

PART B

EAF Project

Concept Design Site-Wide Fire Strategy

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1 Introduction

1.1 Introduction

PartB Group Ltd. has been appointed by Turley (on behalf of Tata Steel UK) to advise on the fire safety aspects of RIBA Stage 2 for the Electric Arc Furnace (EAF) Project.

Tata Steel plans to replace the existing blast-furnace basic-oxygen furnace (BF-BOF) production route at Port Talbot, with an EAF system, which would be fed by predominantly UK-produced scrap.

The creation of the new Electric Arc Furnace (EAF) facility will also require numerous associated ancillary buildings and structures to facilitate this new method of steel production at the Port Talbot site.

In response to the Planning Pre-Application Consultation which has recently concluded (Ref DC/00353833), we note that the Fire Service has raised no objections to the current proposal, offering confidence in the project's foundational safety considerations.

PartB remains committed to collaborating closely with the client throughout the detailed design stage, ensuring that all fire safety requirements are comprehensively addressed and aligned with regulatory standards.

At this planning stage, we have taken all necessary measures to manage fire safety considerations effectively and proportionately, reinforcing our commitment to a safe and compliant development process from initial planning through to final execution of the scheme.

1.2 General

This report is based in accordance with the fire safety legislation listed in Section 2 below. It does not include for compliance with any other criteria (i.e. additional client requirements, insurance, etc.) unless specifically described in this report. This report intends to provide a road-map to compliance for fire safety design and does not necessarily deal with individual buildings at this stage.

The fire safety aspects of the design are highlighted, providing an overview of the fire safety design elements for the proposed scheme that will support compliance with Part B of the Building Regulations 2010.

This assessment is limited to a review in support of the planning application (pre-application) that will review compliance with the following:

- B1 - Means of Warning & Escape
- B3 - Internal Fire Spread (Structure)
- B4 - External Fire Spread
- B5 - Access & Facilities for the Fire Service
- That appropriate operational fire safety management arrangements shall be in place

Where the design deviates from the common practice recommendations, fire engineering principles will be applied to bring the design in line with the Functional Requirements of the Building Regulations.

This fire strategy is primarily concerned with life safety. However, inherent property protection will be provided from some of the life safety provisions such as compartmentation.

1.3 Limitations of Report

The fire safety strategy is based on the planning package of drawings provided by Lawray Architects. Under no circumstances is liability accepted for the accuracy of such information. It does not review the individual buildings at this stage as the plans provided are not sufficiently developed to a point where independent Fire Strategies can be produced.

Table 1: Information Provided

Description	Drawing Number	Revision	Produced by	Date
Unit 01 Proposed GA	EAF-LAW-01-X-DR-A-060001	P01	Lawray Architects	10/07/2024
Unit 02 Proposed GA	EAF-LAW-02-G00-DR-A-061001	P01	Lawray Architects	20/08/2024
Unit 03 Proposed GA	EAF-LAW-03-X-DR-A-061001		Lawray Architects	20/08/2024
Unit 04 Proposed GA	EAF-LAW-04-X-DR-A-060001	P01	Lawray Architects	10/07/2024
Unit 05 Proposed GA	EAF-LAW-05-G00-DR-A-061001		Lawray Architects	20/08/2024
Unit 05 Proposed GA	EAF-LAW-05-U01-DR-A-061002		Lawray Architects	20/08/2024
Unit 06 Proposed GA	EAF-LAW-06-Z-DR-A-061001		Lawray Architects	20/08/2024
Unit 07 Proposed GA	EAF-LAW-07-G00-DR-A-061001		Lawray Architects	20/08/2024

Unit 08 Proposed GA	EAF-LAW-08-G00-DR-A-061001		Lawray Architects	20/08/2024
Unit 09 Proposed GA	EAF-LAW-09-X-DR-A-061001		Lawray Architects	20/08/2024
Unit 10 Proposed GA	EAF-LAW-10-G00-DR-A-061001		Lawray Architects	20/08/2024
Unit 10 Proposed GA	EAF-LAW-10-U01-DR-A-061002		Lawray Architects	20/08/2024
Unit 11 Proposed GA	EAF-LAW-11-X-DR-A-060001	P01	Lawray Architects	10/07/2024
Unit 11 Proposed GA	EAF-LAW-11-U01-DR-A-061002		Lawray Architects	20/08/2024
Unit 12 Proposed GA	EAF-LAW-12-G00-DR-A-061001		Lawray Architects	20/08/2024
Unit 13 Proposed GA	EAF-LAW-13-X-DR-A-060001	P01	Lawray Architects	10/07/2024
Unit 14 Proposed GA	EAF-LAW-14-X-DR-A-060001	P01	Lawray Architects	10/07/2024
Unit 15 Proposed GA	EAF-LAW-15-Z-DR-A-060101		Lawray Architects	20/08/2024
Unit 16 Proposed GA	EAF-LAW-16-X-DR-A-060001	P01	Lawray Architects	10/07/2024
Unit 17 Proposed GA	EAF-LAW-17-G00-DR-A-061001		Lawray Architects	20/08/2024
Unit 18 Proposed GA	EAF-LAW-18-X-DR-A-060001	P02	Lawray Architects	20/08/2024
Unit 19 Proposed GA	EAF-LAW-19-X-DR-A-060001	P01	Lawray Architects	10/07/2024
Unit 20 Proposed GA	EAF-LAW-20-X-DR-A-060001	P01	Lawray Architects	10/07/2024
Unit 21 Proposed GA	EAF-LAW-21-G00-DR-A-061001		Lawray Architects	20/08/2024
Unit 21 Proposed GA	EAF-LAW-21-U01-DR-A-061002		Lawray Architects	20/08/2024

Unit 22 Proposed GA	EAF-LAW-22-G00-DR-A-061001	P01	Lawray Architects	20/08/2024
Unit 30 Proposed GA	EAF-LAW-30-X-DR-A-060001	P01	Lawray Architects	10/07/2024
Unit 31 Proposed GA	EAF-LAW-31-G00-DR-A-061001		Lawray Architects	20/08/2024
Unit 32 Proposed GA	EAF-LAW-32-G00-DR-A-061001		Lawray Architects	20/08/2024
Proposed Site Plan	EAF-LAW-X-X-DR-A-900010	P02	Lawray Architects	10/07/2024
Proposed Site Plan	EAF-LAW-X-X-DR-A-900020	P01	Lawray Architects	17/10/2024
Unit 02 – Consteel Conveyor PGFP	EAF-LAW-02-G00-DR-A-061001	P01	Lawray Architects	17/10/2024
AREA 2 - SWEPT PATH ANALYSIS - PUMPING APPLIANCE	SCP/210634/ATR01.2	P01	SCP	18/10/2024
SWEPT PATH ANALYSIS - GENERAL ARRANGEMENT	SCP/210634/ATR01	P01	SCP	18/10/2024
AREA 1 - SWEPT PATH ANALYSIS - PUMPING APPLIANCE	SCP/210634/ATR01.1	P01	SCP	18/10/2024

2 Legislation & Guidance Documents

2.1 Building Regulations

The relevant buildings will be subject to approval under the Building Regulations 2010 as modified by the Building (Amendment) Regulations 2018.

This will require the design and construction to comply with the Functional Requirements as shown in Section 1.1 of this report.

To demonstrate compliance with Functional Requirements B1 to B5, it is typical to base the design on standard fire safety design documents. Variations to the guidance given in those documents is permitted, provided it can be demonstrated and/or justified to have still met Functional Requirements B1-B5.

In addition, under changes introduced in the Building (Amendment) Regulations 2018, for buildings classified as 'relevant buildings', Regulation 7(2) (and other modified regulations) applies additional criteria on the combustibility of materials within the external walls.

The definition of a 'relevant building' is a building with a storey that is 18 metres or more above ground level (excluding rooftop plant areas and storeys consisting solely of plant rooms), containing one or more dwellings, an institution, or a room for residential purposes (excluding rooms in hostels, hotels or boarding houses).

The buildings forming part of this scheme do not meet the criteria above. As such, additional requirements for 'relevant buildings' under Regulation 7(2) would not be needed.

2.2 COMAH 2015 - Control of Major Accident Hazards (COMAH) - HSE

Major accidents may give rise to serious injury to people or serious damage to the environment, both close to and further away from the site of the accident.

Due to major incidents occurring, and the recognition of the differing standards of controls over industrial activities within the European Union has led the European Commission proposing a directive on the control of major industrial accident hazards.

The works are Upper Tier COMAH and will remain so in the future wing to the red dust waste produced and its eco-toxicity.

The original Seveso directive adopted within COMAH comprised a three-part strategy that is still relevant:

- Identification of the sites
- Control measures to prevent major accidents
- Mitigation measures to limit the effects of any accidents which do occur

Measures introduced as mitigation to control risks associated with fire and prevent major fire-related incidents occurring will be documented within this fire strategy report as informed by others. This may form part of the documentations collated to assist with COMAH requirements for the associated site tier classification. Tata Steel UK will need to confirm the classification for the EAF project and all associated buildings and structures forming part of the scheme.

As the development is yet to be constructed, when operational, it will become subject to COMAH. The 'responsible person' for the site must send a notification within a reasonable time prior to start of construction. This would normally be three to four months.

A plan setting out a timescale for the stages of the project, such as conceptual design, finalisation of design, construction, procurement, commissioning, etc. should be provided to the Health and Safety Executive (HSE).

Figure 1 summarises the responsibilities of the design team / operations team where a site is new, and for first time operations that are relevant prior to key milestones for design, construction and operation for an upper-tier classification.

