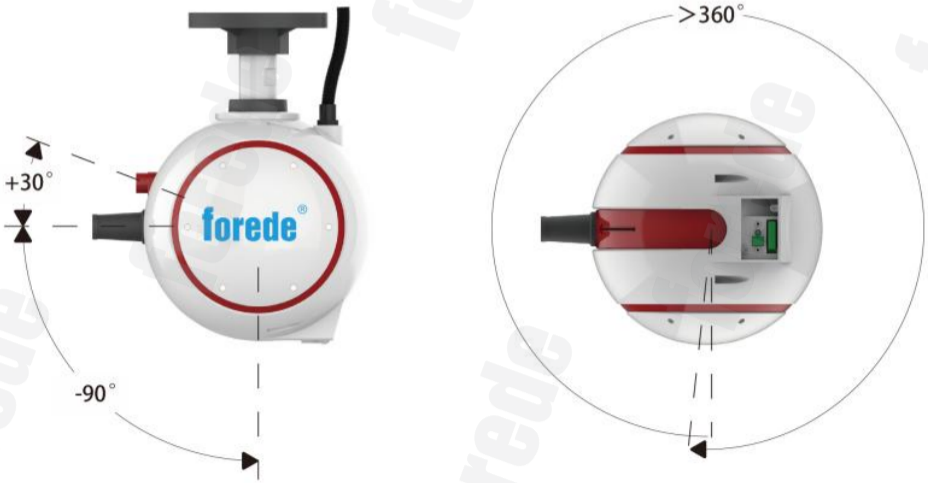
5. Multi-Device Debugging
A. Standard oil pan with test material diameter Φ570mm and height 70mm, filled with 40mm in the oil pan Clean water, then add 500ml car gasoline to ignite as a fire;
B. Set the test device, centralized control cabinet and fire pump control cabinet to automatic state;
C. Ignite a fire in the experimental oil pan;
D. The device system finds the fire source, starts scanning and sends out fire alarm information to the on-site area control box and centralized control cabinet;
E. Scanning and positioning of the fire source by the device is completed, the solenoid valve is automatically opened and the pump start information is sent to the centralized control cabinet;
F. Fire extinguisher fire extinguishing;
G. When the fire extinguishment is completed or the on-site fire alarm signal disappears, the device will continue to spray for 2-3 minutes (this time can be customized according to needs). After deep fire extinguishment, the valve will automatically close and reset. Turn off the pump, valve and reset the device in advance.

PARAMETTERS

MODEL	ZDMS 0.6/5S	ZDMS 0.8/10S
WORKING PRESSURE	0.6MPa	0.8MPa
FLOW RATE	5L	10L
JET RADIUS	34m	39m
MAX PROTECTION RADIUS	30m	35m
MONITORING RADIUS	50m	50m
JET MODE	Columnar	
MOUNTING HEIGHT	6~15m	
TARGETING TIME	≤30s	
HORIZONTAL ROTATIONAL ANGLE	> 360°	
VERTICAL ROTATIONAL ANGLE	-90°~+30°	
OPERATING VOLTAGE	AC220V	
CONTROL MODEL	On-Site Manual \ Remote Manual \ Automatic	
WAY OF COMMUNICATION	RS485	
POWER CONSUMPTION	Monitoring 1W, Sweeping 50W	
DETECTOR TYPE	Red ultraviolet compound	
INLET	DN50 (GB/T 9112~9124-2010; PN16)	
INSTALLATION	Hanging	
STANDARD	GB 25204-2010	

OUTLINE DIMENSION

MOVEMENT ANGLE



APPENDIX H – FIRE DRILL PROCEDURE

FIRE DRILL PROCEDURE

Before carrying out the drill:

- All employees will be trained in fire evacuation procedures and will be informed that a fire drill is going to happen. Staff will be provided with specific details to let them know their participation is required.
- If there are likely to be any visitors present at the time of the fire drill, they will also be pre-warned of the drill.

During the drill:

Throughout the drill, the 'responsible person' and any nominated observers or fire safety wardens shall:

- Keep an eye out for any inappropriate behaviour, such as stopping to collect coats, bags and other personal belongings;
- Closely observe any difficulties experienced by people with disabilities, such as an inability to get out of an exit or get down stairs easily;
- Make sure employees are using the nearest fire escape route, rather than just the exit they are most familiar with;
- Pay attention to any difficulties experienced as a result of the chosen escape routes, such as doors being difficult to open or exits being blocked;
- Listen closely to the roll call taken once the evacuation has been completed, making sure everyone is present and accounted for and checking for any issues which may arise.

