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Consulting Engineers Limited

Teesside Renewable Energy Plant

Port Clarence Energy Limited

Fire Prevention Plan

ENGINEERING CONSULTING

Document approval

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Contents

1 Introduction

Port Clarence Energy Limited (PCEL) was granted an Environmental Permit (EP) (Ref: MP3333WX) by the Environment Agency (EA) for the Port Clarence Sustainable Energy Plant (the Facility) in May 2015, and a variation to the EP was subsequently granted by the EA in March 2016.

The EP permits the Facility to operate as a waste incineration plant, combusting non-exempt waste wood as a fuel. On this basis, the Facility is currently permitted to operate as a co-incineration plant.

Having achieved financial close for the Facility in August 2015, on-site construction commenced in October 2015. The project was subject to a 24-month construction programme, with commissioning expected to commence in August 2017. Due to delays in the construction programme, it became clear that the construction of the Facility would not achieve the key milestones to secure Renewable Obligation Certificates. In 2019 construction ceased and the Facility was placed into a state of preservation.

PCEL is now applying to the Environment Agency (EA) to enable the conversion of the Facility to the combustion of refuse derived fuel (RDF) which has been produced from domestic (municipal solid waste) and commercial & industrial (C&I) non-hazardous residual waste.

This document and the measures to mitigate the risk and impact of fires within the Facility have been (and will continue to be) developed in accordance with the requirements of the following:

- Environment Agency guidance note *'Fire Prevention Plans: Environmental Permits'*, Updated 4th May 2018;
- Building Regulations – *Approved Document B (Fire Safety)*;
- ACE Technical Risks, Engineering Information Bulletin, *Guidance document Energy from Waste (EfW) – Fire Systems Issue 4.0* (27 June 2017);
- National Fire Protection Association *'NFPA 850: Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations'*, 2015 Edition; and
- the insurer's requirements where structures or equipment fall outside published guidance or recommended practice.

1.1 Project Description

The Facility would be a single stream waste incineration plant with a maximum capacity of 333,000 tonnes per annum of RDF produced from domestic (municipal solid waste) and commercial & industrial (C&I) non-hazardous residual waste. The Facility will export electricity to the National Grid. Furthermore, the Facility will have the potential to export heat to local heat users.

1.2 Objective

The objective of this report is to provide a preliminary Fire Prevention Plan (FPP) for the Facility, identifying the provisions which have been taken into account during the initial construction phase of the Facility. In addition, provisional operational measures have been identified where these are available. This report will be subject to review following completion of detailed design and construction. Detailed process design would be programmed following final contract negotiations with the contractors who will be undertaking the construction works and incorporating the requirements of fire insurers. The Facility is expected to take approximately 12-18 months to design, complete construction, commission and commence full operational status.

The requirements of the FPP will be integrated within the emergency plans and procedures for the Facility to ensure that they are consistent and compatible with other management systems associated with the operation of the Facility.

A suite of emergency procedures for the Facility will be written and included in the training package for all staff and contractors. Training of site operatives will commence approximately 4 months prior to commencement of commissioning of the Facility, and all operational personnel will be tested on the fire prevention and emergency procedures.

2 Site Location and Description

2.1 The Site

The site, which extends to an area of some 5.33 hectares (13.17 acres), is located on land at Clarence Works, to the northwest of Koppers UK, Port Clarence on the north side of the River Tees.

The site is located on Koppers Road, Huntsman Drive, Port Clarence, Stockton on Tees, TS2 1TT.

The northwest boundary of the site is formed by a railway line devoted to industrial cargo traffic. Further to the north lies an area of salt marsh and sunken brine pools that make up much of the natural habitat of the area. The Transporter Bridge stands some 880m to the west southwest of the site. Middlesbrough Football Club's Riverside Stadium is situated almost directly to the south of the site on the south bank of the River Tees, some 780m from the site.

Clarence Works is an industrial area with a long history of heavy industry and port related works. The last previous use for the site was as a workshop, but this ended over 50 years ago. Prior to being a workshop, the site was used for steel production. The site and land surrounding has a long and complex industrial history, including: chemical manufacturing; railways; iron works; coal storage, petroleum oil and gas refining; and petroleum, oil and gas storage. Koppers UK is a bitumen processing plant.

The site is presently accessed from the east via a private road which leads to Huntsman Drive which in turn leads to A178, linking northwards to the A1185 and from there westwards towards the A19, A689 and A1(M). This is the designated HGV route from the A19 and A1(M) to Seal Sands.

2.1.1 The Activities

The proposed activities which will be regulated by the EP are summarised in EP application and replicated in Table 2-1:

Table 2-2: Scheduled and directly associated activities

Type of Activity	Schedule 1 Activity	Description of Activity
Installation	Section 5.1 Part A1 (b)	The incineration of waste derived fuels in a facility with a nominal design capacity of greater than 3 tonnes per hour.
Directly Associated Activities		
Directly Associated Activities		The receipt, screening and storage of pre-processed waste derived fuels prior to combustion.
Directly Associated Activities		The handling, storage and transfer of residues for transfer off-site.
Directly Associated Activities		The export of electricity and potential export of heat from the Installation.

2.2 Site Plans & Drawings

Included in Appendix A of this report are the:

- site location plan (Appendix A.1);
- Installation boundary drawing (Appendix A.2);
- Materials storage areas plan (Appendix A.3);
- Access points around the perimeter to assist fire-fighting (Appendix A.4);
- Indicative locations of fire hydrants (Appendix A.5);
- Indicative locations of fire walls (Appendix A.6); and
- Firewater Supplies and firewater containment. (Appendix A.7).

As stated in section 1.2, detailed design of the Facility will be undertaken following final contract negotiations with the contractors commissioned to complete construction and commission the Facility. Therefore, the information in relation to some of the drawings identified above should be considered to be indicative until detailed design and construction has been completed. Following completion of detailed design, the following drawings would be included within the updated FPP:

- the location of drain covers and any pollution control features such as drain closure values and firewater containment systems;
- site drainage plan;
- the location of gas cylinders; and
- the location of plant, protective clothing and pollution control equipment and materials.

Wind roses indicating the direction of prevailing winds for the Facility 2017 to 2021, as taken from the from Durham Tees Valley, are presented in Appendix B.

