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Thornton Energy Recovery Centre



Sesona Hill House Ltd

Fire Prevention Plan

Document approval

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1 Introduction

Sesona Hill House Ltd (Sesona) is applying to the Environment Agency (EA) under the Environmental Permitting Regulations (EPRs) for an Environmental Permit (EP) to operate the Thornton Energy Recovery Centre (the Facility).

The Facility will comprise a twin-line waste incineration plant to incinerate pre-processed refuse derived fuel (RDF). A detailed description of the Facility is presented within section 1.4 of the Supporting Information.

As the Facility will accept and store potentially combustible wastes, a Fire Prevention Plan (FPP) must be developed for its operation.

The objective of this report is to provide a preliminary Fire Prevention Plan (FPP) for the Facility and identify the provisions considered during the development phase of the Facility to prevent, detect, and mitigate against fire. In addition, provisional operational measures in relation to fire have been identified where these are available. It must be made clear that this FPP will be subject to review and update following completion of detailed design of the Facility.

This FPP has been developed in accordance with Environment Agency guidance note: *Fire Prevention Plans: Environmental Permits* and the associated report template, as published on the UK government website. The requirements of the FPP will be integrated within the emergency plans and procedures for the Facility, to ensure that they are consistent and compatible with other management systems associated with the operation of the Facility.

This document and the measures to mitigate the risk and impact of fires within the Facility have been (and will continue to be) developed in accordance with the requirements of the following. It is also intended to share the FPP with the local fire and rescue service.

- Environment Agency guidance – ‘*Fire Prevention Plans: Environmental Permits*’ (updated 11 January 2021);
- Building Regulations – ‘*Approved Document B (Fire Safety)*’;
- National Fire Protection Association ‘*NFPA 850: Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations*’; and
- The insurer’s requirements where structures or equipment fall outside published guidance or recommended practice.

The EA’s Fire Prevention Plan guidance has been designed with 3 objectives in mind:

1. minimise the likelihood of a fire happening;
2. aim for a fire to be extinguished within 4 hours; and
3. minimise the spread of fire within the site and to neighbouring sites.

The Facility will meet these objectives as follows:

1. The use of suitable management procedures and fire detection systems will minimise the likelihood of a fire happening – refer to sections 5, 6, 7 and 10.
2. Active firefighting measures will be implemented should a fire break out – refer to section 11, 13 and 14. Utilising these measures, the Facility aims to extinguish a fire within 4 hours.
3. Fire walls and other prevention methods will minimise the spread of fire within the site and to neighbouring sites – refer to section 8 and 9.

Utilising these measures, the Facility has been designed with the aim of extinguishing a fire within 4 hours.

1.1 Site location and description

The Facility will be located at Hillhouse Business Park, Thornton-Cleveleys, Lancashire. The Site is located on the northern edge of Thornton, approximately 2.6km east of Cleveleys, 2.9km west of Stalmine, 3.9km south of Fleetwood and 8.2km northeast of Blackpool. The approximate National Grid Reference (NGR) for the centre of the Site is SD 34399 44026. The A585 is approximately 1.5km to the east of the Site and connects Thornton with the M55 motorway which runs west to east from Blackpool to Preston, where it ultimately meets the M6 motorway.

The Site covers an area of land which previously had an industrial use – a former chemicals manufacturing facility was located on the site which was decommissioned by 2000. The previous operations/activities have been removed, and the site is vacant and consists largely of hardstanding and internal roadways remaining from the industrial use.

The Site is bound by an access track and scrub vegetation to the east, beyond which lies the Wyre Way coastal footpath and River Wyre. The site is surrounded by industrial development which forms part of the wider Hillhouse Business Park. The closest residential properties to the Site are located off Butts Road, approximately 360m to the southwest.

A site location plan and Installation Boundary drawing are presented in Appendix A.1 and A.2 respectively.

1.1.1 Site address

The site address is as follows:

Thornton Energy Recovery Centre,
Hillhouse Business Park,
Thornton-Cleveleys,
Lancashire,
FY5 4QD

1.2 Who this plan is for

The Fire Prevention Plan will be easily accessible for all staff and will form part of the documented management systems for the site. People who will have access to the plan will include, but not be limited, to the following:

- Site staff;
- Fire officers; and
- Contractors.

2 Types of combustible materials

2.1 Combustible waste

The non-hazardous waste types to be treated at the Facility are presented in Table 1.

Table 1: Waste to be processed in the Facility

EWC code	Description of waste
02	WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING
02 02	wastes from the preparation and processing of meat, fish and other foods of animal origin
02 02 02	animal-tissue waste
02 02 03	materials unsuitable for consumption or processing
02 03	wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation
02 03 04	materials unsuitable for consumption or processing
15	WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED
15 01	packaging (including separately collected municipal packaging waste)
15 01 01	paper and cardboard packaging
15 01 03	wooden packaging
15 01 06	mixed packaging
15 01 09	textile packaging
16	WASTES NOT OTHERWISE SPECIFIED IN THE LIST
16 02	wastes from electrical and electronic equipment
16 02 16	components removed from discarded equipment other than those mentioned in 16 02 15
16 03	off-specification batches and unused products
16 03 06	organic wastes other than those mentioned in 16 03 05
17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)
17 02	wood, glass and plastic
17 02 01	wood

EWC code	Description of waste
18	WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND/OR RELATED RESEARCH (except kitchen and restaurant wastes not arising from immediate health care)
18 01	wastes from natal care, diagnosis, treatment or prevention of disease in humans
18 01 04	wastes whose collection and disposal is not subject to special requirements in order to prevent infection(for example dressings, plaster casts, linen, disposable clothing, diapers)
19	WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE
19 12	wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified
19 12 01	paper and cardboard
19 12 07	wood other than that mentioned in 19 12 06
19 12 08	Textiles
19 12 10	combustible waste (refuse derived fuel)
19 12 12	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11
20	MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS
20 01	separately collected fractions (except 15 01)
20 01 01	paper and cardboard
20 01 08	biodegradable kitchen and canteen waste
20 01 10	Clothes
20 01 11	Textiles
20 01 38	wood other than that mentioned in 20 01 37
20 01 39	Plastics
20 01 99	other fractions not otherwise specified (hygiene waste collected from domestic facilities that is not classified as clinical waste)
20 02	garden and park wastes (including cemetery waste)
20 02 01	biodegradable waste
20 03	other municipal wastes
20 03 01	mixed municipal waste
20 03 02	waste from markets
20 03 03	street-cleaning residues
20 03 07	bulky waste

EWC code	Description of waste
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02 02 02	animal-tissue waste
02 02 03	materials unsuitable for consumption or processing
02 03	wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation
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EWC code	Description of waste
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20 01 38	wood other than that mentioned in 20 01 37
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20 02	garden and park wastes (including cemetery waste)
20 02 01	biodegradable waste
20 03	other municipal wastes
20 03 01	mixed municipal waste
20 03 02	waste from markets
20 03 03	street-cleaning residues
20 03 07	bulky waste

2.2 Other combustible materials

In addition to the wastes listed in section 2.1, there will be a limited number of other materials stored and used at the Facility which are potentially combustible. These include maintenance materials, such as oils and greases which will be present in small quantities at various locations, and gas cylinders.

Fuel oil will be used for auxiliary firing and will be stored in a dedicated storage tank on-site. A plan showing the location of the primary raw materials and residues at the Facility is presented within Appendix A.3 of this report. Following completion of detailed design the plan will be updated to include the storage locations for combustible maintenance materials.

Gas cylinders will be stored within purpose-built dedicated storage facilities. All facilities for the storage of gas cylinders will be kept locked and secured. A system for the regular inspection of gas storage facilities will be developed as part of the operating and maintenance procedures and the site inspection regime. The location of gas cylinder storage and maintenance materials will be

subject to detailed design. Following completion of detailed design a plan showing the location of gas cylinders will be incorporated into Appendix A.

It can be confirmed that all construction materials will be non-combustible, or of limited combustibility, including all thermal insulation within the building.

3 Using this fire prevention plan

3.1 Where the plan is kept and how staff know how to use it

This FPP will form part of the documented management systems for the Facility. The FPP will be available in both electronic and hard copies at easily accessible locations. Staff induction programmes will be location and job role specific; however, they will include awareness training on the documented management systems at the site as a minimum. All staff will be able to easily access the documented management systems.

Visitors and contractors will be informed about the fire prevention measures implemented at the Facility as part of site induction procedures and will be provided with access to the FPP. The FPP will also be made available to local Fire Officers. It is expected that a Premises Information Box or similar at the entrance to the wider Hillhouse Business Park will be made available to the fire and rescue service. This is expected to contain a copy of the FPP, contact numbers and also information on control features such as shut-off valves, hydrant controls etc.

3.2 Testing the plan and staff training

All staff (and contractors) will be trained in the emergency response procedures for the Facility. Operational staff will be trained in a range of firefighting equipment. Training records will be maintained in accordance with the documented management systems for the Facility, with fire response procedures incorporated within the site's management systems. It is expected that fire drills (including procedures for emergency evacuation of the site) will be exercised at least annually.

This FPP will be subject to regular review and updating by senior management following the commencement of operation of the Facility. The first review is expected to be undertaken during the commissioning phase of the RDF processing activities prior to full operation, to incorporate any mitigation measures proposed during detailed design and construction of the Facility. The FPP will be periodically reviewed and updated where necessary to ensure that the stated control techniques remain appropriate. Instances when the FPP will be periodically reviewed and updated, will include the following:

- immediately following any major fire incidents;
- following a near miss of a fire;
- if there are any significant technical or managerial changes at the Facility;
- the local environment changes, e.g. a school or residential development is built nearby; or
- if the EA asks for the FPP to be revised.

Regular reviews will be captured through both the FPP and any fire risk assessments as part of the Facility's documented management systems.

Fire prevention messages will be reinforced around the site using signs. Furthermore, visitors to the Facility will be informed of the correct safety and fire prevention procedures – information will be provided at the site entrance and by appropriate located signage on-site.

On an annual basis, testing of the emergency procedures will be undertaken. The intention of the testing is to verify that all staff and contractors are aware of the emergency procedures. Following all tests, the implementation of the procedures will be reviewed. If appropriate, the procedures will be amended, or additional training provided to all staff and contractors.

The effectiveness of the emergency response procedures will be reviewed following any emergency incidents on-site. The procedures will be updated if required, and staff trained in the updated procedures.

3.3 Roles and responsibilities

A Fire Safety Manager (FSM) or similar will be assigned – the title will be confirmed. The FSM will be responsible for establishing and maintaining a safe working environment in which fires are prevented from starting, or if they do, from developing beyond a minor event. The FSM will be responsible with overseeing the production of fire risk assessments at the site and ensuring that any recommendations for improvements/mitigation measures from the assessments are addressed/implemented. Risk assessments are expected to be reviewed on an annual basis. The FSM will also be responsible for ensuring that the FPP is reviewed regularly and remains appropriate.

In addition to the FSM, a sufficient number of fire wardens will be assigned to ensure a safe and timely evacuation in the event of a fire. The fire wardens will be suitably trained and competent to carry out the role, with any training recorded as part of the documented management systems. The fire wardens will undertake fire watch site inspections during their shift and raise alarm/activate call points if smoke, odour or flame indicates a potential fire source. The fire wardens will be responsible for investigating the location of the fire (if safe to do so, i.e. if determined using an automatic detection system) and utilising fire suppression equipment such as fire extinguishers if deemed safe to do so. The fire wardens will liaise with the FSM if they are not already present on the site during a shift.

All employees (and contractors) will have a number of additional responsibilities in relation to fire safety, which are set out as follows:

- never leave obstructions in corridors, doorways, stairways, stair landings or other escape routes;
- never block fire exits or place objects in front of fire doors;
- never leave open fire doors which are required to be kept shut to prevent fire spreading, and ensure these doors are closed behind them;
- never interfere with fire detection or suppression equipment unless authorised to do so;
- report any damages identified to fire detection or suppression equipment;
- maintain safe working practices with electrical equipment;
- do not smoke on site unless in an approved area;
- familiarise themselves with fire emergency procedures; and
- book in and out of the site using the correct systems in place.

4 Fire prevention plan contents

4.1 Activities at the site

The Facility will consist of a combination of Schedule 1 installation activities (as defined in the Environmental Permitting Regulations) (EPR) and directly associated activities. The activities to be undertaken at the site include the following:

1. A twin-line Energy Recovery Centre (ERC) to recover energy from RDF, incorporating:
 - a. RDF reception and storage facilities prior to incineration;
 - b. generation of power for export to the local electricity distribution network, and the potential to export heat to local users;
 - c. production of an inert bottom ash material that will be transferred off-site for processing or disposal;
 - d. generation of an air pollution control residue that will be transferred off-site to a suitably licensed hazardous waste facility for recovery or disposal;
 - e. storage facilities for raw materials consumed and residues generated by the Facility;
 - f. a flue gas treatment facility; and
 - g. control room(s) plus welfare and office spaces.

Incoming RDF and raw materials will be delivered and residues will be transferred from the site via road. Weighbridge(s) will be installed at the entrance to the Facility to record the quantity of RDF being delivered. The internal roadways provides a one-way circulation route around the perimeter of the Facility, with direct access to the tipping hall, raw material and residue storage areas respectively.

The Schedule 1 activities (as defined in the Environmental Permitting Regulations), and the Directly Associated Activities (DAA's) which will be undertaken at the Facility are listed in Table 2.

Table 2: Scheduled and directly associated activities

Type of Activity	Schedule 1 Activity	Description of Activity	Limits of specified activity
Installation	Section 5.1 Part A(1) (b)	The incineration of non-hazardous waste in a waste incineration plant with a capacity of 3 tonnes per hour or more	From receipt of waste to treatment and emission of exhaust gas and disposal of any residues arising, including the storage of incinerator bottom ash and air pollution control residues.
Directly associated activities			
Directly Associated Activities		Energy generation	Energy generation and export of electrical power using an Organic Rankine Cycle turbine, with the potential to export heat to local users.
Directly Associated Activities		Back up electrical generator	For providing emergency electrical power to the plant in the event of supply interruption.

The Facility will include the following key components/infrastructure:

- RDF reception and storage areas;
- reagent and raw material tanks and silos;
- residue silos and storage areas;
- water, auxiliary fuel and air supply systems;
- two incineration lines;
- two thermal oil boilers;
- Organic Rankine Cycle (ORC) turbine/generator set;
- facilities for the treatment of exhaust or flue gases;
- flues with associated stack; and
- devices and systems for controlling combustion operations and recording and monitoring conditions.