New to COMAH – new construction or first time operation						
Proposed construction/first time operation of new lower-tier establishment	3(1) Date construction/operation of establishment starts	6(1) & 6(2) Pre-construction/operation notifications to be sent within reasonable time before start of construction/operation	7(3)(a)(i) MAPP to be prepared a reasonable time before construction or operation	n/a	n/a	17(5)(a)(i) Information to be provided to competent authority
New establishment						
Proposed construction/first time operation of new upper-tier establishment	3(1) Date construction/operation of establishment starts	6(1) & 6(2) Pre-construction/operation notifications to be sent within reasonable time before start of construction/operation	7(3)(a)(i) MAPP to be prepared a reasonable time before construction or operation as a specific document within safety report	9(2)(a)(i) Pre-construction report to be sent within a reasonable time before start of construction 9(2)(a)(ii) Pre-operation report to be sent within a reasonable time before start of operation	12(2)(a) Plan to be prepared within a reasonable time before operation starts	17(5)(a)(i) Information to be provided to competent authority 18(1) & (6) PIZ information to be sent every 5 years or after 18(5) review
New establishment						

Figure 1: New to COMAH – New Construction or First-Time Operation (Source: COMAH Regulations 2015, HSE.gov)

2.3 DSEAR 2002 (as amended 2015)

Dangerous substances can put peoples' safety at risk from fire, explosions and corrosion of metal. Dangerous substances include the following:

- A substance or preparation which is classified as being explosive, oxidising, extremely flammable, highly flammable or flammable in accordance with the approved classification and labelling guidance

- A substance or preparation which, because of its physio-chemical or chemical properties and/or the way it is used or present at the workplace, creates a risk
- Any dust, whether in the form of solid particle or fibrous material which can form an explosive mixture with air or an explosive atmosphere

The Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR 2002) puts duties on employer to control the risks to safety from fire, explosions and corrosion of metal. DSEAR 2002 requires employers to do the following:

- Identify dangerous substances within workplace and the associated risks
- Implement control measures to remove or, where not possible to remove, control risks
- Implement control measures to reduce effects of an incident involving dangerous substances
- Prepare plans and procedures to effectively deal with accidents, incidents and emergencies involving dangerous substances
- Inform and, where appropriate, train employees to control and or deal with risk from dangerous substances
- Identify and classify areas of the workplace where explosive atmospheres may occur and avoid ignition sources in these areas.

Tata Steel UK will need to provide PartB with a DSEAR assessment, to include within the fire strategy at a later date, to ensure management systems are in place which consider the impact of dangerous substances on the EAF site.

2.4 Design Guidance

2.4.1 Fire Strategy for Site

A combination of British Standards (BS) has been deemed acceptable for the design of the EAF project. The following standards have been used to review the site-wide fire strategy for the EAF Project.

- British Standards BS 5306-8:2012 'Fire Extinguishing Installations and Equipment on Premises Part 8: Selection and positions of portable fire extinguishers – Code of Practice'
- British Standards 5839-1:2017 'Fire Detection and Fire alarm Systems for Buildings Part 1: Code of Practice for the design, installation, commissioning and maintenance of systems in non-domestic premises'
- British Standards 5839-2:1986 'Fire Detection and Fire alarm Systems for Buildings Part 2: Specifications for Manual Call Points'
- British Standards BS 9990:2015 'Non-automatic fire-fighting systems in buildings – Code of practice'
- British Standards BS 9999:2017 'Fire Safety in the Design, Management and use of Buildings – Code of Practice'
- British Standards BS EN 3 'Portable Fire Extinguishers'
- British Standards BS EN 54-11:2001 'Fire Detection and Fire Alarm Systems Part 11: Manual Call Points'
- British Standards BS EN 1869:2019 'Fire Blankets'

In circumstances where the relevant building design diverges from the guidance in ADB 2020, this has been highlighted and justified in this report.

2.4.2 Fire Strategy for Ancillary Buildings

The fire strategy for the ancillary buildings will centre the design of the building around British Standards BS 9999:2017 'Fire Safety in the Design, Management and use of Buildings – Code of Practice'. (BS 9999) Additional guidance documents have been referenced throughout Annex A where appropriate.

In circumstances where the relevant building design diverges from the guidance in BS 9999, this has been highlighted and justified in this report.

This report describes the primary fire safety issues relating to the relevant buildings. In any areas not mentioned in this report, the design should comply with the guidance of the relevant guidance documents stated above.

It will need to be confirmed which buildings on the site are considered ancillary to the primary use.

2.5 Regulatory Reform (Fire Safety) Order 2005

Once completed, the relevant building will be subject to the Fire Safety Order. Following building completion and occupation, the Regulatory Reform (Fire Safety) Order 2005 is the controlling fire safety legislation.

Under the Regulatory Reform Order (RRO) it is necessary - amongst other things - for the 'responsible person' to undertake a fire safety risk assessment. The building's management will be responsible for ensuring the building's fire safety provisions are appropriately managed, maintained and tested over the building's lifetime.

The RRO also requires the 'responsible person' for the relevant buildings to ensure a fire risk assessment has been carried out by a competent person.

This report (or subsequent updated versions of this report) could be used to assist that fire risk assessment.

2.6 Construction (Design & Management) Regulations 2015

Projects undertaken in the UK must comply with the requirements of the Construction, Design and Management Regulations (CDM).

This report outlines the fire safety strategy for complying with the functional and performance requirements of the Building Regulations Part B (Fire Safety). Where any conclusions or recommendations specify particular materials, products, or forms of construction, these will have been assessed in accordance with the CDM Regulation 9 (Duties for Designers).

In the event these involve significant residual risks or health and safety critical assumptions, this information will be made available to the principal designer. Where the architect or other

consultants use the standards put forward in this report to specify works, they are understood to be competent in alerting the client, principal designer, contractor, and building occupiers of CDM issues.

2.7 Regulation 38

Regulation 38 of the Building Regulations 2010 requires that fire safety information be handed over to the responsible person (as defined under the Regulatory Reform (Fire Safety) Order 2005) upon the completion of a construction or refurbishment project and before the relevant buildings are occupied. This information must cover all fire safety measures, such as fire alarms, emergency lighting, fire-fighting equipment, escape routes, and structural fire protection. The goal is to ensure that the responsible person can properly manage, maintain, and operate fire safety systems throughout the building's life. The person carrying out the building work (typically the contractor or developer) is responsible for providing clear and detailed documentation, which will also support ongoing fire risk assessments. Non-compliance can lead to legal and safety risks.

Typical documentation to be provided as part of the Reg 38 will include:

- As-built drawings showing fire safety features.
- Certificates of compliance for fire alarm, detection, and suppression systems.
- Installation and commissioning certificates for emergency lighting and smoke control systems.
- Fire strategy reports.
- Operation and maintenance manuals for all fire safety systems.
- Fire safety management plans, including evacuation procedures.

Failure to comply with Regulation 38 can have serious consequences, including:

- Increased risk of fire safety systems being improperly managed or maintained.
- Legal implications under the Fire Safety Order if the fire safety measures are inadequate or not properly documented.
- Potential penalties for building owners or contractors for non-compliance, particularly in the event of an inspection or fire incident.

In summary, Regulation 38 is vital for ensuring that fire safety systems are properly communicated and documented so that they can be effectively managed throughout the relevant building's lifecycle.

3 Site Overview

The EAF is a proposed Electric Arc Furnace situated at the Tata Steel site at Port Talbot. Figure 2 documents the site plan showing all the buildings and structures related to the EAF works. Due to the size of the site, four additional figures are included to outline the individual building proposed for the site.

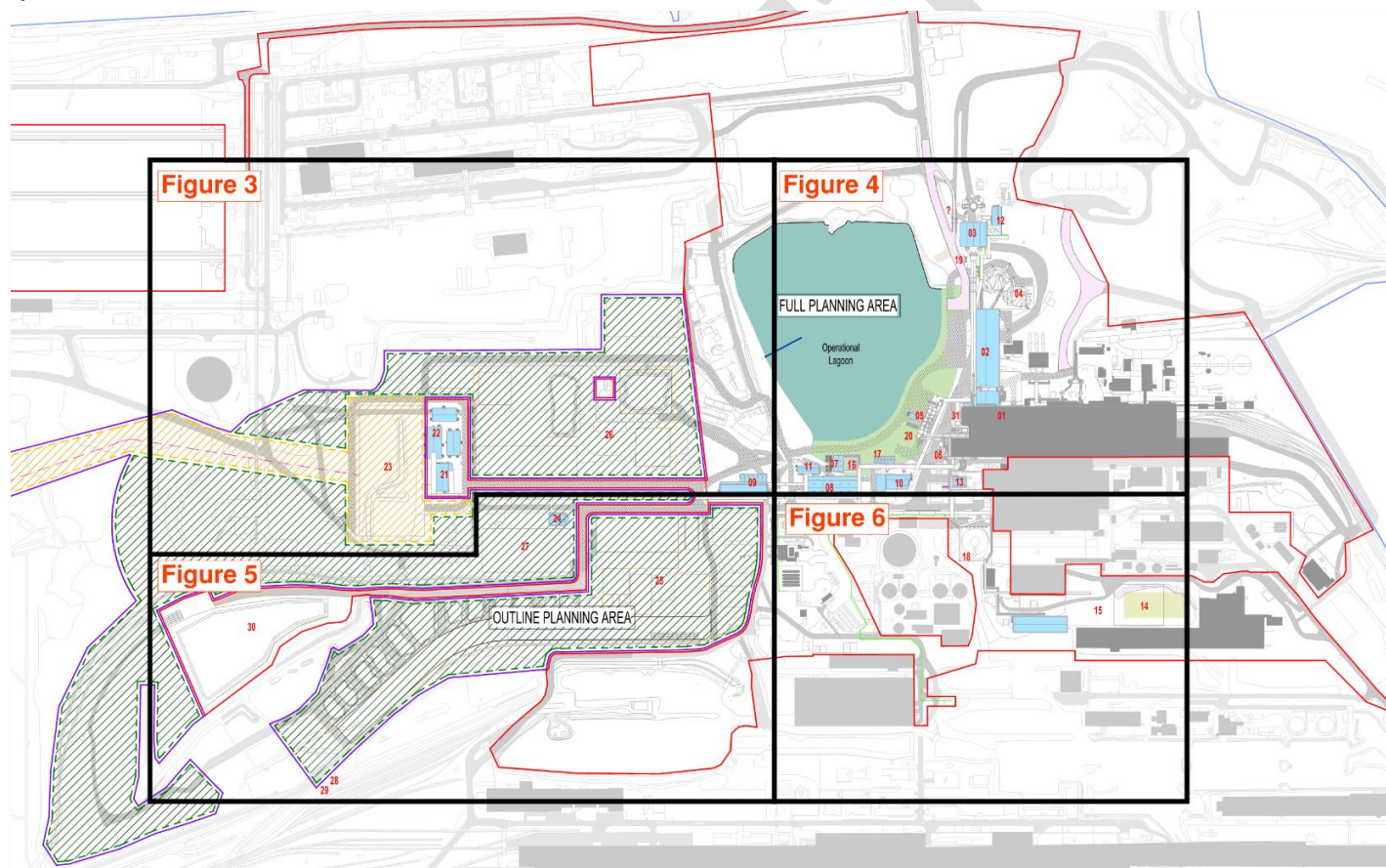


Figure 2: EAF Project Site Plan (Source: Lawray Architects)