2.3 Key Receptors

The key receptors which could be impacted by a fire at the Facility are presented in the following table, and graphically presented in Appendix A.3:

Table 2-3: Fire Prevention Plan Receptors

ID	Name	Location			Distance from Facility Stack (km)
		X (m)	Y (m)	Z (m)	
R1	Saltview Terrace	450094	521645	0	0.94
R2	Queen's Terrace	449780	521820	0	1.24
R3	Middlesbrough college	450144	520877	0	1.25
R4	Lower East Street	449819	520885	0	1.49
R5	High Clarence Primary School	449478	521976	0	1.56
R6	Elizabeth House Care Home	450838	519776	0	2.00
R7	King George's Terrace	452620	520975	0	1.78

3 Fire Prevention

3.1 Waste Storage

3.1.1 Waste Reception Area

PCEL is proposing to process fuels derived from residual municipal and commercial waste. The proposed wastes will all be non-hazardous wastes. PCEL proposes to combust the EWC Codes as fuel within the Facility as presented in Table 3-1:

Table 3-1: Waste to be processed in the Facility

EWC Code	Waste Description
Waste from agriculture horticulture aquaculture forestry and fishing	
02-01-07	Wastes from Forestry
02-01-09	Agrochemical waste other than those mentioned in 02 01 08
Wastes from wood processing and the production of panels and furniture pulp paper and cardboard	
03-01-01	waste bark and logs
03-01-05	sawdust, shavings cuttings wood particle board and veneer other than those mentioned in 03-012-04
03-03-01	waste bark and wood
03-03-08	Waste from sorting of paper and cardboard destined for recycling
Wastes form leather, fur and textile industries	
04-02-21	Wastes from unprocessed textile fibres
04-02-22	wastes from processed textile fibres
Wastes form the photographic industry	
09-01-08	Photographic film and paper free of silver or silver compounds
Waste packaging absorbents wiping cloths filter materials and protective clothing not otherwise specified	
15-01-01	Paper and cardboard packaging
15-01-02	plastic packaging
15-01-03	Wooden packaging
15-01-05	Compositae packaging
15-01-06	Mixed packaging
Construction and demolition wastes including excavated soil from contaminated sites	
17-02-01	Wood
Wastes from waste managements facilities off site waste water treatments plants and preparation of water intended for human consumption and water for industrial use	
19-12-01	Paper and Card
19-12-04	Plastic and rubber
19-12-07	Wood other than that mentioned in 19-12-06

EWC Code	Waste Description
19-12-08	Textiles
19-12-10	Combustible wastes (refuse derived fuel)
19-12-12	Other waste (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19-112-11
Municipal wastes (household wastes or similar commercial industrial and institution wastes including separately collected fractions.	
20-01-01	Process waste from segregated clean sources of paper
20-01-11	Textiles
20-01-38	Wood other than that mentioned in 20-01-37
20-01-39	Process waste form segregated clean sources of plastics
20-03-01	Mixed municipal waste (no black bag waste)

Upon arrival at the Facility, delivery vehicles will be weighed and periodically inspected at the gatehouse before being directed to the Waste Reception Area. The Waste Reception Area will be a fully enclosed building, maintained under slight negative pressure to ensure that no odours, dust or litter can escape the building.

Waste will be sourced from a range of municipal, commercial and industrial sources. The fuel will be pre-processed prior to transport to the Installation.

Incoming fuels will be delivered in covered vehicles or containers. The vehicles will be weighed via an automatic weighbridge before proceeding to the fuel reception area.

The fuel will be unloaded in the enclosed Fuel Reception Area, and tipped into the below ground waste reception bunker, with the existing cranes used to transfer from the bunker to the fuel storage area. The storage capacity of the Fuel Reception bunker and storage area is equivalent to approximately 4 days of waste fuel (3,100 tonnes). The existing cranes will move waste derived fuel from the storage area to the conveying system loading hopper. The waste derived fuel is then transported via enclosed high-level conveyor to the enclosed above ground boiler feed fuel storage bunker.

The fuel storage bunker will have a capacity equivalent to approximately 4 days of fuel (3,100 tonnes), so that operation during an extended weekend/bank holiday is possible without fuel being delivered to the site. Waste will be transferred from the waste storage bunker to the boiler fuel feed hopper via enclosed conveyor.

A plan showing the location of the waste reception and waste storage areas is presented in Appendix A.3.

Bunker management procedures will be adopted to ensure that there is a constant turnover of waste within the waste reception and waste storage bunkers, preventing hotspots or anaerobic conditions within the bunker. The cranes for the waste reception bunker will be sized to allow for mixing and rotating the waste, whilst providing appropriate quantities of waste within the fuel feeding conveyors to maintain operation of the waste combustion process. The regular 'turning over' of the contents of the waste storage bunker, including the regular introduction of 'new' waste from the waste bunker, will ensure that waste does not accumulate within the lower levels of the bunker.

The crane operator will be trained in careful waste handling and crane operation as to maintain the integrity of the waste bunker.

In the event of an unforeseen shutdown of the Facility, a facility has been included within the design which will allow for back-loading of waste from the waste reception bunker to road vehicles for transfer off-site to a suitably licensed waste management facility.

With respect to the potential volume of firewater required, this would be considerably less than the total potential (or 'airspace') volume of the bunker i.e. reduced by the volume taken up by waste at the time of a potential fire.

The waste reception area is designed with a minimum of 2-hour fire resistance rating. Thermal imaging cameras will be installed to scan for areas of hotspots within the waste reception and waste storage bunker (refer to Section 4.8.6). The roof steelwork above the waste bunker area will be protected with water sprinklers in the event of a fire. And the conveying system loading hopper will be fitted with thermal imagining cameras and a deluge system. These measures are in in accordance with the requirement of NFPA and insurers for facilities which combust waste.

Thermal imaging cameras will be fixed around the perimeter of the bunker to provide the crane driver with a continuous thermal 'map' of all waste storage areas, refer to section 4.8.2. This will enable the crane driver and Control Room, to identify and react to hot areas in the waste reception and waste storage bunker and undertake appropriate actions to mitigate the risk of fire. In addition, there would be flame detectors strategically located in waste handling and storage areas, with an associated deluge system.

It should also be noted that the waste reception and waste reception bunker will be designed and constructed as a water retaining structure to protect against the leak of contaminated firewater, and to minimise the risk of emissions of pollutants to groundwater. The reinforced concrete floor and walls of the bunkers will be of sufficient strength as to maintain integrity in the event of a fire.

3.1.2 Quarantine area for unacceptable waste

Unacceptable waste is waste which does not meet the requirements of the waste specification and waste acceptance procedures for the Facility, refer to section 4.1, or other waste which is unsuitable for incineration and/or not compliant with the EWC codes permitted by the EP, refer to Table 3-1.

A suitable area for the quarantine of unacceptable waste will be designated as part of the detailed design stage. However, it is anticipated that it will be located within the Tipping Halll/waste Reception Area.

The quarantine area will be designed to enable unacceptable waste to be segregated from all other incoming waste, allowing it to be collected and loaded into appropriate road vehicles for transfer off-site. It will be used to temporarily store any unacceptable waste (which has been detected prior to being tipped into the waste reception bunker or identified by the crane driver and removed using the waste crane grab) prior to transfer off-site. The quarantine area will have sufficient storage capacity for the storage of more than 50% of the largest waste delivery vehicle.

Appropriate fire detection and protection measures, including a deluge system, will be installed in the quarantine area. The final design of the quarantine area will be subject to detailed design and agreed with fire risk insurers.

Additionally, for unacceptable waste identified within the waste reception bunker, it will be able to be back-loaded from the bunker for examination and/or removal from the site to a licensed disposal facility.

3.1.3 Incinerator Bottom Ash

Bottom ash from the waste incineration process will be transferred to the IBA storage area. The size of the IBA storage area will be subject to detailed design, but it is estimated that it will have a capacity to store approximately 2 – 3 days of IBA, this is equivalent to approximately 500 tonnes of IBA.

3.1.4 Air Pollution Control Residues

Air Pollution Control residues (APCr) will be stored within silos. The silos are designed for the storage of the 200 tonnes of APCr which is equivalent to 5 days of storage. The silos will be elevated above-ground level so that APCr can be discharged into road tankers from above. Removal of the APCr will be by sealed tankers, with telescopic chutes used to discharge the APCr into the road tankers.

