



Fire Prevention Plan

Plastics to Oil Facility

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Fire Prevention Plan

Plastics to Oil Facility

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Site Name	Endolys Oil to Plastics Facility
Site Address	Yarm Road, Darlington, DL1 4DE
Operator Name	Endolys Ltd

1. INTRODUCTION

This document has been prepared by Sol Environment Ltd on behalf of Endolys Ltd (“Endolys” hereafter) for the operation of a chemical recycling facility that converts waste plastics to oil utilising a proprietary advanced thermal treatment (pyrolysis) technology.

The document provides a structured framework approach in effectively preventing potential fires associated with the waste processing and storage operations at the site.

This Fire Prevention Plan document (referred hereafter as the ‘FPP’) has been produced in accordance with the Environment Agency’s Fire Prevention Plans: Environmental Permits guidance, updated 11th January 2021.

This FPP has been produced as part of a permit application to develop the former Cleveland Bridge Premises (Yarm Road, Darlington, DL1 4DE) into a waste plastics thermal treatment pyrolysis facility which will import and process an estimated 120,000 tonnes of waste plastic film per annum.

This Fire Prevention Plan meets the fundamental objective of the FPP Guidance as it demonstrates that the site can:

- Minimise the likelihood of a fire happening;
- Aim for fire to be extinguished within 4 hours; and
- Minimise the spread of fire within the site and to neighbouring sites.

1.1 Structure of the Fire Prevention Plan

This FPP has been structured in accordance with the EA Fire Prevention Plan Guidance and considers the following relevant aspects of the facility:

- Managing Common Causes of Fire;
- Preventing Self-Combustion;
- Managing Waste Piles;
- Preventing Fire Spreading;
- Quarantine Area;
- Detecting Fires;
- Suppressing Fires;
- Firefighting Techniques;

- Water Supplies;
- Managing Fire Water; and
- During and after an Incident.

1.2 Status of the Fire Prevention Plan

The FPP is a “live” document and will form part of the key environmental management document for the facility. All monitoring procedures, responsibilities and compliance actions will be updated as and when required.

2. SITE DETAILS

2.1 Site Location

The proposed Installation is located at the Endolys Ltd, Yarm Road, Darlington, DL1 4DE (National Grid Reference: NZ 32060 13554).

The location is provided in Figure 2.1 below.

2.1.1 Site Installation Boundary

The proposed Installation Boundary is provided in Figure 2.2 below.

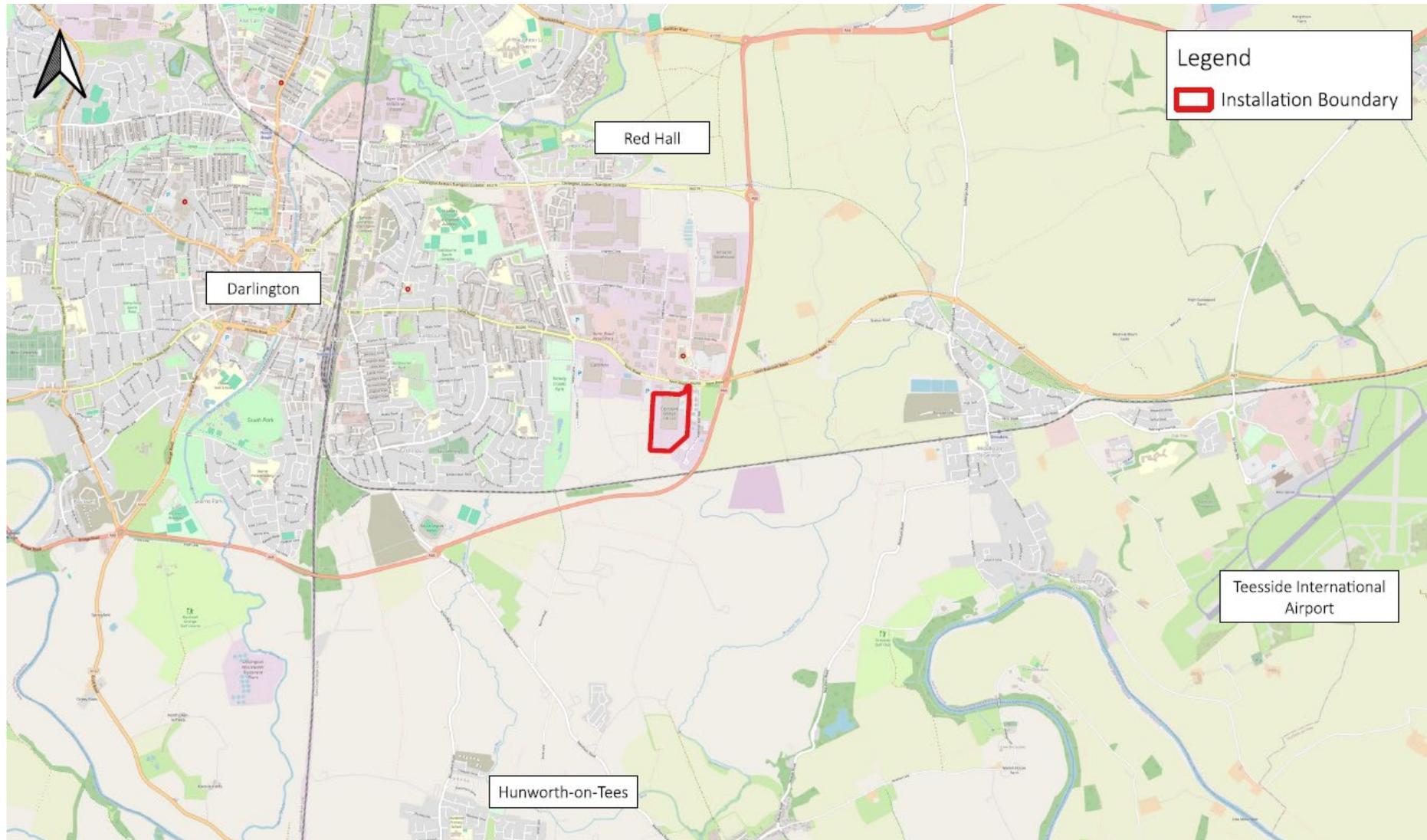


Figure 2.1 Site Location

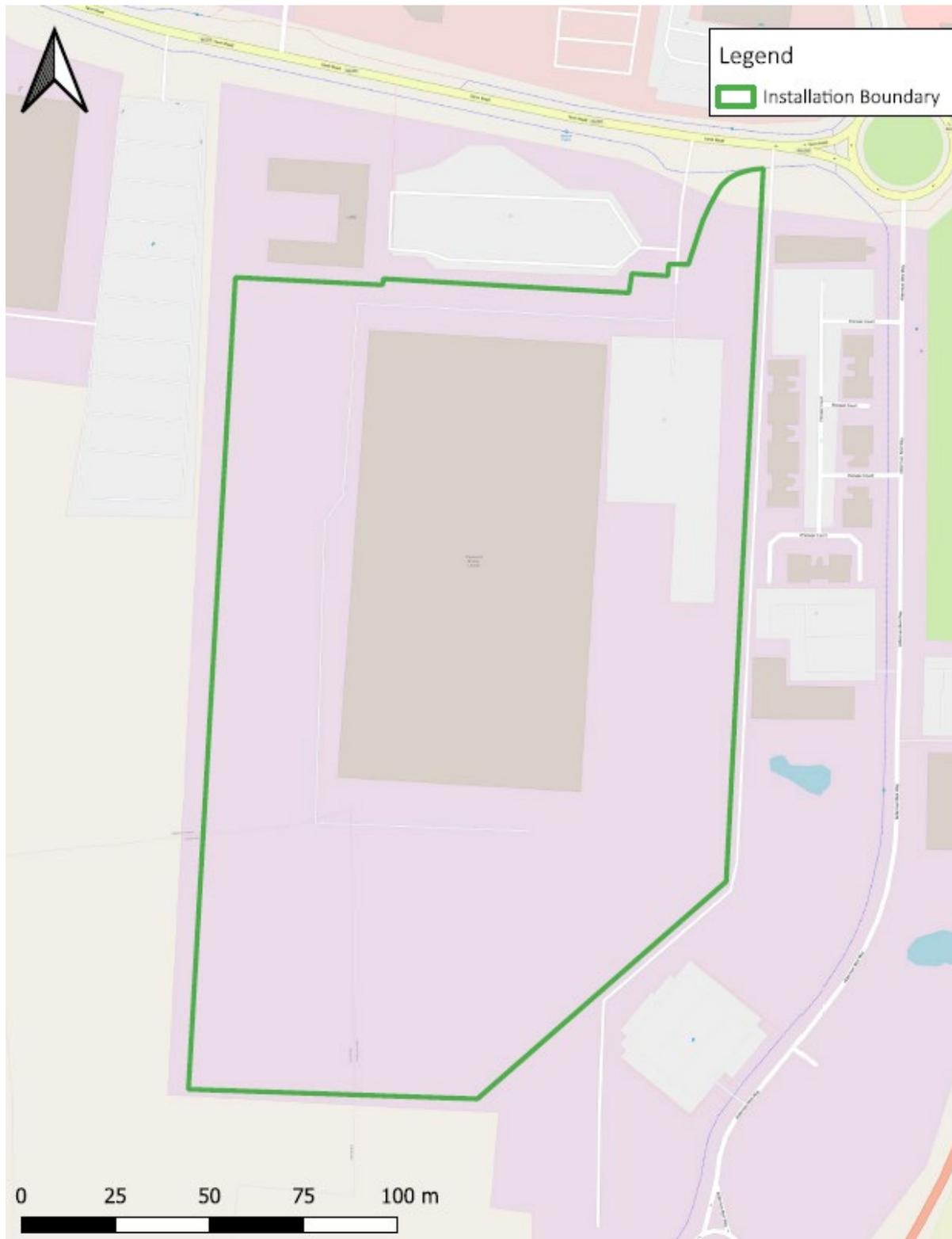


Figure 2.2 Installation Boundary

2.2 Site Context

The following sections outline the site context, including the surrounding site setting and any nearby sensitive receptors.

2.2.1 Site Setting

The site is located on the southeastern edge of Darlington in a predominantly agricultural and industrial/commercial setting. To the north lies Morton Park shopping centre surrounded by other commercial units including a Premier Inn. Industrial units lie to the west whilst the south and east are predominantly agricultural in nature.

Table 2.1 outlines the surrounding site setting in greater detail, including features in the immediate vicinity, within 500m and beyond 500m of the proposed site.

Table 2.1 Site Setting

Direction	Description
North	Immediate Vicinity: Quick Self Storage, Yarm Road Within 500m: Premier Inn Darlington, ZIGUP Car Rental, Woodlands Hospital Taylor's Cafe, Roarsome Soft Play, Total Recycling Services Beyond 500m: Commercial units (Stan Robinson, Vertu Vehicle Solutions, Auxillis Services)
East	Immediate Vicinity: Business Park (Tribe Recruitment, Dash Media Productions, Baxtor Personnel, Darlington Association on Disability) Within 500m: Whessoe Engineering Limited, A66, Agricultural Land Beyond 500m: Agricultural Land, Walton H & Sons Farm, The Beeches Caravan and Camping
South	Immediate Vicinity: Alderman Best Way Car Park, Farm Within 500m: Railway Line, A66, Agricultural Land Beyond 500m: Agricultural Land, Farm
West	Immediate Vicinity: Darlington Driving Test Centre, Cummins Centenary House Within 500m: Amenity/agricultural land, Cummins Engine Plant Beyond 500m: Maidendale Nature Reserve, Residential Housing (Firthmoor), Firthmoor Primary School

2.2.2 Nearby Sensitive Receptors

The closest sensitive receptors to the site are located within the industrial / commercial estate to the north, namely at the Premier Inn 150m distant. The closest residential receptors are located at Richmond Way in the residential area of Firthmoor 770m to the west.

The following table summarises the sensitive human receptors within 1km of the site.

Table 2.2 Sensitive Human Receptors within 1km of the site

Receptor Name	Distance	Direction
Yarm Road	60m	North
Premier Inn Darlington East (Morton Park)	150m	North
Woodlands Hospital	270m	North

Commercial Units	450-1000m	North
Mortin Retail Park	260m	North-east
A66 Road	350m	North-east
Aeolian House Dog Training and Boarding	635m	North-east
Amazon MME1	935m	North-east
Farm	1000m	North-east
Business Park	Adjacent	East
A66 Road	225m	East
Walton H & Sons	690m	East
Alderman Best Car Park	30m	South-east
A66 Road	210m	South-east
The Beeches Caravan and Camping	1000m	South-east
Farm	50m	South
Railway Line	210m	South
A66 Road	300m	South
Farm	970m	South-west
Farm	1000m	South-west
Darlington Driving Test Centre	30m	West
Cummins House/Headoffice	110m	West
Cummins Engine Plant	330m	West
Maidendale Nature Reserve	650m	West
Firthmoor Primary School	285m	West
Travelodge Darlington	330m	North-west
Residential Housing	780m-1000m+	North-west
Darlington Retail Park	640m-1000m+	North-west
Residential Housing (Earl Carlson Grove)	930m	North-west
Commercial units	220m-1000m+	North-west

Ecologically, the nearest surface water features are a pond 30m east and a pond and unnamed stream located 115m to the southeast of the site boundary.

Environment Agency (EA) H1 and H5 guidance states that the potential impacts of the site should be assessed for the following habitat sites within 10km of the site:

- Special Areas of Conservations (SACs) and candidate SACs (cSACs) designated under the EC Habitats Directive;
 - Special Protection Areas (SPAs) and potential SPAs designated under the EC Birds Directive;
- and

- Ramsar Sites designated under the Convention of Wetlands of International Importance.

It is also stated that within 2km of the Source:

- Sites of Special Scientific Interest (SSSI) established by the 1981 Wildlife and Countryside Act;
- National Nature Reserves (NNR);
- Local Nature Reserves (LNR);
- Local Wildlife Sites (LWS), County Wildlife Sites (CWS) and potential wildlife sites (PWS);
- Sites of Importance for Nature Conservation (SINC); and
- Ancient Woodland.

Information from the Multi Agency Geographic Information for the Countryside (MAGIC) website (<http://magic.defra.gov.uk/>) has been used to obtain the above information. The nearest designated site is the Maidendale Fishing and Nature Reserve (LNR), located approximately 623m west of the site.

Table 2.3 UK ecologically Designated sites within 2km of the site

Designated Site	Designation Status	Distance from Site
Neasham Fen	SSSI	1936m SE
Brankin Moor	LNR	1694m SW
Maidendale Fishing and Nature Reserve	LNR	623m W

There are no European designated sites within 10km of the site.

The figure below identifies the designated receptors tabulated above.