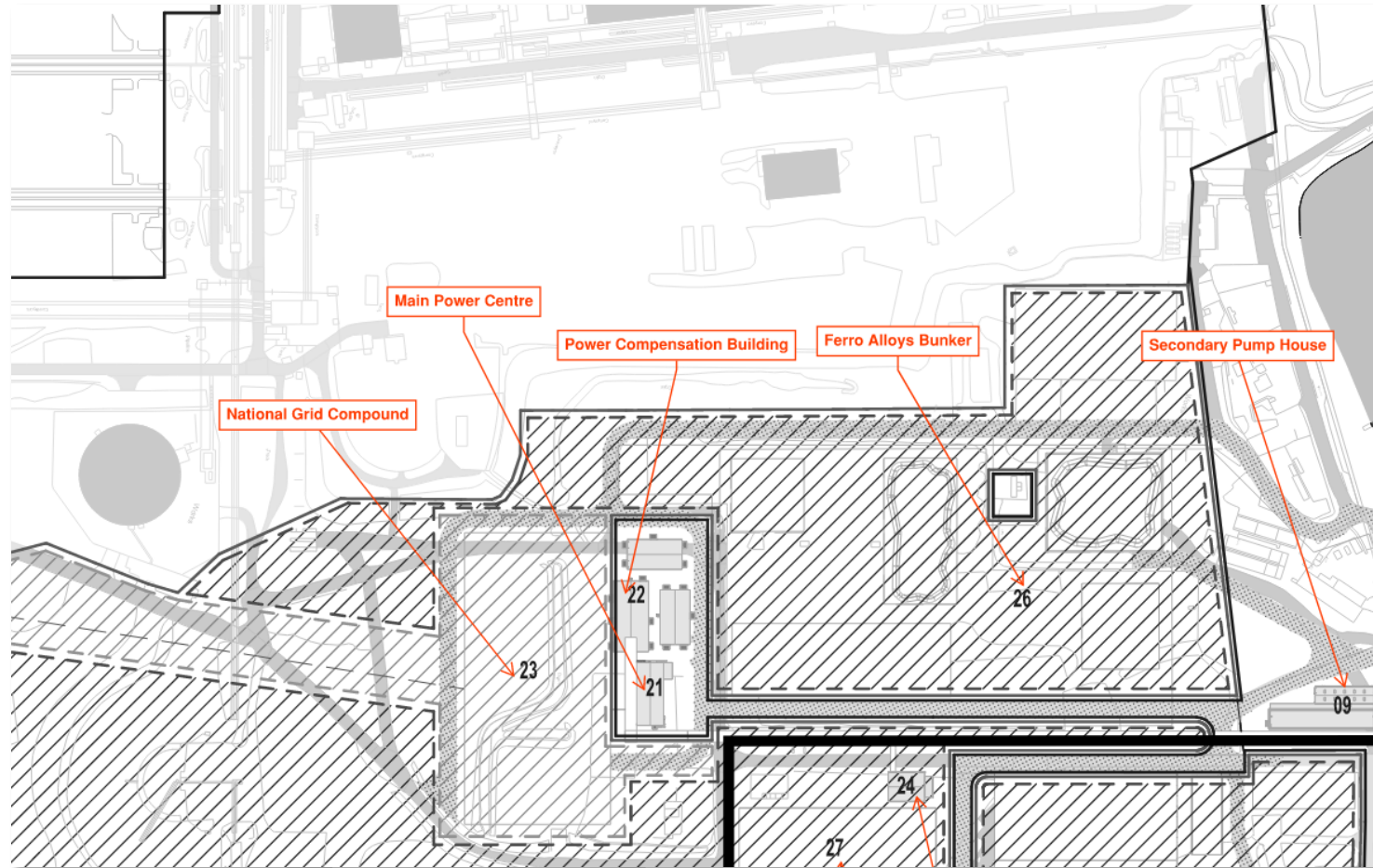


Figure 3: Annotated Site Plan (Source: Lawray Architects)

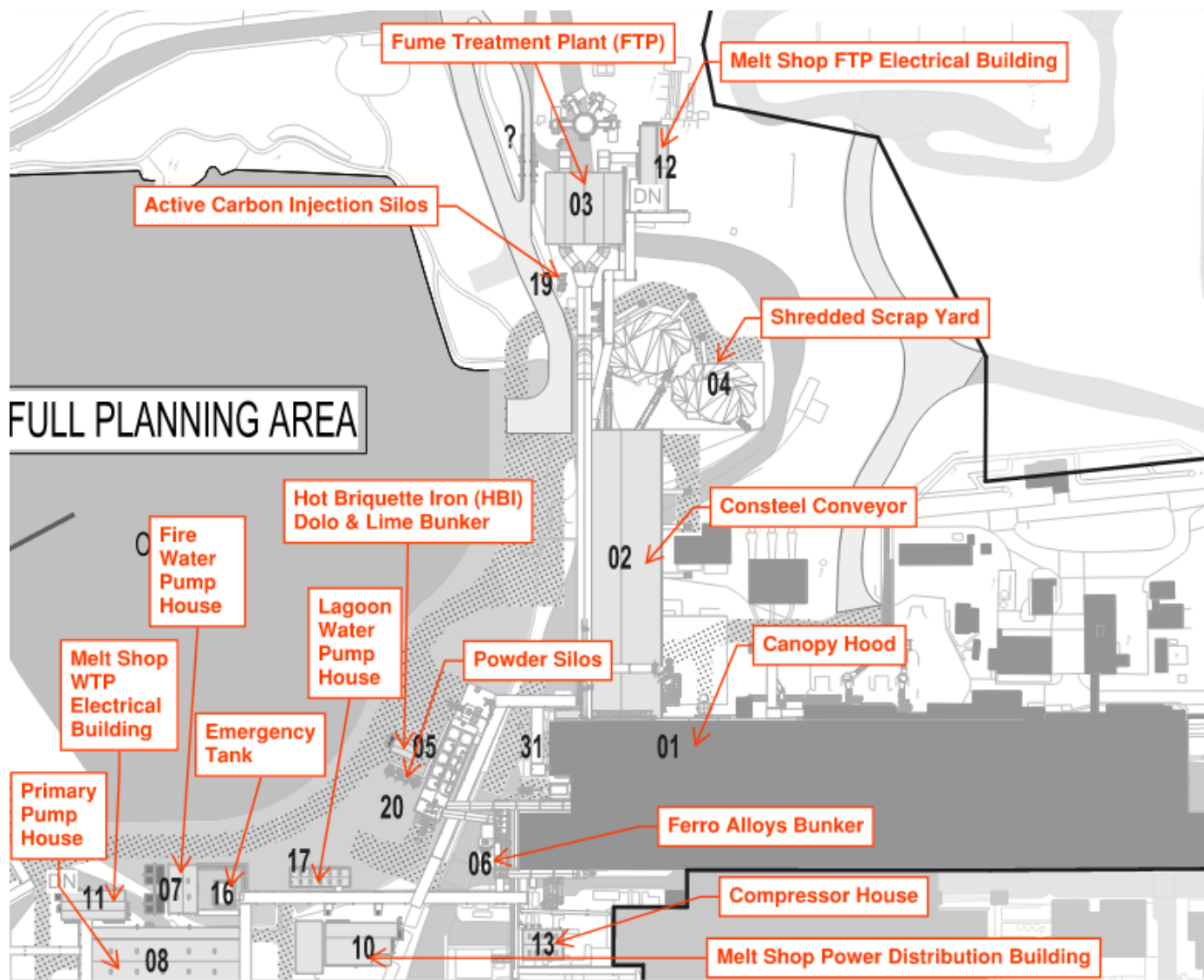


Figure 4: Annotated Site Plan (Source: Lawray Architects)

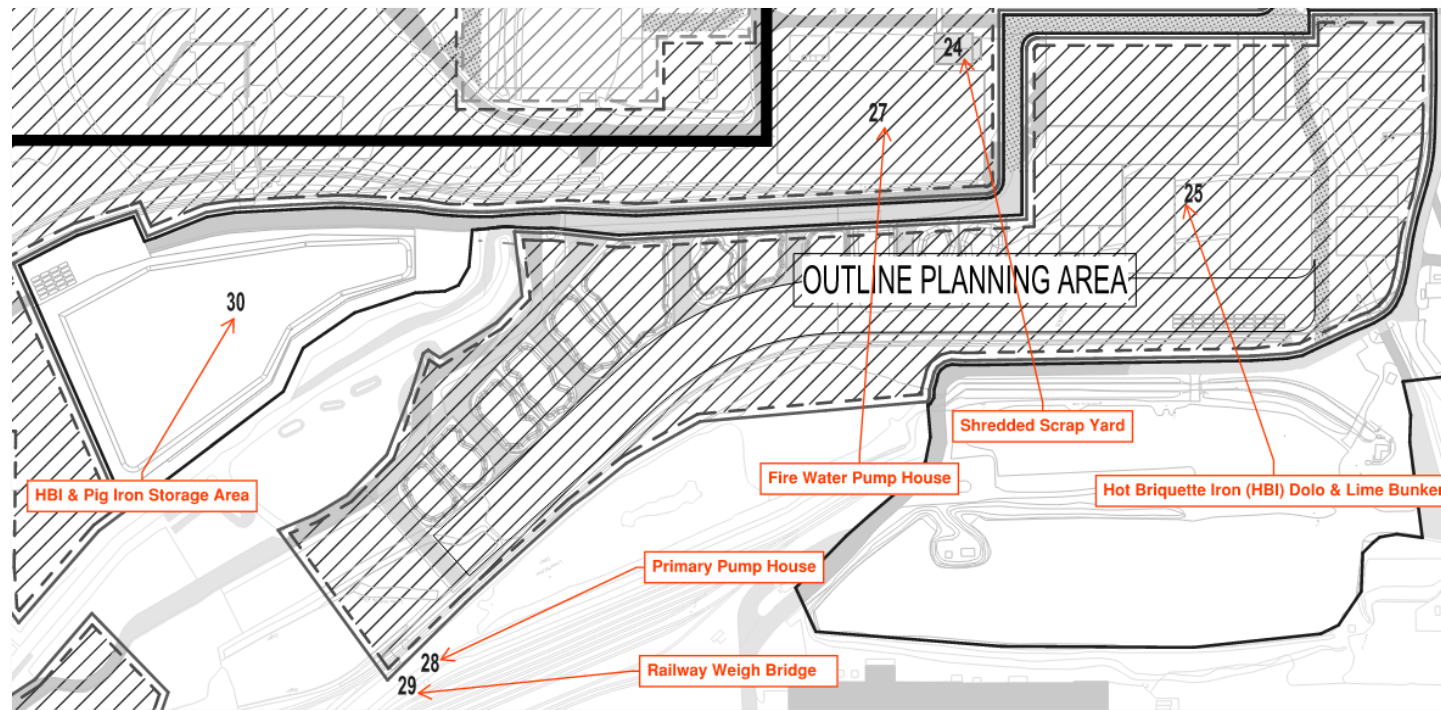


Figure 5: Annotated Site Plan (Source: Lawray Architects)