3.2 Storage Duration

3.2.1 Waste Reception Area

The fuel will be unloaded in the enclosed Waste Reception Area, and tipped into the below ground waste reception bunker. The storage capacity of the Waste Reception bunker is equivalent to approximately 4 days of waste fuel (3,100 tonnes). The waste fuel is then transported via enclosed high-level conveyor to the enclosed above ground waste storage bunker.

The waste storage bunker will have a capacity equivalent to approximately 4 days of fuel (3,100 tonnes), so that operation during an extended weekend/bank holiday is possible without fuel being delivered to the site. Waste will be transferred from the waste storage bunker to the boiler fuel feed hopper via enclosed conveyor.

The waste fuels within the waste reception and waste storage bunkers will be continuously turned and mixed with 'new' incoming waste. This will ensure that waste is not retained within the waste bunkers for any extended periods.

All deliveries of waste would be halted during periods of shutdown.

3.2.2 Quarantine Area for Unacceptable Waste

The quarantine area will be used for the inspection and storage of unacceptable waste. After inspection and verification, depending on whether the waste was deemed unacceptable or not, the waste will either be:

- transferred to the waste bunker; or
- transferred off-site to a suitably licensed waste management facility.

3.2.3 Incinerator Bottom Ash

The IBA storage area will have sufficient capacity for the equivalent of 2 – 3 days of storage, assuming that the Facility operates continuously at the nominal design capacity.

3.2.4 Air Pollution Control Residues

APCr would be stored in silos. The APCr silos will have sufficient capacity for the equivalent of 5 days of storage, assuming that the Facility operates continuously at the nominal design capacity.

3.3 Monitoring of Stores for Waste and Recovered Materials

In accordance with the waste acceptance procedures, which will be developed for the Facility prior to commencement of operation, the unloading of all waste deliveries will be supervised by operational staff.

CCTV will be installed in all areas where fuel delivery vehicles unload fuel within the fuel reception area, and also all areas where wastes and recovered materials are discharged from the processes.

Within the Facility, the fuel reception bunker and conveying system loading hopper will be continuously monitored by the fully automatic thermal imaging system linked to the sprinkler and deluge system. During daytime operation, the fuel reception bunker and fuel bunker will be visually monitored by control personnel. At night time, the control personnel will visually monitor the thermal imaging system as part of their responsibilities for operating the Facility.

3.4 Actions to Limit Self-Heating

3.4.1 Waste Reception Area

During operation, the turning of waste derived fuels within fuel storage areas is standard practice at UK plants that combust waste derived fuels. As well as helping to mix the fuel (to produce a more homogenous fuel which is better for control of the combustion process), it helps to prevent the formation of hotspots. Turning helps to release heat that has built up in the waste.

In addition, following the detection of a hot spot using the thermal cameras, sprinklers and deluge systems automatically operate when the temperature of the hot spot exceeds a defined set-point (subject to agreement with the fire risk insurers). The water cannons will also be designed to be operated and controlled manually from the control room.

Prior to periods of extended plant shutdown, the volumes of waste within the waste reception and waste storage bunker will be reduced with the bunkers being 'empty' during periods of planned shutdown. During the planned shutdown, assumed to be annual, deposits/residues retained within the base and corners of the waste reception bunker and waste storage bunker will be removed, as far as practicable, and processed when the Facility starts-up.

3.4.2 IBA Storage

Due to the high thermal temperatures in which the IBA has been combusted, it will not be expected to contain any combustible materials which are able to self-combust from the elevated temperatures within the IBA.

3.4.3 APCr Storage

The APCr is not expected to contain any combustible materials which would self-combust from elevated temperatures within the APCr.

3.5 Contingency

In the event that the Facility is not able to receive waste due to an unplanned incident forcing a full shutdown of the Facility, incoming waste will be diverted to a suitably licenced waste management facility.

If there is a significant fire, which requires a full shutdown of the Facility, the Facility will not restart operations until the relevant regulatory authorities (Fire Service, Health and Safety Executive, Environment Agency, etc.), as well as the fire insurers, have advised that it is safe to do so. During a complete shutdown of the Facility, the fire detection systems will remain operational. The thermal imaging cameras for the fuel reception bunker and fuel storage bunker will be set with two trigger alarms at different temperatures, with the fire water cannons activated if the high-high temperature alarm is reached (refer to section 4.8.2).

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

For periods of planned maintenance, the fuel levels within the fuel reception and fuel storage bunkers will be maintained to ensure that the quantities of fuel within the bunker can be combusted. Prior to the planned shutdown of the Facility, fuel deliveries will be diverted to alternative waste management facilities, and the fuel within the bunker will be combusted to minimize the quantity of fuel remaining in the fuel bunker area prior to the shutdown commencing. This will ensure that there is only a small residue in the waste storage bunker during the period of shutdown.

The temperature of waste in the fuel storage bunker would continue to be monitored by the thermal imaging system during a planned shut-down. Therefore, the crane operators or the control room would be able to continue to mix fuel to prevent excessive temperatures in the bunker, or if necessary, use the fire-fighting cannons.

If the Facility was not available due to a period of extended unplanned maintenance, facilities will be provided for the fuel within the fuel reception bunker to enable it to be back-loaded from the bunker for transfer off-site to a suitably licensed waste management facility. Extended unplanned shutdowns would rarely exceed 14 days, after which fuel will begin to be removed from the Facility, based upon the status of operation.

3.6 Seasonality

The operation of the Facility is not expected to follow any seasonal variations in the demand for incoming fuels to be treated or the resulting residues generated.

3.7 Arson or Vandalism

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

The Facility is surrounded by security fencing, and a barrier will be present at the entrance and exit of the site to restrict vehicular access. It is expected that the gatehouse at the entrance to the Facility will always be manned, and security personnel will be present on-site. As such, only authorised visitors will be able to enter the site.

The Facility will be operational and manned 24 hours a day, 7 days a week, with the CCTV system monitored in the control room by trained and competent operators. CCTV will cover areas where waste is unloaded, with waste deliveries supervised by operational staff. The shift team leaders will be responsible for security on the site, including delivery vehicles as they travel around the site.

Emergency response procedures will be developed for the Facility, prior to the commencement of operations, as part of the detailed Environmental Management System (EMS). The procedures will detail the response to a number of different emergency situations on site, including unauthorised personnel accessing the Facility.

3.8 Plant and Equipment

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

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

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

3.9 Infrastructure and Site Inspections

Regular site inspections will be undertaken which will cover all operational areas as part of the normal operating procedures. Records of site inspections will be retained on-site. Inspections will be carried out on a continuous basis, but as a minimum an inspection of the main operational areas will be carried out during every operating shift with maintenance work instructions raised for any items identified.

3.10 Electrical Faults

The risk of electrical faults on site will be minimised by the use of qualified electricians and will comply with the relevant British Standards for the design and installation of electrical equipment and supplementary bonding/earthing.

Electrical equipment will be checked and maintained as part of the planned maintenance regime as required in the detailed operating manuals for each piece of equipment.

3.11 Ignition Sources

A review under the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) was developed during the detailed design of the Facility. Due to proposed changes to the operation of the Facility, the DSEAR assessment will be reviewed and DSEAR zonal drawings will be updated to include for any new/additional risk areas.