Assuming a design NCV of 10.11 MJ/kg, the Facility will process approximately 100,000 tonnes of waste per year (at a design capacity of 6.33 tph per line, and assuming 7,900 hours availability). However, the Facility will be capable of processing waste with a range of NCVs. The maximum throughput for the Facility will be up to 120,000 tpa of RDF.

4.2 Site plans and drawings

The following plans and drawings are included within Appendix A of this report:

- site location plan (Appendix A.1);
- site layout plan (Appendix A.2);
- waste and materials storage areas plan (Appendix A.3);
- access points (Appendix A.4);
- indicative locations of fire hydrants (Appendix A.5);
- indicative locations of fire walls (Appendix A.6);
- indicative location of quarantine area (Appendix A.7);
- fire receptor plan (Appendix A.8); and
- areas of natural and unmade ground (Appendix A.9).

Detailed design will be undertaken by the technology provider further into the development stages of the project following securing of consents. Therefore, the information in relation to some of the drawings identified above must be considered to be indicative until detailed design of the Facility has been completed. Following completion of detailed design, the following drawings will also be included within the updated FPP, in accordance with the EA's FPP guidance:

- the location of drain covers, and any pollution control features such as drain closure valves and firewater containment systems;
- a detailed site drainage plan;
- the location of gas cylinders and mobile plant;
- a plan showing permanent ignition sources at the site; and
- the location of plant (including mobile plant), protective clothing and pollution control equipment and materials (such as spill kits).

Wind roses indicating the direction of prevailing winds for the Facility from 2017 to 2021, taken from Blackpool Airport, are presented in Appendix B.

4.3 Plan of sensitive receptors near the site

The following section details the local sensitive receptors which are considered to be sensitive to the effects of a fire event at the Facility. In the unlikely event of a fire, the site personnel, and the infrastructure and equipment at the Facility itself, will be most at risk. A fire at the Facility will potentially have a temporary localised impact on the operation of the Facility, or a wider impact on surrounding receptors, depending on meteorological conditions at the time of any incident. Meteorological conditions are discussed further in section 4.4.

According to the EA's FPP guidance, examples of sensitive receptors include:

- schools, hospitals, nursing and care homes, residential areas, workplaces;
- protected habitats, watercourses, groundwater, boreholes, wells and springs supplying water for human consumption; and
- roads, railways, bus stations, pylons (on or immediately adjacent to the site only), utilities, airports.

According to the guidance, receptors up to 1km from the site should be included, as these are considered to be most at risk of impacts from a fire.

The key receptors which could be impacted by a fire at the Facility are presented in Table 3. A more detailed plan showing the location of receptors surrounding the site (a Fire Receptor Plan), as required by the EA's FPP guidance, is presented within Appendix A.8.

Table 3: Sensitive receptors

ID	Name	Location		Distance from ERF stacks (km)
		x	y	
R0	Hillhouse Business Park	The wider Hillhouse Business Park surrounds the site to the south and west.		
R1	Land at Bourne Road	334050	444040	0.34
R2	240 Bourne Rd	333823	444119	0.58
R3	23 Bourne Rd	333670	444080	0.72
R4	20 Rose Fold	333428	443988	0.96
R5	Hawthorn Drive	333715	444397	0.77
R6	52 Holmes Road	333402	443253	1.25
R7	122 Fleetwood Road North	333644	442866	1.37
R8	1 Woodfield Road	334952	442503	1.62
R9	Staynall Lane	336061	443836	1.68
R10	Carters Farm	335784	444084	1.40
R11	Burrows Farm	335679	444271	1.31
R12	Thornton Primary School	333973	443420	0.73
R13	Red Marsh Special School	333956	443256	0.88
R14	Great Arley School	333919	443183	0.96
R15	Sacred Heart Catholic Primary School	333740	443240	1.01
R16	Westport House Care Home	333538	443665	0.92
R17	Thornton Lodge Care Home	333913	442955	1.17

4.4 Meteorological conditions

As can be seen from the wind roses presented in Appendix B, the prevailing wind direction for the site is from the southwest, with an average wind speed between 4.9 – 5.8 m/s. Therefore, receptors to the northeast of the site (such as the Morecambe Bay and Wyre Estuary habitats site) are most likely to be affected by the effects of a fire event at the Facility. The wind rose has been obtained from Blackpool Airport, which is located approximately 13km to the south of the Facility. This is the closest and most representative meteorological station available.

5 Managing common causes of fire

5.1 Arson or Vandalism

Robust security measures will prevent access to the Facility by members of the public, thereby reducing the risk of arson attacks or vandalism.

As the Facility is located within a wider industrial complex (the Hillhouse Business Park), it may not be possible to provide security fencing around the perimeter of the site. However, the Hillhouse Business Park is an area of private land enclosed with security fencing. The Hillhouse Business Park has dedicated 24-hour security on site at all times, which operates the gatehouse restricting access to the complex. There will be site-wide CCTV coverage and recording, and pedestrians and vehicles cannot access the complex without approval from the gatehouse.

In addition to the gatehouse, there will be an access control system for vehicles to access the Facility. Access barriers will be provided on the roadways to access the Facility, with vehicle access only being obtained via approval access cards or via intercom to the Control Room. Only authorised vehicles will be able to access the Facility.

All external doors will be locked, with an intercom system to the Control Room being required to obtain access to main the building and office areas. Therefore, only authorised personnel and visitors will be able to access the buildings.

The Facility will be operational and manned 24 hours a day, 7 days a week. The gatehouse for the Hillhouse Business Park will be manned 24-hours by the site security. The CCTV system will also be monitored by the facilities operational staff. The wider Hillhouse Business Park will be responsible for security on the site, including delivery vehicles as they travel around the wider site.

Emergency response procedures will be developed for the Facility prior to the commencement of operations, as part of the documented management systems. The procedures will detail the response to a number of different emergency situations on site, including unauthorised personnel accessing the Facility.

5.2 Plant and equipment

An operating and maintenance manual (O&M manual) will be developed and completed through the commissioning phase of the Facility. The O&M Manual will set out detailed operating and maintenance instructions for all plant and equipment which requires maintenance.

Maintenance procedures and work instructions will be developed to cover all plant and equipment within the Facility. As part of these, the risk of fire will be considered, and appropriate activities included within the maintenance procedures and work instructions to reduce the risk of fire in all plant and equipment.

As part of the maintenance system, responsibilities for retaining records of all maintenance undertaken and any actions taken following a problem will be defined.

There will be frequent visual checks of RDF processing equipment, including the RDF storage and RDF transfer arrangements, to allow the prompt identification of any 'unsuitable' or 'unacceptable' RDF which includes hot loads. RDF processing equipment will be subject to regular preventative maintenance in accordance with the documented management systems in place, and will be fitted with suitable fire suppression systems, further details of which are provided within section 11.

5.3 Electrical faults including damaged or exposed electrical cables

The risk of electrical faults at the Facility will be minimised by the use of qualified electricians and will comply with the relevant British Standards for the design and installation of electrical equipment and supplementary bonding/earthing. The site will be constructed and operated in accordance with recognised standards for fire prevention, detection and control within electrical control systems.

Testing will be carried out on electrical equipment by fully and appropriately qualified electricians, when required. The inspection of electrical cabling at the Facility will be included in the documented maintenance programmes. Electrical circuits on both mobile plant and static equipment will be checked in accordance with the manufacturer's recommendations.

All portable electrical appliances will be PAT tested annually, with a label attached to the plug (or the cable) to confirm the item has been tested.

The exact types of fire detection and suppression systems for electrical control systems will be subject to detailed design. However, for the Facility, it is expected that the following measures will be implemented in accordance with current best practice for this type of facility:

- All rooms with concentrations of electrical equipment will be fitted with suitable fire detection systems. Inert gas suppression systems will be installed as required, subject to the detailed design of the Facility. These will be installed and operated in accordance with a recognised standard, such as EN 15004.
- Manual Call Points will be installed in all areas. The detection systems will be designed for ease of regular testing to demonstrate correct operation.
- All cable trays or piping systems passing through fire barriers will be fitted with fire stops. Cable spreading rooms and cable tunnels which are long, or otherwise difficult to access for firefighting, will be protected with appropriate automatic fire suppression systems (such as automatic gaseous extinguishing systems, or sprinklers or water spray systems).

5.4 Discarded smoking materials

Smoking will be prohibited in operational areas at the Facility. External areas within the site boundary that are designated for smoking will be identified, and suitable facilities will be provided for staff.

5.5 Hot works safe working practices

Staff and contractors will follow safe working practices which may include a permit to work system when carrying out hot works such as welding or cutting at the Facility. A fire watch will be carried out for a suitable period after hot works have ended, and at the end of a working day (i.e. after each shift).

5.6 Industrial heaters

It is not expected that industrial heaters will be installed at the Facility, however, this will be confirmed during detailed design.

If applicable, the hot work management system will be extended to include the use of industrial heaters and the necessary safeguards required in each instance will be assessed and implemented to ensure their use is safe.

5.7 Hot exhausts and engine parts

A fire watch system will be implemented at the Facility to detect signs of fires from dusts settling on hot exhausts (including those associated with mobile plant). This will be developed as part of the operating procedures. This will include regular visual checks of hot exhausts as part of operational checks by staff – it is expected that these checks will be undertaken at the end of each shift and so will be daily. Maintenance work instructions will be raised for any items identified as requiring maintenance.

5.8 Ignition sources

A review under the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) will be completed during the detailed design of the Facility, with any risk areas identified on DSEAR zonal drawings. This is a legal requirement for installations/workplaces which use dangerous substances, including pressurised gases.

Vehicles and electrical items necessary for the operation of the Facility will be regularly inspected for electrical faults. Mobile plant serving the Facility will be fitted with fire extinguishers and dust filters where appropriate.

Naked sources of ignition will be controlled through a hot work management system. This system will cover both staff and contractors working at the Facility. The hot work management system will also include requirements to train and authorise 'hot work risk assessors' for the purposes of eliminating, reducing and managing the risks associated with hot work. The hot work system will include for a period of fire watch following the hot works being undertaken, as required by the EA's FPP guidance.

As part of the hot work management system, the potential for sources of ignition to cause fires will be managed on a case-by-case basis. The guidance of keeping all sources of ignition at least 6 metres away from any combustible or flammable waste will be followed as part of this management where possible (i.e. this separation distance may not be possible when using or transporting mobile plant or when driving site vehicles). The management system will include ensuring that the location of stored mobile plants, which is subject to detailed design of the Facility, will be stored at least 6 metres away from combustible waste. In the unlikely event that this separation distance cannot be maintained, there will be suitable fire detection and protection measures installed in this area to minimise the risk of a fire spreading, the design of which is subject to the recommendations of the final fire strategy which will be completed during the detailed design phase of the project and agreed with the fire insurers.

5.9 Leaks and spillages of oils and fuels

Emergency response procedures will be developed as part of the documented management systems for the Facility. The procedures will include actions to be undertaken to respond to spills and leaks of chemicals. This will include actions to be undertaken to prevent liquids leaking from site vehicles.

Mobile plant and vehicle operators will be provided with suitable training for the equipment they are operating. Supervision of mobile plant operation and regular site inspections will ensure that any leaks from vehicles are quickly identified and suitably maintained to prevent leaks. Where specific responsibilities are given to specific staff, training will be provided to those employees. Training records in the emergency response procedures for all staff and contractors will be retained on-site.

Should a spill occur at the site, contained drainage systems in process areas will ensure that any contaminated effluent is not released to the aquatic environment. Storage of liquid chemicals (for example urea and diesel at the Facility) will be within bunded areas with the secondary containment having sufficient capacity to contain a spill. Regular inspections will be undertaken of storage vessels as part of regular preventative maintenance procedures.

Spill kits will be made readily available at different locations throughout the site. The location of spill kits will be marked up on a site plan following completion of design of the Facility. The documented management procedures for the Facility will include for accident management measures and will set out procedures to be followed in a spill event. All staff and contractors will be trained in site-wide emergency response procedures.

5.10 Build-up of loose combustible waste, dust and fluff

The Facility will be designed to prevent the accumulation of dusts by designing structural steelwork such that their shape or method of installation minimizes the surface area where dust can settle.

As part of the design of the Facility, the control of dust and fluff has been considered. This includes:

- the use of an enclosed fuel reception/unloading building; and
- mechanical ventilation of the RDF reception and storage areas at the Facility to prevent fugitive emissions from the building façade.

On a daily basis, inspections will be undertaken at the Facility to identify the build-up of loose combustible materials, such as waste/RDF, dust and fluff. Where inspections identify that there has been a build-up of loose combustible materials, appropriate cleaning (such as washdown using hoses) will be undertaken to clean this material from the surfaces. Good housekeeping practices will be employed at the Facility to ensure that dusts and litter do not build up and pose a potential fire risk.

5.11 Reactions between wastes

Waste acceptance procedures will be in place which will minimise the risk of incompatible wastes coming into contact with each other, or unstable wastes being accepted at the Facility. This risk is further reduced by the fact that the Facility is intended to accept only pre-processed RDF.

In the unlikely event that incoming waste identified as 'unacceptable' is received, it will be transferred to the quarantine area to segregate it from the RDF prior to transfer off-site (refer to section 9).

5.12 Deposited hot loads

Documented waste pre-acceptance and waste acceptance procedures will be implemented at the Facility. These will enable the identification of any 'unacceptable' wastes – this could include the presence of hot loads. The waste pre-acceptance and acceptance procedures will meet the requirements of EA Guidance S5.06, to ensure that only the permitted waste codes are accepted.

Further details on the dedicated quarantine area are provided in section 9. Should a 'hot load' be delivered to the Facility, a 'hot load procedure' will be followed. The requirements of the hot load procedure will be incorporated into the waste acceptance procedures.

Hot loads identified prior to transfer to the RDF deposit areas/stockpile bays (if not immediately rejected) will be tipped onto the tipping hall floor in the quarantine area and extinguished. Appropriate fire detection and protection measures will be installed in the quarantine area, with

any hot loads extinguished using hoses, sprinklers or an equivalent fire suppression method. Hot loads identified within the RDF deposit areas/stockpile bays would be extinguished by the sprinkler systems before being transferred to the RDF feed hopper.

A loading shovel will be used to remove RDF from storage areas if the RDF is deemed unsuitable for incineration.

5.13 Hot and dry weather

Incoming RDF, stored within stockpile bays and the RDF deposit areas at the Facility, will be provided with protection from direct sunlight as the main RDF storage areas will not be fitted with external windows. Periods of hot weather have the potential to increase the risk of fires; however, as RDF will be stored within the main buildings and will be subject to regular turning and processing, this will reduce the risk of overheating.

6 Preventing self-combustion

6.1 General self-combustion measures

It is acknowledged that some wastes can self-combust under certain conditions. Self-combustion can be managed through preventative measures, carefully managing storage times, pile volumes and height, and the temperature of the wastes. These are described further within the following sections.