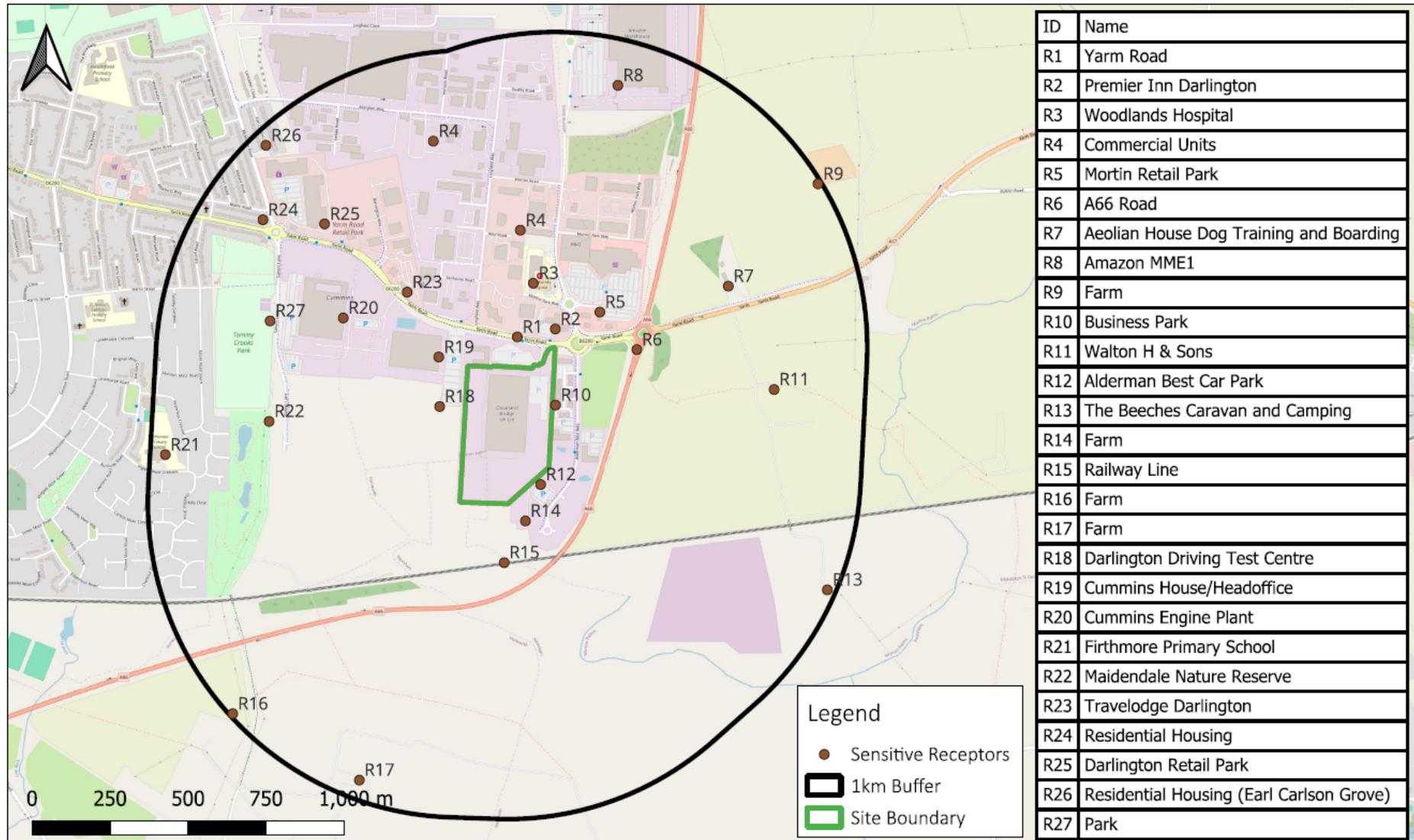


Figure 2.3 Sensitive Receptor Plan

2.2.3 Wind Direction

The estimated wind direction for the proposed site comes from a predominantly south-south westerly direction, based on historic wind direction recordings taken from Teesside International Airport located 4.75km east of the site.

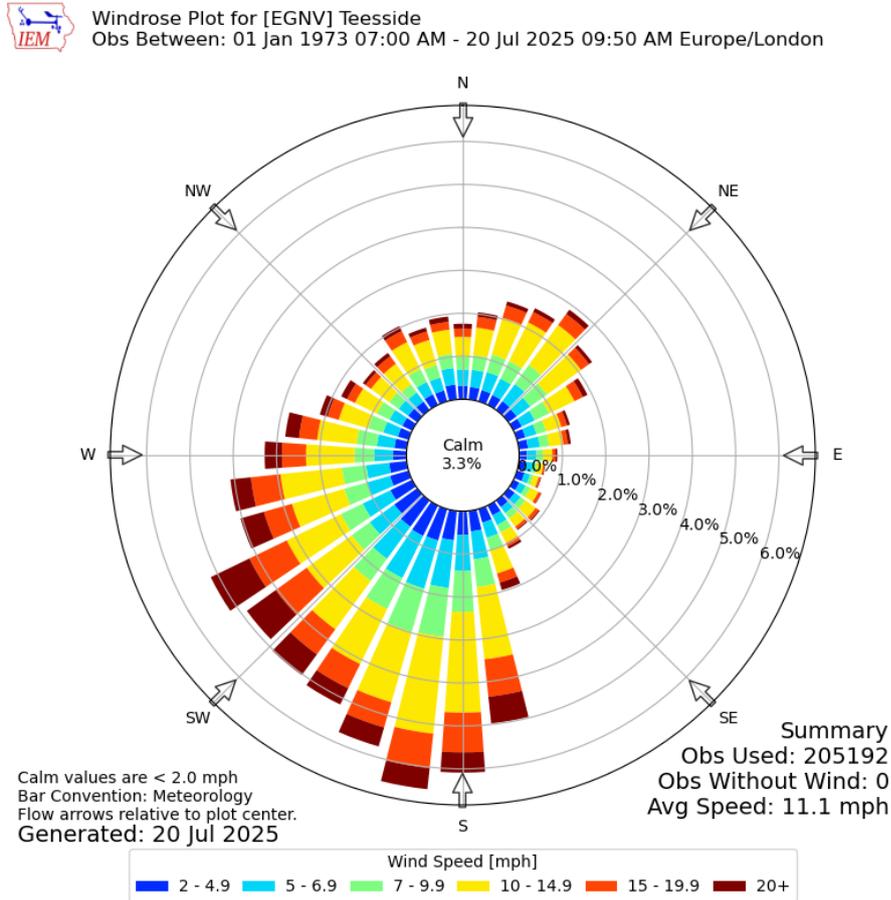


Figure 2.4 Wind Rose for Teesside International Airport (1973 – 2025)

2.2.4 Flood Risk

The site is located within flood zone 1, meaning there is a low probability of flooding from rivers and surface waters. The extent of flooding from rivers is shown in the figure below taken from the Defra Flood Risk for Planning Website.

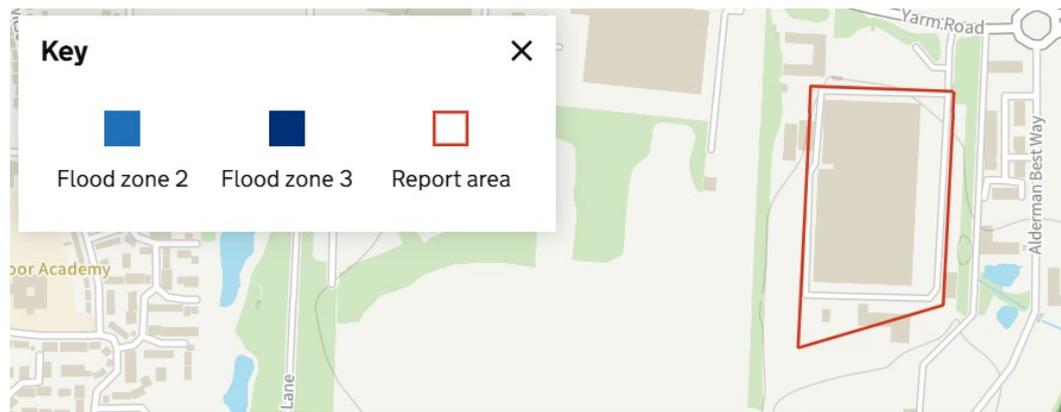


Figure 2.5 Flood Risk Extent

2.3 Infrastructure and Design

The key infrastructure and design of the site will comprise the following:

- Main processing building;
- Feedstock Reception Hall;
- Pre-treatment system;
- Feed system;
- Pyrolysis Units;
- Flue Gas Treatment System;
- Pyrolysis exhaust stack (A1);
- Syngas Stream Generation Boiler (A2);
- Cooling Towers;
- Oil Purification Plant;
- Settlement and Storage Tanks;
- Nitrogen Storage Tanks;
- Emergency flare (A6);
- Gas Buffer Tank;
- Char collection and cooling system;
- CHP Engine with associated exhaust stack (A5);
- Emergency diesel generator (A7) and associated auxiliary fuel storage.

2.3.1 Drainage

There will be no direct process emissions to controlled water arising from the installation.

All wastewater produced by the process will be collected within an onsite wastewater tank and tankered offsite for disposal.

Uncontaminated clean surface water runoff captured from roof drainage and external roadways / car parking areas will be discharged to the existing surface water drainage system.

Domestic foul flows will be directed to the existing sewer network.

Pyoil produced by the process will be stored within a bunded Tank Farm, designed in accordance with CIRIA 736.

3. SITE ACTIVITIES

The proposed development will treat waste plastic film through an advanced thermal treatment facility utilising pyrolysis technology. Following conversion within the pyrolysis reactor, oil vapours are condensed, the solid residues (char) discharged off site and the syngas produced will be utilised within the pyrolysis systems and onsite boiler to produce steam. Oil vapours will be condensed into Pyoil (Grade 3 Intermediate), which will be transported offsite to an established offtaker for further refinement.

The listed activities for the site are within Table 3.1 below.

Table 3.1 Listed Activities

Activity listed in EP Regulations 2013	Description of Specified Activity	Limits of Specified Activity	Specified Waste Management Operation
Section 1.2 Gasification, liquefaction and refining activities Part A(1)(f)	Activities involving pyrolysis, carbonisation, distillation, partial oxidation or other heat treatment	The reception, storage and combustion of non-hazardous waste feedstocks to produce syngas condensed into pyrolysis oil Installation includes all ancillary activities including syngas combustion, emissions abatement, electrical generation and oil production	R1: Use principally as a fuel or other means to generate electricity. R13: Storage of waste pending the operations numbered R1
Section 5.4 Disposal, recovery or a mix of disposal and recovery of non-hazardous waste Part A(1)(b)(ii)	Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day	Pre-treatment of non-hazardous waste feedstocks consisting of shredding, separation, agglomeration and densification for utilisation within pyrolysis process Waste types as specified in Table 3.1 only.	R3: Recycling/reclamation of organic substances which are not used as solvents R5: Recycling/reclamation of other inorganic materials R13: Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)
Directly Associated Activities			
Steam Generation	Generation of steam for onsite use	From receipt of syngas to production of steam for heat use onsite	-
Electricity Generation	Generation of power and heat within CHP Engines – Medium Combustion Plant	From receipt of natural gas or syngas to export of heat and electricity for on-site use	-
Back-up Electricity Generation	Standby Diesel generator	Emergency use to a maximum of 500 hours operation per year.	-

The proposed process comprises the following stages:

- *Waste Reception* – Pre-accepted bales of plastic film will be delivered into bays within the Feedstock Reception Hall under supervision from a suitably trained operative. Wastes will typically be stored for up to two weeks prior to processing;
- *Pre-treatment system* – This system will include shredding, NIR, metals removal, agglomeration and densification to produce a bead which will be transferred to intermediate storage prior to use as a feedstock for the pyrolysis reactors. The pre-treatment system is located internally within the building;
- *Pyrolysis* – Each pyrolysis reactor has the capacity to process 33tpd of waste plastic, producing a yield of 60 – 75% pyrolysis oil (approximately 81,000 tpa), non-condensable combustible gas (aka syngas) and a solid waste char. The pyrolysis reactors are housed within the pyrolysis hall in the building;
- *Oil storage* – The proposed facility will utilise oil storage tanks, typically each with the capacity of approximately 100m³ (12 in total) for Pyoil storage prior to export. The tanks are located within a bund in the external Tank Farm;
- *Char storage* – char will be stored internally prior to removal offsite;
- *Syngas Use* – The produced syngas will be utilised as fuel for the pyrolysis process under normal operation. Additionally, syngas will be utilised within an onsite boiler for steam generation for use within the heating system onsite; and
- *Electricity Generation* – The sites power requirement will be met by an onsite CHP unit, which will utilise natural gas during Phase 1, switching to syngas in Phase 2.

A simplified process flow diagram and site layout are provided below.