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

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

As part of the hot work management system, the potential for sources of ignition to cause fires will be managed on a case-by-case basis. Where feasible, the guidance of keeping all sources of ignition at least 6 metres away from any combustible or flammable waste would be followed as part of this management system. This will include ensuring that mobile plant storage locations will be stored at least 6 metres away from combustible wastes. It should be noted that the location of mobile plant storage locations is subject to detailed design of the Facility.

The guidance of keeping sources of ignition at least 6m away from any combustible or flammable waste will be followed as part of this management system.

3.12 Industrial Heaters

It is currently not expected that industrial heaters will be installed at the Facility, however, this will be confirmed during detailed design. If applicable, the hot work management system would be extended to include the use of industrial heaters and the necessary safeguards required in each instance would be assessed and implemented to ensure their use is safe.

3.13 Leaks and Spillages of Oils and Fuels

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

3.14 Build-up of Loose Combustible Waste, Dust and Fluff

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

As part of the detailed design of the Facility, the control of dust and fluff will be considered and includes for the following:

- the use of an enclosed fuel reception/unloading building under negative pressure with air extraction;
- mechanical ventilation of waste storage areas to prevent fugitive emissions from the building façade; and
- electrical panels are located away from inherently dusty areas. The panels are enclosed and sealed.

These systems will be checked as part of the planned maintenance regime as required in the detailed operating manuals for each piece of equipment.

Initially it is proposed to undertake site wide inspections on a monthly basis, to identify the build-up of loose combustible waste, dust and fluff. Where inspections identify that there has been a build-up of loose combustible waste, dust and fluff, appropriate cleaning will be undertaken to clean this material from the surfaces.

Therefore, it is proposed to undertake annual inspections of these areas as part of the annual maintenance regime.

In the event that inspections identify a regular build-up of loose combustible waste, dust and fluff in certain areas of the Facility, the frequency of inspections will be increased.

3.15 Hot Exhausts

A fire watch system will be implemented to detect signs of fires from dusts settling on hot exhausts. This would be developed as part of the operating procedures. This will include daily visual checks of dusts settling on hot exhausts as part of the operational checks by operational staff for each shift.

3.16 No Smoking Policy

A no smoking policy will be adopted and implemented at the Facility. Smoking will be prohibited in operational areas. External areas designated for smoking within the Installation Boundary will be identified, with suitable facilities provided for staff.

3.17 Heat and Spark Prevention

A review under the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) will be completed during the detailed design of the Facility, with any risk areas identified on zoning drawings.

3.18 Gas Bottle and Other Flammable Items

Gas cylinders will be stored within purpose-built dedicated storage facilities. All facilities for the storage of gas cylinders will be kept locked/secured. The location of gas cylinder storage and other flammable items will be subject to detailed design. A plan showing the location of gas storage facilities and other flammable items will be included in Appendix A upon completion of detailed design.

A system for the regular inspection of gas storage facilities will be developed as part of the operating and maintenance procedures and the site inspection regime.

3.19 Fire Watch

Operational staff will be briefed on the need for monitoring for the early signs of fires. The waste bunker and all main process areas will have CCTV to allow remote monitoring from the control room and by the crane operator on a continuous basis.

All waste delivered to the Facility will be supervised by operational staff, who will be responsible for the inspection and monitoring of waste deliveries.

3.20 Smoke/Heat/Flame Detectors

The choice of fire detection system (smoke/heat/flame and carbon dioxide detectors) to be installed within the Facility is subject to detailed design. However, it can be confirmed that the fire detection systems will be covered by a UKAS-accredited third-party certification scheme. This will be confirmed prior to the commencement of commissioning of the Facility.

Suitable detection systems will be installed in each area dependant on the fire risks associated with the area. A plan showing the location of the fire detection system in each area will be presented in Appendix A upon completion of detailed design.

4 Management and Storage of Waste

4.1 Unacceptable Waste/Hot Loads

Waste supply contracts will be agreed with waste suppliers/producers, which will include specifications for the supply of incoming waste. The waste specifications will require that the fuel has been pre-processed with incompatible and unstable wastes, such as batteries and other unacceptable materials, being removed from the incoming waste at the pre-processing facility. Whilst this will limit the likelihood of unacceptable wastes being transferred to the Facility, the Operator will also undertake periodic checks/audits of waste suppliers to ensure that the waste is being pre-treated to ensure that it is in accordance with the required waste specifications.

Waste acceptance procedures will be developed for the Facility. These will include considerations for unacceptable wastes and hot loads.

Upon arrival at the waste reception area and unloading of the waste, it will be subject to inspection by operational staff. Loads which are identified as containing unacceptable waste, including hot loads, will not be accepted at the Facility. Unacceptable wastes, including hot loads, will be transferred to a dedicated quarantine area (refer to sections 3.1.2, 3.2.2 and 4.5).

Where feasible, unacceptable waste will be returned to the waste processing facility which has transferred the waste to the Facility.

4.2 Waste Acceptance – Permitted Waste

Prior to commencement of operations, waste acceptance procedures will be developed and implemented for the Facility. This fire prevention plan will be updated following development of the procedures. The procedures will include arrangements for the management of wastes which are permitted to be treated.

4.3 Waste Storage – Separation Distance

Following previous discussions with the Environment Agency, it is understood that the storage requirements relating to pile separation distance only applies to external storage of wastes. As detailed in section 3.1, all wastes which are delivered or stored within the Facility will be within enclosed buildings.

4.4 Fire Walls

Suitable fire walls will be installed within the appropriate areas within the Facility. The location and specification for fire walls would be subject to final sign-off by the fire insurers. A drawing showing the indicative location of the known fire walls is presented in Appendix A.

Subject to the location of the process equipment, operational areas would be segregated into fire zones (the “Fire Zones”). In accordance with fire insurers requirements, the waste reception building and boiler hall are classified as separate buildings due to the 50m separation distance between them.

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

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

The fire zoning will be subject to the agreement of PCEL and the fire risk insurers.

The conveyors between the waste reception area and the boiler hall are fitted with interlocks to prevent the migration of fires between the waste reception area and the boiler hall.

All openings in fire barriers will be provided with fire doors, including (if feasible) airlock systems, fire dampers, penetration seals (fire stops), or other approved means having a fire protection rating consistent with the designated fire resistance rating of the barrier. Windows in fire barriers (e.g. control rooms, observation windows, computer rooms, etc.) will be provided with appropriate fire protection to maintain the integrity of the fire barrier, e.g. by means of a fire shutter, automatic water curtain, window sprinkler system, etc. All cable trays or piping systems passing through fire barriers will be fitted with fire stops.

The glass partition in the control room/crane cabin will be 2-hour fire rated, and hence resistant to fire. The site staff will therefore be able to continue operating the crane within the waste reception bunker for a limited amount of time in the event of a fire, depending on the severity of the fire.

4.5 Quarantine Areas for Unacceptable Waste

As stated in section 3.1.2, a suitable area for the quarantine of unacceptable waste will be designated as part of the detailed design stage. However, it is expected that it will be located within the waste reception hall. In addition, where appropriate, the quarantine area will be in accordance with the requirements of the fire prevention plan (FPP) guidance, i.e. it will:

- hold at least 50% of the waste delivery load; and
- where practicable, have a separation distance of at least 6 metres, or alternative equivalent measure (such as a thick concrete wall between the bunker and the quarantine bay, or provision of containers or skips in the quarantine area), around the quarantined waste.