6.2 Managing storage time

6.2.1 Methods used to record and manage the storage of all waste on site

In the event that the Facility is not able to receive RDF due to an unplanned incident, forcing a full shutdown of the Facility, RDF deliveries will be stopped and/or diverted to a suitably licenced waste management facility. Typically, in the event that an unplanned shutdown lasts for more than a couple of weeks, RDF within the RDF deposit areas/stockpile bays at the Facility can be backloaded into vehicles using a loading shovel for transport off-site to a suitably licensed waste management facility, unless operations are expected to recommence imminently. The rate at which RDF will be removed will depend on the status of operation and expected recommencement of operations. In addition, environmental factors such as weather (e.g. hot weather posing odour risks) may contribute to the need to remove RDF from the tipping hall stockpile bays and RDF deposit areas.

At the Facility, the capacity of the RDF deposit areas/stockpile bays will be clearly stated and not exceeded. It is anticipated that the RDF storage capacity of the RDF deposit areas will be approximately 250 tonnes per deposit area. The stockpile bays will each have a capacity of up to 450 m³. The tipping hall stockpile bays and deposit areas will have capacity to store approximately 4 days of RDF. However, allowing for extended periods of shutdown, the maximum amount of time that RDF will be stored in the RDF deposit areas/stockpile bays is expected to be up to 4 weeks.

Prior to any planned shutdowns of the Facility, RDF deliveries will be stopped and/or diverted to alternative waste management facilities. At the Facility, the RDF within the RDF deposit areas/stockpile bays will be combusted to minimize the quantity of RDF remaining in storage prior to the shutdown commencing. This will ensure that there is only a small residue of RDF in storage during the period of shutdown. The duration of planned shutdowns will vary significantly, dependent on the nature of the work required. At the Facility, they will typically will not extend beyond four weeks.

6.2.2 Stock rotation policy

6.2.2.1 Facility

Following the recommencement of RDF deliveries after a period of shutdown, the loading shovel will be used to mix RDF within the storage areas at the Facility and to mix deliveries of 'new' RDF with residual quantities of older RDF. It is not expected that there will be seasonal variations in the demand or supply of RDF.

During normal operations, frequent stock rotation will be ensured, with waste stored within stockpile bays moved every 24 hours.

6.3 Monitoring and control temperature

6.3.1 Monitoring and controlling temperature

As part of the detailed design and construction of the Facility, the fire system design will be designed and installed by an experienced fire engineering company, which employs appropriately qualified persons. The Facility will develop systems in collaboration with the local fire officer, the fire risk insurers and any relevant standards and codes of practice.

All RDF delivered to the Facility will be supervised by operational staff, who will be responsible for the inspection and monitoring of RDF deliveries. Operational staff will be briefed on the need for monitoring for the early signs of fires.

The frequency of inspections of the RDF storage areas (and other parts of the site) will be increased during a full shutdown, and a checklist utilised to ensure a complete record of issues and comments that may require further action, such as assessing the presence of hotspots within RDF storage areas.

Smoke or flame detectors will be fitted within the main building above RDF storage areas, to allow for quick detection and mitigation of fires. Daily inspections and visual monitoring of RDF storage areas will be undertaken, with CCTV fitted in the main process building which covers the main RDF storage areas.

Thermal imaging cameras will be fixed around the perimeter of RDF storage areas to provide the Operator with a continuous thermal 'map' of RDF storage. This is standard practice in UK waste incineration plants. The temperature of RDF in RDF storage areas will continue to be monitored even during periods of shutdown.

During daytime operations, the RDF storage areas will be visually monitored by control personnel and the thermal imaging system. At night-time, the control personnel will visually monitor the thermal imaging system as part of their responsibilities for operating the Facility. Therefore, they will be able to identify and react to hot areas in the RDF storage areas and undertake the mixing or feeding of RDF as appropriate.

Management procedures for the storage and handling of RDF will be adopted to ensure that there is a regular turnover of RDF within RDF storage areas, preventing hotspots or anaerobic conditions developing within RDF storage areas. A loading shovel will be used to mix RDF to avoid generation of anaerobic conditions. The mixing of waste is standard practice at waste incineration plants in the UK. As well as helping to produce a more homogenous fuel which is better for control of the combustion process, it helps to prevent the formation of hotspots. Turning of RDF will help to release heat that has built up. By taking 'grabs' of waste and spreading it over a wider area, it dissipates the entrained heat and removes thermal inertia within the waste. It also increases the evaporation of water, which is a heat absorbing process. These factors help to minimise the risk of self-heating and ignition. In addition, mixing the RDF enables older RDF stored towards the base of RDF storage areas to be brought to the surface, reducing the risk of anaerobic conditions developing and ensuring older RDF does not remain 'buried' at the base of RDF storage areas. Operators will be trained in careful RDF handling as to maintain the integrity of the structure of RDF storage areas.

In extreme cases, sprinklers located over the RDF storage areas (refer to section 11) will be used to extinguish any smouldering or burning RDF that is identified within RDF storage areas. It is expected that thermal imaging cameras will be set with two trigger alarms at different temperatures within the RDF storage areas. The fire suppression systems will be activated if the 'high-high' temperature alarm is reached.

Quenched IBA will be transferred from the combustion process, via conveyor, to the storage skips. Due to the high thermal temperatures in which the IBA has been combusted, it is not expected to contain any combustible materials which are able to self-combust from the elevated temperatures within the IBA. In addition, the quenching of the ash will ensure it has been suitably cooled prior to processing/storage, and the moisture within the IBA from quenching of the ash will ensure that the IBA will not combust.

APCr is not expected to contain any combustible materials which could self-combust from elevated temperatures associated with the handling and storage of APCr.

6.3.2 Reducing exposed metal content and proportion of fines

It is not expected that a large quantity of fines will be present within the RDF accepted at the Facility, due to the nature of the fuel (pre-processed RDF). As the fuel is pre-processed, it is expected that the majority of ferrous and non-ferrous metals will have been removed from the fuel before it is accepted at the Facility. Therefore, it is not expected that large quantities of fines or metals will be present within the RDF, and as such, the FPP guidance requirement to reduce exposed metal content and proportions of fines does not apply to the Facility.

7 Manage waste piles

7.1 Maximum pile sizes

It is understood that the EA's maximum waste pile sizes are not applicable to RDF stored within 'bulk' storage facilities at waste incineration plants, such as bunkers, or in the case of the Facility, RDF deposit areas (whereby waste will continually be moved into the incineration process by means of walking floors). Therefore, the pile sizes in the FPP Guidance do not apply to the RDF deposit areas.

In relation to the stockpile bays, each bay will not exceed a storage capacity of 450 m³, and pile heights will not exceed 4m. Therefore, the stockpile bays will be in accordance with the requirements of the FPP guidance relating to pile sizes.

7.2 Storing waste materials in their largest form

Incoming RDF will not undergo any further 'treatment' upon receipt at the Facility prior to incineration. Therefore, it will be stored in its largest form.

7.3 Waste stored in containers

At the Facility, the only waste/residue which will be stored in 'containers' is ash. The design of storage facilities for these residues is subject to detailed design. Further details on storage arrangements are presented within section 2.9 of the supporting information. Both IBA and APCr are not expected to contain any combustible materials which could self-combust from elevated temperatures within the ash.

8 Prevent fire spreading

8.1 Separation distances

It is understood that the storage requirements relating to pile separation distances (i.e. storing combustible waste piles with a separation distance of at least 6 metres) only applies to the external storage of wastes. All RDF delivered to the Facility will be stored within buildings.

8.2 Fire walls construction standards

Fire walls will be installed within buildings as required by the fire insurers and in accordance with the requirements of the Buildings Regulations. The location and specification for fire walls will be subject to detailed design, and will be dependent on the 'final' layout developed by the EPC Contractor. Indicative locations for the fire walls are presented in Appendix A.6.

Subject to the location of the process equipment, operational areas at the Facility will be segregated into fire zones (the "Fire Zones"). In accordance with NFPA 850, certain specific Fire Zones at the Facility such as the tipping hall and boiler hall will be separated from each other by fire barriers with a minimum of 2-hour fire resistance rating, spatial separation, or by other approved means. The specific Fire Zones to which this applies, and the means of separation, will be subject to agreement with the fire risk insurers.

As part of the detailed design process, a fire risk assessment will be undertaken for each Fire Zone within the Facility to identify the appropriate fire detection and protection systems in association with appropriate civil work design principles to control:

- the risk of fire propagation;
- the spread of fumes and smoke;
- firewater flooding; and
- to maintain the integrity of dedicated fire partition walls in the event of fire.

The fire zoning will be subject to the approval of Sesona and the fire risk insurers.

The dividing wall between the tipping hall and boiler hall at the Facility and all other walls within RDF storage areas will be suitably constructed in concrete, block work or a suitably rated cladding system up to roof level to form a continuous 2-hour fire rated barrier for the full width and height of the building structure. In addition, the base of RDF storage areas (deposit areas and stockpile bays) will be constructed of reinforced concrete, and the whole structure will be designed as a water retaining structure. The structural design and construction of the dividing wall shall be such that the integrity of the fire barrier is maintained in the event of the collapse of the tipping hall roof due to a fire in the RDF storage areas. The walls and the base of the RDF deposit areas/stockpile bays will be resistant to loading shovel impact and the impingement of water suppression systems. Therefore, the structure of the RDF deposit areas/stockpile bays will provide adequate fire resistance/containment.

Stockpile bays themselves (including the quarantine area) will be separated by concrete walls which will act as fire wall containment to stop fire spreading between bays.

All openings in fire barriers will be provided with fire doors, including fire dampers, penetration seals (fire stops), or other approved means having a fire protection rating consistent with the designated fire resistance rating of the barrier. Windows in fire barriers (e.g. control rooms, observation windows, computer rooms, etc.) will be provided with appropriate fire protection to

maintain the integrity of the fire barrier, e.g. by means of a fire shutter, automatic water curtain, window sprinkler system, etc. All cable trays or piping systems passing through fire barriers will be fitted with fire stops.

8.3 Storing waste in bays

There will be a number of RDF stockpile bays within the tipping hall. Bays will be separated by rated concrete fire walls to prevent the spread of fire. The bays (including separating fire walls) will be designed to:

- resist fire (both radiative heat and flaming); and
- have a fire resistance period of at least 120 minutes to allow waste to be isolated and to enable a fire to be extinguished within 4 hours.

The exact specification/construction of the concrete bays is subject to detailed design of the Facility. However, it is expected that they will be constructed in accordance with the 'EN 1992-1-1: Eurocode 2: Design of concrete structures' standard.

In accordance with the EA's FPP guidance, stockpile bays will meet the following requirements:

- Full and frequent stock rotation will be carried out to ensure a 'first in, first out' policy.
 - During normal operations, waste stored in bays will be moved every 24 hours to ensure frequent stock rotation. As part of the site management system and operating procedures, waste storage will be monitored visually to ensure frequent turnover.
- Temperatures of waste stored within bays will be monitored.
 - Thermal imaging cameras will be stored over the main RDF storage areas including the stockpile bays, and RDF deposit areas. This will allow temperature monitoring and quick identification of any hotspots.
- When completing detailed design of the Facility, the calculation of flame height and radiation will be taken into account, in the context of preventing the spread of fire between piles/bays. Furthermore, the design of stockpile bays will prevent brands or lighted material moving outside the bay walls and igniting other wastes.
 - In particular, a 'freeboard' space of 1m minimum will be kept clear at the top and sides of the bay walls at all times, to prevent fire spreading over and around the walls.
- Wastes at risk of ignition will be quickly and effectively removed to the quarantine area, to isolate any bays with burning waste during an incident.
 - This is expected to be achieved by the use of front loaders. Further details on the quarantine area are presented within section 9.

9 Quarantine areas

9.1 Quarantine areas – location and size

The exact location of the quarantine area will be subject to the detailed design of the Facility; however, it is expected that a designated quarantine bay will be located at the stockpile area closest to the exit door. A drawing is presented within Appendix A.7 which shows the indicative location of the quarantine area.

The stockpile bays will be segregated by concrete walls which act as fire wall containment. Therefore, the quarantine area will have rated fire walls which will prevent the spread of fire to adjacent bays/waste storage areas.

Heat detectors will be fitted in the tipping hall/RDF storage areas, including the quarantine bay. Fire suppression would be achieved by means of sprinklers.

When depositing RDF in the quarantine area at the Facility, the site operatives will place the RDF so that a reasonable separation distance is maintained around the pile, and it does not lie directly adjacent to any walls. When it is not being used for the storage of unacceptable waste, the quarantine area will be kept clear.

Following completion of detailed design, a plan showing the final location of the quarantine area will be developed. The plan will show the size/capacity of the quarantine area, clearance areas around the perimeter, and infrastructure associated with the quarantine area.

The quarantine area will be designed in accordance with the requirements of the FPP Guidance, i.e. it will be designed:

- To hold at least 50% of the largest pile size; and
- with a thick concrete wall between the quarantine area and other RDF storage areas to prevent the spread of fire.

With regards the first requirement, this is stated in the FPP guidance as holding “*at least 50% of the volume of the largest pile, row or block of containers*” at the Facility. As pile size requirements and separation distances are not considered to apply to the RDF deposit areas, the RDF stored within the RDF deposit areas is not considered to fall under the definition of a waste ‘pile’ as per the FPP guidance. The largest pile of waste will be RDF contained within stockpile bays. It is expected that the quarantine area will be designed to hold at least 50% of the capacity of a stockpile bay (225 m³), in accordance with the requirements of the FPP guidance. This will be confirmed following detailed design of the Facility.

9.2 How to use the quarantine areas if there is a fire

The quarantine area will be used to temporarily store, if needed, any unacceptable RDF/waste prior to removal from site. Unacceptable RDF is broadly defined as RDF which does not meet the requirements set out in the RDF supply agreements which have been agreed with RDF suppliers for the Facility, or other RDF which is otherwise unsuitable for incineration, and/or is not compliant with the EWC codes stated in the EP.

In the event that unacceptable RDF is a ‘hot load’, this would be extinguished and stored in the quarantine area for a short period of time before being transferred off-site. At the Facility, where unacceptable RDF is identified inside the RDF deposit areas/stockpile bays, it will be back-loaded from the RDF deposit areas/stockpile bays using a front loader shovel arrangement and transferred

to the quarantine area, for examination and/or removal from the site to a suitably licensed waste treatment facility.