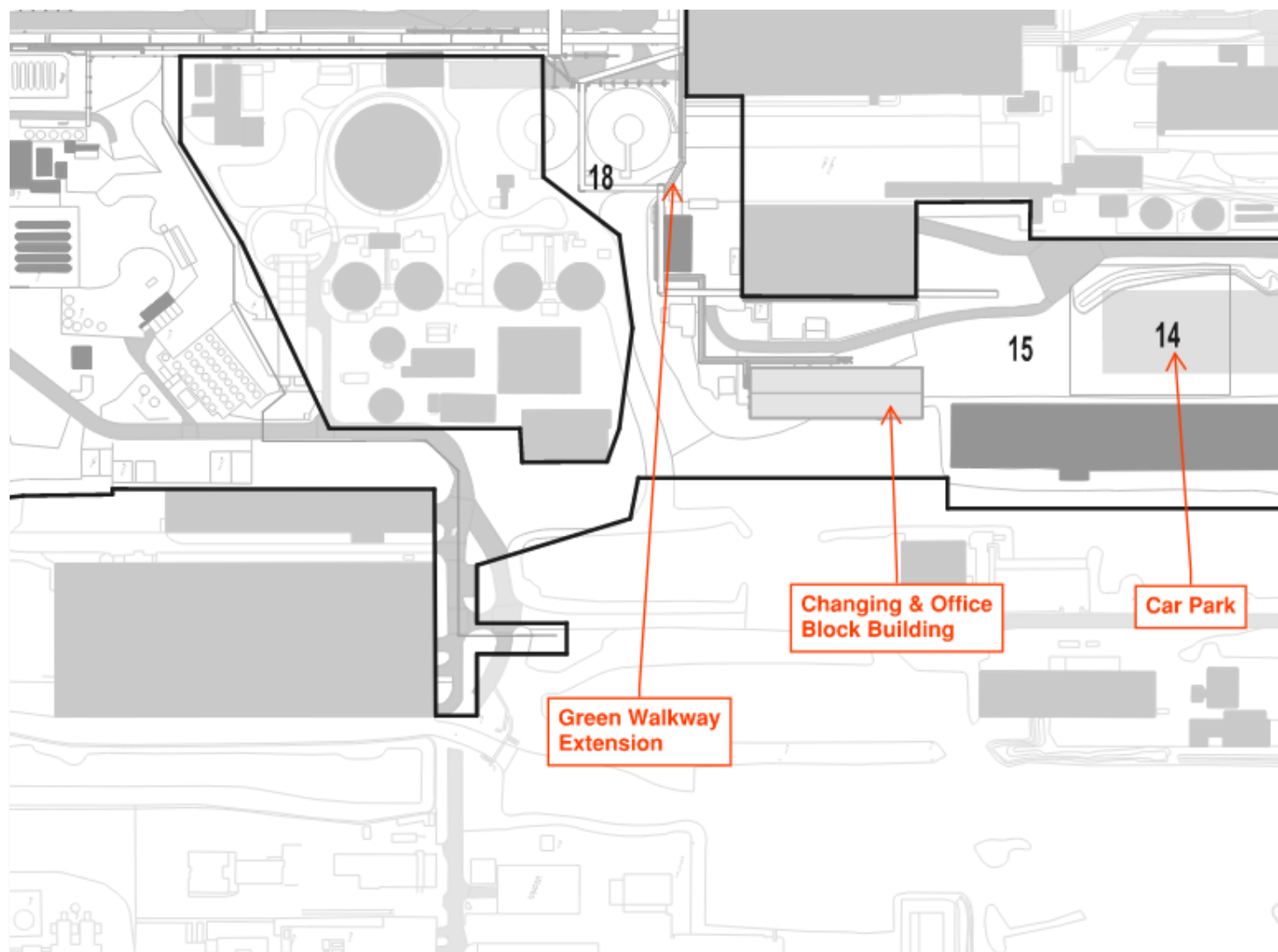


Figure 6: Annotated Site Plan (Source: Lawray Architects)

3.1 Flammable Liquids

Flammable liquids can be classified as Class I, Class II or Class III. The definitions for each Class are given below:

- A Class I liquid is defined as a liquid having a closed-cup flashpoint below 37.8°C
- A Class II liquid is defined as a liquid having a closed-cup flashpoint between 37.8°C and 60°C
- A Class III liquid is defined as a liquid having a closed-cup flashpoint above 60°C

3.1.1 Class I Liquids

Class I liquids are further split into the following subclasses:

- Class IA liquids have a closed-cup flashpoint below 22.8°C and a boiling point below 37.8°C
- Class IB liquids have a closed-cup flashpoint below 22.8°C and a boiling point at or above 37.8°C
- Class IC liquids have a closed-cup flashpoint at or above 22.8°C but below 37.8°C

In accordance with NFPA 30 *Flammable and Combustible Liquids Code*, areas where there is a potential for a Class I liquid to spill should be monitored appropriately. Monitoring methods may include one of the following:

- Personnel observation/patrols
- Process-monitoring equipment which can indicate if a spill/leak has occurred
- Gas detectors to continuously monitor areas where facilities are unattended

A full list of liquids will need to be confirmed in order to select the appropriate classification and monitoring method.

4 Risk Profiles

BS 9999:2017 is a risk-based guidance document, whereby a 'risk profile' needs to be established to determine the suitable design criteria for the buildings. A risk profile is a combination of an occupancy characteristic and a fire growth rate.

4.1 Occupancy Characteristic

Occupancy characteristic defines whether occupants are likely to be awake or asleep, and if the occupants are unfamiliar or familiar with the relevant buildings.

Table 2 below gives the occupancy characteristics from Table 2 in BS 9999:2017.

Table 2: Occupancy Characteristics (Source: BS 9999:2017, Table 2)

Occupancy Characteristic	Description	Examples
A	Occupants who are awake and familiar with the building	Office, Industrial
B	Occupants who are awake and unfamiliar with the building	Shops, assembly buildings
Ci	Occupants who are likely to be asleep in long-term individual occupancy	Flats without 24hr maintenance/management
Cii	Occupants who are likely to be asleep in long-term managed occupancy	Serviced flats, student accommodation, sleeping areas of boarding schools
Ciii	Occupants who are likely to be asleep in short-term occupancy	Hotels

4.2 Fire Growth Rate

Fire growth rate defines the rate at which a fire in the building is estimated to grow.

Table 3 below gives the fire growth rates as defined in BS 9999:2017 Table 3.

Table 3: Fire Growth Rates (Source: BS 9999:2017, Table 3)

Category	Fire Growth Rate	Fire Growth Parameter (kJ/s ³)	Description	Examples
1	Slow	0.003	Evenly distributed low level fire load	Reception areas, halls with limited fire loads
2	Medium	0.012	Evenly distributed low-to-mid level fire load, comprising a mix of combustible materials	Office, classrooms, seating areas, car parks
3	Fast	0.47	Stacked combustibles (excluding high rack storage) some small quantities of materials other than those of limited combustibility. Manufacturing or storage of combustible materials	Shop sales areas, workshops, factories, small storage buildings
4	Ultra-Fast	0.188	Medium to large quantities of materials other than those of limited combustibility. High rack storage, flammable liquids/gases	Warehousing, processing plants, car parks with stackers

5 Buildings Overview

The following section will, when complete, gives a brief overview of the buildings located within the EAF site based on latest information provided to date. Due to the differing levels of fire risk associated with the different buildings, each building will be assigned a different risk profile, which will determine certain aspects of the fire strategy, including maximum capacity, travel distances, proximity to other buildings etc.

PartB will need confirmation on the contents of each building, including any specific risks associated with them, e.g. high temperatures, presence of flammable gasses etc. in order to correctly assign a risk profile for each building.

Table 4: Building Risk Types

Building Name	Description	Risk Profile	Comments ^[1]
Canopy Hood	Captures fugitive air emissions from the Electric Arc Furnace and Ladle Furnaces not caught by the direct extraction system and sends them to the Fume Treatment Plant (3)	A3	Enclosed canopy over existing BOS plant building
Consteel Conveyor	Transports graded scrap metal through a pre-heating system and charges the metal directly into the Electric Arc Furnace on a continuous basis	A3	Open to ground, enclosed upper
Fume Treatment Plant (FTP)	Extracts dusts and fume from the Electric Arc Furnace, Ladle furnaces and any fugitive emissions and captures particulates via a bag filter before final discharge through the main stack	A3	Enclosed
Shredded Scrap Yard	A temporary stockpile of furnace ready scrap metal, which	A2	External

Building Name	Description	Risk Profile	Comments ^[1]
	will be loaded directly on to the Consteel Conveyor (2), as required.		
Hot Briquetted Iron (HBI) Dolo & Lime Bunker	Bunkers to store Hot Briquetted Iron, which is used to create a favourable steel chemistry. Lime and dolomite are used to create the slag layer, which removes impurities in the hot metal	A3	Enclosed
Ferro Alloys Bunker	A storage bunker for ferroalloys, which are iron compounds with other important elements such as silicon, manganese, chromium etc which are added to the furnace to achieve the correct steel chemistry	A3	Enclosed
Fire Water Pump House	Water storage and pumping facilities for hydrant and deluge systems	A3	Enclosed, two large water tanks
Primary Pump House	Water cooling plant containing pumps, heat exchangers, and equipment for 5 closed circuit cooling systems	A3	Enclosed
Secondary Pump House	Cooling tower and two open circuit cooling system to supply the primary pump house	A3	Enclosed
Melt Shop Power Distribution Building	Power distribution building for the	A3	Enclosed

Building Name	Description	Risk Profile	Comments ^[1]
	Electric Arc Furnace and Ladle Furnaces		
Melt Shop WTP Electrical Building	Electrical building to provide power to the primary (8) and secondary pump houses(9)	A3	Enclosed
Melt Shop FTP Electrical Building	Power distribution building for the Fume Extraction Plant (3)	A3	Enclosed
Compressor House	Building housing compressors for the creation of compressed air for the Electric Arc Furnace facility	A3	Enclosed
Car Parking Area	Main car parking area for both construction staff and operational staff when the facility is fully constructed		
Changing & Office Block Building	New office facility for operational staff but will also be utilised for members of the construction team working inside the main building.	A2	
Emergency Tank	Storage tank for gravity fed water to supply to closed circuits during loss of power or similar emergency	A3	External (water tower type structure)
Lagoon Water Pump House	Replacement of existing pumps on north side of BOS lagoon to make room for partial infill of the lagoon and Consteel building	A3	