With regards the first requirement, this is stated in the FPP guidance as holding "*at least 50% of the volume of the largest pile, row or block of containers*" at the ERF. As pile size requirements and separation distances do not apply to the waste bunker, the waste stored within the bunker is not considered to fall under the definition of a waste 'pile' as per the FPP guidance. The largest pile or container of waste will be waste contained within delivery vehicles. The quarantine area will have sufficient capacity to hold at least one waste delivery vehicle load. This will allow the segregation of the whole waste delivery should a hot load be identified upon arrival at the ERF.

With regards the second requirement, depending on the size of the waste pile requiring quarantine, it may not be possible to maintain a separation distance of 6m around the quarantined waste. However, in the unlikely event that there is more than one pile of waste (for example, two loads requiring storage in the quarantine area), skips will be used within the quarantine area to maintain appropriate separation between the wastes. The use of skips will also provide contingency in the event that the quarantine area is required for the storage of a hot load whilst it is being used for the storage of another unacceptable load. The skips will prevent contact between the hot load and the unacceptable load, with the hot load extinguished immediately upon placing into the skip.

Fire detection and protection measures (e.g. smoke / flame detectors, hose reel, sprinklers, or water cannon) will be installed in the quarantine area, the final design being subject to the

recommendations of the final fire strategy completed during the detailed design phase of the project and agreed with the fire insurers.

4.6 Storage within Buildings

The detailed arrangements for waste storage are explained within section 3.1, but it can be confirmed that all incoming wastes and residues generated by the Facility will be stored within buildings.

As part of the detailed design and construction of the Facility, the fire system design will be designed and installed by a suitably qualified and experienced fire engineering company, which employs appropriately qualified persons. The system will be developed in accordance with NFPA 850 (the recognised industry standard, in the UK, for fire protection systems for power generating facilities), the local fire officer, the fire risk insurers and any relevant standards and codes of practice. Where appropriate, waste storage areas will be designed with automatic fixed fire detection and suppression systems to enable a fire to be supressed in less than 2-hours.

4.7 Shutdown

The duration of planned shutdowns will vary significantly, dependent on the nature of the work required, and typically will not extend beyond two weeks. The nature of a planned shutdown allows the Facility to minimise fuel deliveries prior to the shutdown. During periods of shutdown, the fuel within the fuel reception bunker and storage bunkers will be maintained at suitable levels. Facilities will be in place to back-load fuel from the fuel reception bunker for transfer off-site to a suitably licensed waste management Facility. In the event that the Facility is not able to receive fuel, due to an unplanned incident forcing a full shut-down of the Facility, incoming fuel deliveries will be diverted to a suitable waste management facility.

When the Facility is shutdown, whether it is planned or unplanned, both engineered fire detection controls and management procedures will be implemented to minimise the risk of a fire within all fuel storage areas. The controls implemented during shutdown will be dependent on whether combustion fans are operational, and will include either the opening or closing of louvers in the fuel reception area.

The frequency of inspection of fuel storage areas (and other parts of the site) will be increased during a full shutdown, and a checklist utilised to ensure a complete record of issues and comments that may require further action, assessing the presence of dust, odours and hotspots. The operation of all thermal monitoring equipment will be maintained during all periods of shutdown where there is fuel within the fuel storage areas.

4.8 Active Fire Fighting

The fire fighting system for the Facility will be subject to detailed design and the insurer's requirements. The main features of the fire fighting systems, and how they will be utilised in the event of a fire, are described in the following sections.

4.8.1 Fire Prevention Standards

Where appropriate, the Facility will be designed and operated in accordance with the following fire prevention and detection standards, or alternative recognised international standards where they are available:

- BS EN 671: Fixed fire-fighting systems;
- BS 5266: Emergency Lighting;
- BS 5446: Automatic Fire Alarm Systems;
- BS 5839: Fire Detection and Alarm systems for buildings;
- ISO 6182: Fire Protection – Automatic Sprinkler Systems;
- ISO 6183: Fire Protection Equipment – Carbon Dioxide Systems;
- CIBSE Guide Volume E, Fire Engineering, 2003;
- BS EN 15004: Fixed Firefighting systems – Gas extinguishing systems;
- BS EN 12845: Fixed firefighting systems – Automatic sprinkler systems – Design, installation and maintenance;
- BS 5306: Fire extinguishing installations and equipment on premises;
- BS 5588: Fire Precautions in the design, construction and use of buildings (only in as much as referred to in the Building Regulations);
- BS 9990: Non-automatic fire-fighting systems in buildings – Code of practice;
- BS 9999 – Code of Practice for Fire Safety in the design, management and use of Buildings; and
- Building Regulations, in particular Approved Document B, Volume 2 – Buildings other than dwelling houses, Section B5, Access and facilities for the fire service.

All staff, visitors and contractors will be informed about the fire safety precautions as part of the induction procedures.

4.8.2 Fire Detection Systems

There will be a fire detection and alarm system which will cover all of the waste processing areas within the Facility. The fire alarm systems will include the following:

- local detectors/transducers and call points;
- sounders/high intensity flashing beacons;
- cabling and containment systems;
- local control and indication panels; and
- remote control and indication panel (incorporating integral printers) would be in the control room.

All fire detection systems will be installed in accordance with BS 5839, Part 1 2002 and subsequent amendments to give level P1 + M coverage in accordance with the Loss Prevention Council ("LPC") Rules for Automatic Fire Detection and Alarm Installations for the Protection of Property. In low fire risk areas e.g. the boiler house, the requirements for a P1 detection system may be relaxed. In areas which are identified as having a low fire risk, proposed detection method(s) would be agreed with the requirements of the fire service and fire risk insurer. The fire detection, protection and alarm systems will comply with the requirements of the fire service and fire risk insurer. All fire detection systems will be design, installed and maintained in accordance with an appropriate UKAS-accredited third-party certification scheme.

The following fire detection systems will be incorporated into the design of the Facility:

1. Waste reception area fire detection will be provided by flame detectors in accordance with an appropriate risk study.
2. Fire detection within the fuel reception and fuel storage bunkers will be provided by thermal imaging cameras and flame detectors which will be fixed around the perimeter of each area,

and will include automatic scanning of the entire area of both fire zones. The thermal imaging cameras will provide a continuous thermal 'map' of the surface of the fuel within the fuel bunkers. The thermal mapping will be displayed in the control room and will be used by the crane operator to manage temperatures within the waste bunkers.

The staff within the control room, as well as the crane operator, will be trained in the identification and implementation of corrective measures in the event of elevated temperatures within the fuel reception and storage building. The thermal imaging cameras will enable the crane operator and/or the control room staff to identify and react to hot areas in the waste storage areas to operate the firewater cannons to suppress any areas of elevated temperature within the waste storage areas.

In addition, a 'satellite' control room will be located in the waste reception building, which will be manned during periods when fuel will be delivered and the staff in the control room will be responsible for undertaking inspections of the incoming fuel deliveries, and ensure that non-compliant waste is not accepted/removed from Facility.