Any RDF placed within the quarantine area will be removed in a timely manner (i.e. typically within 24 hours), so it is highly unlikely for a situation to arise whereby the quarantine area is already 'full' and another load needs to be placed within the quarantine area. Any hot loads would be placed in a location within the quarantine area which is away from any loads which have already been transferred to this area. If the RDF is burning when it is transferred to the quarantine area, it will be extinguished immediately upon placing in the quarantine area to prevent the spread of fire to any loads already within the quarantine area. If required by the EA, skips can be placed in the quarantine area to allow loads to be segregated, although as stated previously, it is highly unlikely for a situation to arise whereby the quarantine area is already 'full' and another load needs to be placed within the quarantine area.

Depending on the location of the fire, there may be a requirement for an alternative quarantine area, particularly when it has been identified as unsafe or not practical for hot loads to be transferred to the dedicated quarantine area. In this situation, the FSM or deputy FSM will undertake a dynamic risk assessment should additional storage areas be required. The dynamic risk assessment will take into account the potential for contaminated firewater runoff resulting from water suppression; the location of fire suppression systems; and the potential for the spread of fire.

9.3 Procedures to remove material stored within the quarantine areas

Hot loads stored within the quarantine area will be extinguished as soon as possible. Appropriate fire detection and protection measures (e.g. smoke/flame detectors, sprinklers, fire extinguishers) will be installed in the quarantine area. Therefore, if a fire was to occur within the quarantine area, it will be extinguished prior to the RDF being transferred off-site. If required, the emergency services would be called for assistance.

Unacceptable RDF will be segregated from all other incoming RDF, allowing it to be collected and loaded into appropriate road vehicles for removal off-site, once deemed safe to do so.

Unacceptable RDF will typically not be stored within the quarantine areas for more than 24 hours. The RDF supplier would be contacted immediately upon identification of an unacceptable load, and provisions will be made for the RDF to be collected and removed from the site. However, to allow for extended periods where RDF deliveries are not occurring (such as bank holidays), the maximum time that RDF could remain in the quarantine area will be up to 7 days. Sesona will co-ordinate with the RDF supplier to ensure that unacceptable RDF is removed from the site as soon as possible. This will reduce the risk of two separate loads requiring storage in the quarantine area.

Typically, unacceptable loads would be identified immediately upon tipping into the RDF deposit areas/stockpile bays at the Facility. In this case, the RDF delivery driver would be asked to remain at the site, the load would be rejected and the RDF backloaded into the delivery vehicle for transfer off-site. Should the delivery driver have left the site, RDF would be removed from the RDF deposit areas/stockpile bays using a loading shovel and deposited into the quarantine area.

10 Detecting fires

Procedures will be in place at the Facility to detect a fire in its early stages, in order to reduce the impact of the fire. The choice of fire detection systems (smoke/heat/flame detectors) to be installed within the Facility will be subject to detailed design. The fire detection systems will be covered by a UKAS-accredited third-party certification scheme or equivalent. The details of the fire detection systems will be confirmed prior to the commencement of commissioning.

During detailed design, appropriate fire detection systems will be proposed for the different areas of the Facility. The chosen fire detection systems will be appropriate to the activities undertaken. Following completion of detailed design, a plan showing the fire detection systems in each area will be included in this FPP.

10.1 Detection systems in use

Fire detection and alarm systems will cover all of the RDF processing areas.

All fire detection systems will be installed in accordance with BS 5839, Part 1 (2002) and subsequent amendments to give level P1 + M coverage in accordance with the requirements of the Loss Prevention Council ("LPC") guidance, or equivalent standard(s). A category P1 system relates to the protection of property and involves installing detectors in all areas of the building. A category M system is a manual-operation only system which has call points on all exits, as well as corridors where call points are spaced a minimum of 45m apart for access. In low fire risk areas, such as the Boiler Hall at the Facility, the requirements for a P1 detection system may be relaxed.

All automatic fire detection and alarm systems will be designed and maintained by a suitably qualified, experienced and registered fire protection engineer. Detailed design calculations, risk assessments and system drawings to demonstrate compliance with the requirements of the building control officer, fire officer and the insurer's requirements will be produced during detailed design.

In areas which are identified as having a low fire risk, the fire detection method(s) will be agreed with the requirements of the fire service and fire risk insurer. The fire detection, protection and alarm systems will comply with the requirements of the fire service and fire risk insurer. All fire detection systems will be design, installed and maintained in accordance with an appropriate UKAS-accredited third-party certification scheme or equivalent.

Procedures will be developed in the operation of the fire detection systems. Training will be provided to the relevant staff in the different fire detection systems. Training records in the operation of the fire detection systems will be retained on-site. It will be the responsibility of the operators and shift managers to monitor fire alarms.

It is anticipated that the following fire detection systems will be incorporated into the design of the Facility:

1. Fire detection within the tipping hall will be provided by flame or temperature detectors in accordance with an appropriate risk study. Fire suppression in the tipping hall will likely be provided by an automatic sprinkler system, to protect roofing and steelwork, with fire hose reels used manually in the case of vehicle fires or similar ground-level fires. The tipping hall fire detection and suppression systems is subject to detailed design.
2. Fire detection for RDF storage areas (deposit areas/stockpile bays) will be provided by thermal imaging cameras which will be fixed around the perimeter of the RDF storage areas with automatic scanning of the entire fire zone. The thermal imaging cameras will provide a continuous thermal 'map' of the surface of the RDF within the tipping hall bays and deposit

areas. The thermal mapping will be displayed in the control room and will be used by the operator to monitor temperatures within the RDF storage areas. The operator (s) within the control room will be trained in the identification and implementation of corrective measures in the event of elevated temperatures within the RDF storage areas. The thermal imaging cameras will enable the operator and/or the control room staff to identify and react to hot areas in the RDF storage areas and undertake mixing or feeding of RDF (using loading shovels) as appropriate. In extreme cases, sprinklers which will cover the entire extent of the tipping hall bays and deposit areas will extinguish any smouldering/burning RDF as required.

- Sprinklers and manual fire hoses are considered to be the primary means of fighting a RDF storage areas fire.
 - To proactively prevent fires, it is anticipated that the fire detection systems will be configured to sound an alarm based on certain conditions. This would involve the thermal imaging cameras being set with two alarms at two different ‘trigger’ temperatures. These are described below.
 - Temperature set-points would be determined during detailed design of the Facility and in consultation with the fire service. It is understood that the system will be designed so that trigger temperatures can be amended if required.
 - High temperature alarms in other UK waste incineration plants operate with a trigger temperature of approximately 90°C, with high-high temperature alarms operating with a trigger temperature of approximately 120°C. The trigger temperatures for the fire detection systems will be subject to detailed design and will be set in consultation with the Fire Service – it is assumed that they will be similar to other UK waste incineration plants. The system can be designed so that the trigger temperatures for the fire detection systems can be amended if required from operational experience.
 - Following activation of the high temperature alarm in an area within the tipping hall bays and deposit areas, the area with an elevated temperature can be readily identified and, if possible, extinguished based on operator action through mixing within the tipping hall bays and deposit areas or, if it is safe to do so, transfer to the quarantine bay.
 - Following activation of the high-high temperature alarm in an area within the tipping hall bays and deposit areas, the area with an elevated temperature will be targeted and the sprinklers will be activated to reduce the temperature in the area where self-heating has occurred.
3. Feed hopper area fire detection will be provided by the RDF feed hopper supervision camera or other suitable detection system, and a deluge system or firefighting nozzles to flood the feed hoppers if required.
 4. Fire detection and suppression for the thermal oil boilers will be managed through a centralised control system, with cameras, detection and supervision. 24/7 monitoring will be linked the fire brigade. Checks will also be incorporated into the daily operations and maintenance (O&M) plan. All systems will be monitored by personnel 24/7.
 5. Fire detection and suppression for the thermal oil boilers will be managed through a centralised control system, with cameras, detection and supervision. 24/7 monitoring will be linked the fire brigade. Checks will also be incorporated into the daily operations and maintenance (O&M) plan. All systems will be monitored by personnel 24/7.
 6. Electrical rooms with significant concentrations of electrical equipment will be fitted with appropriate suitable fire detection systems and suppression systems (such as inert gas extinguishing systems).
 7. Any oil-filled transformers shall be located outdoors wherever possible. Dry type transformers are preferred for indoor installations. Oil type transformer protection will comply with the

requirements of NFPA 850 or have an equivalent level of fire protection. If appropriate, enclosures for dry-type transformers will be provided with suitably designed fire detection systems.

8. The fire sensitive areas of turbine-generator and ancillaries will be protected by a dedicated fire detection and automatic sprinkler fire protection system or equivalent.

11 Suppressing fires

The suppression systems for the Facility will be subject to detailed design. The main features of the fire suppression systems are described in section 11.1. Active firefighting techniques are detailed in section 13, with further details on the water supplies for the fire suppression systems provided in section 14.

11.1 Suppression systems in use

There will be a fire suppression system installed in the locations considered by the fire strategy to be at risk of fire. Automatic fire suppression systems (such as sprinklers) will be designed and maintained by a suitably qualified, experienced and registered fire protection engineer. The fire suppression systems will be covered by a recognised (typically UKAS) third party certification scheme.

Detailed design calculations, risk assessments and system drawings to demonstrate compliance with the requirements of the building control officer, fire officer and the insurer's requirements will be retained on site throughout the lifetime of the Facility.

A Fire and Rescue Service is already in place for the wider Hillhouses industrial site.

11.1.1 Fire hose reel system

Hose stations will be designed in accordance with NFPA 14, Standard for the Installation of Standpipe, Private Hydrants and Hose Systems, or BS equivalent (e.g. EN 671). Fire hydrant systems equipment will be provided at strategic positions within/surrounding the Facility for firefighting in fire risk areas.

For firefighting purposes, hose reels and extinguishers will be provided within the main buildings at the Facility.

The positioning of hose points will take into account the following:

- location and physical protection as to avoid potential damage by vehicles;
- size and number to be determined for the specific works layout (e.g. push wall positions);
- ease of use, maintenance, and storage, such as through the use of continuous-flow, non-collapsible hose reels; and
- protection from freezing in unheated areas.

Following detailed design of the Facility, a plan identifying the location of the fire hose reels will be developed.

11.1.2 Fire hydrants and mains

It is anticipated that around 4 fire hydrants will be required around the installation to allow a fire tender access. The hydrants would be positioned such that all hydrants are no more than 90m from a building entrance (in accordance with BS 9990) and within 12 m of the building. An indicative drawing showing the possible locations of fire hydrants is presented in Appendix A.5 of this report.

The location of hydrants will be subject to detailed design and will be agreed with the fire risk insurers and the fire officer. The positioning of fire hydrants will take into account:

- location and physical protection as to avoid potential damage by vehicles;
- size and number to be determined for the specific layout; and

- protection from freezing.

Fire hydrants will be designed in accordance with NFPA 14 Standard for the Installation of Standpipe, Private Hydrants, and Hose Systems (or BS equivalent – refer to section 12) and will be connected to a ring main at strategic positions around the Facility to provide firewater supplies to external fire risk areas. The fire hydrants will be designed in accordance with the requirements of the Building Regulations and the fire service.

Due to the location of the Facility in a wider industrial complex, there is a fire tender response service located nearby. Water supply/pressure can be provided from the tender tank and be replenished by the hydrant water supply.

11.1.3 Fire extinguishers

Fire extinguishers will be strategically located throughout the operational areas of the Facility in accordance with the requirements of BS 5306 (or NFPA equivalent).

The location of the fire extinguishers will be subject to implementation of the recommendations of the fire officer for the Facility. Following completion of detailed design, a plan identifying the location of the fire extinguishers will be developed.

11.1.4 Additional suppression systems

In addition to the fire suppression systems outlined above, it is anticipated that the fire suppression systems at the Facility will also include the following:

- automatic systems for the turbine generator and lube oil systems, auxiliary burners; and
- inert gas suppression for electrical rooms as required.

Furthermore, the main RDF storage areas (tipping hall bays, deposit areas and quarantine area) will be covered by a sprinkler system, which is described in further detail in section 10.1

12 Certification for the systems

The Facility will be designed and operated in accordance with relevant standards and guidelines, or alternative recognised international standards where they are available. The exact standards to be applied will depend on the detailed design of the Facility and agreement with fire insurers. The standards may include, but not be limited to, the following:

- BS EN 54: Fire detection & alarm systems.
- EN 671: Fixed firefighting systems. Hose systems.
- BS 750: Specification for underground fire hydrants and surface box frames and covers.
- EN 1028: Fire-fighting pumps. Fire-fighting centrifugal pumps with primer.
- BS 5041: Fire hydrant systems equipment.
- BS 5266: Emergency lighting
- BS 5306: Fire extinguishing installations
- BS 5839: Fire detection & alarm systems for buildings
- BS 7273: Operation of fire protection measures
- BS 7974: Application of fire safety engineering principles to the design of buildings.
- BS 9990: Non automatic fire-fighting systems in buildings.
- BS 9997: Fire risk management systems.
- BS 9999: Code of Practice for Fire Safety in the design, management and use of Buildings.
- EN 12101-2: Smoke and heat control systems. Natural smoke and heat exhaust ventilators.
- EN 12259: Fixed firefighting systems. Components for sprinkler and water spray systems.
- EN 12845: Fixed Firefighting systems. Automatic sprinkler systems. Design, installation and maintenance.
- EN 13565: Fixed firefighting systems. Foam systems.
- EN 14384: Pillar fire hydrants.
- EN 14710: Fire-fighting pumps. Fire-fighting centrifugal pumps without primer.
- EN 14972: Fixed firefighting systems. Water mist systems.
- EN 15004: Fixed firefighting systems. Gas extinguishing systems.
- NFPA 850: Recommended practice for fire protection for electric generating plants and high voltage (for the Facility), in addition to other relevant NFPA standards as applicable.
- Requirements/guidance from the Insurer.

Records associated with the certification of the fire prevention and suppression systems will be retained on site throughout the lifetime of the Facility.

13 Firefighting techniques

13.1 Active firefighting

An immediate firefighting response will be allowed to be made by staff if the following criteria have been met:

- the fire alarm has been raised;
- the fire is identified to be 'small' and it has been deemed safe by the individual to attempt fire suppression; and
- such firefighting action (e.g. use of a single fire extinguisher) is deemed safe and likely to have a direct and immediate effect on the fire.

Team firefighting (i.e. more than one member of staff operating firefighting equipment at once) will be permitted in the event of a larger fire by the use of multiple fire extinguishers and the fire hose reels if the following criteria are met.

- the fire alarm has been raised;
- the FSM (or deputy FSM) is in attendance;
- a sufficient number of trained staff are available;
- an escape route is always available;
- staff are not deemed to be at risk of smoke inhalation, significant heat exposure or other relevant fire risks; and
- such firefighting action is deemed safe and likely to have a direct and immediate effect on the fire.