Building Name	Description	Risk Profile	Comments ^[1]
Green Walkway Extension	Extension of an existing walkway to allow construction and operations staff to get from the main office (15) into the BOS plant building without walking through trafficked areas	A2	Open elevated walkway across site)
Active Carbon Injection Silos	Storage of Activated Carbon before injection to remove certain organic compounds, such as Dioxins, from the process	A3	External (silos)
Powder Silos	Storage of powdered carbon, to use for reduction of iron oxides in the furnace to metallic iron and powdered lime for slag creation	A3	External (silos)
Main Power Centre	Main power distribution building to take power from National Grid and allocate it to the rest of the facility	A3	Enclosed
Power Compensation Building	The purpose of the building is to stabilize and improve the quality of the electrical power supply by reducing the amount of fluctuations caused by the process	A3	Enclosed
National Grid Compound	Main National Grid building taking power from the off-site Margam sub-station	A3	

Building Name	Description	Risk Profile	Comments ^[1]
	and transformers to reduce the incoming voltage		
Incoming Scrap Yard Electrical Building	Electical distribution for the main scrapyard (25) and associated activities	A3	
Scrap Storage & Processing Yard	Main scrap storage and processing area that runs alongside the existing rail line for deliver of the main raw material for the process	A3	Unknown
Overflow Scrapyard	Tata Steel's existing scrap storage and processing is done in his area and would act as an overflow for certain scenarios and parking for scrap processing vehicles	A3	
Non Ferrous Processing Area	Scrap brought into site will contain materials not required, such as copper, aluminium and plastics. These materials will be segregated in the Non Ferrous Processing Area for recycling	A3	
Scanning Facilities	This facility scans incoming scrap metal for trace amounts of radioactivity to ensure that no material is melted within the furnace	A3	
Railway Weigh Bridge	Weigh bridge to monitor the weight of	A3	

Building Name	Description	Risk Profile	Comments ^[1]
	scrap entering the processing areas prior to be charged to the furnace		
HBI & Pig Iron Storage Area	Temporary storage area for Hot Briquetted Iron and Pig iron before being charged into the furnace or loaded into the bunkers (5)	A3	Enclosed
Charger Bay South Extension	An extension to the current BOS plan building to accommodate new infrastructure but also allow access to the building from the southern façade	A3	
HBI Electrical building	Electrical distribution building for the Hot Briquetted Iron bunkers (5)	A3	

[1] Comments taken from Lawray spreadsheet

6 Outstanding Information

Table 5 below outlines the outstanding information PartB will require in order to produce the fire strategies.

Table 5: Outstanding Information

Number	Information Required	Description
1	Building Descriptions	Received
2	Occupancy Numbers	TBC as part of detail design
3	Fire Alarm Zones	Basic Info received at planning stage – Detail Design to be developed by specialist
4	Emergency Water Supplies	Basic Info received at planning stage – Detail Design to be developed by specialist
5	Private Hydrant Systems	Basic Info received at planning stage – Detail Design to be developed by specialist
	Suppression Systems	Basic Info received at planning stage – Detail Design to be developed by specialist
6	Blast Analysis	TATA input to date based on detail knowledge of site operations. Further reviews at detail design stage
7	GA Information	Developed architectural drawings including plans, sections, elevations showing escape routes, etc.
8	Emergency Response Procedures & Access Provisions	Info received regarding fire service entry point to site. Further tracking to be provided by specialist during detail design.

7 B1 - Means of Warning & Escape

This section deals with the following Functional Requirement from Part B1 of Schedule 1 of the Building Regulations 2010.

Functional Requirement

B1. Means of Warning and Escape

The building shall be designed and constructed so that there are appropriate provisions for the early warning of fire, and appropriate means of escape in case of fire from the building to a place of safety outside the building capable of being safely and effectively used at all material times.

7.1 Means of Warning

Fire detection and alarm systems are designed to alert occupants at an early stage of a fire, thus giving them the ability to evacuate the area of fire in safe conditions, prior to escape routes becoming untenable due to the products of a fire (smoke, heat, flames, toxic gases, etc.)

The EAF site will be manned 24/7 from a central core point (7.1.1).

7.1.1 Main Control Pont (MCP)

The function of fire safety in the Main Control Centre of a steelworks is to protect both personnel and equipment from potential fire hazards in a high-risk industrial environment. It ensures that operations can continue smoothly by preventing or quickly suppressing fires in the control room, which manages critical steelmaking processes. This fire safety system plays a crucial role in safeguarding the control centre from the inherent dangers associated with electrical systems, high temperatures, and combustible materials present in the steelworks

Key Components:

- Risk Assessment: Identify fire risks related to electrical systems, human error, and proximity to production areas.
- Fire Detection: Early warning systems like smoke, heat, and gas detectors to quickly detect potential fire hazards.
- Fire Suppression: Automatic systems (e.g., gas-based suppression) and fire extinguishers designed to put out fires without damaging sensitive electronics.
- Fire-resistant Building Design: Use of fire-resistant materials and compartmentalization to prevent fire spread.
- Emergency Egress: Clear evacuation routes and safety plans for staff to escape in case of fire.
- Monitoring & Maintenance: Regular inspection and testing of fire safety systems to ensure readiness.

- Training: Fire drills and safety training for personnel on fire response and equipment use.

In addition to the above, it is intended that this MCP area will be used for other monitoring systems of the development and will act as the central hub within the development.

The location of this control room is currently intended to sit within the existing BOS Plant, building, directly adjacent to the new Arc Furnace as indicated on latest available plans. Refer to extract below for approximate location indicated in orange.

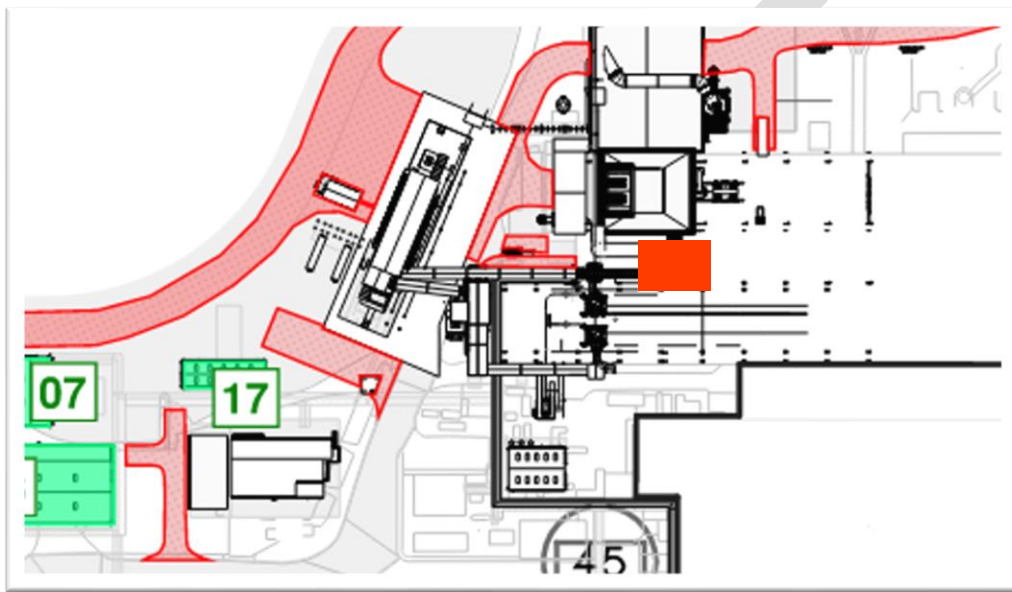


Figure 7 - MCP Location (Source: Lawray 2024)

7.1.2 Outdoor Structures

For the EAF Project site, automatic fire detection and alarm systems may not be appropriate for some of the areas of external equipment, as smoke/heat from a potential fire is not guaranteed to activate the system in open air. PartB would recommend open-air equipment on site to be protected via manual call points as a general rule. The following types of detectors are recommended for the site:

- Flame detector 3-H2 (point type), to detect hydrogen fires/explosions
- Flammable gas detector (point type), which will indicate a leak of flammable material
- Hydrogen gas detector (point type)
- Manual alarm call point
- Oxygen depletion detector
- Flammable gas detector (line of sight type)

The specialist detectors should be designed and installed in accordance with a specialist designer, in accordance with BS EN 45544-4:2016.

7.1.3 Indoor Structures

The fire alarms systems required for individual buildings will be assessed on a case-by-case basis within the fire strategies for the individual buildings.

7.1.4 Manual Call Points

Manual call points should comply with BS 5839-2:1983 or Type A of BS EN 54-11:2001 and should be designed and installed to BS5839-1:2017.

Manual call points should be located such that the travel distance from any point in the relevant buildings to a manual call point is no more than 60 metres for the outdoor areas.

Whilst the fire strategy will indicate early warning systems across the site, there will be reliance on input from a specialist consultant to provide their advice.

7.1.5 Emergency Signalling

Telecoms and emergency signs will be developed at a later stage and included within the fire strategy once locations have been determined. This will include the location of flashing beacons and speakers to alert occupants on site, along with escape signage and escape route marking.

7.1.6 Emergency Shutdown Systems

It will need to be confirmed if any systems shutdown upon activation of alarms, both within an alarm zone and across adjacent fire alarm zones / full site.

7.1.7 Fire Alarm Zones

It will need to be confirmed if any fire alarm zones are being considered for the site. These zones would group alarms across multiple buildings, triggering a 'simultaneous' evacuation for all occupants within the zone.

Alternatively, each building would have a separate alarm system which would trigger an evacuation of only the building in which a fire occurs in.

Upon completion of specialist design, Fire Alarm Zone Plans will be produced as part of the site wide fire strategy.

7.1.8 Fire Suppression Systems

For the installation of a new fire suppression system at the new facilities, a specialist will be responsible for designing a comprehensive, tailored solution as part of the detailed design phase. The system will incorporate both water and gaseous suppression components to address various safety requirements across different zones. In areas where water suppression is unsuitable, such as spaces with high-risk electronics or sensitive equipment, an advanced gaseous suppression

system will be implemented to provide effective fire control without compromising the equipment or facility safety.

This integrated approach will ensure optimal protection, aligning with safety regulations and operational needs.

7.1.9 Muster Points

Designated muster points are to be provided across the development to service the new buildings. Consideration to be made of existing fire safety procedures across the site and the effect of the new buildings on the existing muster point locations. Where required, new muster points to be provided to suit the final site layout. These muster points are to be located a safe distance away from buildings, away from any debris. They must be clearly identifiable and located with all evacuation procedures reviewed regularly to ensure suitability.