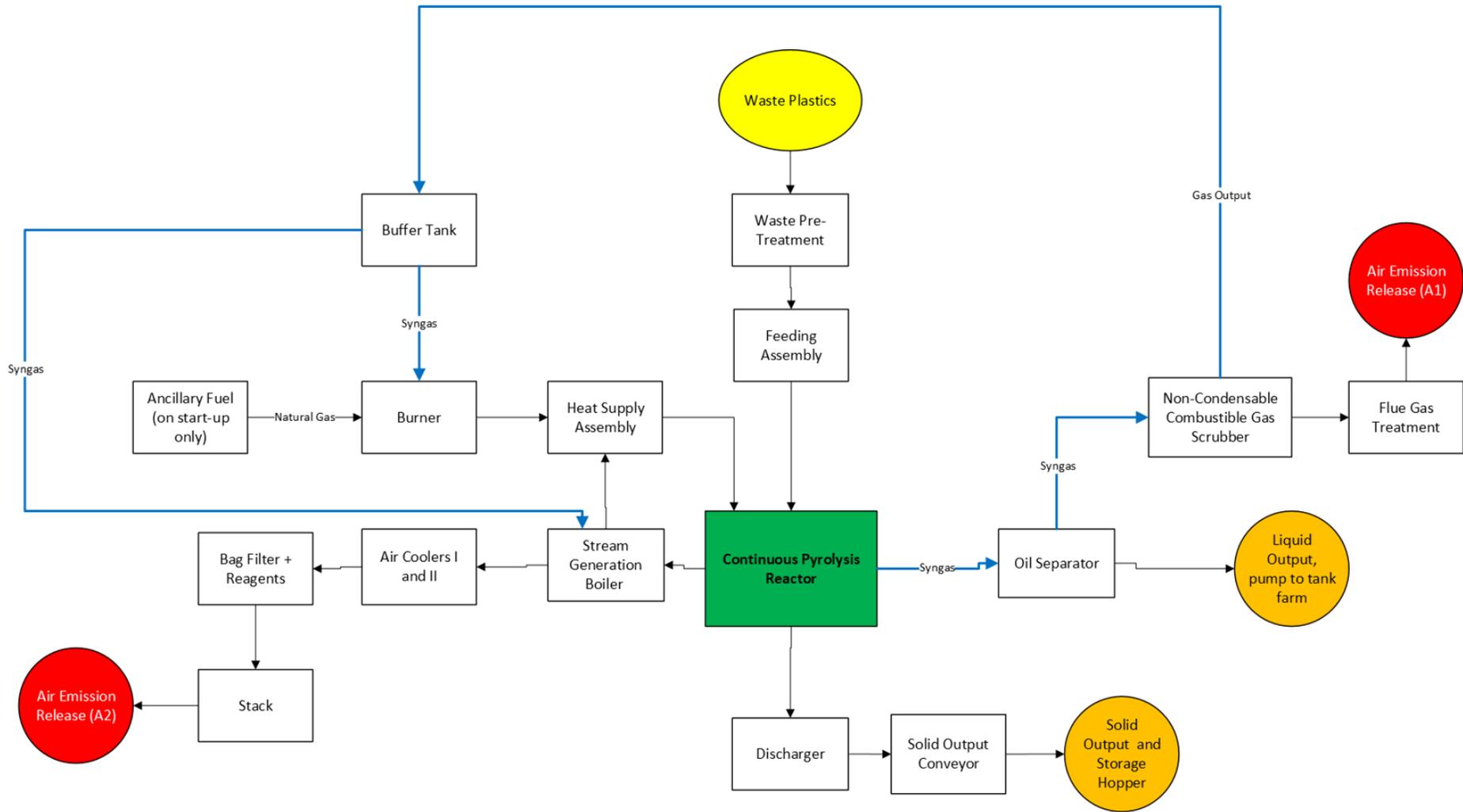


Figure 3.1 Simplified Process Flow Diagram

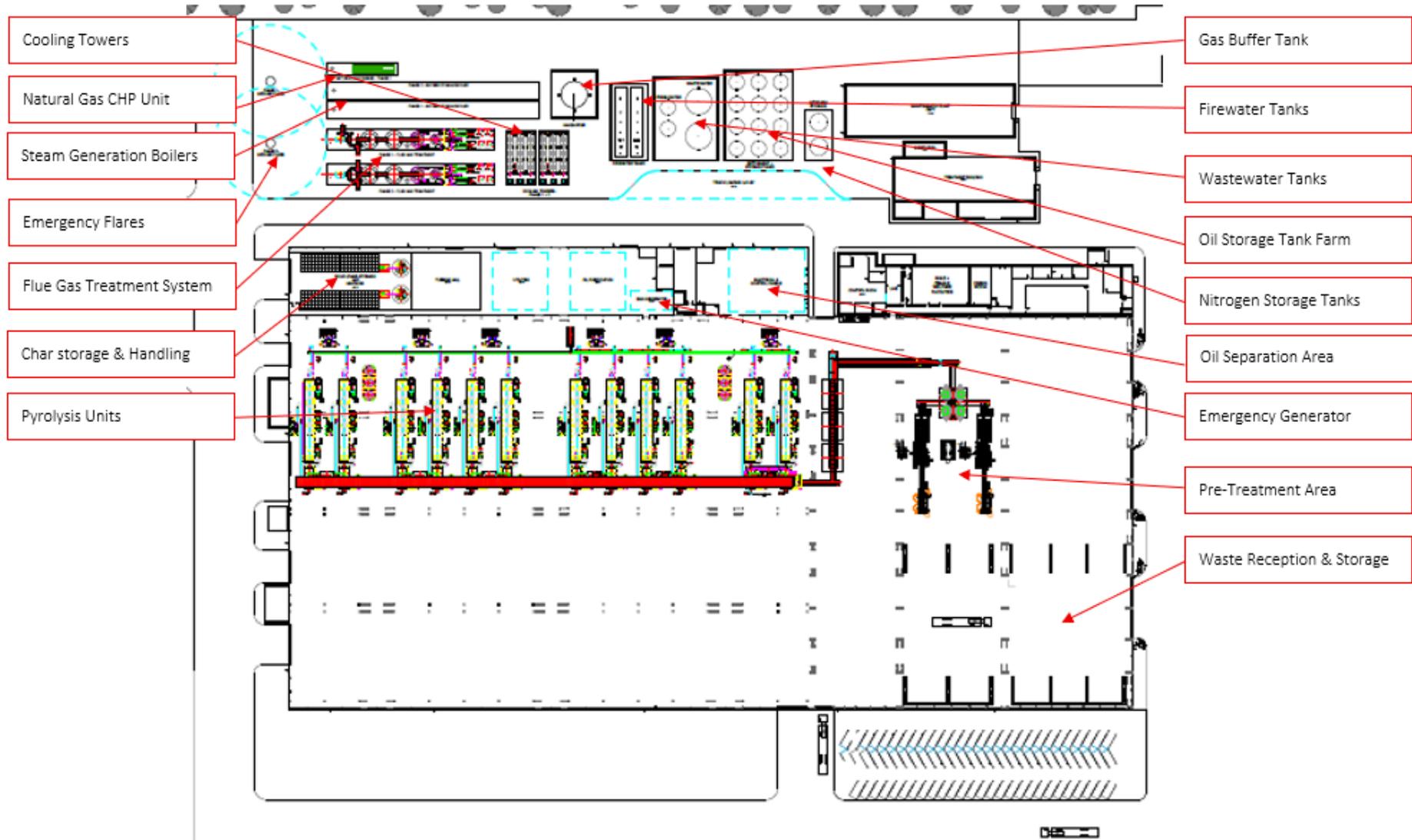


Figure 3.2 Site Layout

4. FIRE PREVENTION PLAN

This Fire Prevention Plan has been developed to include an assessment of fire risk on site and the measures in place to prevent, detect, suppress, mitigate and contain fires.

This plan forms part of Endolys' management system and sets out the fire prevention measures and procedures that will be put in place and used on site.

All staff and contractors working on site will understand the contents of the Fire Prevention Plan and what they must do during a fire.

The Fire Prevention Plan will be kept in the Site Office and all staff will be aware of where it is kept.

Regular exercises will be carried out to test how well the plan works and that staff understand what to do. These exercises will take place every quarter.

Please note, due to the nature and minimal storage times for the wastes on site, self-combustion is considered extremely unlikely.

Endolys accept the following potentially combustible waste materials, namely waste plastic film:

- 02 01 04 - waste plastics (except packaging) from agriculture, horticulture, aquaculture, forestry, hunting and fishing;
- 12 01 05 – plastics shavings and turnings from shaping, physical and mechanical surface treatment of plastics;
- 15 01 02 – plastic packaging;
- 16 01 19 – plastic from end-of-life vehicles (ELVs) and dismantling of ELVs;
- 17 02 03 – plastic from construction and demolition wastes;
- 19 12 04 – plastics and rubber from the mechanical treatment of waste at waste management facilities; and
- 20 01 39 – plastic from municipal waste.

Following the pre-treatment activities, additional waste products will be produced that require managing. These include:

- Char – which will be directed a dedicated internal storage area prior to removal;
- Waste metals – removed during the pre-treatment stage and stored within a dedicated skip prior to removal offsite for recovery; and
- Rejected incoming plastics – quarantined prior to return to supplier.

Additional non-waste combustible materials onsite include diesel, which is stored within a mobile bowser and within the emergency generator internally.

4.1 Responsibility for Implementation of the Fire Prevention Plan

The primary responsibility for implementing the Fire Prevention Plan lies with the Site Operations Manager, as appointed by Endolys. The Site Operations Manager will be suitably trained in fire and fire prevention and hold a full working knowledge of this FPP.

The Site Operations Manager is responsible for ensuring that all staff and site operatives working on site are trained in the FPP and know the measures/actions to be undertaken should a fire event occur on site.

4.2 Control of Potential Causes of Fire

The following table identifies common causes of fire and the measures that Endolys take to reduce the risk.

Table 4.1 – Control of Potential Sources of Fire

Potential Source of Fire	Proposed Management Control	Residual Risk
Arson	Security fencing, locked gates and 24/7 monitored CCTV in operation to prevent unauthorised access and deliberate arson incidents.	Low
Plant and Equipment	All plant and equipment used will be regularly inspected and maintained to reduce risk of fire. Any dust or debris will be removed from plant or equipment as part of routine cleaning to prevent accidental combustion. Any mobile plant will be stored away from combustible waste when not in use. There will be a dedicated mobile plant storage area on site, where mobile plant will be stored when not in use. The site will ensure, as part of its daily operations, that hot plant is not stored near combustible waste.	Low
Electrical faults including damaged or exposed electrical cables	Ongoing inspections, maintenance and, if required, repairs of all electrical points on site.	Low
Discarded Smoking Materials	There is a strict no smoking policy on site. The site does not accept any smoking materials onto site.	Low
Hot Works	No permanent hot works will be undertaken on site. Ad-hoc hot works may be undertaken for repair and maintenance purposes, however these will be undertaken with maximal distance between the works and any stored waste. A Fire Watch will be in place continuously for the first 30 minutes following hot works ceasing, and periodically for a further 60 minutes (minimum) before the fire watch is signed off by the Site Manager. The Fire Watch may be extended if deemed necessary by the Site Manager.	Low
Industrial Heaters	Not applicable – no industrial heaters to be used on site.	None
Hot Exhausts	Hot exhausts on site will not come into contact with waste. Hot exhausts from mobile plant will avoid contact with waste by the safe operation by trained staff, and parking plant away from waste storage at safe distances.	Low
Ignition Sources	All ignition sources onsite will be located at a minimum 6m away from combustible waste. The Reception Hall & storage area is in a separate area of the building to the pyrolysis units.	Low
Batteries	Not applicable – the site does not accept batteries on site	Low
Leaks and Spillages	Staff will be appropriately trained in managing accidental spills and leaks that may arise on site. Spill kits will be strategically located around the site to allow for the timely cleaning of any leaks or spills that may occur.	Low
Build-up of loose combustible waste	All waste will be accepted onto site in pre-prepared bales and be stored in storage bays, and will be visually inspected on a daily basis.	Low

	<p>As there is no loose combustible waste accepted, the fire risk from its build up is expected to minimal.</p> <p>The site will be cleaned by litter picking daily to prevent the build-up of loose combustible waste.</p> <p>Internal areas will be kept clean and free of excessive waste, and all waste will be stored within the bays.</p>	
Reactions between wastes	<p>There are no reactions between wastes expected. The only waste type accepted onto site is plastic. Small quantities of metal will be removed during the pre-treatment stage, however this is not expected to cause reactions.</p> <p>Visual inspection of waste at the point of entry onsite will identify any non-permitted waste. The likelihood of receiving non-permitted waste is low.</p>	Low
Waste acceptance and deposited hot loads	Not applicable – no hot loads are accepted on site.	None
Hot and dry weather	<p>Hot and dry weather can give rise to fire. Storage time will be kept to a minimum, with regular checks and inspections being undertaken to look for signs of fire. CCTV will monitor the site during out-of-hours.</p> <p>All waste will be stored internally away from direct sunlight and environmental stressors.</p>	Low

4.3 Preventing Self-Combustion

The primary self-combustion prevention measure used on site relates to the management of storage time. Wastes with longer storage times have a proportionately greater risk of self-combustion than waste stored for minimal times. Details of storage times have been outlined below.

4.3.1 Managing Storage Times

Endolys propose to operate in such a manner as to maintain waste piles as low in size as possible.

The site operates on a 24-hour basis with each pyrolysis unit processing 33 tonnes per day. Given the processing capacity of the site, it is aimed that waste will be accepted, stored and processed within 1 week. No wastes will be stored onsite for longer than a maximum of 3 months.

The site will operate with first in – first out principles, with one bay cleared prior to emptying of the next.

Due to the homogeneous nature of the incoming wastes, namely plastic film, there will be no seasonal variations anticipated.

4.3.2 Monitor and Control of Temperatures

The storage areas will be continuously monitored for temperature via the site's detection system.

The control room is manned 24/7 ensuring that there is always a trained operative available to act in the event of an alarm. Thermal imaging cameras monitor the Reception Hall, Feed Pre-treatment area and conveyors within the pyrolysis hall. These are linked to the automatic suppression systems in each area.

A trained site operative will carry out a visual inspection twice daily to ensure that the feedstock storage areas (internal and external) are being managed correctly.

Feedstock that is stored internally is not subject to fluctuations in temperature caused by external weather conditions.

In the event a fire is detected within the storage area, the automatic suppression system will commence.

All of the above measures meet the minimum expectations defined with the EA Fire Prevention Plan Guidance.

4.3.3 Waste Bale Storage

Pre-accepted bales of plastic film will be accepted onto site and delivered into bays within the Feedstock Reception Hall under supervision by a suitably trained site operative. Wastes will be stored for a maximum of up to three months before processing, although the typical estimate timeframe before processing is one to two weeks.

As the proposed storage time is less than three months (as stipulated in the FPP Guidance), it is not considered that sampling and testing procedures including temperature readings or turning frequencies is required. Temperature is monitored continuously via the thermal imaging camera detection system.

4.4 Manage Waste Piles

4.4.1 Maximum Pile Size

The maximum amount of waste stored on site at any one time will be 3344m³. This waste will be split across 10 storage bays, each containing an approximate 334.4m³.

Upon arrival on site, all waste will arrive in bales. Bales will be stored in bays prior to processing. Processing activities will include shredding, NIR, metal removal, agglomeration and densification to produce a bead which will be transferred to storage prior to use as a feedstock.

The proposed pile sizes will be stored in line with the maximum permissible pile sizes for each fragment size, detailed in the table below. The site does not expect to receive waste in fragments smaller than 30mm.

Table 4.2 – Permitted Fragment Sizes of Plastic Waste Stored in Piles

Loose and more than 150mm	30-150mm or baled	Less than 30mm
750 cubic metres	450 cubic metres	300 cubic metres

The bay dimensions will be in line with the guidance, 8m (w) x 10.5m (l). Bales will be stored up to a height of 4m.

Scrap metal and other fractions of waste removed from the incoming waste stream during pre-treatment will be stored in designated skips prior to export offsite.

4.4.2 Managing non-FPP Wastes

There will be no wastes stored on site that are not covered by the FPP guidance. All waste proposed for storage are covered by the FPP guidance.

4.5 Preventing Fire Spread

4.5.1 Separation Distances

All waste will be stored in concrete, fire-resistant bays, the walls of which act as a fire break in the event of a fire. Therefore, the 6m separation distances stipulated within the FPP Guidance are not considered relevant at this site.

4.5.2 Fire Walls and Bays

The dimensions for each waste bay are as follows:

$$8 \text{ m (w)} \times 10.5 \text{ m (l)} \times 4 \text{ m (h)} = 336\text{m}^3$$

Bay walls will be sized to allow a 1m freeboard to the top and sides which will be maintained and adhered to prevent fire spreading over and around the walls. Maintaining the freeboard allowance will also minimise the potential of dust and litter escaping to the environment. Regular site inspections will ensure that the freeboard space is maintained at all times. Operationally, the freeboard allowance will be by visual white paint striping located on the walls and floor to indicate the maximum extent the pile size can reach to stay within the FPP guidance.

The bays will be constructed of Legio type concrete blocks, graded Class A1. Concrete itself is inert and non-combustible and offers a level of protection against heat and flames. Industry guidance on concrete and fire safety states that 100mm load-bearing blockwork will achieve a fire rating of 120 hours.

4.5.3 Quarantine Area

A single quarantine area will be available at all times to quarantine waste that is either burning, at high risk of combustion, or to store unburnt waste to isolate and prevent further combustion.