As described in section 11.1.2, there will be a fire tender response service nearby which can provide support within minutes if required (e.g. for more serious fires).

13.2 Alternative fire detection and suppression measures

In addition to the fire detection and suppression systems identified in sections 10 and 11, the design of the Facility will include 'additional measures' to prevent the spread of fire, such as fire walls (refer to section 8.2). Furthermore, in the event of a significant fire within the RDF storage areas at the Facility, the plant can be shut-down which will include the shut-down of the induced draft (ID) fan and the extraction of combustion air from within the RDF storage areas. Shutdown of the Facility will reduce the risk of fire spread between 'fire compartments'.

14 Water supplies

14.1 Available water supply

As explained in section 7.1, the largest pile size at the Facility will be 450 m³. Therefore, in accordance with the requirements of the FPP Guidance, this would require a supply of 540 m³ of water for fire fighting purposes.

As explained in section 11, there are a number of measures proposed to suppress extinguish a fire at the Facility. The Hillhouses Fire and Rescue Service has confirmed that it would be able to provide 2,000 litres per minute the tender tank and associated pressure which is replenished by the hydrant water supply for the Hillhouse Business Park. It has advised that it could potentially be dangerous in terms of pressure and hose control to provide a flow rate of more than this.

Sesona understands that the provision of water available for fire fighting purposes from the Hillhouses Fire and Rescue Service is significantly more than the 540 m³ required by the FPP Guidance; therefore, the proposed design complies with the requirements of the FPP Guidance.

15 Managing fire water

The exact design of firewater containment systems is subject to the detailed design of the Facility. It is proposed that the design of the systems for the containment of firewater at the Facility are confirmed via a pre-operational condition or similar. However, a general summary of the proposed firewater containment measures at the site is provided below:

1. As described within section 14, the FPP Guidance requires a minimum provision of 540 m³ of water for fire fighting purposes.
2. Containment for contaminated firewater can be provided by a number of potential containment facilities:
 - a. Firewater resulting from external areas at the Facility would be collected in the site surface water drainage systems. Surface water attenuation facilities will be provided which can be used for firewater containment. Surface water attenuation facilities will be installed with a penstock valve or similar isolation system which will prohibit the discharge of contaminated surface water off-site in the event of a fire or other emergency. The surface water attenuation facilities are described in more detail as follows:
 - i. There is an existing 'confluence chamber' which is fitted with a flap valve. The required attenuation storage volume for surface water from the site has been sized to store the 1 in 100 AEP rainfall event. The 1 in 100 AEP rainfall event including a 40% increase in rainfall intensity to account for climate change has been allowed to pond on the surface of the site to reduce storage requirements. Taking this into consideration, a total attenuation storage volume of approximately 200 m³ is calculated to be required (refer to the Flood Risk and Drainage Assessment submitted with the planning application in Appendix I of the Application Pack). It is understood that the surface water drainage pipework itself could accommodate this volume. However, the existing 'confluence chamber' also provides adequate storage for any surcharge events.
 - ii. It is acknowledged that the capacity of surface water attenuation systems will be reduced by the quantity of water already present within the system; however, it is not anticipated that the attenuation systems will regularly store large amounts of water, as the required attenuation capacity was calculated assuming a 'worst case flow' (i.e. allowing for SUDS requirements). Therefore, there should be sufficient capacity available to hold excess firewater in the event of a fire. Furthermore, additional capacity from site raised kerbing and hardstanding will ensure that there is sufficient capacity to store used firewater resulting from external areas.
 - b. It is expected that firewater resulting from internal process areas will be collected in an underground tank for firewater containment capacity. It is expected that the underground tank will be fitted with a double block valve, which will allow firewater to easily flow into the tank but provide a tight seal when fully closed. The exact design and capacity of the tank will be subject to detailed design. Furthermore, RDF storage areas (the tipping hall, deposit areas, stockpile bays) will be designed as water-retaining structures in accordance with BS EN 1992-3. This will protect against the leak of contaminated firewater from RDF storage areas and minimise the risk of contamination of groundwater in the event of a fire within RDF storage areas. It can be confirmed that water stop joints will be installed in RDF storage areas as required. The material from which water stop joints are constructed is subject to detailed design, but fire resistance will be considered. The process drainage system itself (including any floor drains/trenches, intermediate storage tanks/drainage pits, sumps etc) can also be used for the containment of contaminated firewater in the event of a fire in process areas.

Potentially contaminated firewater that is collected in site drainage systems will be sampled and analysed to identify whether it is suitable to be used as process water or suitable for discharge offsite, or if treatment/disposal is required. If the firewater is considered to be contaminated, it will be transferred off-site, via tanker, to a suitably licensed waste management facility.

As required by the FPP guidance, a plan showing the proposed landscaping to surround the site (which shows the locations of natural and unmade ground surrounding the Facility) is presented in Appendix A.9 of this report.

16 During and after an incident

16.1 Dealing with issues during a fire

Documented emergency response procedures will be developed during the construction and commissioning phase of the Facility. The emergency procedures will include, but not be limited to:

- fire identification and reporting procedures;
- an evacuation plan;
- emergency communication procedures;
- responding to chemical spillages;
- containment of firewater;
- requirements for diverting incoming RDF; and
- Notification of any adjacent residential properties and businesses which may be impacted by the incident.

The effectiveness of the emergency response procedures will be reviewed following any emergency incidents on-site. Following an emergency incident, the procedures will be updated if required, and staff trained in the updated procedures.

A copy of the emergency procedures will be maintained at the gate house or other suitable location and may include the fire system mimic panel to allow co-ordination of the emergency response to a fire in the event that the main offices are unavailable.

On a periodic basis, testing of the emergency procedures will be undertaken. The intention of the testing is to verify that all staff and contractors are aware of the emergency procedures. Following all tests, the implementation of the procedures will be reviewed. If appropriate, the procedures will be amended, or additional training provided to all staff and contractors.

In the event of an incident resulting in the Facility not being capable to receive RDF, RDF deliveries will be stopped or diverted to a suitably licensed alternative waste management facility. Deliveries of RDF will not be recommenced until it has been deemed safe for RDF processing activities to be restarted following the incident. During a complete shutdown, the fire detection systems will remain operational.

16.2 Notifying residents and businesses

The Facility will be operated in accordance with an Environmental Management System (EMS). The EMS will include procedures for the response to and documentation of emergency situations. A documented emergency response procedures will be developed which will detail specific actions which must be carried out in the event of a fire.

Depending on the nature and scale of any incidents, it may be necessary to notify local residents and adjacent businesses of the incident. Prior to commencement of operation of the Facility, and as part of the development of the documented management systems associated with the operation of the Facility, suitable external communication procedures will be developed and implemented.

In the event of a significant fire, the EA will be notified as soon as practically possible. Following any fire incidents, the FSM will advise the EA what remedial measures or actions have been taken to prevent any further incidents.

16.3 Clearing and decontamination after a fire

Following a fire which requires the presence of the emergency services; materials, building structures, furnishings, vehicles, equipment and raw materials could be damaged. Once the fire has been fully extinguished and the emergency services given approval to enter the Facility, an assessment will be undertaken by the management team for the Facility, insurance assessors, structural engineers and fire damage/salvage specialists to assess the extent of the damage.

Once a full inventory of the damage and equipment has been completed under the strict supervision of specialist structural engineers, any building or structure will be made safe. Severely damaged equipment or building materials will be removed from site by a licenced waste/scrap company. Building structures that are deemed safe will be cleaned, as necessary.

RDF within the RDF storage areas which is not suitable to be incinerated, will be backloaded into HGV's and removed from site by a licenced waste carrier. Affected areas will be cleaned and washed before equipment and structural repairs will take place.

16.4 Making the site operational after a fire

If there was a significant fire requiring a full shutdown of the Facility, the Facility would not restart operations until the relevant regulatory authorities (Fire Service, Health and Safety Executive, Environment Agency, etc.), as well as the fire risk insurers, advised that it was safe to do so.

Records will be maintained of the following:

- fire incidents including post-incident investigation;
- feedstock management;
- training of site operatives;
- site inspections and monitoring;
- maintenance activities;
- testing of firefighting equipment; and
- complaints.

Records will be maintained in accordance with the requirements of the EP and any documented management systems.