Discussions are currently on-going regarding the reallocation of muster points across the site to align with the new proposed site layouts for the scheme.

7.2 Horizontal Means of Escape

7.2.1 Evacuation Strategy

The evacuation strategy for the site will be documented in the Emergency Planning Document that will be provided for the site. This will be based on a phased evacuation strategy per fire alarm zone, whereby the activation of a manual call point within a fire alarm zone will alert all occupants within the zone to evacuate.

The cause and effect will dictate the activation protocol for the evacuation of the designated areas, based on a robust risk assessment for each building use that will be captured in the associated Fire Safety Strategy.

The extent of fire alarm zones will need to be confirmed by the specialist designer.

7.2.2 Travel Distances

Travel distance is the actual distance a person needs to travel from any point within a building to the nearest storey/final exit.

Travel distance limits will be based on guidance within BS 9999:2017. This is a risk-based document and maximum travel distances are based on the risk of associated with individual buildings. Therefore, these will be determined within the fire strategies for individual buildings.

Travel distances for any external areas of plant, or weather-housed plant, will follow guidance from Annex F in BS 9999:2017. The maximum travel distances are given in Table 6 below:

Table 6: Maximum Permitted Travel Distances (Source: BS 9999:2017 Table F.1)

Situation	Details/Risk Profile	Maximum Permitted Travel Distance (metres)	
		One direction (metres)	More than one direction (metres)
Weather Housed Plant	Risk Profile A1	20 ¹	100
	Risk Profile A2	18 ¹	100
	Risk Profile A3	13 ¹	60
	Risk Profile A4	N/A	N/A
External Plant/Weather Protected Plant	Normal Fire Hazard Outdoor Zone	60 ²	200 ³
	Higher Hazard Outdoor Zone (frequently visited)	13	100 ³
	Higher Hazard Outdoor Zone (not frequently visited)	25	200 ³

Notes:

- 1. Maximum when minimal fire protection measures are provided*
- 2. Plus, additional 50 metres at ground level where direction of travel is unrestricted*
- 3. 100 metres from top of a storage tank or silo, provided the person is not required to cross the top of more than one other tank to reach a route leading to ground level*

The contents and hazards of equipment used within the facility will need to be confirmed, in order to determine the appropriate travel distances.

Turley will need to confirm which of the equipment on site will be considered frequently visited, and the heights/escape routes from any indoor modules or storage/processing tanks.

7.2.3 Number of Occupants

The numbers of occupants for each building will affect aspects of the design of each building, including the number of escape routes required, the width of escape routes, etc.

The following will need to be confirmed:

- Occupants for individual buildings
- Expected maximum site occupancy numbers
- Occupancy numbers for external equipment

7.2.4 Number of Escape Routes

The numbers of escape routes required will be determined on an individual basis within the fire strategy for each building.

PartB would expect that once occupants have reached ground level, there are multiple directions of escape and all travel distances move away from a module/piece of equipment to reach another zone and/or an area considered a safe distance away which are considered acceptable.

This will be reviewed once the exit locations from each building are known.

PartB will suggest indicative locations of fire assembly points throughout the site once the total occupancy numbers of the site are confirmed.

7.3 Disabled Access

The Equality Act became law in October 2010. It replaced previous legislation (Disability Discrimination Act 1995) and provides employers and employees information on what they need.

Fire safety procedures will, where appropriate, make provision for occupants who might need assistance to make their way to a place of ultimate safety in a fire. If there is a need to make specific arrangements, then it is assumed that consultation with the individual(s) or representative organisations should take place at the earliest opportunity.

Occupants with visual, hearing or learning difficulties will be expected to use the route of escape through which they entered the building. It is the responsibility of the building management team to ensure resource is available to accommodate individual disabilities where appropriate, for example personal vibration devices.

It is assumed the occupants working with/on the outdoor equipment on the EAF Project site are capable of using the required escape routes without assistance, e.g. using escape ladders to evacuate the roof of a storage tank/processing building.

The fire strategy report for each building located on site will consider disabled egress independently.

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8 B3 - Internal Fire Spread (Structure)

This section deals with the following Functional Requirement from Part B3 of Schedule 1 of the Building Regulations 2010.

Functional Requirement

B3. Internal Fire Spread (Structure)

(1) The building shall be designed and constructed so that, in the event of fire, its stability will be maintained for a reasonable period

(2) A wall common to two or more buildings shall be designed and constructed so that it adequately resists the spread of fire between those buildings.
For the purposes of this sub-paragraph a house in a terrace and a semi-detached house are each to be treated as a separate building.

(3) Where reasonably necessary to inhibit the spread of fire within the building, measures shall be taken, to an extent appropriate to the size and intended use of the building, comprising either or both of the following—

- a) sub-division of the building with fire-resisting construction;
- b) installation of suitable automatic fire suppression systems.

(4) The building shall be designed and constructed so that the unseen spread of fire and smoke within concealed spaces in its structure and fabric is inhibited.

8.1 General

It is paramount the load-bearing elements of structure and important construction elements of the relevant buildings remain for defined periods during a fire event. This means they must withstand the effects of fire without loss of stability.

For the EAF Project, the majority of equipment on site will have specialist requirements for structural fire resistance periods depending on their size and use.

Fire Strategy Reports produced for each new building will document the necessary level of protection required to the load-bearing structure.

In addition to the above, compartment size restrictions and related fire resistance periods will be documented in the buildings Fire Safety Strategy.

8.1.1 Blast Assessment

It will need to be confirmed if any of the buildings on site will require a blast assessment to be undertaken. If so, the fire resistance periods of the walls documented from the output results will dictate the level of protection. Structural protection may require an uplift to individual buildings located near a blast zone for protection against secondary fire situations.

PartB are currently aware assessments will be undertaken to ensure that the MCP will have adequate levels of protection to protect occupants within the event of an emergency. Relevant blast assessments and structural Blast Protection will be provided and documented appropriately by specialist designers.

9 B4 & Regulation 7 - External Fire Spread

This section deals with the following Functional Requirement from Part B4 of Schedule 1 of the Building Regulations 2010.

Functional Requirement

B4. External Fire Spread

(1) The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building.

(2) The roof of the building shall adequately resist the spread of fire over the roof and from one building to another, having regard to the use and position of the building.

9.1 Blast Analysis

Due to the potential combustible gasses/liquids present on site, there are possibilities for explosions to occur on site following an incident of fire.

It will need to be confirmed if a blast analysis is required for buildings on the site. If so, the blast analysis will determine if areas of the equipment/ancillary buildings will require additional protective measures and will be undertaken by a specialist consultancy.

Results from any blast analyses will be applied to the fire strategy, whereby buildings located within a blast zone will have the appropriate structural protection measures and associated means of escape provisions.

This will be developed during the developed/detail design stage RIBA Stage 3/4.

9.2 BRE 187: Enclosing Rectangle Assessment

A full enclosing rectangle assessment in line with BRE Report 187:2014 will be undertaken for the RIBA Stage 3 fire strategy reports for new buildings on the site. This is used to evaluate the fire performance of external cladding systems on buildings and avoid the risks associated with fire spread between buildings in close proximity.

Buildings located on the same site will have less onerous conditions (fire spread between buildings under the same ownership) subject to ensuring life safety conditions have been satisfied under Part B of the Building Regulations.

10 B5 - Access & Facilities for the Fire Service

This section deals with the following Functional Requirement from Part B5 of Schedule 1 of the Building Regulations 2010:

Functional Requirement

B5. Access and Facilities for the Fire Service

- (1) The building shall be designed and constructed so as to provide reasonable facilities to assist fire fighters in the protection of life
- (2) Reasonable provision shall be made within the site of the building to enable fire appliances to gain access to the building.

The below sections are an overview of the firefighting access for the site in general. Specific details about the firefighting for individual buildings, including perimeter access, locations of dry risers, firefighting shafts, etc. will be confirmed in the fire strategies for the individual buildings.

The existing site includes an 'in house' emergency response fire service team that specialise in the control of fires within industrial facilities. The in house fire service operate in conjunction with the LA Fire Service and act as the first line of defence.

10.1 Firefighting Access

The vehicle access roadways for the site should achieve the following in accordance with Table 20 in BS 9999:2017. It is noted that there are likely to be numerous specialist vehicles on site, so will need to ensure fire access facilities do not share these high-risk routes through the site.

Table 7: Vehicle Access Requirements (Source: Table 20, BS 9999:2017)

Appliance Type	Width of road between kerbs (metres)	Width of gateways (metres)	Turning circle between kerbs (metres)	Turning circle between walls (metres)	Clearance height (metres)	Carry capacity (tonnes)
Pump	3.7	3.1	16.8	19.2	3.7	12.5
High Reach	3.7	3.1	26	29	4	17

The M4 which has two key junctions with the A48, A4107 and A474 in Port Talbot. The A48 Harbour Way is a key spine route through the town. The A4107 and A474 provide important

inland connections, including to Maesteg and Neath. The A48 connects to the A4241 Harbour Way, which was opened in 2013. This runs adjacent to the wider steelworks site.

Existing vehicular access from two locations off the A4241 Harbour Way: the A4241 Harbour Way / main gate access roundabout; and A4241 Harbour Way / west gate access roundabout.

Port Talbot deep sea harbour which is located to the northwest of the application Site. The harbour is operated by ABP and accessed from the steelworks via the internal harbour road and jetty road. The facility has been used throughout the operational life of the steelworks for importing raw materials, including iron ore, limestone and coal.

Figure 8 below shows the firefighting access through Tata steel to the Proposed EAF site.



Figure 8: Firefighting Access (Source: Google Earth)

The current infrastructure will be utilised with the addition of new access roads as highlighted below in Figure 9. All roads must meet the requirements in Table 7 for width between curbs for both Pump and High Reach, i.e. 3.7 metres wide.

Given the use of the site and type of vehicles present, all roads should be designed to accommodate fire service vehicles as a minimum.