- Water cannons and manual fire hoses are considered to be the primary means of fighting a fire in the waste reception and waste storage bunkers.
- To proactively prevent fires, the system will be configured to alarm based on certain conditions. The thermal imaging cameras would be set with a high-level trigger/alarm. As indicated in insurer guidelines, high temperature sprinkler heads would be installed, and temperature set-points would be determined during detailed design and in consultation with the fire insurers.
- Following activation of the high temperature alarm in an area within the waste reception and waste storage bunker, the area with an elevated temperature will be targeted and the firewater cannons would be activated to reduce the temperature in the area where self-heating has occurred.
- High-high temperature alarms in other UK waste incineration plants operate with a trigger temperature of approximately 120°C. For the Facility, this is subject to detailed design, and will be set in consultation with the Fire Service and the fire insurers.
- The control system will be designed so that the trigger temperatures for the fire detection systems can be amended from operational experience, if required.

3. The fuel feed conveyor and fuel feed hopper area fire detection will be provided by the feed conveyor and fuel feed hopper supervision camera and a deluge system to flood the conveyor and feed hopper, if required.
4. In the boiler house the boiler auxiliary burner fuel supply valve train will have a wire and fusible link system or heat detector and solenoid valve such that in the event of an external fire the local fuel supply isolation valve (fuel oil) is automatically closed.
5. Electrical rooms with significant concentrations of electrical equipment such as switchgear rooms, low voltage rooms, control system rack room, uninterruptible power supply (UPS) and crane control cabinet rooms will be fitted with suitable fire detection systems.
   - The fire detection will be by means of a 'double knock' system composing of ionisation (or heat and smoke) detectors to minimise the risk of false activation. In addition, manual call points will be installed in all areas. The fire detection systems will be designed for ease of regular testing to demonstrate correct operation. Suitable automatic fire protection systems will be located within the rooms. The electrical equipment would be installed within rooms of blockwork construction.
6. Transformer protection would provide complete water spray impingement on all exposed exterior surfaces, in accordance with fire insurers requirements. Typically, this requires that water is applied at a net rate not less than 10.2 mm/m^2 of projected area of rectangular prism

envelope for the transformer and its appurtenances, and not less than 6.1 mm/m^2 on the expected non-absorbent ground surface area of exposure. Water spray application will include the conservator tanks, pumps, etc.

7. The turbine-generator and ancillaries will be protected by a dedicated fire detection and automatic sprinkler fire protection system. The area will be segregated into 3 fire zones: turbine, generator and lubricating oil skid. The fire detection and protection system will be installed such that detectors cover all potential areas of fire risk.
   - Automatic actuation of the fire protection systems via a double knock system with manual operation from the control room will be provided
   - The fire detection systems would be installed in accordance with NFPA 850. In addition, in accordance with NFP850 all areas beneath the turbine-generator operating floor that are subject to oil flow, oil spray, or oil accumulation would be protected by an automatic sprinkler or foam-water sprinkler system.
   - Whilst it is subject to detailed design, if the turbine generator is housed in an enclosure, then an automatic total flooding water mist system, or inert gas fire suppression system will be installed.
   - A 'double knock' system will be used with a dry glass bulb for 1st knock and dedicated heat detectors as the 2nd knock. Break glass units will be installed at each entrance to the turbine hall. These detection and protection systems will be segregated from the main fire detection and protection system. Locations of pipes and equipment will be designed to minimise the risk of oil fires spreading. Passive fire protection to the generator and the cooling system will be designed in accordance with the requirements of the fire insurer.
8. Procedures will be developed in the operation of the fire detection systems. Training will be provided to the relevant staff in the different fire detection systems. Training records in the operation of the fire detection systems would be retained on-site.
9. All automatic fire detection and alarm systems will be designed and maintained by a suitably qualified, experienced and registered fire protection engineer.
10. Detailed design calculations, risk assessments and system drawings to demonstrate compliance with the requirements of the building control officer, fire officer and the insurer's requirements will be produced during detailed design.
11. It would be the responsibility of the shift managers to monitor fire alarms.

4.8.3 Fire Suppression Systems

There will be a fire suppression system installed in the locations considered by the fire strategy and NFPA 850 to be at risk of fire. The fire suppression systems will include the following:

- automatic sprinkler/water deluge systems for waste reception and storage areas, waste feed conveyor and waste feed hopper, step-up transformer area, 33 kV series circuit reactor, fire pump container and the emergency diesel generator;
- automatic foam systems for the turbine generator and lube oil systems, auxiliary burners;
- inert gas suppression for the electrical rooms and CEMS container; and
- carbon dioxide gas suppression system for the bag filters in the flue gas treatment system.

The automatic fire suppression systems will be designed and maintained by a suitably qualified, experienced and registered fire protection engineer. The fire suppression systems will be covered by a recognised (typically UKAS) third party certification scheme.

Detailed design calculations, risk assessments and system drawings to demonstrate compliance with the requirements of the building control officer, fire officer and the insurer's requirements will be produced following detailed design.

4.8.4 Alternative Fire Detection and Suppression Measures

In addition to the fire detection and suppression systems identified in sections 4.8.2 and 4.8.3, the design of the Facility will include a number of 'additional measures' to prevent the spread of fire, such as fire walls (section 4.4), fire hose reels and wet riser system (section 4.8.7), and fire extinguishers (section 4.8.9).

In addition, in the event of a significant fire within the waste storage bunker, the Facility will initiate a full shutdown. The shutdown will reduce the risk of fire spread between the 'fire compartments' within the Facility.

4.8.5 Provision of Firewater

The Facility will have a firewater storage tank designed in accordance with the requirements of BS 5306. The fire insurers have requested that an additional diesel fire water pump and waste storage tank are installed to provide additional hydraulic capacity.

The firewater storage tank is connected to the local water supply and would be installed with a suitable system to prevent freezing. The tank will be fitted with a local external water level indicator as well as with remote water level control and level alarm indication to the distributed control system (DCS).

The automatic fixed fire suppression systems for the Facility would be designed in accordance with the requirements of the fire insurers and NFPA 850. The water storage capacity for the fire protection systems would be based on providing a 2-hour supply based on the flow rate requirements for the sum of items (a) and (b) as:

a. the greater of items (i) or (ii) below:
    i. the largest fixed fire suppression system demand; or
    ii. any fixed fire suppression system demands that could reasonably be expected to operate simultaneously during a single event e.g. turbine under-floor protection in conjunction with other fire protection system(s) in the turbine area; and
b. a reasonable assessment of anticipated hose stream demand at not less than 1,890 l/min for 10 minutes.

The firewater tank is designed to ensure the required firewater capacity is available for fire protection at all times.

It is estimated that the size of the existing firewater tank is approximately 1,000 to 1,200 m^3, and the additional tank required by the fire insurers will provide an additional capacity of 1,000 m^3 of fire water capacity. The sizing for the firewater tanks, is based on early fire detection and automatic fire suppression systems in the waste reception and storage areas such that any fire can be rapidly contained and extinguished. The use of foam as an additive in the firewater system would reduce the quantity of water required for firefighting. However, the use of foam would be subject to detailed design, and fire insurers expectations/requirements.

It is proposed that the designs of the systems for the provision and containment of firewater are confirmed via a pre-operational condition.