Appendices

A Plans and drawings

A.1 Site location plan

A.2 Installation Boundary drawing

A.3 Materials and waste storage areas plan

A.4 Access points around the perimeter to assist firefighting

A.5 Indicative locations of fire hydrants

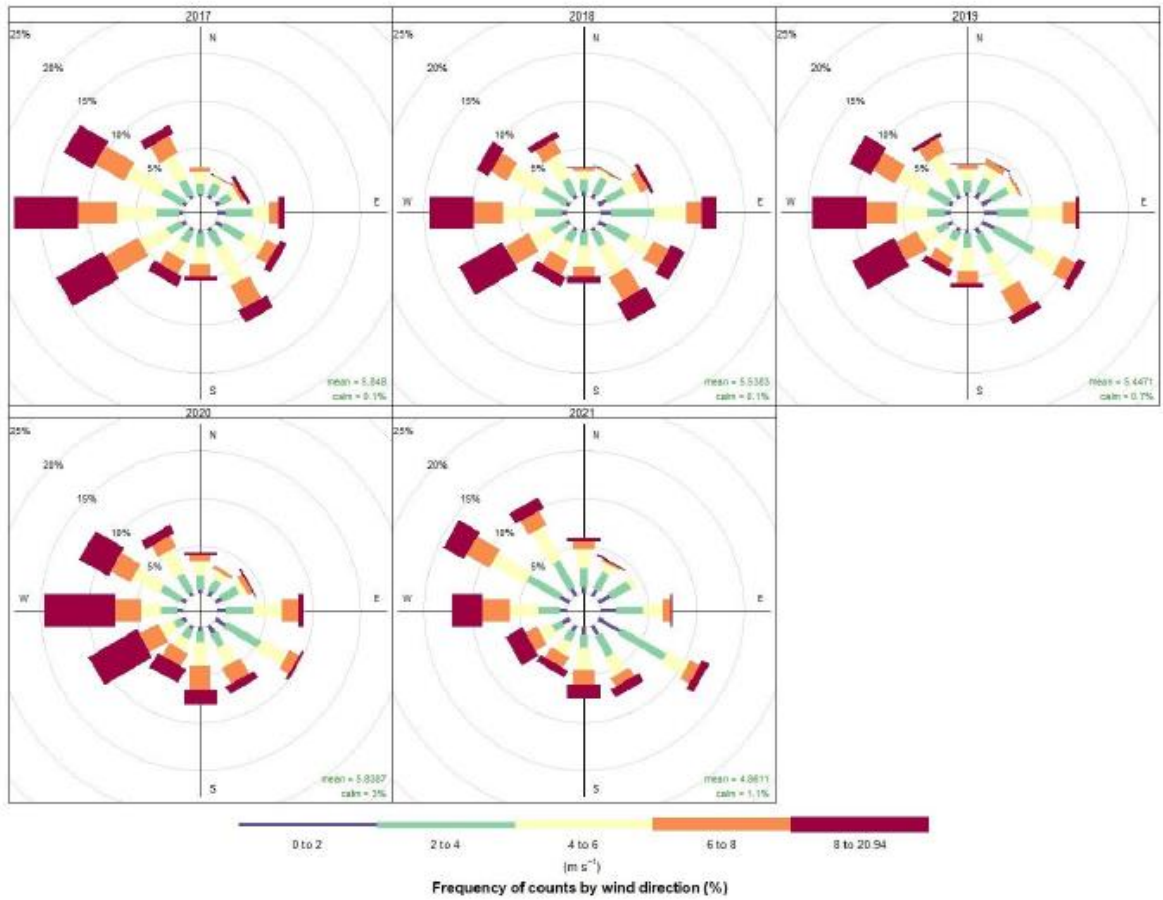
A.6 Indicative locations of fire walls

A.7 Indicative location of quarantine area

A.8 Fire Receptor Plan

A.9 Areas of natural or unmade ground

B Wind roses



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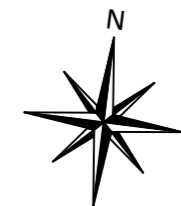
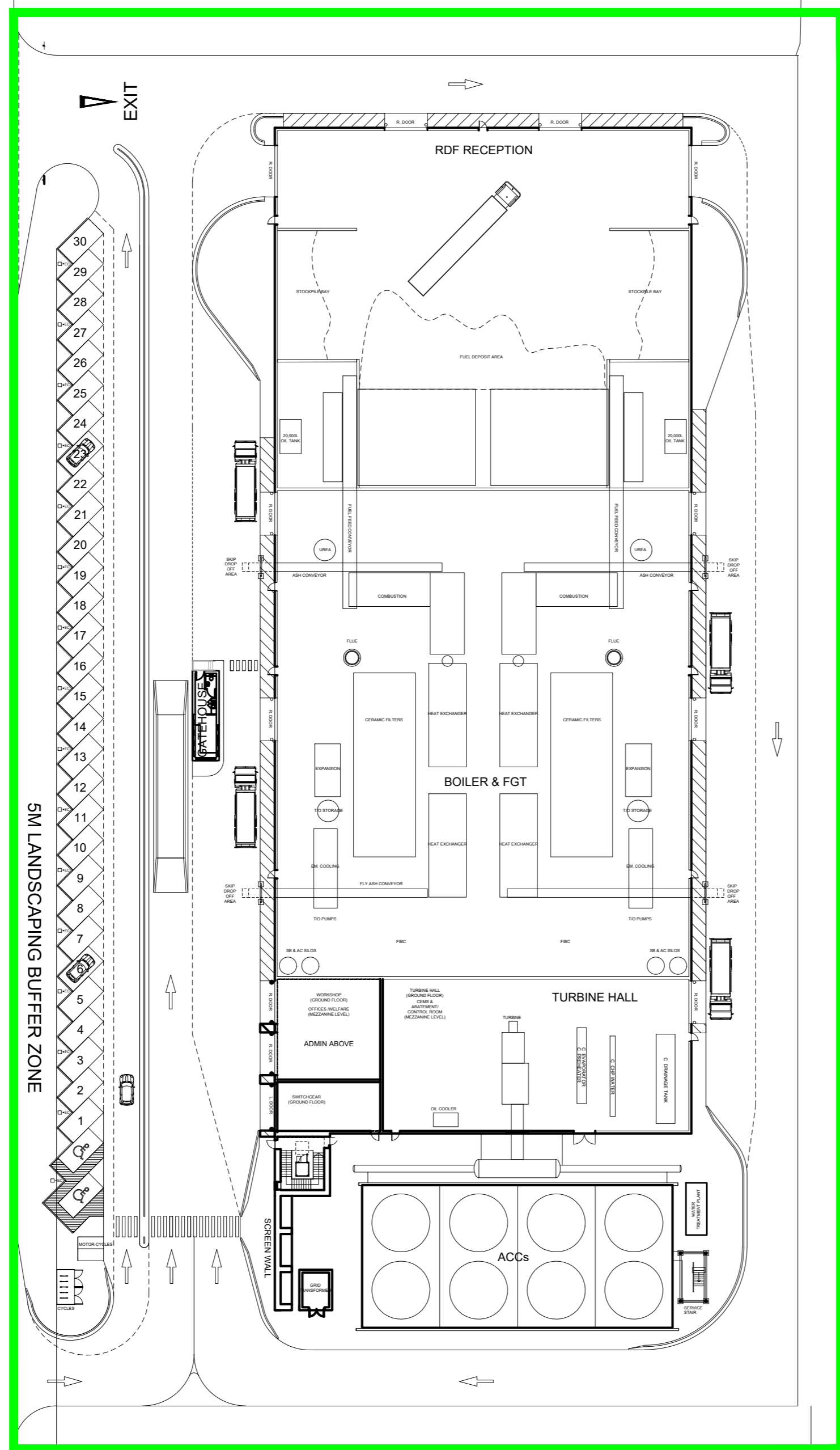
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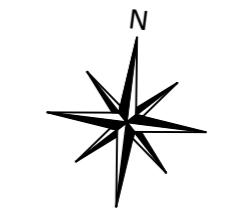
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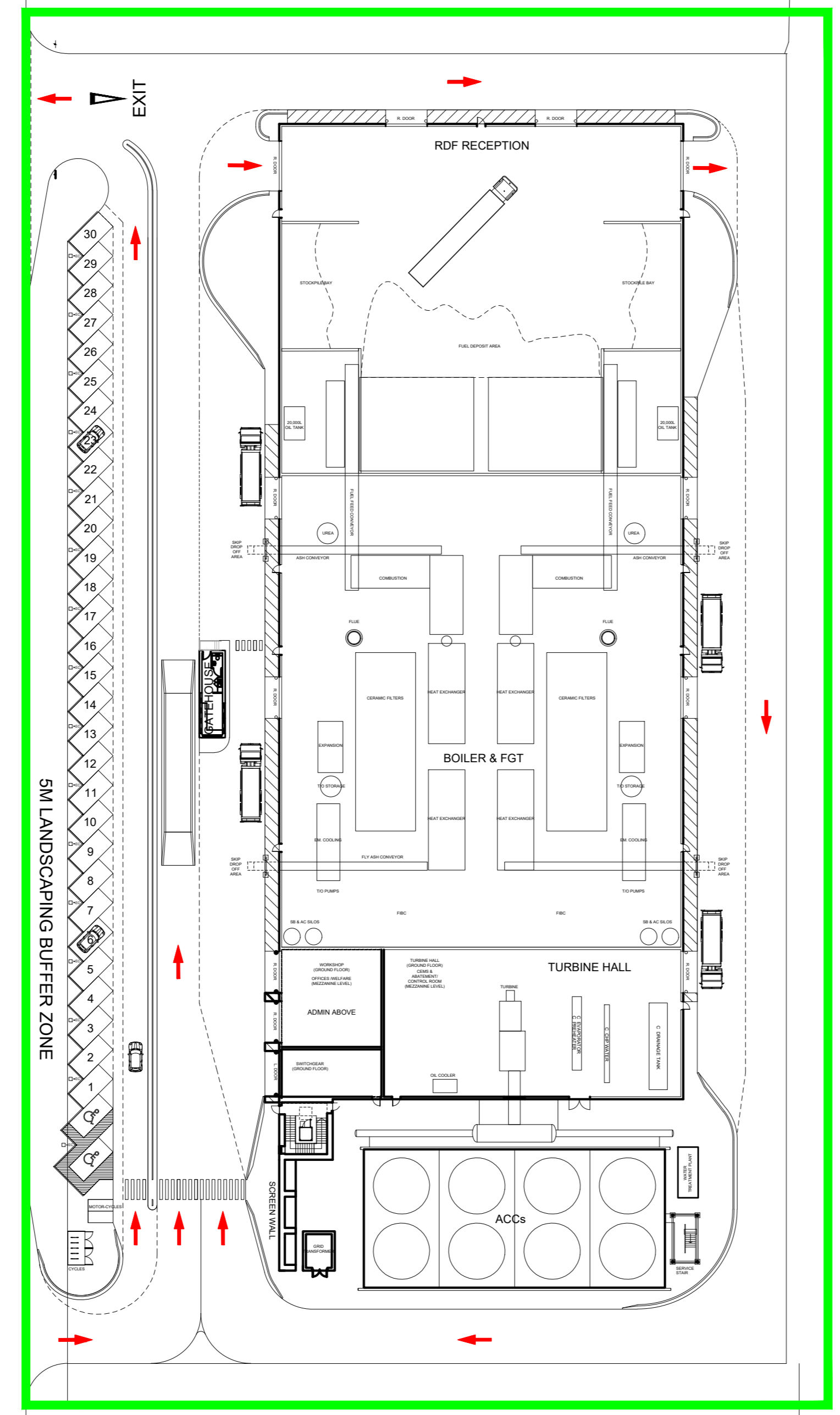
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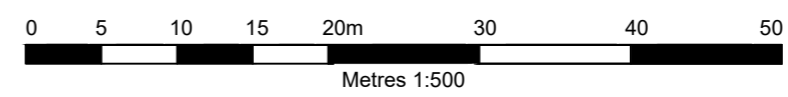
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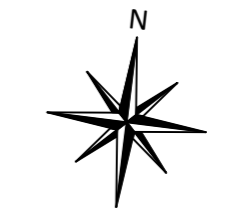
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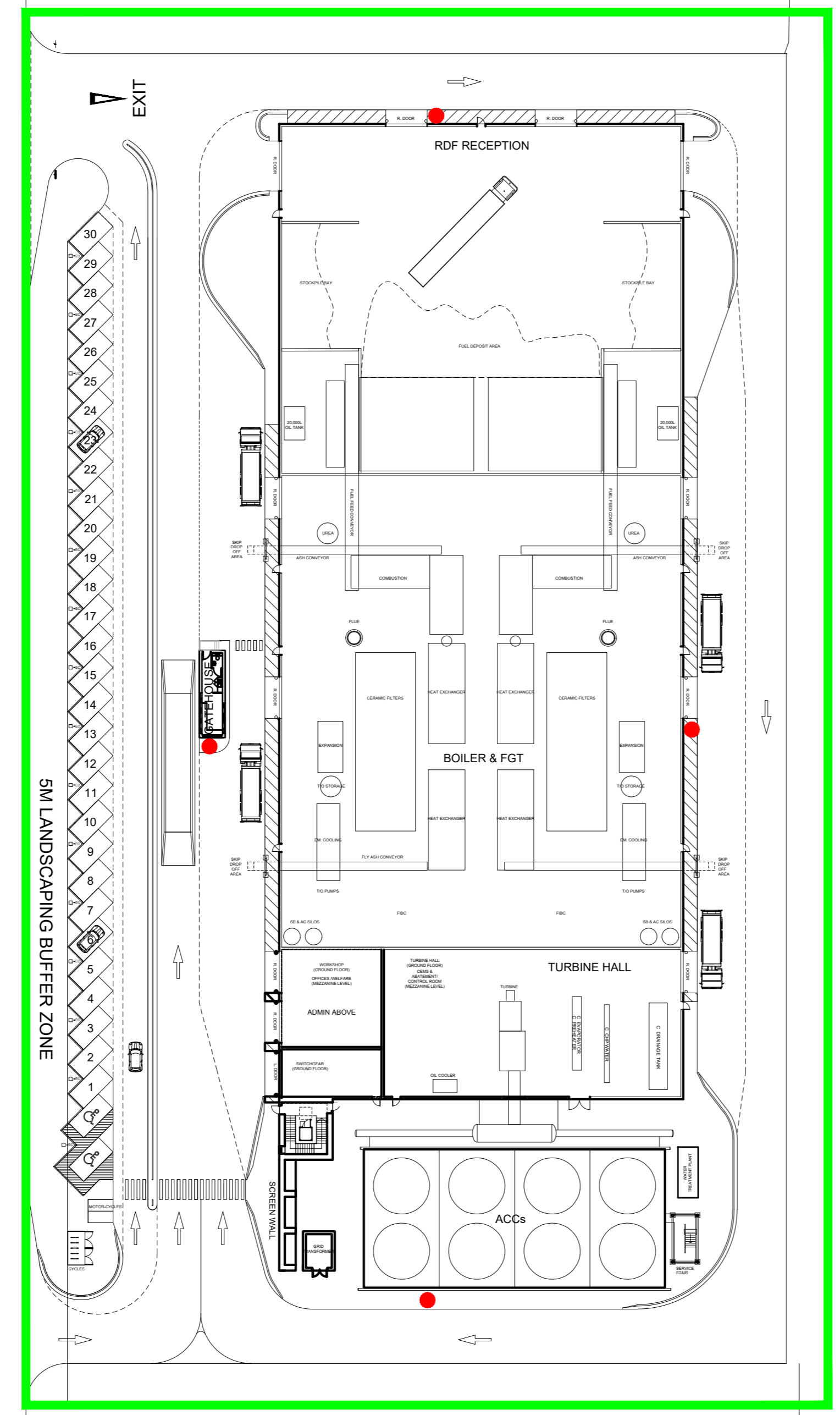


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● INDICATIVE LOCATIONS OF FIRE HYDRANTS



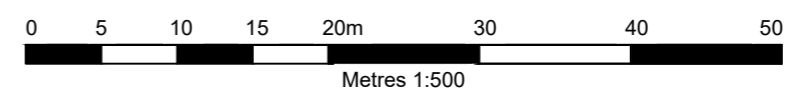
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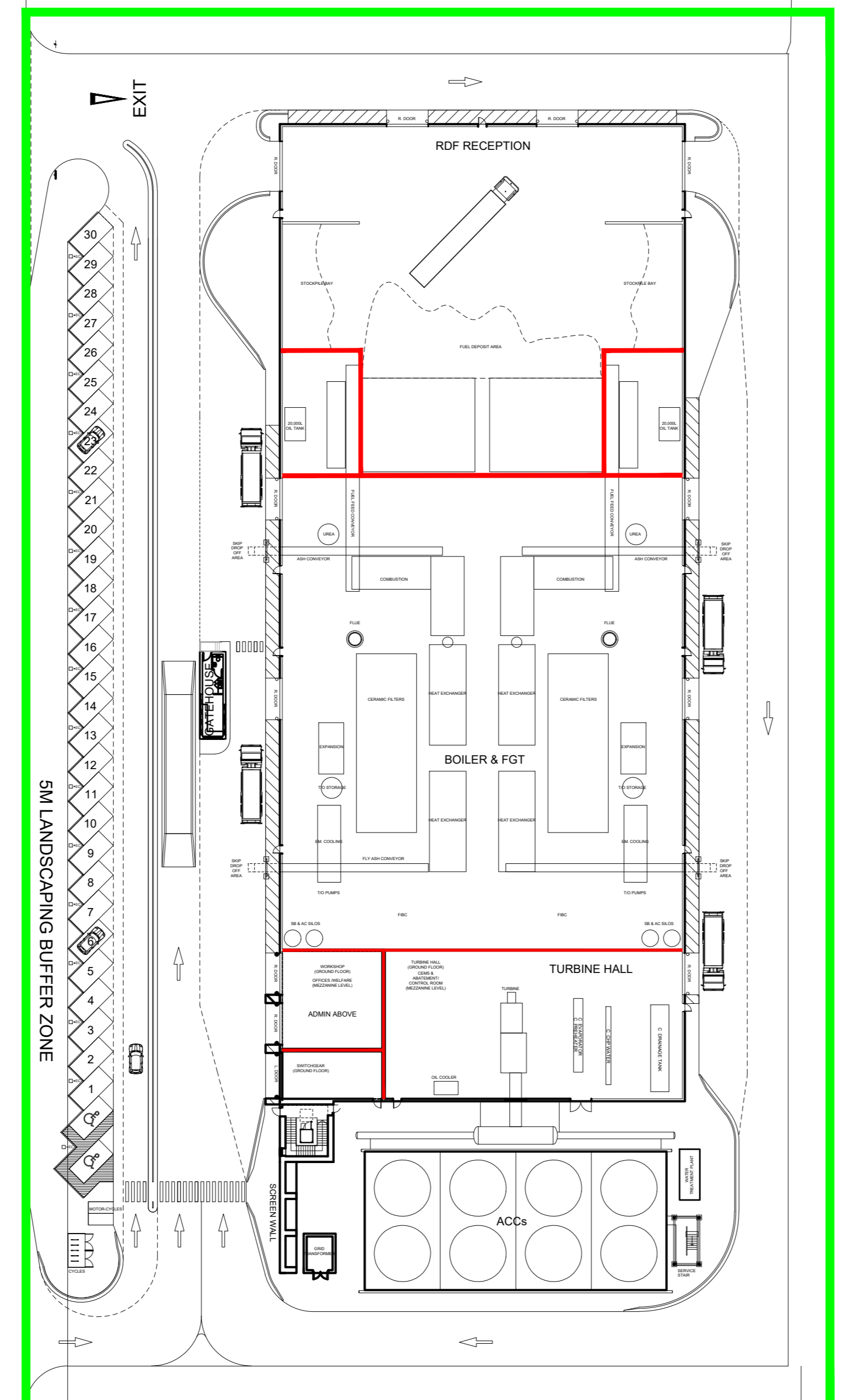