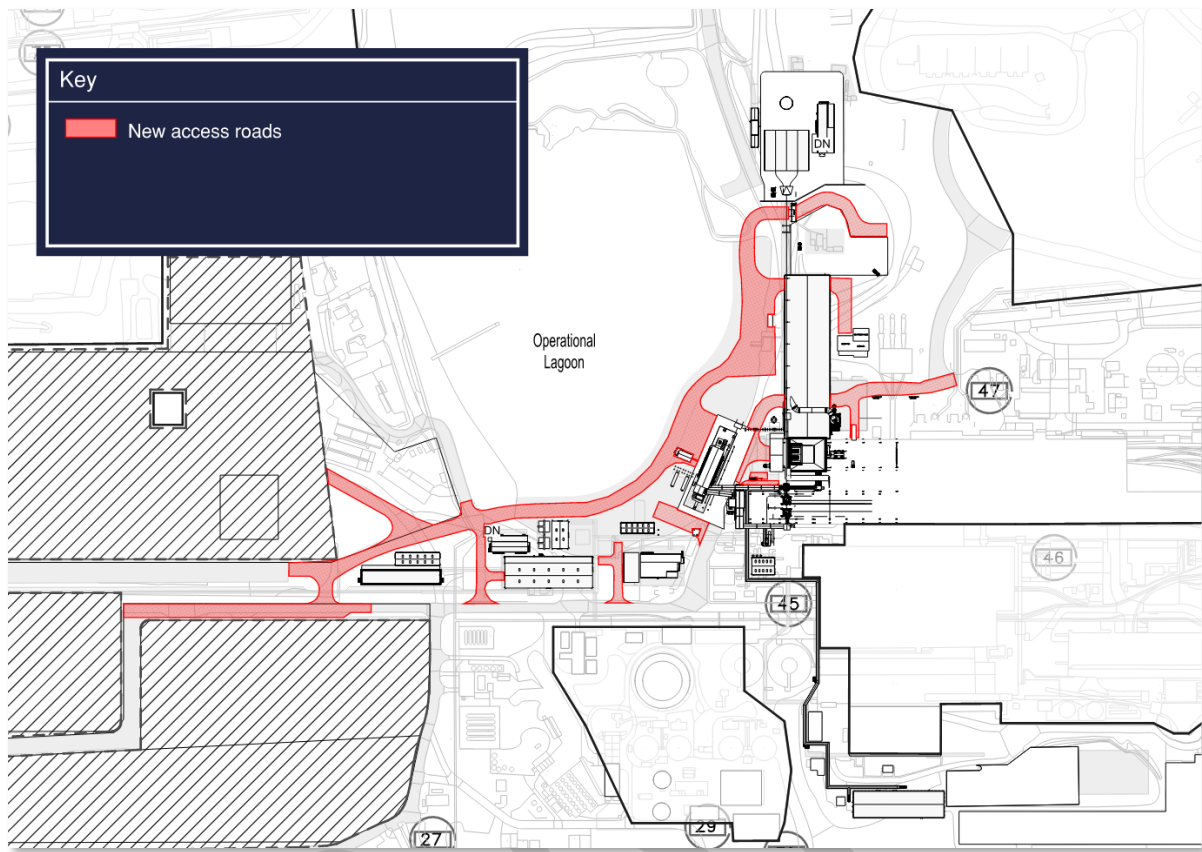


Figure 9: New Access Roads (Source: Lawray Architects)

10.2 Water Supplies

PartB note Mid and West Wales Fire and Rescue Services comments as part of the PAC response regarding the requirement to provide adequate water supplies across the site in line with guidance set out in the National Guidance document on the provision of water for fire fighting.

The proposed fire fighting facilities on-site are to cover emergency water supply hydrants and pressurised wet riser/pressurised water delivery systems (often referred to as deluge fire fighting systems).

New buildings are proposed to include Fire water pump house, Primary pump house, Secondary pump house, Lagoon water pump house that will be the primary water supply and storage areas.

There will be a new ring main provided for hydrants across the site. The water deluge system will be developed for firefighting within buildings utilising the existing pump house.

In accordance with Fire Protection Philosophy, the system of firewater will provide adequate water supply for firefighting, vessel and structural cooling in the event of a fire.

Figure 10 below documents the existing fire water protection layout for the EAF, including details on the following:

- Hydrants
- Fire appliance tracking to hydrant locations (blue line)

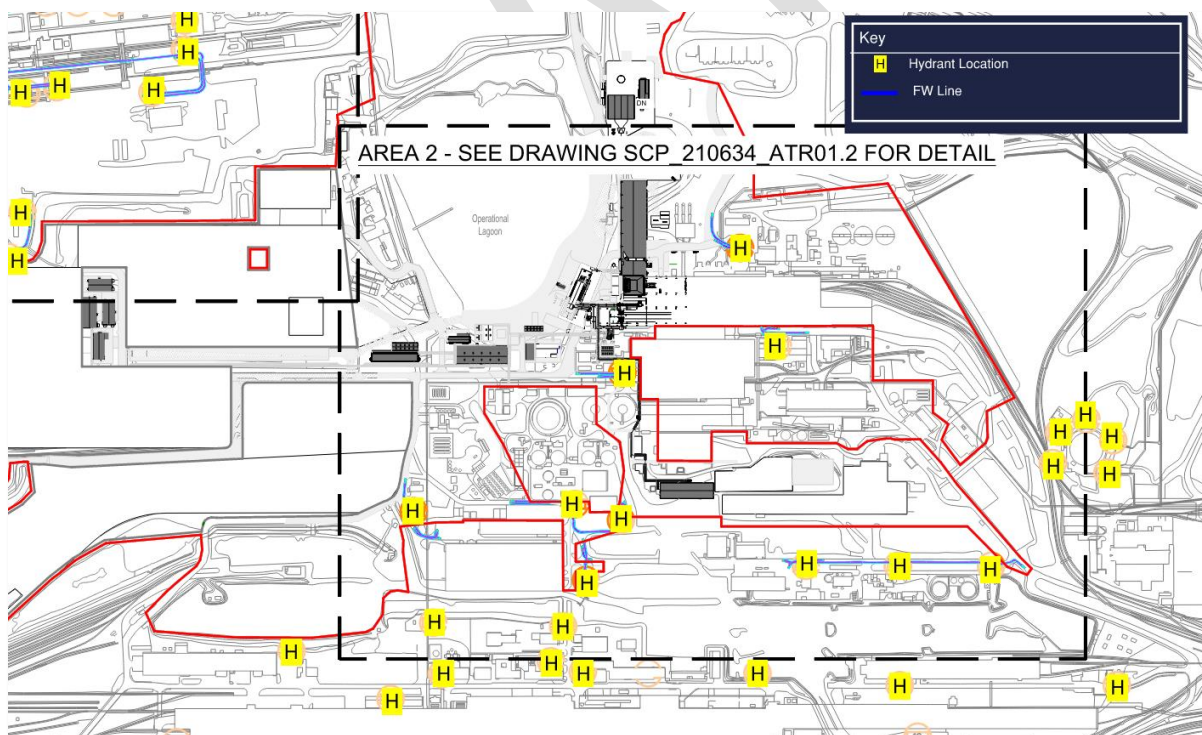


Figure 10: Existing Fire Hydrants (Source: SCP)

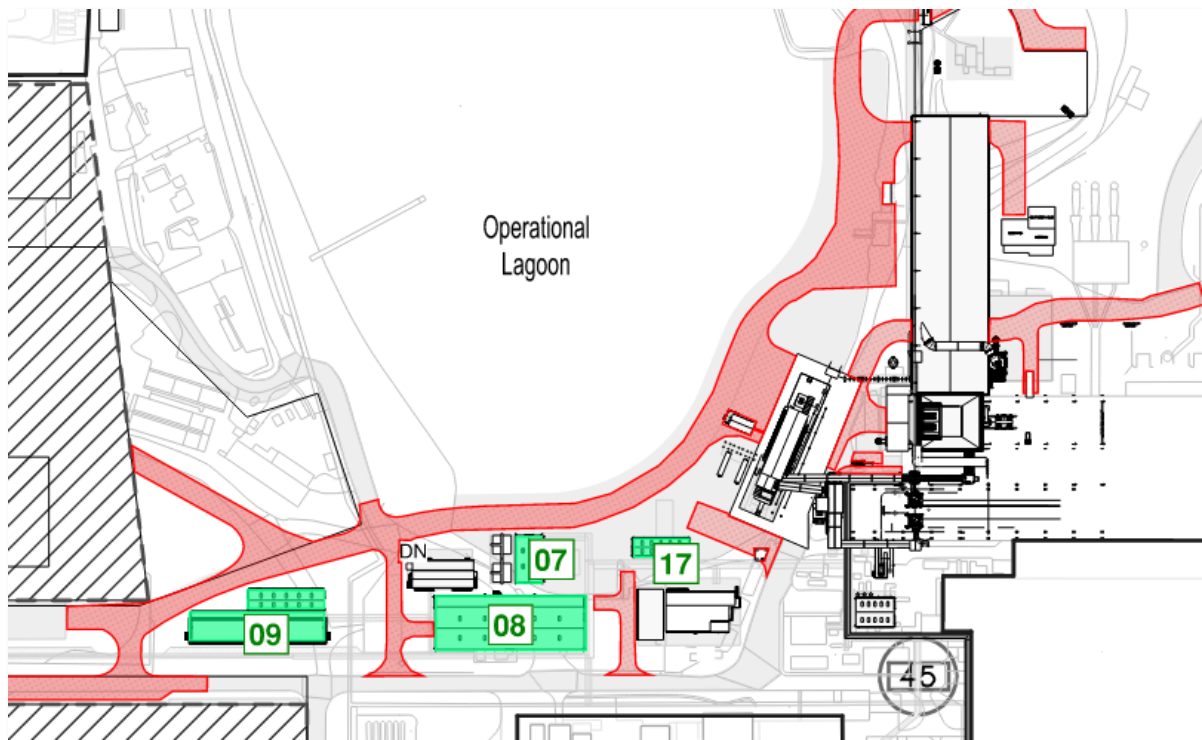


Figure 11: Proposed Water Pump Houses (Source: Lawray Architects)

Figure 11 above shows the water pumping facilities for The EAF site.

- 07 – Fire water pump house
- 08 – Primary pump house
- 09 – Secondary pump house
- 17 – Lagoon water pump house

10.2.1 Location and access to external water supply

All premises should be provided with a supply of water for firefighting. Fire-fighters have to lay out hose between the water supply and the fire appliance, so these distances should be kept to a minimum.

Hydrants should be located in positions that are near to building entry points (including entry points to fire-fighting shafts containing fire mains) and fire appliance parking positions, as follows:

- For buildings provided with dry fire mains, hydrants should be provided within 90 m of dry fire main inlets on a route suitable for laying hose.
- For buildings not provided with fire mains (or where the relevant building is fitted with a wet fire main), hydrants should be provided within 90 m of an entry point to the building and not more than 90m apart.

Water mains and hydrants should be capable of delivering a sufficient flow of water to enable effective firefighting to be undertaken. If the water supply takes the form of a static tank or dam, the capacity should be related to the size of the relevant building and the risk involved.

NOTE: An unlimited and guaranteed natural water source providing the right quantities is also expected to be acceptable, subject to access and hard standing for appliance vehicles. It is not anticipated that the operational lagoon will be utilised for 'pumping from open water' as there will be adequate new water supplies provided.