4.8.6 Fire Water Cannons

As described in section 4.8.2, the cannons will activate following the activation of a high-high temperature alarm. The cannons will also, following the detection of a hot spot using the thermal cameras, automatically operate when the temperature of the hot spot exceeds a defined set-point (subject to agreement with the fire risk insurers). The water cannons will also be designed to be operated and controlled manually from the control room.

The cannons will be located in positions to optimise the horizontal and vertical coverage of the water spray(s) for total firefighting suppression across the waste reception and waste bunker storage areas.

Through detailed design of the waste reception area, and in consultation with the fire insurers, the number and position of the fire monitors and cannons will be established, alongside the automatic and remote-control systems. Thermal imaging screens will be installed within the control room.

4.8.7 Fire Hose Reel System and Wet Riser System

Hose stations will be designed in accordance with NFPA 14, Standard for the Installation of Standpipe, Private Hydrants and Hose Systems, or equivalent standard as required by fire insurers. Fire hydrant systems equipment will be provided at strategic positions within the Facility for firefighting in fire risk areas.

For firefighting purposes, hose reels and extinguishers where appropriate will be provided within the buildings. Upstream connection of fire hose reels shall be as a minimum with 80 mm diameter pipe. A minimum 2.5 barg pressure will be maintained at all times in the fire hose piping system with 4 fire hose reels in simultaneous operation.

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

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

Following detailed design of the Facility, and in consultation with the fire insurers, a plan identifying the location of the fire hose reels will be developed.

4.8.8 Fire Hydrants and Mains

Fire hydrants will be designed in accordance with NFPA 14, Standard for the Installation of Standpipe, Private Hydrants, and Hose Systems, or equivalent standard as required by fire insurers. The fire hydrants will be connected to a ring main at strategic positions around the Facility to provide firewater supplies to external fire risk areas. The fire hydrants would be designed in accordance with the requirements of the Building Regulations and the fire service; and spaced at no greater than 90 metres apart and within 12 metres of the building.

The positioning of fire hydrants would take into account:

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

The fire hydrants will be fed from the fire water storage tank and maintain the required pressure in accordance with the requirements of the fire service.

The location of hose reels and hydrants will be subject to detailed design and will be agreed with the fire insurers and the fire officer. Following completion of detailed design, and in consultation with the fire insurers, a plan identifying the location of the fire hose reels and hydrants will be developed. An indicative drawing showing the location of the fire hydrants is presented in Appendix A.7.

4.8.9 Fire Extinguishers

Fire extinguishers will be strategically located throughout the operational areas in accordance with the requirements of BS 5306: Part 3.

The location of the fire extinguishers will be subject to implementation of the recommendations of the fire officer for the Facility. Following completion of detailed design, and in consultation with the fire insurers, a plan identifying the location of the fire extinguishers will be developed and presented in Appendix A.

4.8.10 Containment of Firewater

The containment systems for firewater will be accomplished by a combination of the following:

- waste reception and waste storage bunkers;
- internal and external drainage systems;
- open doorways or other wall openings;
- kerbs for containing or directing drainage;
- equipment pedestals; and
- pits, sumps, and sump pumps.

The provisions for drainage and any associated drainage facilities, and in particular drainage for the turbine hall deluge system would be sized to accommodate the concurrent flow due to operation of the following components:

- the spill of the largest single container of any flammable or combustible liquids in the area, where the bund around oil tanks should be large enough to contain the oil and the water from suppression systems;
- the maximum expected number of fire hose lines operating for a minimum of 10 minutes; and
- the maximum design discharge of fixed fire suppression systems operating for a minimum of 10 minutes.

There are three different types of firewater flows which would be required to be contained if there was a fire at the Facility:

1. Firewater resulting from treating fires in the waste reception building. This firewater will either be contained in the waste reception bunker, or the waste storage bunker. Both are designed as water retaining structures and will be capable of containing large volumes of firewater.
2. Firewater from inside any of the process buildings. Such firewater is expected to be extremely rare and small in quantity so only small amounts of firewater will arise. This drainage would be contained, to prevent contaminated water discharging off-site.
3. Firewater from outside any building. Such firewater would be contained in the site drainage systems. A penstock valve will prohibit the discharge of potentially contaminated surface water off-site.

The water used for fire-fighting would be sampled and analysed to identify whether it is suitable to be used as process water, or if treatment/disposal is required. If the firewater is considered to be contaminated, it will be pumped out, and transferred off-site to a suitably licensed waste management facility.

4.8.11 Contingency During the Incident

Emergency procedures would be developed during the construction and commissioning phase. The emergency procedures will include, but not be limited to:

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

All staff and contractors would be trained in the emergency response procedures for the Facility, as well as the site-wide emergency procedures. Where specific responsibilities are given to specific staff, training would be provided to those employees. Training records in the emergency response procedures for all staff and contractors would be retained on-site.

The effectiveness of the emergency response procedures would be reviewed following any emergency incidents on-site. Where appropriate the procedures would be updated, and staff trained in the updated procedures.

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

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

In the event of an incident resulting in the Facility not being capable to receive fuel, fuel deliveries to the Facility would be diverted to a suitably licensed waste management facility.

Deliveries of fuel to the Facility will not be recommenced until it has been deemed safe for the Facility to be restarted following the incident.

4.8.12 Actions Following a Fire

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

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

Building structures that are deemed safe would be cleaned, as necessary.

Fuel within the fuel reception and fuel storage bunker which is not suitable to be incinerated would be backloaded into HGV's and transferred off-site to a suitably licensed waste management facility for disposal/treatment. Affected process areas would be cleaned and washed before equipment and structural repairs would take place.

Incoming fuel deliveries will be prevented, with incoming fuels diverted to alternative waste management facilities, until it can be concluded that it is safe to start-up the Facility.