The quarantine area can be located on the plan provided in Annex A.

The quarantine area will have a capacity of at least 167.2m³, and therefore meets the requirement of the FPP guidance in providing a quarantine area to hold at least 50% of the largest pile

4.6 Detecting Fires

The site will have an automatic detection system in place.

Within the reception hall, feed pre-treatment area, pyrolysis hall and solid storage handling areas these will be of aspirating active detection system type. Internal areas have automatic point detection systems.

Thermal cameras are located within the reception hall targeting the waste storage bays, within the feed pre-treatment area targeting the shredder and pyrolysis shall targeting the conveyors. The conveyors within the feed pre-treatment area are also fitted with linear heat detection.

The external tank storage farm will have a gas detection system in place to alert operatives to any unwanted emissions that may lead to fire.

Additionally, the site will be manned 24/7 and site walkover inspections will be undertaken daily.

Please see technical details of the sites detection systems in Annex B.

4.7 Suppressing Fires

Automatic suppression systems will be installed within the reception hall, feed pre-treatment area and pyrolysis hall, incorporating cannon systems.

An automatic sprinkler system is to be installed within the solid storage (char) handling area.

All water requirements for the suppression systems will be met by the 2x onsite firewater tanks.

Please see technical details of the suppression systems provided in Annex B.

4.8 Firefighting Techniques

The site has been designed to allow active firefighting to meet the three objectives of the FPP guidance.

These are:

- minimise the likelihood of a fire happening
- aim for a fire to be extinguished within 4 hours
- minimise the spread of fire within the site and to neighbouring sites

Minimising the Likelihood of a Fire Happening

The site minimises the likelihood of a fire occurring by managing and controlling common potential causes of fire and preventing self-combustion of waste. Self-combustion of waste is to be prevented by storing as minimal amount of waste as possible for the least amount of time.

Fire Extinguished within 4 hours

The site aims to extinguish any fire that may arise on site within four hours. It does this by storing a minimal amount of combustible material at any one time, with all waste being stored in distinct fire-resistant containers and bays. This minimises the amount of waste that may become involved in a blaze, ensuring the fire is extinguished as fast as possible. Automatic detection and suppression systems ensure quick effective action in the event of increased temperature within the waste and rapid extinguishing of fires.

Further, the site have developed a robust set of protocols that will be in place to detect a fire, suppress it, and ensure emergency services are on site as promptly as possible to help tackle any fire that may arise.

Upon identifying or being made aware of a fire, the site operations manager will raise the alarm, alert all present on site to the fire and its location and alert emergency services. Any members of the public will be evacuated from the site immediately, either in their own vehicles or on foot, depending on the scale of the fire and the urgency required to evacuate,

The site will be evacuated in accordance with the site's evacuation plan outlined below. The site evacuation will be conducted and controlled by trained site staff.

In the majority of instances, the sites automatic suppression systems will be activated. In the unlikely event this does not occur, staff will only tackle the fire using fire extinguishers and onsite hose point if:

- It is safe to do so;
- The fire service has been notified;
- The fire is small and not spreading to other areas;

- Escaping the area is possible by backing up to the nearest exit; and
- The fire extinguisher is in working condition and personnel are trained to use it.

In the event of a small fire:

- Staff will stop all activities immediately;
- Notify the site operations manager;
- Suppress the fire with onsite manual measures and dampen surrounding waste piles if required; and
- The fire will be recorded in the site log, including the causes of the fire and methods used to manage the fire. An assessment will be carried out to determine whether further mitigation measures could have prevented the fire. Any outcomes to be implemented onsite will be incorporated within this FPP and the site's EMS as required.

In the event of a larger fire, staff are to await the FRS, who would then take the appropriate actions.

All personnel working on site will be provided training in the Fire Prevention Plan and all associated procedures and controls. A training record shall be maintained digitally through the Endolys' internal system.

FPP training will be provided to all new starters and temporary employees working at the site to ensure the highest health and safety standards are upheld.

FPP refresher training will be carried out to all personnel at least annually.

Minimise the Spread of Fire within the Site and to Neighbouring Sites

To fulfil the final objective of the FPP, the site has dedicated plans in place to prevent the spread of fire around site and to neighbouring sites.

All bays storing waste will be constructed to be 5 meters tall inclusive of a 1m "freeboard" allowance as detailed in section 3.5.1. This will remain clear at all times to prevent the potential spread of fire over the top of the bay. Regular site inspections will ensure that the freeboard space is maintained at all times.

The concrete to be used for the firewall construction will be graded Class A1. Concrete itself is inert and non-combustible and offers a level of protection against heat and flames. Industry guidance on concrete and fire safety states that 100mm load-bearing blockwork will achieve a fire rating of 120 hours.

These combined measures achieve the third and final objective of the FPP and therefore meets its active firefighting obligations.

4.9 Fire Evacuation

All fire exits are clearly signposted and accessible. The evacuation point is located within the carpark.

Site rules and procedures are reinforced via use of fire drills and planned response scenarios.

All personnel are to follow the instructions of the site Fire Wardens and the Site Operations Manager. A trained Fire Warden will be working on site at all times during operational hours.

A list of trained Fire Wardens is maintained and displayed in the site office, together with a list of on-call staff to attend the site in the event of a fire outside of normal operation hours.

The Fire Evacuation Procedure is provided to staff and contractors which states:

- On discovery of a fire, immediately make the presence of fire known to all on site and contact the Site Operations Manager;
- Fire Wardens and staff must only tackle to fire if they are trained to do so, the equipment is appropriate and if their own safety or that of others is not compromised;
- Leave the site by the nearest available exit/safe route and report directly to the assembly point located outside of the Volkswagen dealership;
- Leave quickly but in a calm, controlled and orderly manner. Do not detour to collect personal items;
- Do not re-enter the site for any reason until authorisation has been given by the Site Operations Manager/Fire Warden;
- The Site Operations Manager will assess the situation and call the FRS if required; and
- Visitors to the site will be instructed by trained site staff in the safe evacuation of the site. Where possible, all visitors will leave in their personal vehicles providing it is safe and practical to do so.

This document is reviewed and updated annually, or sooner if required. The document details all hazards and the control measures that are in place and/or required to prevent fires.

4.10 Water Supplies

The table below provides a summary of the site’s firefighting water supplies:

Table 4.3 - Water Supplies

Description	Supply Volume	Location
Firewater Tank	200,000 litres	Onsite
Firewater Tank	200,000 litres	Onsite

Firewater for the site suppression systems will be provided through two dedicated onsite tanks.

In accordance with the EA guidance the site would need a water supply of 399,600 litres and an available flow rate of 2,200 litres per minute as identified in the table below.

Maximum pile size	Minimum Water Supply Rate (l/min)	Water Supply Rate Delivered (l/min)	Overall water volume required over 3 hours (l)	Total water volume available for site over 3 hours (l)
334.4m ³	2,200	2,200	399,600	400,000

4.11 Managing Contaminated Fire Water

All firewater will be contained onsite. Any fire within the waste storage bays will result in containment of firewater within the building footprint. All doors to the area are ramped for vehicle access/egress, ensuring

a continual kerb to the building, capable of containing over 400,000 litres. There are no drains within the building.

Contained firewater would then be tankered offsite for treatment / disposal.

4.11.1 During and After an Incident

The following sections describe the measures taken by the site during and after a firefighting incident

During an Incident

During any firefighting or subsequent clear up operations, any incoming wastes will be diverted to an alternative waste processing site.

All nearby residents, businesses and the Environment Agency will be notified during any firefighting taking place on site. Relevant telephone numbers are stored on site.

After an Incident

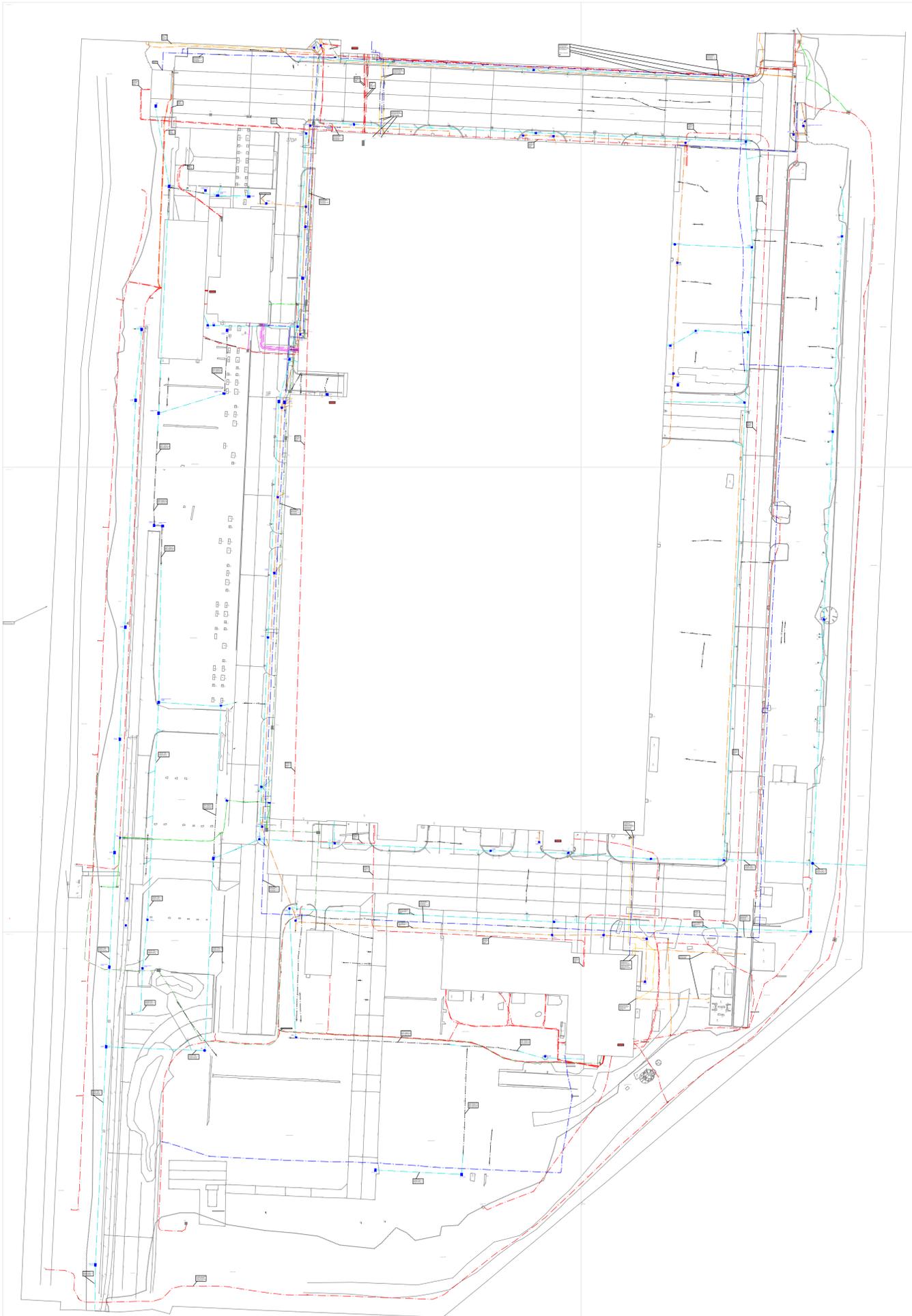
The site will be thoroughly cleaned after an incident. Any charred, partially combusted material or products of combustion will be disposed of an appropriate facility. It is anticipated that the clearing of combusted material will not take long, as Endolys are confident that any fires will be appropriately controlled and therefore will not result in significant volumes of burnt waste.

All fire water will be captured by the building and site kerbing and transferred off site via tanker and appropriately disposed of.

All equipment will be checked for any fire damage. In the event that any equipment has been damaged, it will be removed from site and fixed / replaced as soon as possible.

This ensures that the impact on the community, infrastructure and the environment is minimal.

APPENDIX A FIGURES



360 Mapping Drawing Legend:

- Topographical Linetypes:**
- Road
 - Drop Kerb
 - Steps
 - Building Line
 - Barrier
 - Channel
 - Concrete
 - Chain Fence
 - Post & Wire Fence
 - Metal Fence
 - Wooden Fence
 - Top of Bank
 - Bottom of Bank
 - Tree Canopy Line
 - Verge Line
 - Wall
 - Footpath
- Underground Utility Linetypes:**
- E — Electric
 - GAS — Gas
 - W — Water
 - CATV — Cable TV
 - CATVFR — Cable TV Taken From Records
 - CCTV — Closed Circuit TV
 - BT — British Telecom
 - BTFR — British Telecom Taken From Records
 - EMPTY — Empty Ducting
 - UNK — Unknown Metallic Utility
 - GPR — GPR Anomaly Possible Utility
 - COM — Communications
 - FWD — First Water Drainage Route
 - SURF — Surface Water Drainage Route
 - COMB — Combined Service Drainage Route
 - UNK — Unknown Drainage Route
 - Field Drain
 - Aco Drain
 - E-TFR — Electric Taken from Records
 - E-AR — Assumed Electric
 - OH BT — BT Overhead
 - BT — BT Overhead
 - MSR — Multi Service Route
 - MS-TRENCH — Multi Service Trench
 - W-TFR (D) — Water Taken from Records
 - W-AR (B4) — Assumed Water
 - GAS-AR (B4) — Assumed Gas
 - GAS-TFR (D) — Gas Taken from Records
 - Survey Extends
 - EOS — End of Signal
 - UTR — Unable to Trace
 - NVO — No Visible Outlet
 - UTMCCA — Unable to Make Out Chamber Attributes

- Symbols:**
- CTP — Telegraph Pole
 - LP — Lamp Post
 - EP — Electric Post
 - TL — Traffic Light
 - FL — Floodlight
 - CTV — Cable TV IC
 - SC — Stop Cock
 - GV — Gas Valve
 - BOX — Bollard
 - SL — Spot Level
 - POST — Post
 - GUL — Gully
 - ER — Earth Rod
 - GR — Gas Riser
 - RWP — Rain Water Pipe
 - RS — Road Sign
 - SVP — Soil Vent Pipe
 - RE — Rodding Eye
 - Station
 - Control Details
 - End of Signal/Unable to Trace Further
 - Gate
 - MH1 — Manhole
 - IC — Inspection Chamber
 - CATV — Cable TV Chamber
 - BT — BT Chamber
 - RG — Road Gully
 - SV — Stop Valve
 - WM — Water Meter
 - AV — Air Valve
 - WC — Wash Out
 - FR — Fire Hydrant
 - GV — Gas Valve
 - Cabinet — Gas Valve Cabinet
 - ELB — Electric Link Box
 - MH2 — Circular Manhole
 - MB — Manhole
 - MH3 — Triangular Manhole
 - Tree

AS 128:2022
Underground utility detection, indication and location - Specification