After the drill, the person in charge shall:

- Logs details of the fire drill, including how the evacuation procedure went and any inappropriate actions or problems which were noted as a result;
- Record any significant findings of the drill;
- Undertake any remedial action deemed necessary, such as the installation of additional fire safety signs if deemed appropriate.

APPENDIX I – PPM SCHEDULE & MAINTENANCE SOP

Key	
	Daily or prior to next use (which ever is more frequent) visual inspection and cleaning requirements
	Weekly visual inspection
	Monthly inspection
	Outsourced Service (250hrs)
	Outsourced Service (500hrs)

Plant Type	Make	Model	Asset No	Outsource Servicing	Frequency of Inspection	Frequency of Servicing	Equipment Start	Most Recent Service
Mobile Plant								
Gas Forklift	Hyster	H2.5HXL	DBR0001	No			July 18	
Telescopic Loader	TBC	TBC	DBR0002	YES				
Small Generator	TBC	TBC	DBR0003	YES				
Densimetric Separator	TBC	TBC	DBR0004	No				
Granulation Plant	TBC	TBC	DBR0005	No				
Feed Hopper	TBC	TBC	DBR0006	No				
Converyor Belt	DBM	1 m	DBR0007	No				
Converyor Belt	DBM	1 m	DBR0008	No				
Converyor Belt	DBM	1 m	DBR0009	No				
Converyor Belt	DBM	1 m	DBR0010	No				
Converyor Belt	DBM	1 m	DBR0011	No				
Mechanical Processing Machinery	Mansfield	# 5	DBR0012	No				
ECS Metal Separators	Master Magnets	ECS 150 W	DBR0013	No				
Fire Water Tank	TBC	TBC	DBR0014	No				
Hand Held Equipment								
Welder 350 Amp	Star	Kamanchi	DBR0015	YES			July 18	
4 inch Grinder	Makita	GA4530KD	DBR0016	YES			July 18	
9 inch Grinder	Makita		DBR0017	YES			July 18	
Site Infrastructure								
Fire Suppression System	TBC	TBC	DBR0018	YES				
Concete Surfacing	N/a	N/a	N/a	N/a				
Drainage catch pits and drainage channels	N/a	N/a	N/a	N/a				

Procedure Number: TBC	Dunn Bros Recycling Ltd
Title: Monitoring, Inspection and Maintenance	

1	**Purpose:**	**To ensure that all legally required monitoring is undertaken and any issues arising from these are investigated and resolved and that all fixed and mobile vehicles, plant and equipment are maintained in a serviceable condition, suitable for use and therefore operate with minimal negative impact on the environment and comply with H&S best practice.**

2	Procedure	*Responsible Person*	Record
Monitoring			
2.1	A site schedule is prepared which summarises the monitoring activities and their frequencies. Items that require daily monitoring and are already prompted in the site daily diary are not required to be included on the site schedule.	*Site / Operations Manager*	PPM Schedule
2.2	Monitoring requirements may be stated in the Environmental Permit, planning conditions or any other legal documents and can include (but is not limited to): • Inspection of sealed drainage systems • Inspection of containment tanks, mobile tanks / containers and sealed sumps • Inspection of storage areas, fixed bays and containers • Inspection of fuel, oil and chemical storage containers / areas • Inspection of site identity board and site security • Inspection of vehicles, plant and equipment for leaks / spillages • Inspection of road for mud / debris / litter • Inspection of site for pests / birds / scavengers • Discharges to surface water / effluent discharges • Aerial emissions of dust, fibres and particulates	*Information*	
2.3	Monitoring requirements are regularly reviewed taking into account any changes to legislation, site specific authorisation, potential receptors and control systems and changes in data collected and the monitoring schedule is amended accordingly.	*Responsible Manager*	PPM Schedule
Inspection and Maintenance			
2.4	A Planned Preventative Maintenance schedule summarises the maintenance activities and their frequencies of all fixed, mobile and rider operated plant and equipment. This may include (but not limited to) • Forklift • Telescopic Loader • Generator • Granulation Plant • Hopper • Portable electrical equipment • Convery Belt • Separators • Grinder • Fire Suppression System	*Site / Operations Manager*	PPM Schedule

Procedure Number: TBC

Title: Monitoring, Inspection and Maintenance

2	Procedure	*Responsible Person*	Record
2.5	Each machine or item of plant shall be inspected daily, prior to use or operation. The operator shall record and report any defects immediately to the site manager. The item of plant or machinery with the defect may only be operated if the defect does not affect its safe operation, have potential to damage the environment or have an adverse effect on product quality. The Site Manager will liaise with the appropriate fitter to arrange timely correction.	*Machine / Plant Operator*	Daily Records