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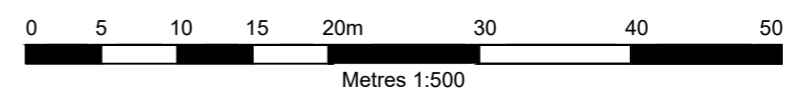
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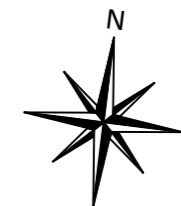
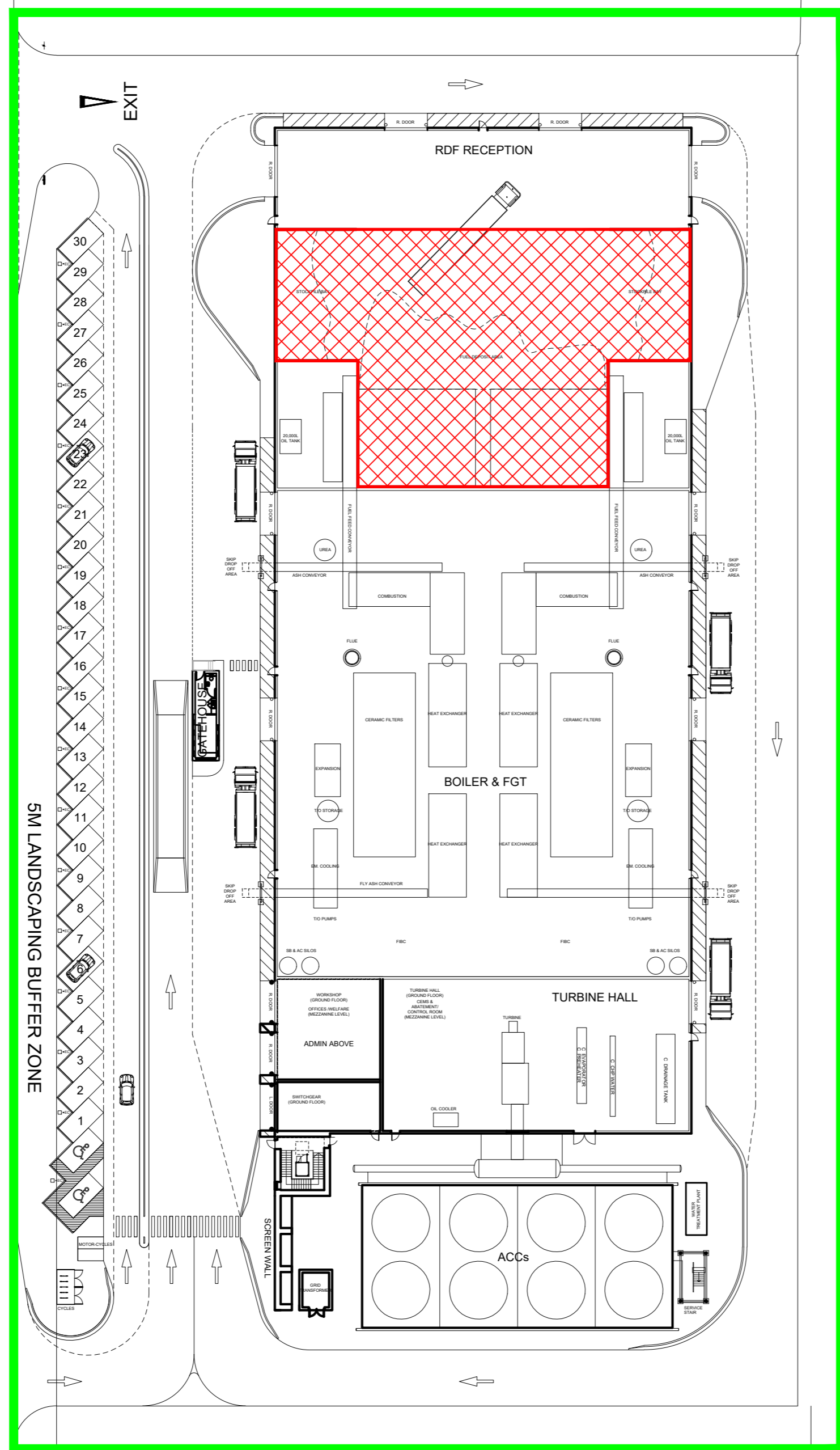
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	INSTALLATION BOUNDARY
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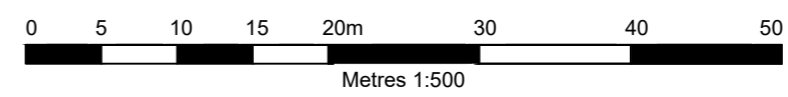
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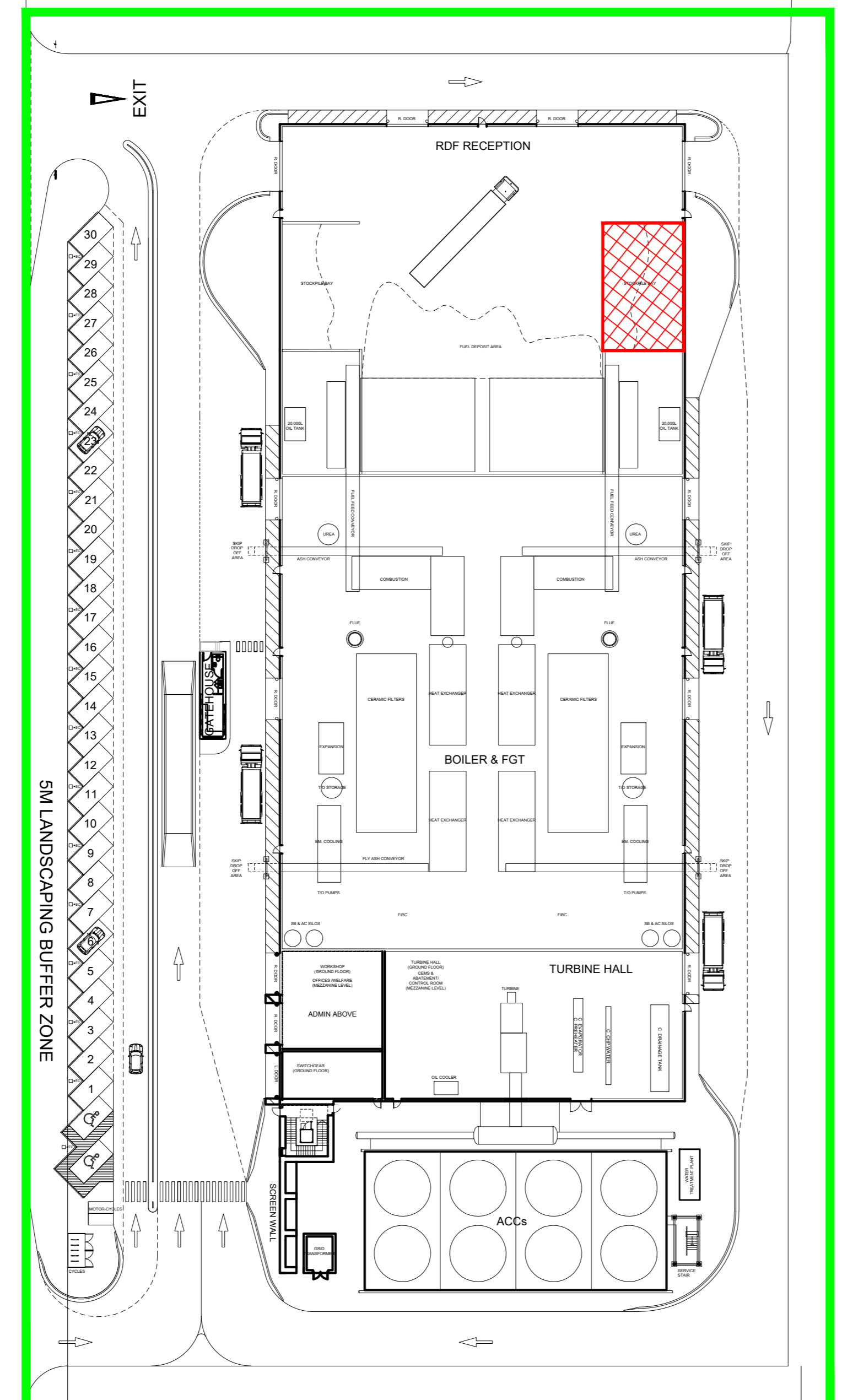
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LEGEND
 INSTALLATION BOUNDARY
 INDICATIVE QUARANTINE AREA
 EXACT LOCATION TO BE CONFIRMED.



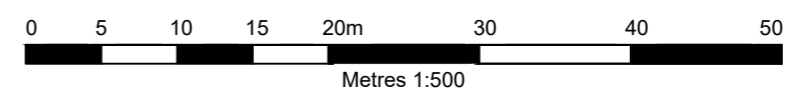
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REV.	DETAILS OF REVISION	DRAWN	CHKD	APR	DATE

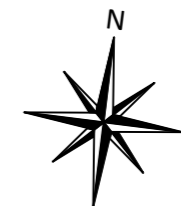
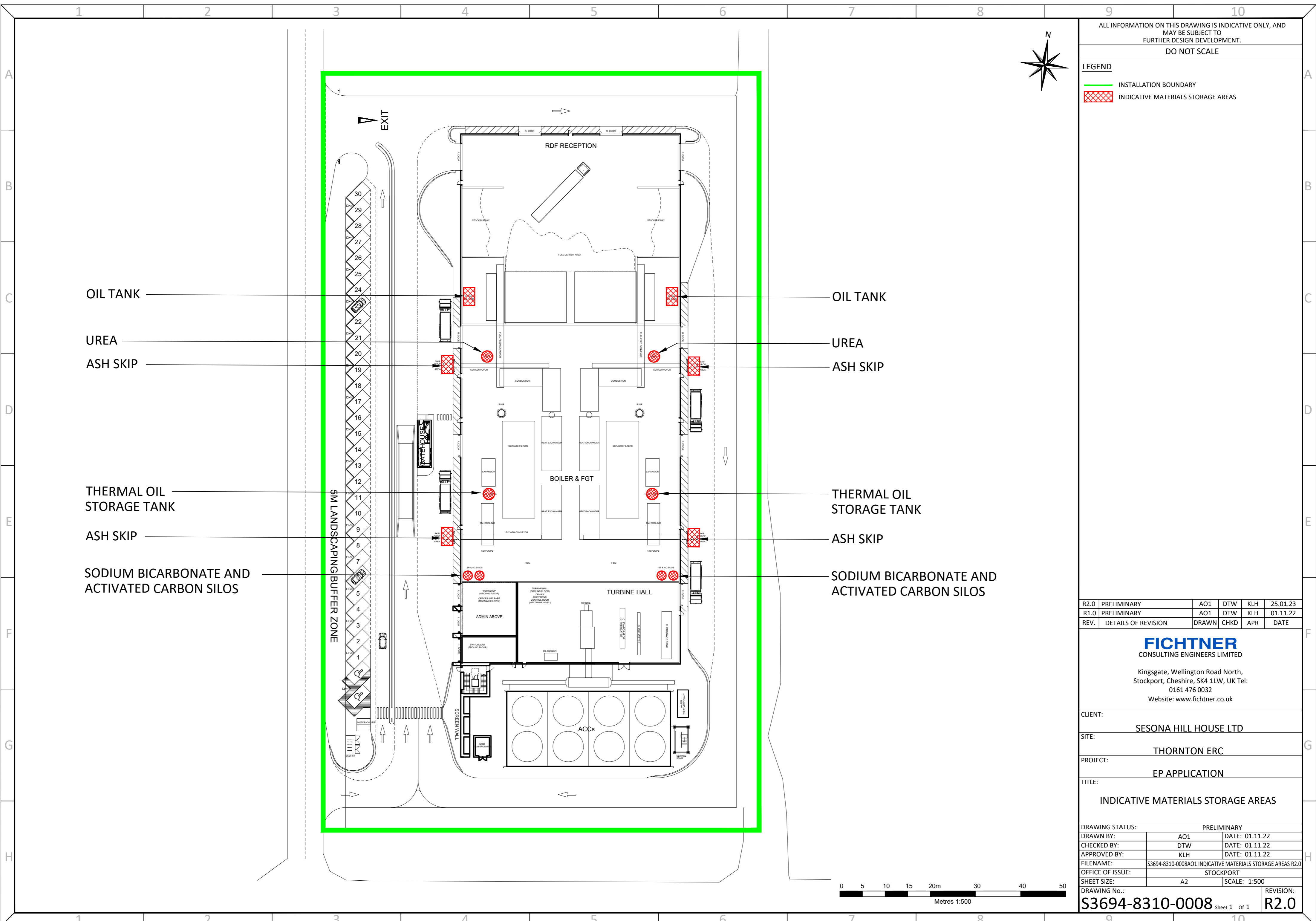
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SITE:	THORNTON ERC
PROJECT:	EP APPLICATION
TITLE:	INDICATIVE QUARANTINE AREA

DRAWING STATUS:		PRELIMINARY
DRAWN BY:	AO1	DATE: 01.11.22
CHECKED BY:	DTW	DATE: 01.11.22
APPROVED BY:	KLH	DATE: 01.11.22
FILENAME:	S3694-8310-0007AO1 INDICATIVE QUARANTINE AREA R2.0	
OFFICE OF ISSUE:	STOCKPORT	
SHEET SIZE:	A2	SCALE: 1:500
DRAWING No.:	S3694-8310-0007	Sheet 1 of 1
REVISION:	R2.0	





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LEGEND

	INSTALLATION BOUNDARY
	INDICATIVE MATERIALS STORAGE AREAS

OIL TANK

UREA

ASH SKIP

THERMAL OIL STORAGE TANK

ASH SKIP

SODIUM BICARBONATE AND ACTIVATED CARBON SILOS

OIL TANK

UREA

ASH SKIP

THERMAL OIL STORAGE TANK

ASH SKIP

SODIUM BICARBONATE AND ACTIVATED CARBON SILOS

R2.0	PRELIMINARY	AO1	DTW	KLH	25.01.23
R1.0	PRELIMINARY	AO1	DTW	KLH	01.11.22
REV.	DETAILS OF REVISION	DRAWN	CHKD	APR	DATE

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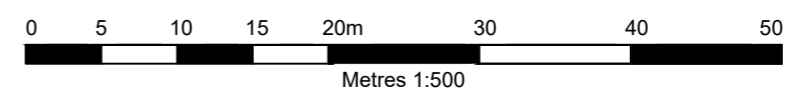
CLIENT: SESONA HILL HOUSE LTD