PLEASE USE THE ABOVE TABLE IN CONJUNCTION WITH THE TABLES

360

PLEASE USE THE ABOVE TABLE IN CONJUNCTION WITH THE TABLES

360

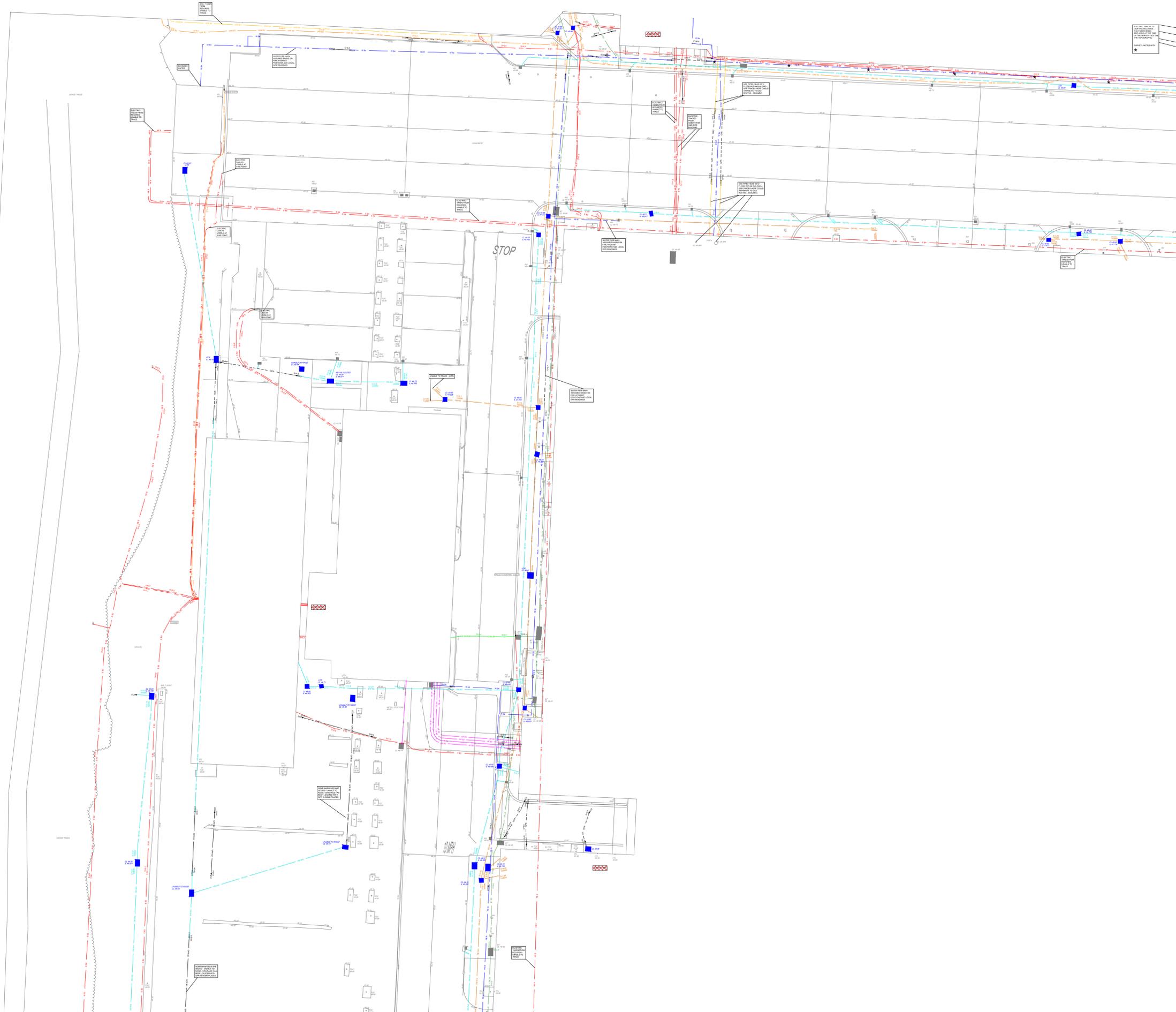
Approximate National Grid North

THREE SIXTY GROUP

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i/telect		
CLIENT: Cleveland Bridge		
PROJECT TITLE: Utility Survey		
DRAWING TITLE: 1:600 @ A0	DATE: 31/10/2025	SHEET: Overview
SCALE: BR/PR/RJ	DATE: BR/PR/RJ	APPROVED: RJ
PROJECT ID: 5135	PROJECT NO: OSTN15/LSF1	CHECKED: OSTN15/LSF1
P01	INITIAL RELEASE	



360 Mapping Drawing Legend:

Topographical Linetypes:	
[Symbol]	Road
[Symbol]	Drop Kerb
[Symbol]	Steps
[Symbol]	Building Line
[Symbol]	Barrier
[Symbol]	Channel
[Symbol]	Concrete
[Symbol]	Chain Fence
[Symbol]	Post & Wire Fence
[Symbol]	Wooden Fence
[Symbol]	Top of Bank
[Symbol]	Bottom of Bank
[Symbol]	Tree Canopy Line
[Symbol]	Verge Line
[Symbol]	Wall
[Symbol]	Footpath

Underground Utility Linetypes:	
[Symbol]	Electric
[Symbol]	Gas
[Symbol]	Water
[Symbol]	Cable TV
[Symbol]	Cable TV Taken From Records
[Symbol]	Closed Circuit TV
[Symbol]	BT
[Symbol]	British Telecom Taken From Records
[Symbol]	EMPTY
[Symbol]	Unknown Metallic Utility
[Symbol]	GPR Anomaly Possible Utility
[Symbol]	Communications
[Symbol]	Frost Water Drainage Route
[Symbol]	Surface Water Drainage Route
[Symbol]	Combined Service Drainage Route
[Symbol]	Unknown Drainage Route
[Symbol]	Field Drain
[Symbol]	Aoo Drain
[Symbol]	Electric Taken from Records
[Symbol]	Assumed Electric
[Symbol]	Electric Overhead
[Symbol]	BT Overhead
[Symbol]	Multi Service Route
[Symbol]	Multi Service Trench
[Symbol]	Water Taken from Records
[Symbol]	Assumed Water
[Symbol]	Assumed Gas
[Symbol]	Gas Taken from Records
[Symbol]	Survey Extents
[Symbol]	End of Signal
[Symbol]	EOS
[Symbol]	UTR
[Symbol]	Unable to Trace
[Symbol]	UUT
[Symbol]	No Visible Outlet
[Symbol]	NVO
[Symbol]	Unable to Make Out Chamber Attributes
[Symbol]	UTMOCA

Symbols:

[Symbol]	Telegraph Pole
[Symbol]	Lamp Post
[Symbol]	Electric Post
[Symbol]	Traffic Light
[Symbol]	Floodlight
[Symbol]	Cable TV IC
[Symbol]	Stop Cock
[Symbol]	Gas Valve
[Symbol]	Bollard
[Symbol]	Spot Level
[Symbol]	Post
[Symbol]	Gully
[Symbol]	Earth Rod
[Symbol]	Gas Riser
[Symbol]	Rain Water Pipe
[Symbol]	Road Sign
[Symbol]	Soil Vent Pipe
[Symbol]	Roofing Eye
[Symbol]	Station
[Symbol]	Control Details
[Symbol]	End of Signal/Unable to Trace Further
[Symbol]	Gate
[Symbol]	MH1
[Symbol]	Manhole
[Symbol]	Inspection Chamber
[Symbol]	Stop Valve
[Symbol]	Cable TV Chamber
[Symbol]	BT Chamber
[Symbol]	Road Gully
[Symbol]	Stop Valve
[Symbol]	Water Meter
[Symbol]	Air Valve
[Symbol]	Wash Out
[Symbol]	Fire Hydrant
[Symbol]	Gas Valve
[Symbol]	Cabinet
[Symbol]	Electric Link Box
[Symbol]	MH2
[Symbol]	Circular Manhole
[Symbol]	MH3
[Symbol]	Triangular Manhole
[Symbol]	Tree

AS 188:2022
Underground utility detection, identification and location - Specification

PLEASE USE THE ABOVE TABLE IN CONNECTION WITH THE TABLE LEGEND

360

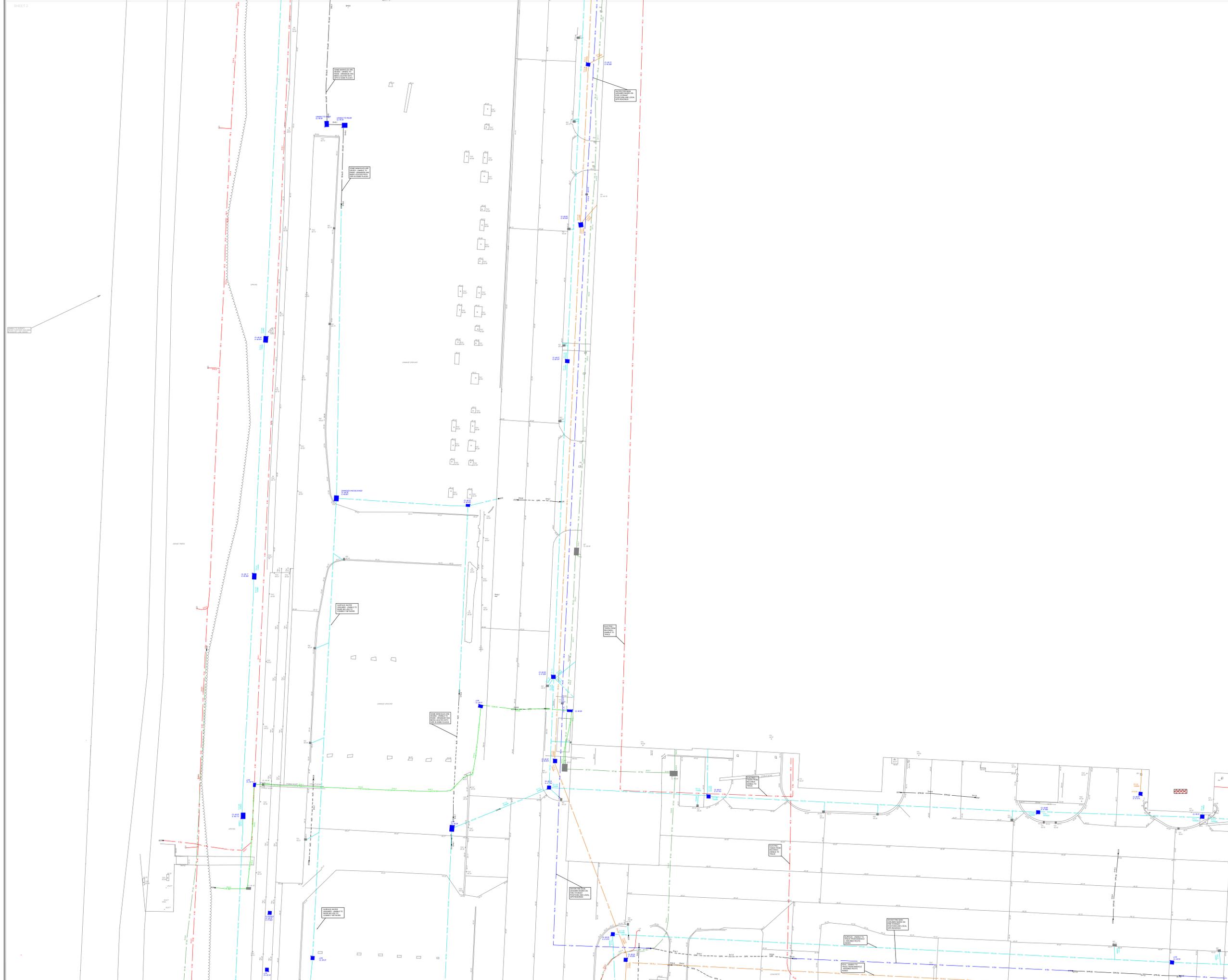
Approximate National Grid North

THREE SIXTY GROUP

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CLIENT		Cleveland Bridge	
PROJECT TITLE		Utility Survey	
DRAWING TITLE		Sheet 1	
SCALE: 1:200 @ A0	DATE: 31/10/2025	BY: BR/PR/RJ	CHECKED: RJ
PROJECT NO: 5135	CREDIT: OSTN15/LSF1		
P01	INITIAL RELEASE		



360 Mapping Drawing Legend:

Topographical Linetypes:	
Drop Kerb	Road
Building Line	Drop Kerb
Barrier	Steps
Channel	Building Line
Concrete	Barrier
Chain Fence	Channel
Metal Fence	Concrete
Wooden Fence	Chain Fence
Top of Bank	Post & Wire Fence
Bottom of Bank	Wooden Fence
Tree Canopy Line	Top of Bank
Verge Line	Bottom of Bank
Wall	Tree Canopy Line
Footpath	Verge Line

Underground Utility Linetypes:	
E	Electric
G	Gas
W	Water
CATV	Cable TV
CATVFR	Cable TV Taken From Records
CCTV	Closed Circuit TV
BT	British Telecom
BTFR	British Telecom Taken From Records
EMPT	Empty Ducting
LNK	Unknown Metallic Utility
GPR	GPR Anomaly Possible Utility
COM	Communications
FWD	Foul Water Drainage Route
SWD	Surface Water Drainage Route
CSD	Combined Service Drainage Route
UNKD	Unknown Drainage Route
FD	Field Drain
ACD	Aco Drain
E TR	Electric Taken from Records
E AR	Assumed Electric
OH E	Electric Overhead
OH BT	BT Overhead
MSR	Multi Service Trench
W TR	Water Taken from Records
W AR	Assumed Water
G TR	Gas Taken from Records
G AR	Assumed Gas

EOS	End of Signal
UTR	Unable to Trace
NVO	No Visible Outlet
UTMOCA	Unable to Make Out Chamber Attributes

Symbols:	
TP	Telegraph Pole
LP	Lamp Post
EP	Electric Post
TL	Traffic Light
FL	Floodlight
CTV	Cable TV IC
SC	Stop Cock
GV	Gas Valve
BOL	Bollard
SL	Spot Level
POST	Post
GUL	Gully
ER	Earth Rod
GR	Gas Riser
RWP	Rain Water Pipe
SVP	Soil Vent Pipe
RE	Rodding Eye
STN	Station
CD	Control Details
G	Gate
MH1	Manhole
IC	Inspection Chamber
SV	Stop Valve
CTV	Cable TV Chamber
BT	BT Chamber
RG	Road Gully
WM	Water Meter
AV	Air Valve
WO	Wash Out
FH	Fire Hydrant
GV	Gas Valve
CAB	Cabinet
ELB	Electric Link Box
CMH	Circular Manhole
TMH	Triangular Manhole
T	Tree
EOS	End of Signal/Unable to Trace Further

AS 18:2022
Underground utility detection, identification and location - Specifications