Early consultation (prior to the construction of the relevant buildings) should be undertaken with the water authority, fire and rescue service and building control body on the nature of the water supply and the quantities or capacity to be provided.

The water supply should comprise one or a combination of the following:

- hydrants provided by the water supply company on the street mains;
- private hydrants designed and installed in accordance with BS 9990, ideally forming part of a ring main system;
- a static or natural water supply.

All hydrants should have signage in accordance with BS 3251.

10.2.2 Wet Riser/ Pressurise Water Supply

A wet riser system is a fixed fire-fighting installation used in buildings to provide a reliable water supply for fire-fighting operations. Wet risers are charged with water at all times, ensuring immediate access to water for fire fighters. Below are the key requirements and components of a wet riser system according to common standards, such as NFPA (National Fire Protection Association) and BS (British Standards):

Wet Riser access points should be located no more than 120m apart, however designed specific to the associated risk for the individual buildings.

The system must comply with BS 9990:2015, which provides specific guidance for design, installation, maintenance, and performance criteria for wet riser systems.

The system will be subject to periodic inspections by local fire authorities and regulatory bodies to ensure it remains compliant with fire safety standards in addition to test and inspection by the in house fire service provision.

a) Water Supply Requirements

- **Permanent Water Supply:** Wet riser systems must be permanently charged with water at all times, with adequate water pressure and flow to serve firefighting operations.
- **Water Storage Tank:** The water supply must be sufficient to operate for a minimum of 45 minutes under fire-fighting conditions. The minimum capacity of the tank will depend on the

building's fire risk assessment which will be undertaken by the specialist designer for the new facility.

- Pump Requirements: At least two pumps are required, typically:
 - Main Pump: Electric-driven, responsible for the primary operation of the system.
 - Standby Pump: A diesel-driven backup pump, in case of power failure or main pump malfunction.

b) Pressure & Flow Requirements

- Pressure: In accordance with BS 9990, the system must maintain a pressure of at least 4.5 bar at the highest outlet (typically the topmost landing valve) when flowing at the required rate.
- Flow Rate: The system should deliver 1,500 litres per minute (LPM), distributed between two landing valves operating simultaneously.
- Hydraulic Calculations: The system must be designed to ensure that the water pressure at all landing valves meets the operational requirements, with the correct pipe sizing to reduce friction losses.

c) System Monitoring

- The system must be equipped with pressure gauges to monitor water pressure at critical points.
- Signage: Clearly visible signs indicating the location of risers, landing valves, and inlets are required. These signs must conform to fire safety standards.

The wet riser system design is currently being undertaken by specialists. The fire strategy reports provided for each building will document where the wet riser outlets will be positioned.

10.2.3 Existing Fire hydrant locations

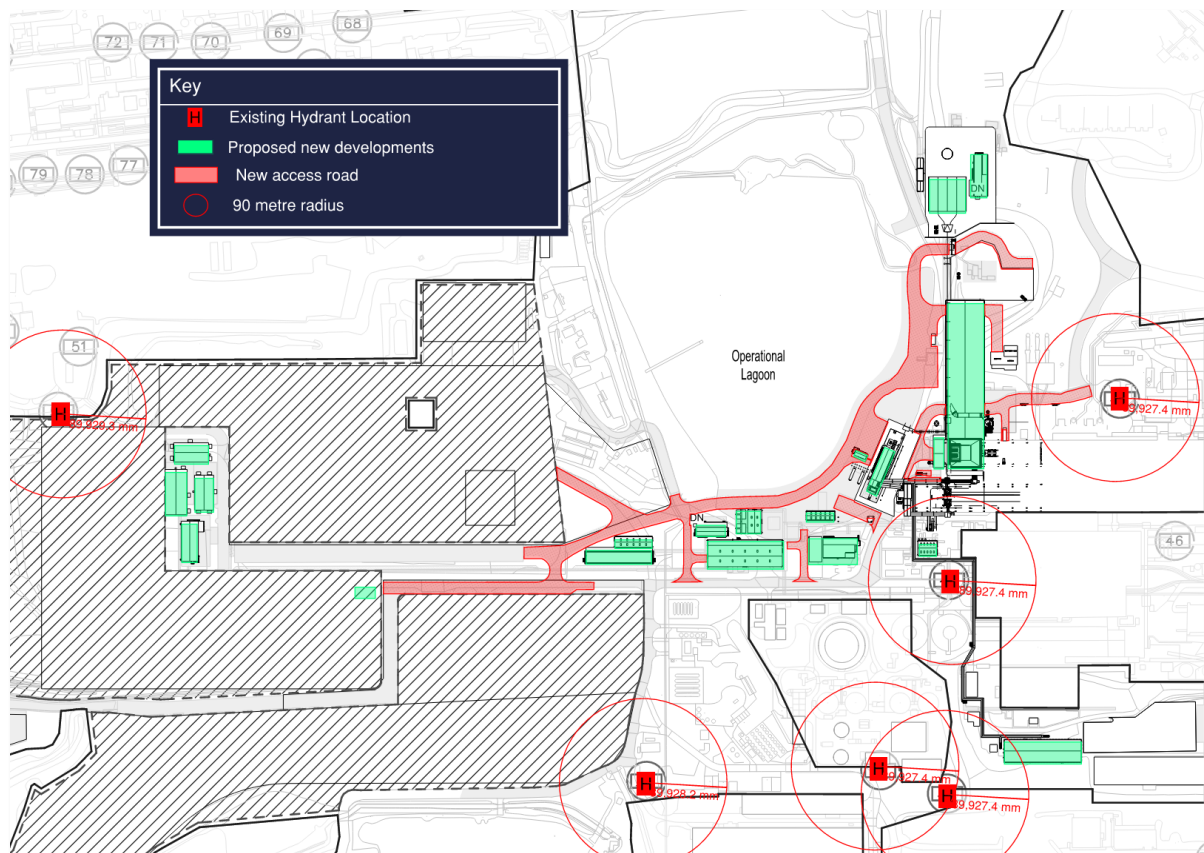


Figure 12: Existing Fire Hydrants (Source: Lawray Architects)

Figure 12 above shows the proposed new buildings for development as highlighted in green with a 90-metre radius highlighted from the closest fire hydrants.

The current provision and coverage of fire hydrants is not considered suitable to accommodate all of the proposed developments.

In order to comply with the guidance as set out BS 9999:2017 additional water supply is required.

10.2.4 Proposed Fire hydrant locations

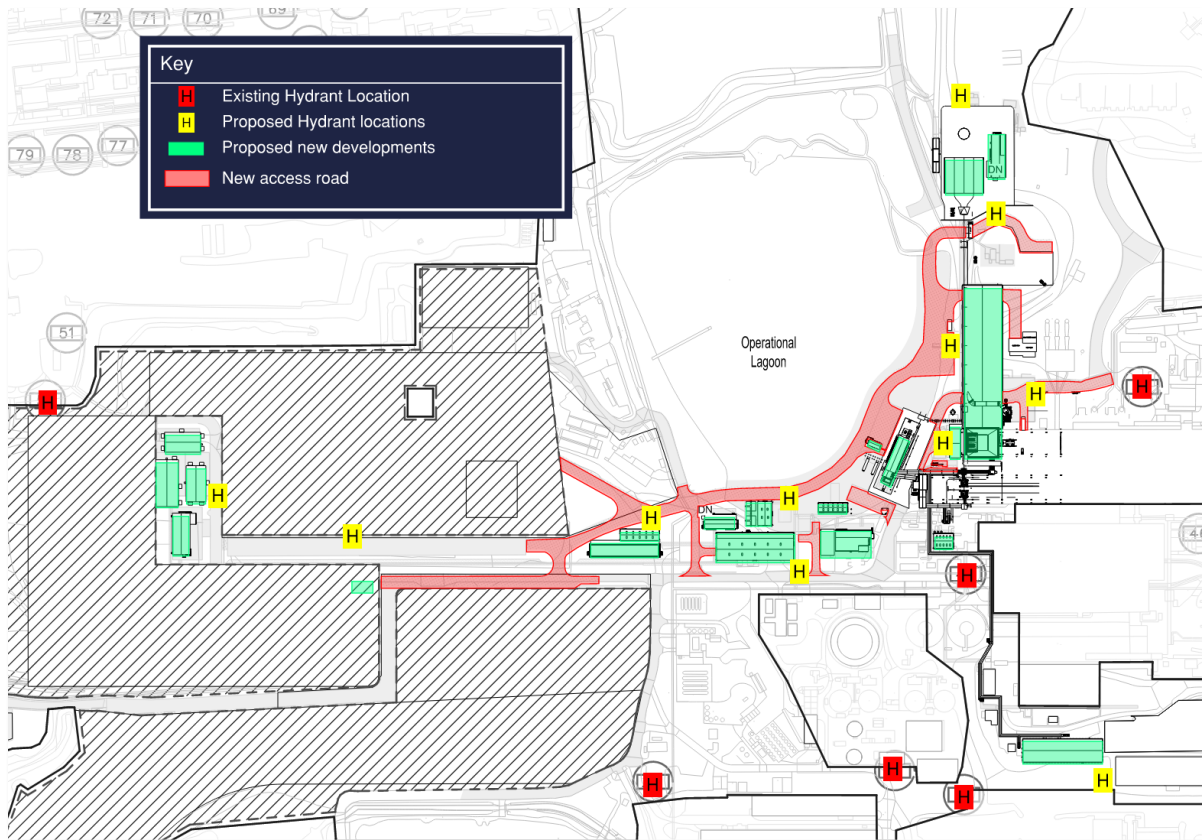


Figure 13: Proposed Fire Hydrants (Source: Lawray Architects)

Figure 13 above shows the proposed new fire hydrants required for The EAF site.

11 Conclusion

In conclusion, fire safety considerations outlined in this document have been comprehensively addressed to a level appropriate for this planning stage of the project. This concept document establishes a robust framework for fire prevention, detection, and response strategies, aligning with current safety regulations and laying a solid foundation for the development's fire safety plan. As the project advances into the detailed design phase, individual fire strategies will be developed for each building across the site to address the specific fire safety needs of each structure.

This tailored approach will ensure that all fire safety measures are optimized for the unique design and function of each building, enhancing overall site safety.

Furthermore, ongoing collaboration with the Fire Service and client will ensure that critical elements, such as emergency access, egress routes, suppression systems, and evacuation protocols, are carefully refined to meet and exceed regulatory standards. This partnership will be essential in achieving a cohesive and effective fire safety strategy for the entire site, creating a safer environment for all future occupants and stakeholders.