SITE: THORNTON ERC

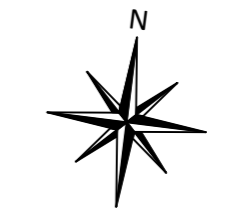
PROJECT: EP APPLICATION

TITLE: INDICATIVE MATERIALS STORAGE AREAS

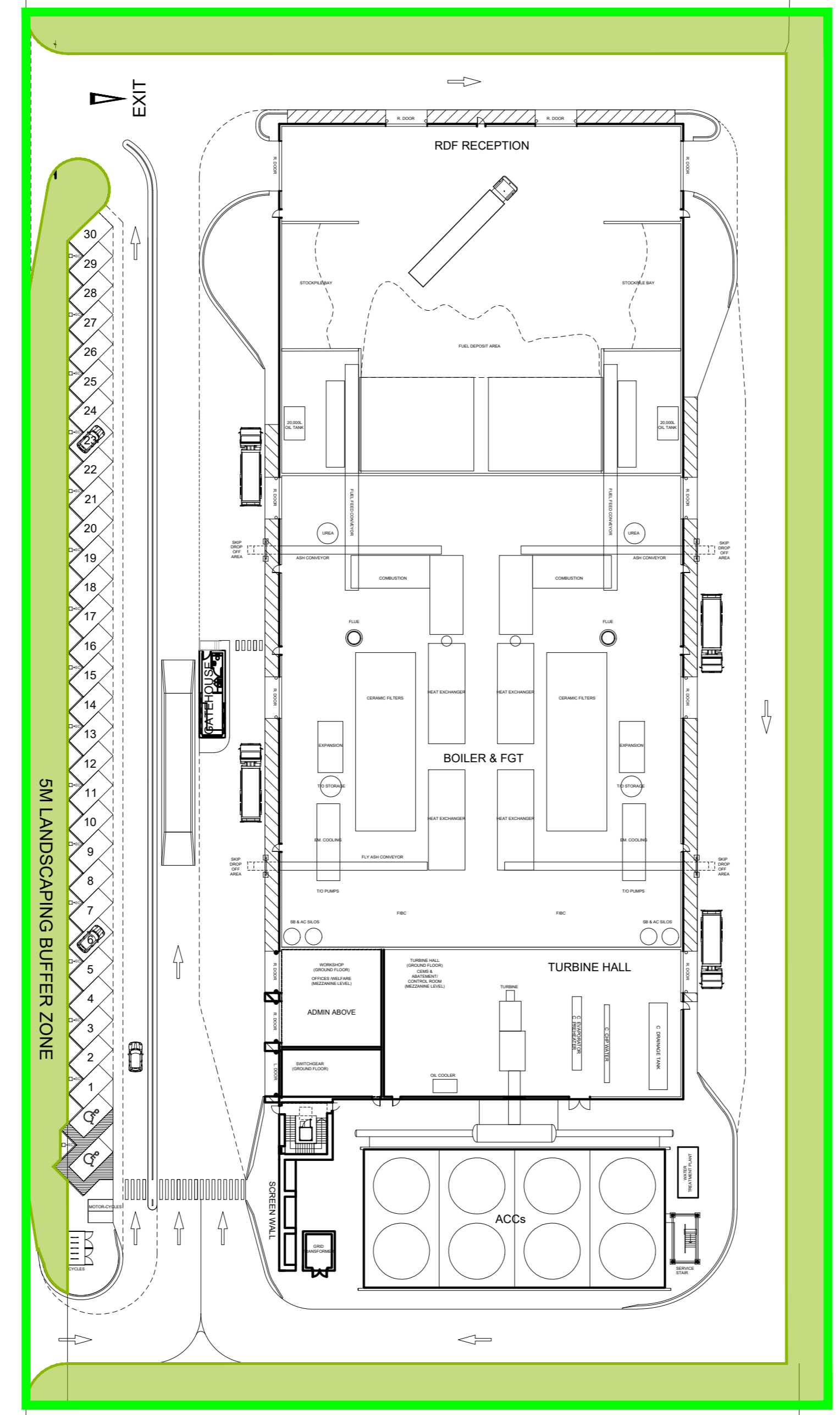
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DRAWN BY: AO1	DATE: 01.11.22
CHECKED BY: DTW	DATE: 01.11.22
APPROVED BY: KLH	DATE: 01.11.22
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OFFICE OF ISSUE: STOCKPORT	
SHEET SIZE: A2	SCALE: 1:500
DRAWING No.: S3694-8310-0008	REVISION: R2.0



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LEGEND
— INSTALLATION BOUNDARY
 AREAS OF NATURAL OR UNMADE GROUND



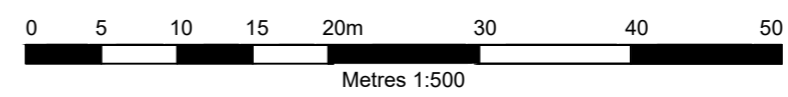
R2.0	PRELIMINARY	AO1	DTW	KLH	25.01.23
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REV.	DETAILS OF REVISION	DRAWN	CHKD	APR	DATE

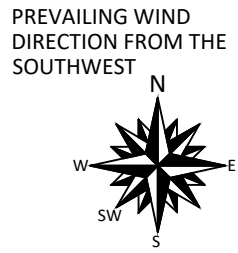
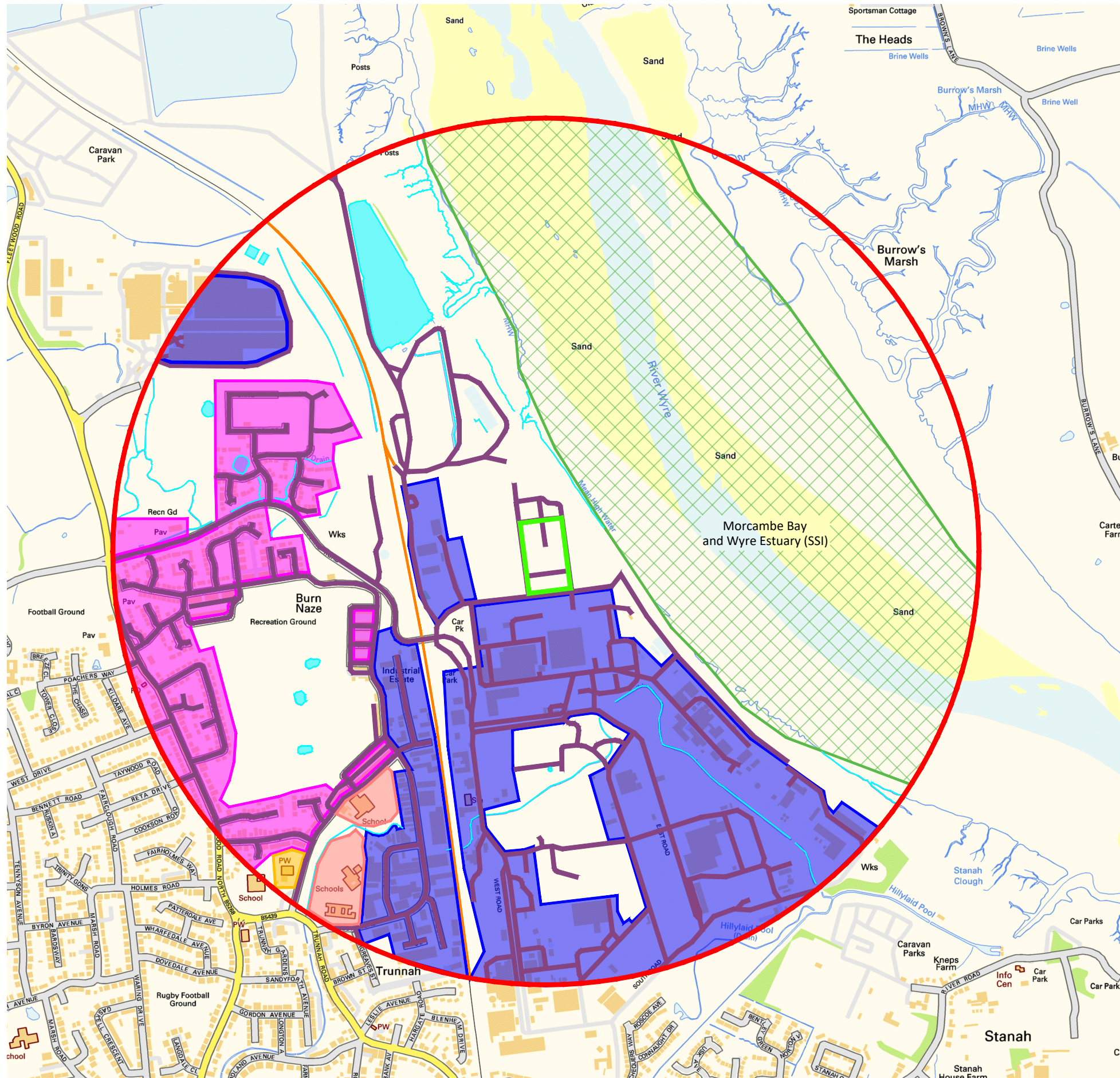
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SITE:	THORNTON ERC
PROJECT:	EP APPLICATION
TITLE:	AREAS OF NATURAL OR UNMADE GROUND

DRAWING STATUS:		PRELIMINARY
DRAWN BY:	AO1	DATE: 01.11.22
CHECKED BY:	DTW	DATE: 01.11.22
APPROVED BY:	KLH	DATE: 01.11.22
FILENAME:	S3694-8310-0010A01 AREAS OF NATURAL OR UNMADE GROUND R2.0	
OFFICE OF ISSUE:	STOCKPORT	
SHEET SIZE:	A2	SCALE: 1:500
DRAWING No.:	S3694-8310-0010	Sheet 1 of 1
REVISION:	R2.0	





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LEGEND

- INSTALLATION BOUNDARY
- 1km RADIUS
- INDUSTRIAL RECEPTORS
- RESIDENTIAL RECEPTORS
- SCHOOL
- CHURCH
- ▨ DESIGNATED HABITATS SITE
- RAILWAY LINES
- WATERBODIES
- ROADS

R2.0	PRELIMINARY	AO1	DTW	KLH	25.01.23
R1.0	PRELIMINARY	AO1	DTW	KLH	01.11.22
REV.	DETAILS OF REVISION	DRAWN	CHKD	APR	DATE

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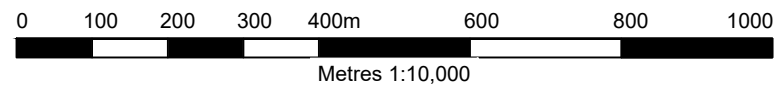
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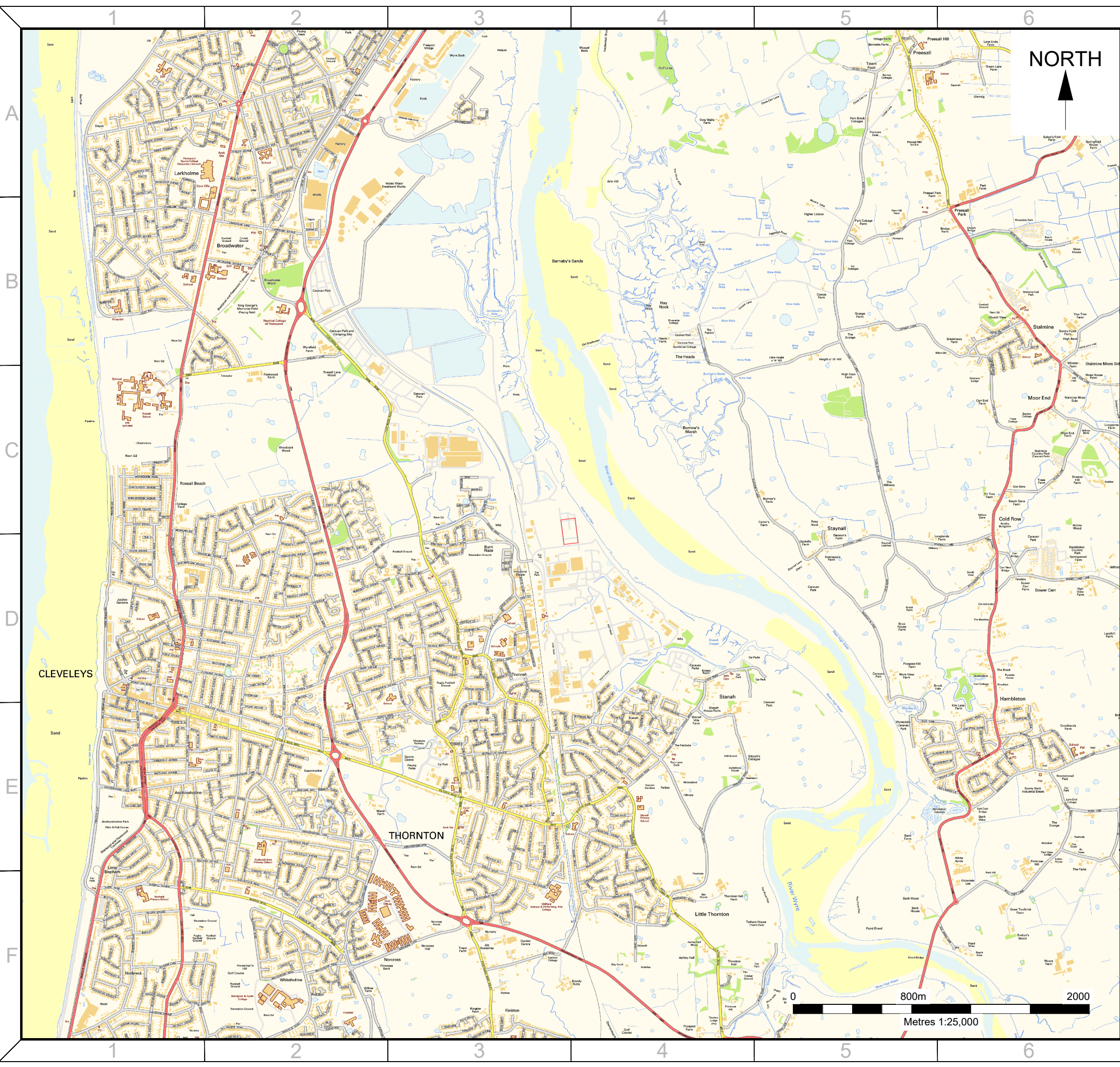
PROJECT: **EP APPLICATION**

TITLE: **FIRE RECEPTOR PLAN**

DRAWING STATUS:		PRELIMINARY
DRAWN BY:	AO1	DATE: 01.11.22
CHECKED BY:	DTW	DATE: 01.11.22
APPROVED BY:	KLH	DATE: 01.11.22
FILENAME:	S3694-8310-0011AO1 FIRE RECEPTOR PLAN R2.0	
OFFICE OF ISSUE:	STOCKPORT	
SHEET SIZE:	A3	SCALE: 1:10,000

DRAWING No.: **S3694-8310-00011** Sheet 1 of 1 REVISION: **R2.0**





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NOTES:

— SITE BOUNDARY

R2.0	PRELIMINARY	AO1	DTW	KLH	25.01.23
R1.0	PRELIMINARY	DTW	AO1	KLH	04.01.23
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SITE:	THORNTON ERC
PROJECT:	THORNTON ERC
TITLE:	SITE LOCATION PLAN

DRAWING STATUS:	PRELIMINARY	
DRAWN BY:	DTW	DATE: 04.01.23
CHECKED BY:	AO1	DATE: 04.01.23
APPROVED BY:	KLH	DATE: 04.01.23
FILENAME:	S3694-8310-0014DW SITE LOCATION PLAN R2.0	
OFFICE OF ISSUE:	STOCKPORT	
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DRAWING No.: **S3694-8310-0014** Sheet 1 of 1 REVISION: **R2.0**