PLEASE USE THE ABOVE TABLE IN CONJUNCTION WITH THE 360 LOGBOOK

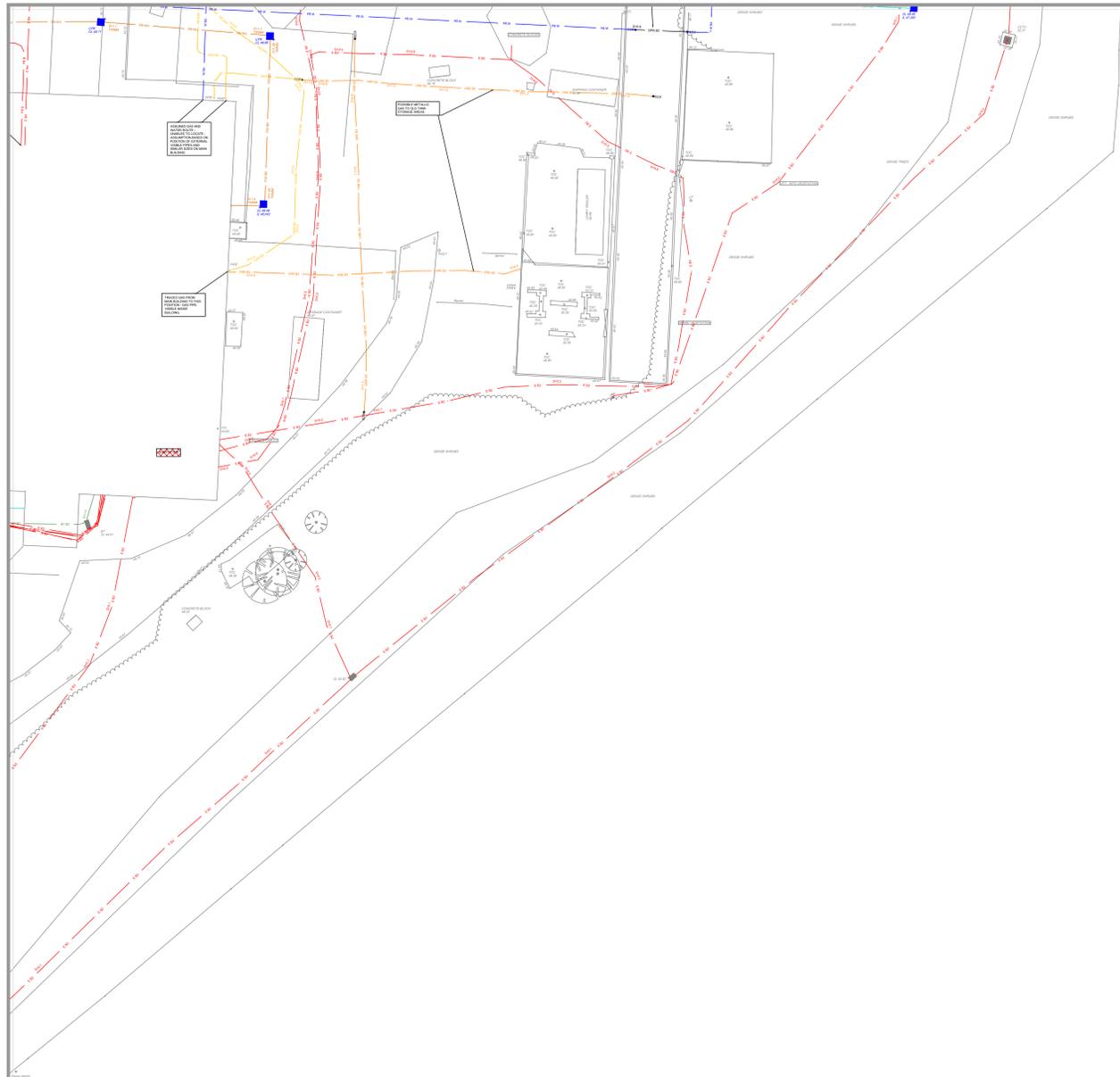
The diagram illustrates three methods for detecting underground utilities: GPR, DCR, and EMI. Each method is shown with a cross-section of the ground and the utility being detected. GPR uses radio waves, DCR uses electrical resistance, and EMI uses magnetic fields.

Approximate National Grid North

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CLIENT		Cleveland Bridge	
PROJECT TITLE		Utility Survey	
DRAWING TITLE		Sheet 2	
SCALE: 1:200 @ A0	DATE: 31/10/2025	SHEET: 2	
PREPARED BY: BR/PR/RJ	DRAWN BY: BR/PR/RJ	APPROVED BY: RJ	
PROJECT ID: 5135	CREDIT: OSTN15/LSF1		
P01	INITIAL RELEASE		



360 Mapping Drawing Legend:

Topographical Linetypes:	
	Road
	Drop Kerb
	Steps
	Building Line
	Barrier
	Channel
	Concrete
	Chain Fence
	Post & Wire Fence
	Wooden Fence
	Top of Bank
	Bottom of Bank
	Tree Canopy Line
	Verge Line
	Wall
	Footpath
Underground Utility Linetypes:	
	Electric
	Gas
	Water
	Cable TV
	Cable TV Taken From Records
	Closed Circuit TV
	British Telecom
	British Telecom Taken From Records
	Empty Ducting
	Unknown Metallic Utility
	GPR Anomaly Possible Utility
	Communications
	First Water Drainage Route
	Surface Water Drainage Route
	Combined Service Drainage Route
	Unknown Drainage Route
	Field Drain
	Aoo Drain
	Electric Taken from Records
	Assumed Electric
	Electric Overhead
	BT Overhead
	Multi Service Route
	Multi Service Trench
	Water Taken from Records
	Assumed Water
	Assumed Gas
	Gas Taken from Records
	Surveys/Errors
	End of Signal
	Unable to Trace
	No Visible Outlet
	Unable to Make Out Chamber Attributes

Symbols:

	Telegraph Pole		Gate
	Lamp Post		MH1
	Electric Post		Manhole
	Traffic Light		CL 100,000
	Floodlight		Inspection Chamber
	Cable TV IC		Stop Valve
	Stop Cock		Cable TV Chamber
	Gas Valve		BT Chamber
	Bollard		SV
	Spot Level		Road Gully
	Post		Stop Valve
	Gully		Water Meter
	Earth Rod		AV
	Gas Riser		Air Valve
	Rain Water Pipe		WC
	Soil Vent Pipe		Wash Out
	Roofing Eye		FR
	Station		Fire Hydrant
	Control Details		Gas Valve
	End of Signal/Unable to Trace Further		Cabinet
			Electric Link Box
			LD
			MH2
			CL 100,000
			TL 97,500
			MH3
			CL 100,000
			TL 97,500
			Triangular Manhole
			Tree



Approximate National Grid North

THREE SIXTY GROUP

UNIT 3, MANDALE PARK, NORTH SHIELDS,
TYNE & WEAR, NE13 7JN

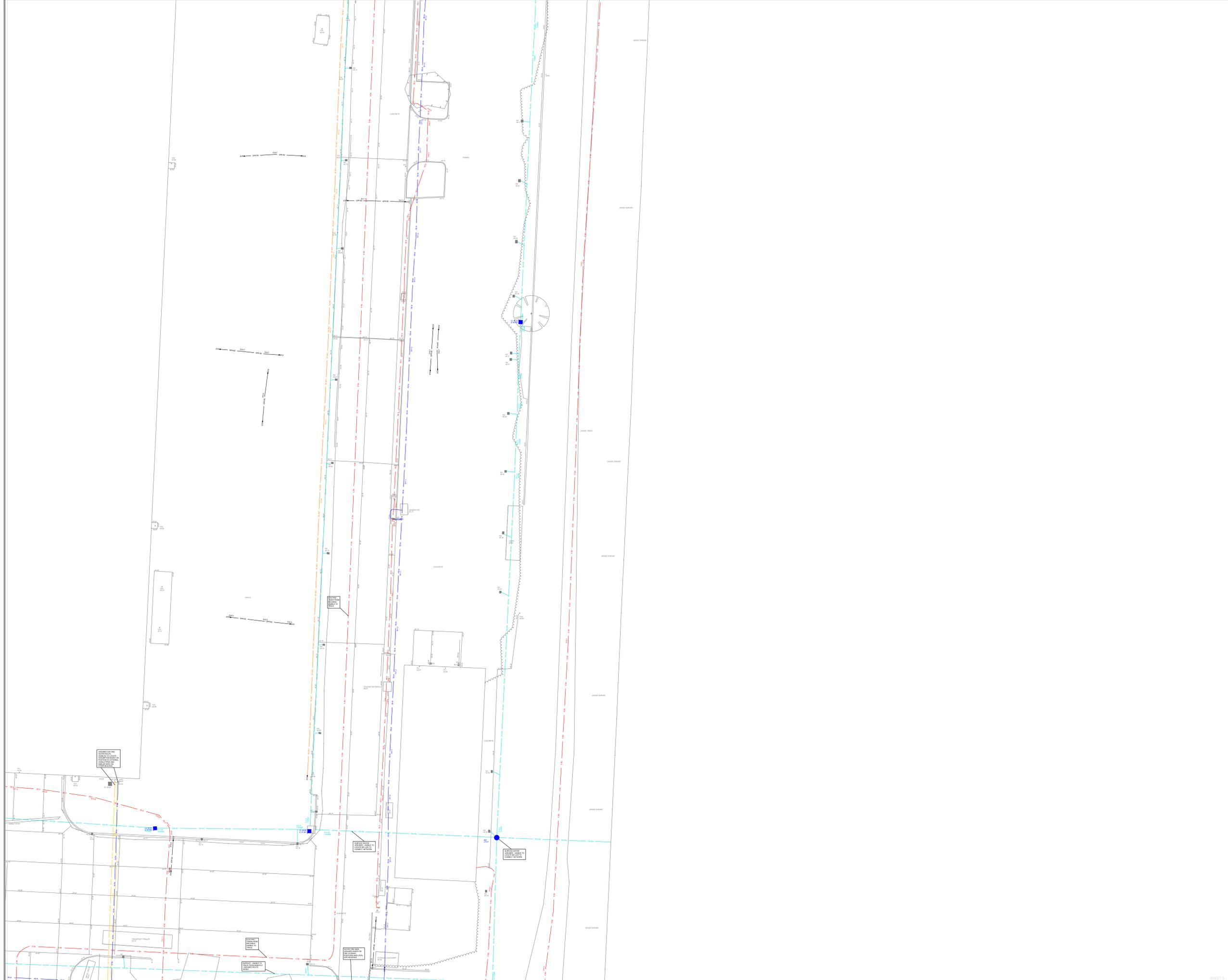
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i/telect

CLIENT: Cleveland Bridge

PROJECT TITLE: Utility Survey

DRAWING TITLE	DATE	SHEET
1:200 @ A0	31/10/2025	Sheet 4
BR/PR/RJ	BR/PR/RJ	RJ
5135		OSTN15/LSF1



360 Mapping Drawing Legend:

Topographical Linetypes:	
	Road
	Drop Kerb
	Steps
	Building Line
	Barrier
	Channel
	Concrete
	Chain Fence
	Post & Wire Fence
	Wooden Fence
	Top of Bank
	Bottom of Bank
	Tree Canopy Line
	Verge Line
	Wall
	Footpath

Underground Utility Linetypes:	
	Electric
	Gas
	Water
	Cable TV
	Cable TV Taken From Records
	Closed Circuit TV
	British Telecom
	British Telecom Taken From Records
	Empty Ducting
	Unknown Metallic Utility
	GPR Anomaly Possible Utility
	Communications
	First Water Drainage Route
	Surface Water Drainage Route
	Combined Service Drainage Route
	Unknown Drainage Route
	Field Drain
	Aoo Drain
	Electric Taken from Records
	Assumed Electric
	Electric Overhead
	BT Overhead
	Multi Service Trench
	Water Taken from Records
	Assumed Water
	Assumed Gas
	Gas Taken from Records
	Survey Limits
	End of Signal
	Unable to Trace
	No Visible Outlet
	Unable to Make Out Chamber Attributes

Symbols:

	Telegraph Pole
	Lamp Post
	Electric Post
	Traffic Light
	Floodlight
	Cable TV IC
	Stop Cock
	Gas Valve
	Bollard
	Spot Level
	Post
	Gully
	Earth Rod
	Gas Riser
	Rain Water Pipe
	Road Sign
	Soil Vent Pipe
	Rocking Eye
	Station
	Control Details
	End of Signal/Unable to Trace Further
	Gate
	MH1
	Manhole
	Inspection Chamber
	Stop Valve
	Cable TV Chamber
	BT Chamber
	Road Gully
	Stop Valve
	Water Meter
	Air Valve
	Wash Out
	Fire Hydrant
	Gas Valve
	Cabinet
	Electric Link Box
	MH2
	Circular Manhole
	MH3
	Triangular Manhole
	Tree

AS 128:2022
Underground utility detection, identification and location - Symbols

PLEASE USE THE ABOVE TABLE IN CONNECTION WITH THE DRAWING

360
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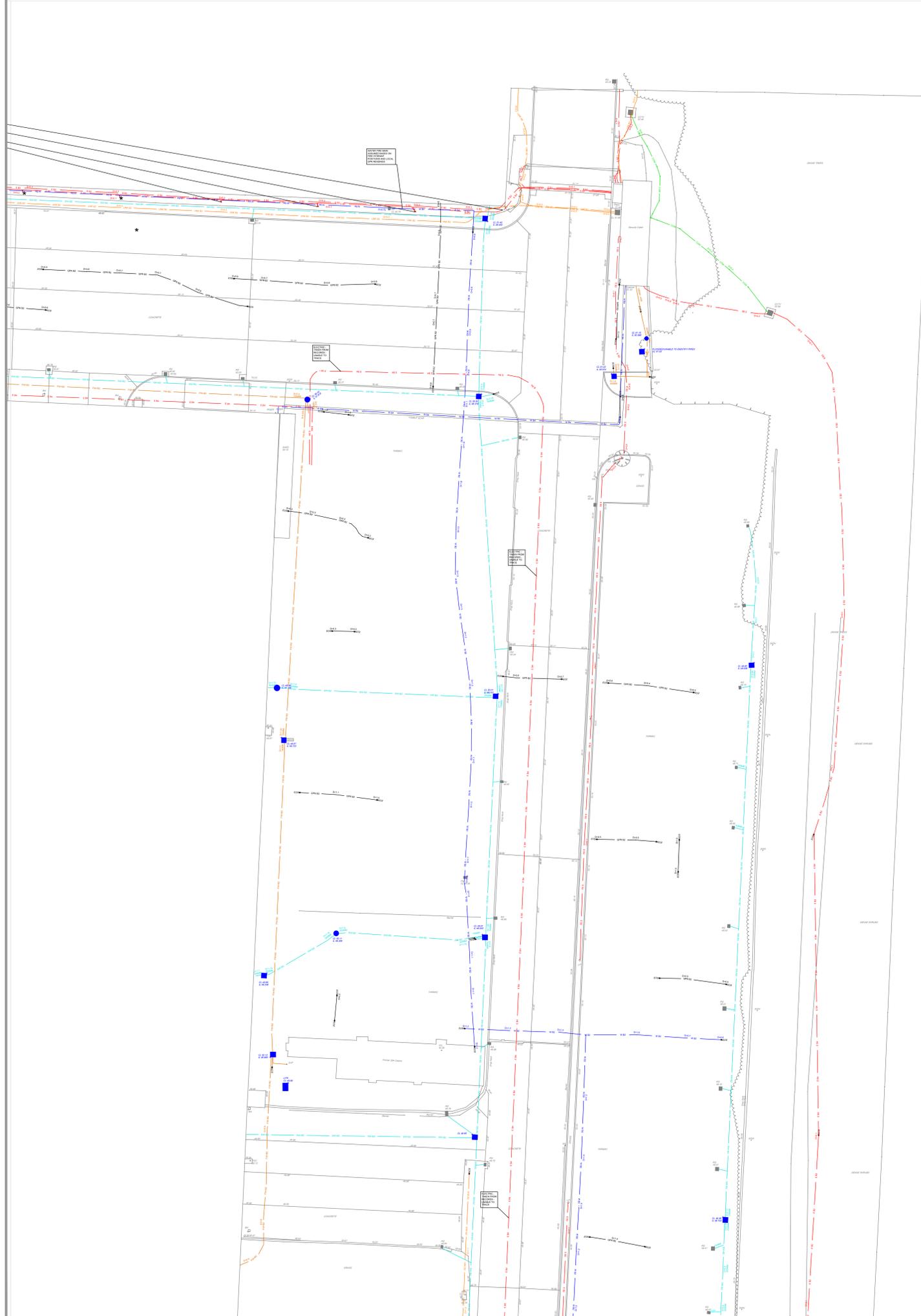
Approximate National Grid North

THREE SIXTY GROUP

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iVtelect		
CLIENT: Cleveland Bridge		
PROJECT TITLE: Utility Survey		
DRAWING TITLE: 1:200 @ A0		
SCALE: 1:200 @ A0	DATE: 31/10/2025	SHEET: Sheet 5
PREPARED BY: BR/PR/RJ	DESIGNED BY: BR/PR/RJ	APPROVED BY: RJ
PROJECT REFERENCE: 5135	CREDIT: OSTN15/LSF1	
P01	INITIAL RELEASE	



360 Mapping Drawing Legend:

Topographical Linetypes:	
[Line Style]	Road
[Line Style]	Drop Kerb
[Line Style]	Steps
[Line Style]	Building Line
[Line Style]	Barrier
[Line Style]	Channel
[Line Style]	Concrete
[Line Style]	Chain Fence
[Line Style]	Metal Fence
[Line Style]	Post & Wire Fence
[Line Style]	Wooden Fence
[Line Style]	Top of Bank
[Line Style]	Bottom of Bank
[Line Style]	Tree Canopy Line
[Line Style]	Verge Line
[Line Style]	Wall
[Line Style]	Footpath

Underground Utility Linetypes:	
[Line Style]	Electric
[Line Style]	Gas
[Line Style]	Water
[Line Style]	Cable TV
[Line Style]	Cable TV Taken From Records
[Line Style]	Closed Circuit TV
[Line Style]	British Telecom
[Line Style]	British Telecom Taken From Records
[Line Style]	Empty Ducting
[Line Style]	Unknown Metallic Utility
[Line Style]	GPR Anomaly Possible Utility
[Line Style]	Communications
[Line Style]	First Water Drainage Route
[Line Style]	Surface Water Drainage Route
[Line Style]	Combined Service Drainage Route
[Line Style]	Unknown Drainage Route
[Line Style]	Field Drain
[Line Style]	Aoo Drain
[Line Style]	Electric Taken from Records
[Line Style]	Assumed Electric
[Line Style]	Electric Overhead
[Line Style]	BT Overhead
[Line Style]	Multi Service Route
[Line Style]	Multi Service Trench
[Line Style]	Water Taken from Records
[Line Style]	Assumed Water
[Line Style]	Assumed Gas
[Line Style]	Gas Taken from Records
[Line Style]	Survey Points
[Symbol]	End of Signal
[Symbol]	Unable to Trace
[Symbol]	No Visible Outlet
[Symbol]	Unable to Make Out Chamber Attributes

Symbols:

[Symbol]	Telegraph Pole	[Symbol]	Gate
[Symbol]	Lamp Post	[Symbol]	MH1
[Symbol]	Electric Post	[Symbol]	MH2
[Symbol]	Traffic Light	[Symbol]	MH3
[Symbol]	Floodlight	[Symbol]	Manhole
[Symbol]	Cable TV IC	[Symbol]	Inspection Chamber
[Symbol]	Stop Cock	[Symbol]	Stop Valve
[Symbol]	Gas Valve	[Symbol]	Cable TV Chamber
[Symbol]	Bollard	[Symbol]	BT Chamber
[Symbol]	Spot Level	[Symbol]	Road Gully
[Symbol]	Post	[Symbol]	Stop Valve
[Symbol]	Gully	[Symbol]	Water Meter
[Symbol]	Earth Rod	[Symbol]	Air Valve
[Symbol]	Gas Riser	[Symbol]	Wash Out
[Symbol]	Rain Water Pipe	[Symbol]	Fire Hydrant
[Symbol]	Road Signs	[Symbol]	Gas Valve
[Symbol]	Soil Vent Pipe	[Symbol]	Cabinet
[Symbol]	Roofing Eye	[Symbol]	Electric Link Box
[Symbol]	Station	[Symbol]	LD
[Symbol]	Control Details	[Symbol]	MH2
[Symbol]	End of Signal/Unable to Trace Further	[Symbol]	LD
[Symbol]		[Symbol]	MH3
[Symbol]		[Symbol]	Triangular Manhole
[Symbol]		[Symbol]	Tree

AS 128:2022
Underground utility detection, indication and location - Specification

PLEASE USE THE ABOVE TABLE IN CONNECTION WITH THE DRAWING

360

Approximate National Grid North

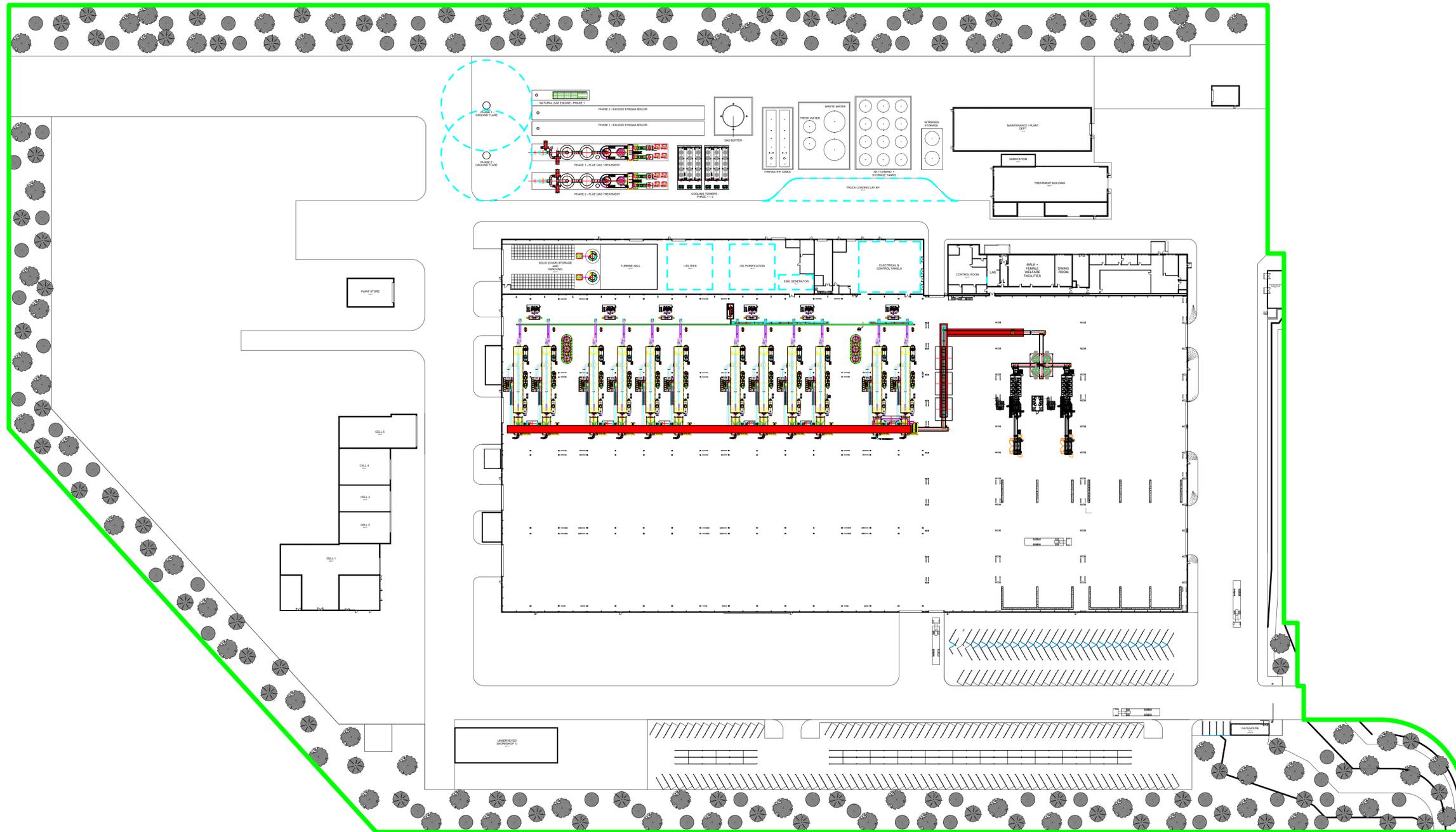
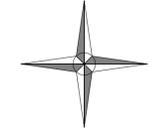
THREE SIXTY GROUP

UNIT 3, MANDALE PARK, NORTH SHIELDS, TYNE & WEAR, NE12 7JN

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ivtelect		
CLIENT	Cleveland Bridge	
PROJECT TITLE	Utility Survey	
DRAWING TITLE	Sheet 6	
SCALE: 1:200 @ A0	DATE: 31/10/2025	SHEET: 6
PREPARED BY: BR/PR/RJ	DRAWN BY: BR/PR/RJ	APPROVED BY: RJ
PROJECT ID: 5135	CHECKED BY: OSTN15/LSF1	
P01	INITIAL RELEASE	

NOTES:



REV	DATE	NOTES	BY	CHK
A	29/08/2025	FIRST ISSUE	LC	JG
B	09/10/2025	REVISED ISSUE	KB	LC
C	20/11/2025	ISSUED FOR PLANNING	RE	LC
D	05/12/2025	RE-ISSUED FOR PLANNING	RE	LC



PROJECT TITLE
PYROLYSIS PLANT

DRAWING TITLE
ENDOLYS GREEN LINE BOUNDARY

DRAWING NUMBER
J-14215-30-B-1-D

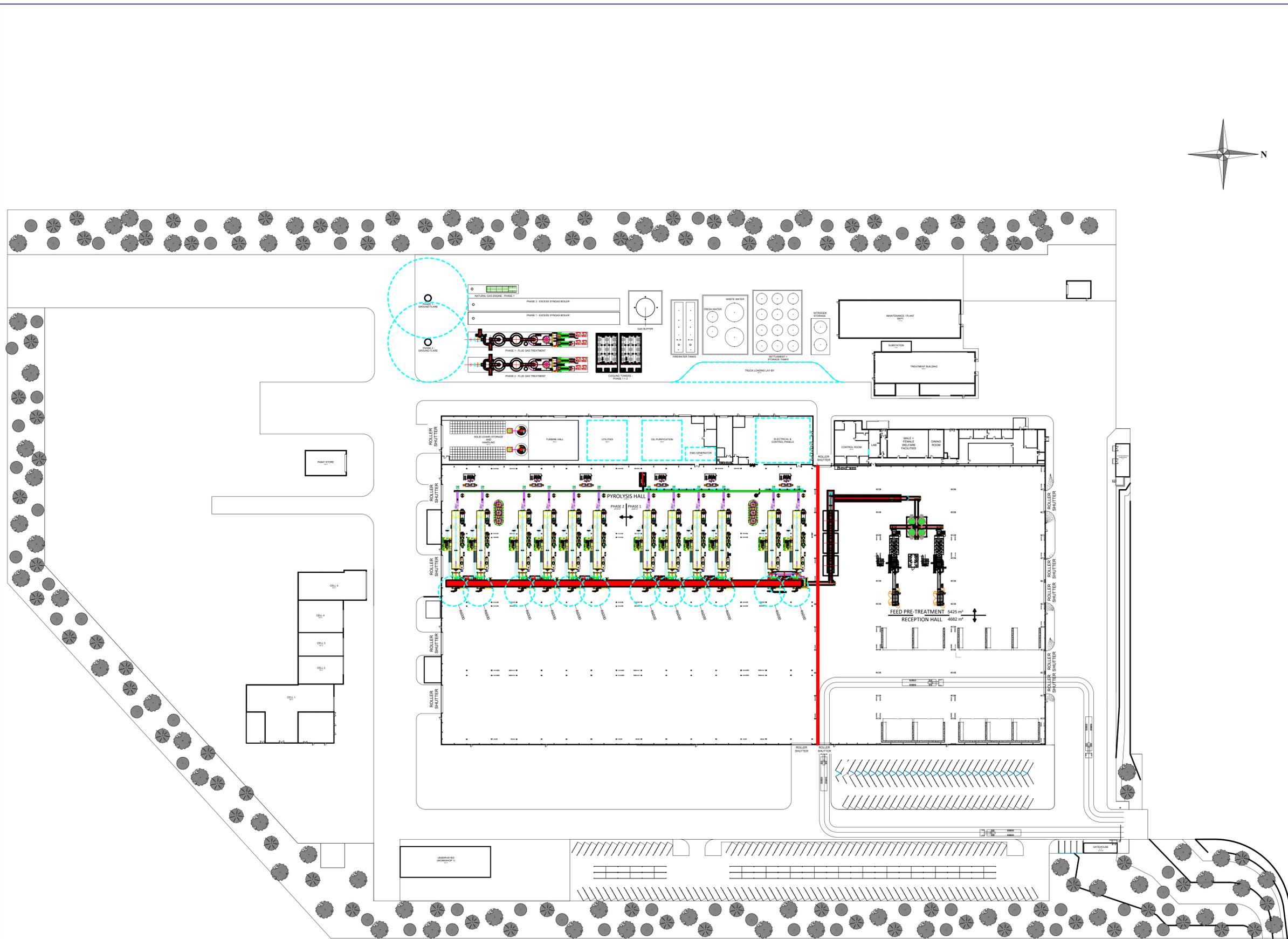
JOB NUMBER
14215/30

SCALE
N/A DATE
09/10/2025

REVISION
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KB PAGE
1 OF
1

CLIENT





NOTES		
AREA	HAZ./FLAM. MAT'L STORED	FIRE DETECT / SUPPRESS. MEASURE in DEVELOPMENT
RECEPTION HALL	YES	Aspirating Active Detection System. Thermal Cameras scanning raw product, Targetted suppression system. (Precise extinguishing agent deployment direct to source. Water/Foam can be used as extinguishing agent.)
FEED PRE-TREATMENT	YES	Aspirating Active Detection System. Linear Heat Detection Within Conveyor. Thermal Cameras scanning Shredded product, Targetted suppression system. (Precise extinguishing agent deployment direct to source Water/Foam can be used as extinguishing agent.)
PYROLYSIS HALL	NO	Aspirating Active Detection System. Linear Heat Detection within Conveyor. Thermal Cameras scanning conveyors, Targetted suppression system. (Precise extinguishing agent deployment direct to source Water/Foam can be used as extinguishing agent. Linear detection connected to main system activating dampers protecting compartmentation.)
SOLID (CHAR) STORAGE & HANDLING	YES	Aspirating Active Detection System, Sprinkler System, Gas detection. (Gas detection to be confirmed, will be linked to the main system and control room.)
TURBINE HALL	NO	
UTILITIES	NO	Automatic Point Detection
OIL PURIFICATION	NO	Automatic Point Detection, Gas Detection
EMERGENCY GENERATOR	YES	Automatic Point Detection
ELECTRICAL & CONTROL PANELS	NO	Automatic Point Detection, Local Suppression System. (Suppression to protect specific panel/risk)
CONTROL ROOM	NO	Automatic Point Detection
LABORATORY	YES	Automatic Point Detection
WELFARE	NO	Automatic Point Detection
DINING	NO	Automatic Point Detection
NITROGEN STORAGE	NO	Nitrogen Gas Detection, External Manual System
PRODUCT (OIL) SETTLEMENT & STORAGE	YES	External Manual System, Gas Detection. (System designed to alert operatives and detection unwanted emissions.)
WASTE WATER	NO	External Manual System, Gas Detection
FRESH WATER	NO	External Manual System, Gas Detection
FIREWATER TANKS	NO	External Manual System, Gas Detection
COOLING TOWERS	NO	External Manual System, Gas Detection
GAS BUFFER STORAGE	YES	External Manual System, Gas Detection
FLUE GAS TREATMENT	NO	External Manual System, Gas Detection
EXCESS SYNGAS BOILER	NO	External Manual System, Gas Detection
NATURAL GAS ENGINE	NO	External Manual System, Gas Detection
GROUND FLARE	NO	External Manual System, Gas Detection

REV	DATE	NOTES	BY	CHK
A	05/11/2025	FIRST ISSUE	RE	LC



PROJECT TITLE
PYROLYSIS PLANT

DRAWING TITLE
ENDOLYS FIRE PREVENTION PLAN LAYOUT

DRAWING NUMBER
J-14215-30-FPP-1-A

JOB NUMBER
14215/30

SCALE
N/A DATE
05/12/2025

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APPENDIX B DETECTION & SUPPRESSION SYSTEMS

		
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SA	ML	01

Fire Safety Design- Endolys

Introduction:

This document provides an overview of fire safety in relation to functional requirements of Part B (Fire Safety) of Schedule 1 to the Building Regulations 2010 (as amended), which relates to the life safety of persons in and around the building. This document also provides a basis of design to allow for the implementation of the Fire Prevention Plan, produced for Endolys.

Considerations such as property protection, business continuity, and environmental impact fall outside the scope of this document.

In addition to the minimum fire safety requirements for life safety in this document, further enhancements may be necessary to meet the requirements of the building's insurers. This document can be updated to include additional enhancements to the building's fire safety as part of insurance, property protection, business continuity, or environmental impact considerations.

Please note that the project is currently at a very early stage. The information, values, and the comments provided in this document are preliminary and subject to change as the design develops and additional details are provided.

Given the high-risk nature of this project, close coordination with the relevant stakeholders is essential. Certain elements are expected to change as the design progresses and more information becomes available.

In addition, this report does not consider the potential impact of process safety requirements under the Control of Major Accident Hazards (COMAH) Regulations, the Control of Substances Hazardous to Health (COSHH) Regulations, or the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR). We are unable to provide guidance on all such requirements, as a full appraisal would extend beyond the scope of fire engineering. It is recommended that this aspect be led by a suitably qualified process safety engineer.

The values specified in this document are subject to change as the design develops and additional details become available, taking into account potential updates to the layout, the high-risk nature of the building, associated hazards, the configuration, requirements under COSHH, DSEAR, and COMAH, aspects related to other stakeholders, and other relevant factors.

As part of the design development, a formal fire strategy for the building will be produced at Spatial Coordination, updated at Detailed Design and Construction (RIBA Workstages 3, 4 and 5, respectively), with a final as-built fire strategy suitable for Regulation 38 handover (RIBA Stage 6). Note this document does not constitute a formal fire strategy at this stage.

A) Primary guidance referred to in this document: BS 9999:2017

B) Building Overview:

Endolys will build a pyrolysis facility at the old Cleveland Bridge site. The building includes office spaces, plant and processing areas.

It was confirmed during the site visit on 18.11.2025 that the building is expected to operate 24/7 with around 110 total workers operating in shift pattern (60 occupancy for office spaces).

C) Evacuation Strategy:

Simultaneous evacuation

D) Building Height:

For the purposes of the Fire Safety Strategy, the top-most occupied storey of the building is approximately 4.48 m above ground level, measured from the upper surface of the top-most occupied floor to ground level on the lowest side of the building.

E) Sprinkler Provision:

As per Table 3 of BS 9999:2017, plant and processing areas are classified with a fire growth rate of Ultra-fast (Category 4). This category is unacceptable unless a sprinkler system is installed as per BS 9999:2017. Therefore, sprinkler protection is required throughout all plant and processing areas.

The sprinkler systems should be designed and installed in accordance with BS EN 12845:2015+A1:2019.

The processing and plant areas to be protected by the automatic sprinkler system are classified as High Hazard, as per Clause 6.2.4 of BS EN 12845:2015+A1:2019, because they cover occupancies where the materials involved have a high fire load, high combustibility, and are capable of developing a rapidly spreading or intense fire.

For the storage areas, it should be assessed in accordance with Clause 6.3 of BS EN 12845:2015+A1:2019.

It should be noted that the sprinkler system should be designed to meet life safety requirements, as specified in Annex F of BS EN 12845:2015+A1:2019.

F) Risk profiles:

Floor	Space	Occupancy Characteristics ^[1]	Fire Growth Rate ^[2]	Risk Profile ^[3]
Ground Floor	Office areas	Category A – Occupants awake and familiar with building layout	Category 2 – Medium fire growth rate	A2
	Plant and processing areas	Category A – Occupants awake and familiar with building layout	Category 3 – Fast fire growth rate ^[4]	A3
First Floor	Office areas	Category A – Occupants awake and familiar with building layout	Category 2 – Medium fire growth rate	A2

Notes:

- As per Clause 6.2 of BS 9999:2017
- As per Clause 6.3 of BS 9999:2017
- As per Clause 6.4 of BS 9999:2017
- The fire growth rate is reduced by one level in accordance with Clause 6.5 of BS 9999:2017, as sprinkler systems are required to be provided throughout all plant and processing areas.

G) Fire detection and alarm systems:

According to Table 7 of BS 9999:2017, the minimum required fire detection and alarm system categories for risk profiles A2 and A3 are M and L2, respectively.

Given that the majority of the building is classified as Risk Profile A3, a Category L2 fire detection and alarm system would be sufficient to provide consistent coverage throughout the building.

The category L2 Fire Detection and Alarm System is to be designed, installed and commissioned in accordance with BS 5839-1:2025.

In addition, smoke and heat detectors should be provided to protect specific areas.

In areas of high ambient noise levels and where ear protectors are to be worn, the sounders should be augmented with visual warning beacons.

H) Compartmentation:

In accordance with Clause 31.2 of BS 9999:2017, compartment sizes should be as follows:

Risk Profile	Maximum Area on Any Floor (m ²)
A2	No Limit ^[1]
A3	No Limit ^[2]

Notes:

- For a multi-storey building with the height of top floor less than 30 m.
- For a single-storey building.

As the design develops, compartmentation will be subject to change taking into account potential updates to the layout, the high-risk nature of the building, associated hazards, the configuration, requirements under COSHH, DSEAR, and COMAH, aspects related to other stakeholders, and other relevant factors.

I) Fire Resistance:

Floor	Space	Elements of Structure ^[1]
Ground Floor	Office areas	The required fire resistance for the elements of structure is 30 minutes (with respect to load-bearing capacity) for a Risk Profile of A2, in accordance with Clause 30.2 and Table 23 of BS 9999:2017.
	Plant and processing areas	The structures that support the fire-resistance elements should provide 120 minutes structural fire protection.
First Floor	Office areas	The required fire resistance for the elements of structure is 30 minutes (with respect to load-bearing capacity) for a Risk Profile of A2, in accordance with Clause 30.2 and Table 23 of BS 9999:2017.

Note:

- This is subject to coordination with the structural engineers, as the minimum level of fire resistance specified in this Table may increase depending on the design.

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For plant and processing areas, as single-storey buildings, where there are compartment walls, or where an external wall is close enough to the relevant boundary to require it, structural fire resistance should be provided, as per Clause 30.2.3 of BS 9999:2017.

As per Clause 30.2.4 of BS 9999:2017, the structure of the roof and the structure that supports only the roof need not to be fire rated unless the roof:

- Forms part of an escape route; or
- Function as a floor; or
- Is part of a portal frame structure where the roof and the supporting stanchions form a single element of structure; or
- Is integral to the stability of a fire-resisting external wall.

J) Exit and Room Door Width

All exits and escape doors from rooms should have an effective width of at least 800 mm, or 850 mm where the door is expected to serve wheelchair users, in accordance with Clause 16.6.

K) Inner rooms

The inner room arrangement should meet all of the following conditions as per Clause 16.3.4 of BS 9999:2017:

- The occupant capacity of the inner room does not exceed 60 (30 where the occupants require assistance escaping).
- The inner room is not a bedroom.
- The inner room is entered directly from the access room.
- The escape route from the inner room does not pass through more than one access room.
- The travel distance from any point in the inner room to the exit(s) from the access room does not exceed the allowable one-way travel distance.
- The access room is not a place of special fire hazard and is under the control of the same occupier as the inner room.
- One of the following arrangements is made:
 - The enclosures (walls or partitions) of the inner room stop at least 500 mm below the ceiling; or
 - A suitably sited vision panel not less than 0.1 m² is located in the door or walls of the inner room, to enable occupants of the inner room to see if a fire has started in the outer room; or
 - The access room is protected by an automatic smoke detector that either: Operates an alarm that is immediately audible in the inner room, to a sound pressure level in accordance with the minimum recommended in BS 5839-1:2013, or gives an immediate visual alarm conforming to BS EN 54-23 in the inner room if the ambient noise levels are so great as to make an alarm inaudible.

L) Travel Distances:

In accordance with Clause 18 of BS 9999:2017, where additional fire protection measures, including automatic detection and informative warning systems and considerations for ceiling heights, are provided, it is permissible to increase the maximum travel distances of Table 11 of BS 9999:2017, subject to the maximum acceptable variations specified in Clause 18.4 of BS 9999:2017 for the appropriate risk profile.

Floor	Space	Risk Profile	Ceiling height (m)	Maximum permissible increase in travel distance due to ceiling heights (%) ^[1]	Maximum permissible increase in travel distance due to automatic fire detection and alarm system (%) ^[2]	Total maximum permissible increase in travel distance (%) ^[3]
Ground Floor	Office areas	A2	- ^[4]	-	15	15
	Plant and processing areas	A3	7.86	21	-	21
First Floor	Office areas	A2	- ^[4]	-	15	15

Notes:

- As per Table 14 of BS 9999:2017.
- As per Clause 18.2 of BS 9999:2017.
- Total maximum permissible increase in travel distance due to automatic detection and informative warning systems and considerations for ceiling heights.
- It needs to be confirmed.

		
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According to clause 18 of BS 9999:2017, the maximum travel distances should be as follows:

Area	Space	Risk Profile	Maximum Permitted Travel Distance (m)			
			With Only One Escape Route Available		With Alternative Escape Routes Available	
			Layout Known	Layout Unknown	Layout Known	Layout Unknown
Ground Floor	Office areas	A2	25.3	17.3	63.3	42.3
	Plant and processing areas	A3	21.8	14.5	54.5	36.3
First Floor	Office areas	A2	25.3	17.3	63.3	42.3

The values specified here are subject to change as the design develops and additional details become available, taking into account potential updates to the layout, the high-risk nature of the building, associated hazards, the configuration, requirements under COSHH, DSEAR, and COMAH, aspects related to other stakeholders, and other relevant factors.

To meet the required travel distances for means of escape, it may be recommended to implement one or a combination of the following measures:

- Additional compartmentation to divide the processing area into multiple zones, ensuring compliance with travel distance limits.
- A performance-based evaluation analysis.
- Provision of smoke control systems.

All measures are subject to approval from the relevant approving authority and the local Fire Service.

This will be assessed at the next stage.

M) Heat and smoke control:

As per Clause 27.4 of BS 9999:2017, all enclosed loading docks exceeding 200 m² and covered service roadways should be provided with a system of smoke and heat ventilation, with the objective of clearance of smoke during the fire and after the fire has been suppressed.

In general, a smoke control system would not be required. However, this will need to be reassessed as the design develops, as smoke control may be necessary to support the means of escape analysis depending on the final layout and design.

N) Glazed fire-resisting elements

Glazed elements, when incorporated into fire-resisting internal walls, partitions and screens, should provide a level of fire resistance equivalent to that of the structure into which they are installed. The level of fire resistance of a representative example of the glazed element should be demonstrated by testing in accordance with BS 476-22 or classification in accordance with BS EN 13501-2.

Glazed fire-resisting elements should meet requirements of clause 30.3 of BS 9999:2017.

O) Suspended ceilings

Suspended ceilings need to meet following requirements of BS 9999:2017.

- In accordance with Clause 30.2.5 of BS 9999:2017, a suspended ceiling can contribute to the overall fire resistance of a floor/ceiling assembly. If a suspended ceiling is used, it should be in accordance with Table 26 of BS 9999:2017.
- In accordance with Clause 34.1.4 of BS 9999:2017, the ceiling of a room should be constructed either as a suspended or stretched skin membrane from panels of a thermoplastic material of the TP(a) flexible classification, unless it is part of a fire-resisting ceiling. Each panel should not exceed 5 m² in area and should be supported on all its sides.

		
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P) Firefighting Access

Firefighting access is to be provided for the building in accordance with Clause 21 of BS9999:2017. Based on the total floor area of the building exceeding 24,000 m², 100% perimeter access should be provided for a pump appliance. Every elevation to which vehicle access is provided should have a suitable door(s) not less than 750 mm wide giving access to the interior of the building. Doors should be provided such that there is no more than 60 m between each door and/or the end of that elevation (e.g. a 150m elevation would need at least two doors).

Due to the hazardous nature of the building, it is recommended that early consultation with the fire service takes place as the firefighting methodology may change to incorporate additional features (such as rising mains).

Further consideration should be given to the adequacy of water supply for firefighting services (and likely need of addition of firewater tanks to the site). This will be reviewed at the next stage and to be agreed with the fire service.

		
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