Appendices

A Plans and Drawings

A.1 Site location plan

A.2 Installation boundary drawing

A.3 Key receptors plan

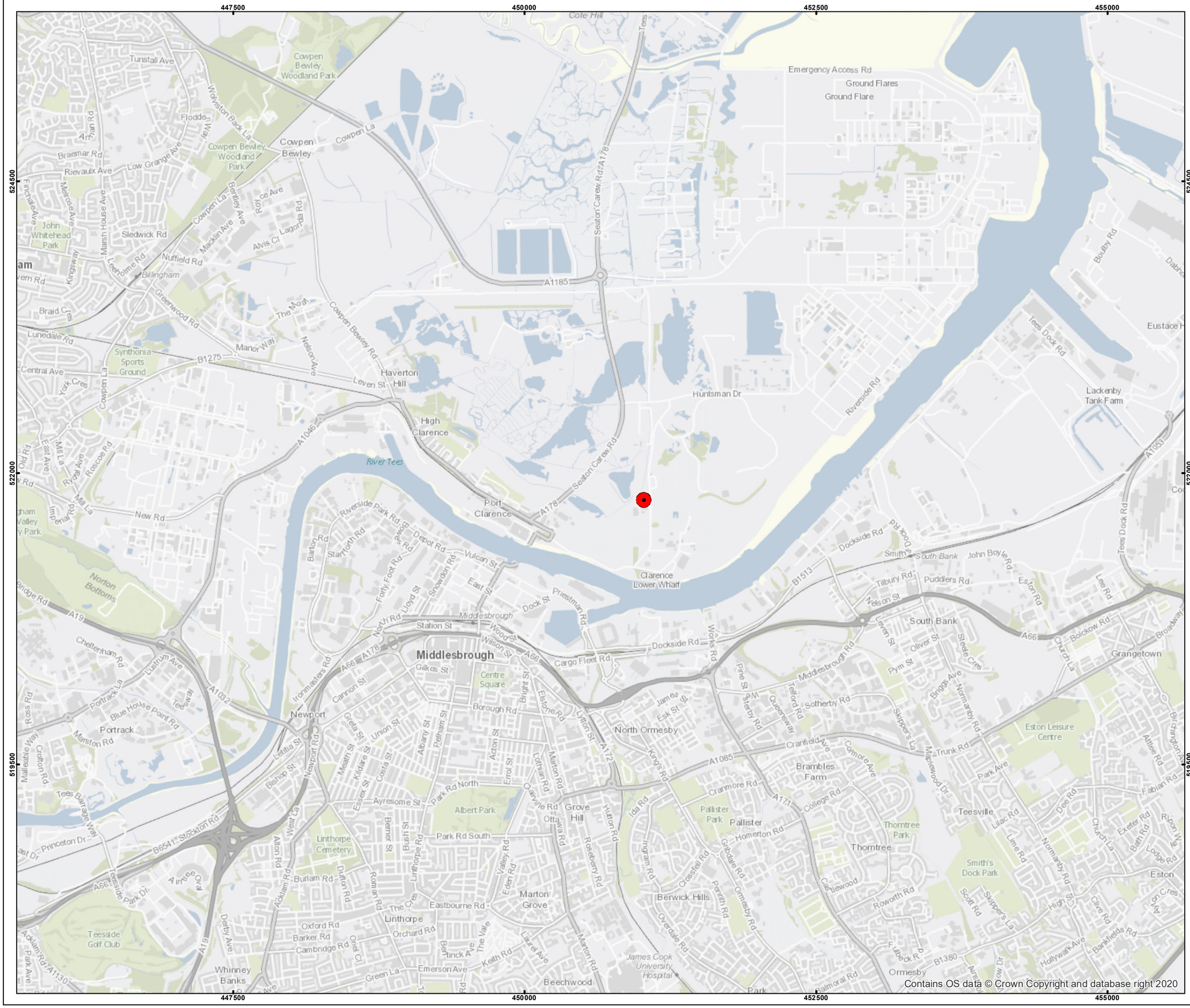
A.4 Materials storage areas plan

A.5 Access points around the perimeter to assist fire-fighting

A.6 Indicative locations of fire hydrants

A.7 Indicative locations of fire walls

A.8 Firewater Supplies and firewater containment



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Stack

Note:

Client:	Port Clarence Energy Ltd
Site:	Teesside Renewable Energy Plant
Project:	3740-06 EP Application
Title:	Figure 1: Site Location
Drawn by: Stuart Nock	Date: 01/12/2022

0 0.3 0.6 1.2 km

Scale: 1:30,000

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Stockport, Cheshire, SK4 1LW
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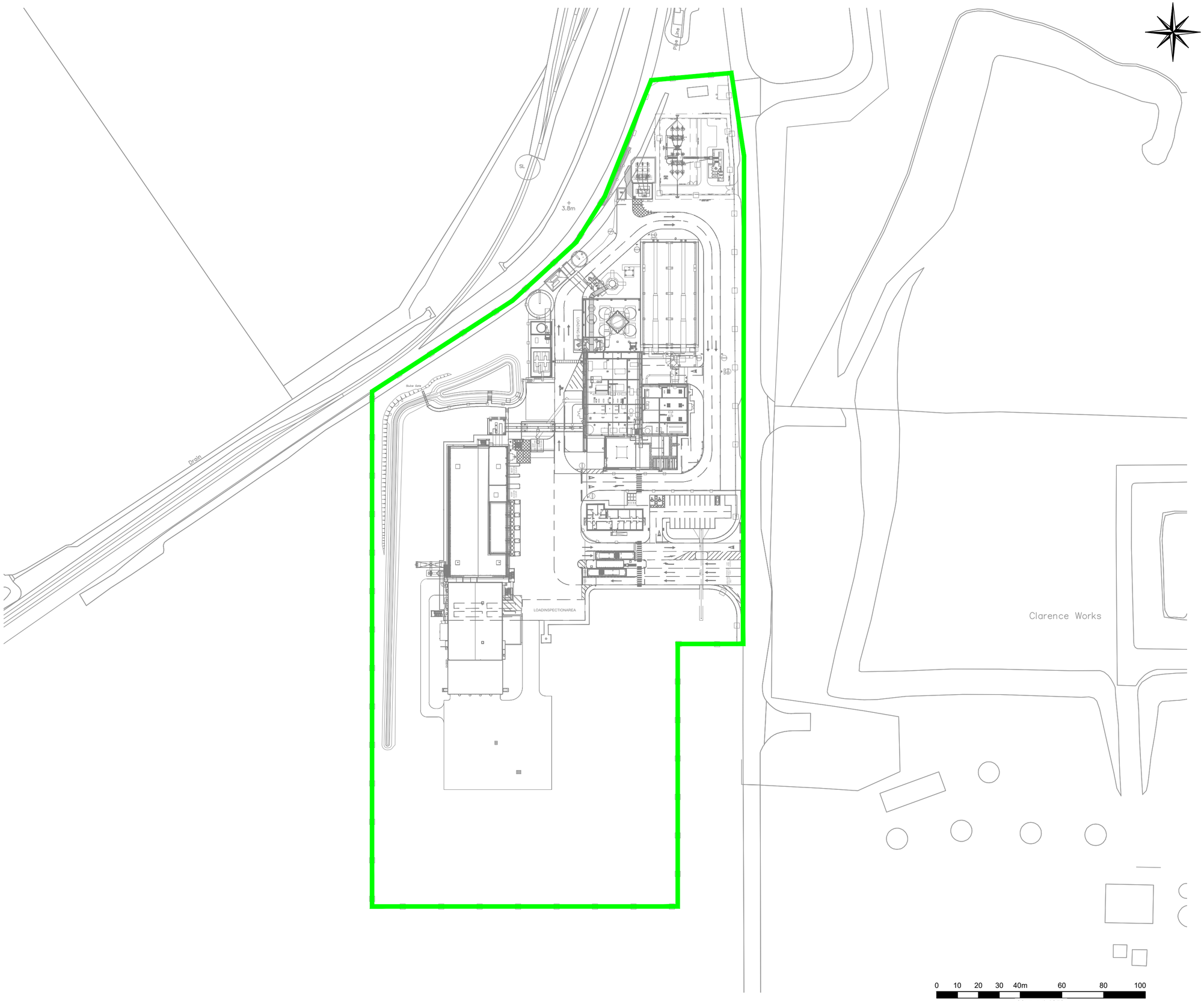

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INSTALLATION BOUNDARY

REV.	DETAILS OF REVISION	DRAWN	CHKD	APR	DATE
R1.0	PRELIMINARY	AO1	DTW	JS	18.11.22

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CLIENT:
PORT CLARENCE ENERGY LIMITED

SITE:
PORT CLARENCE, TEESIDE

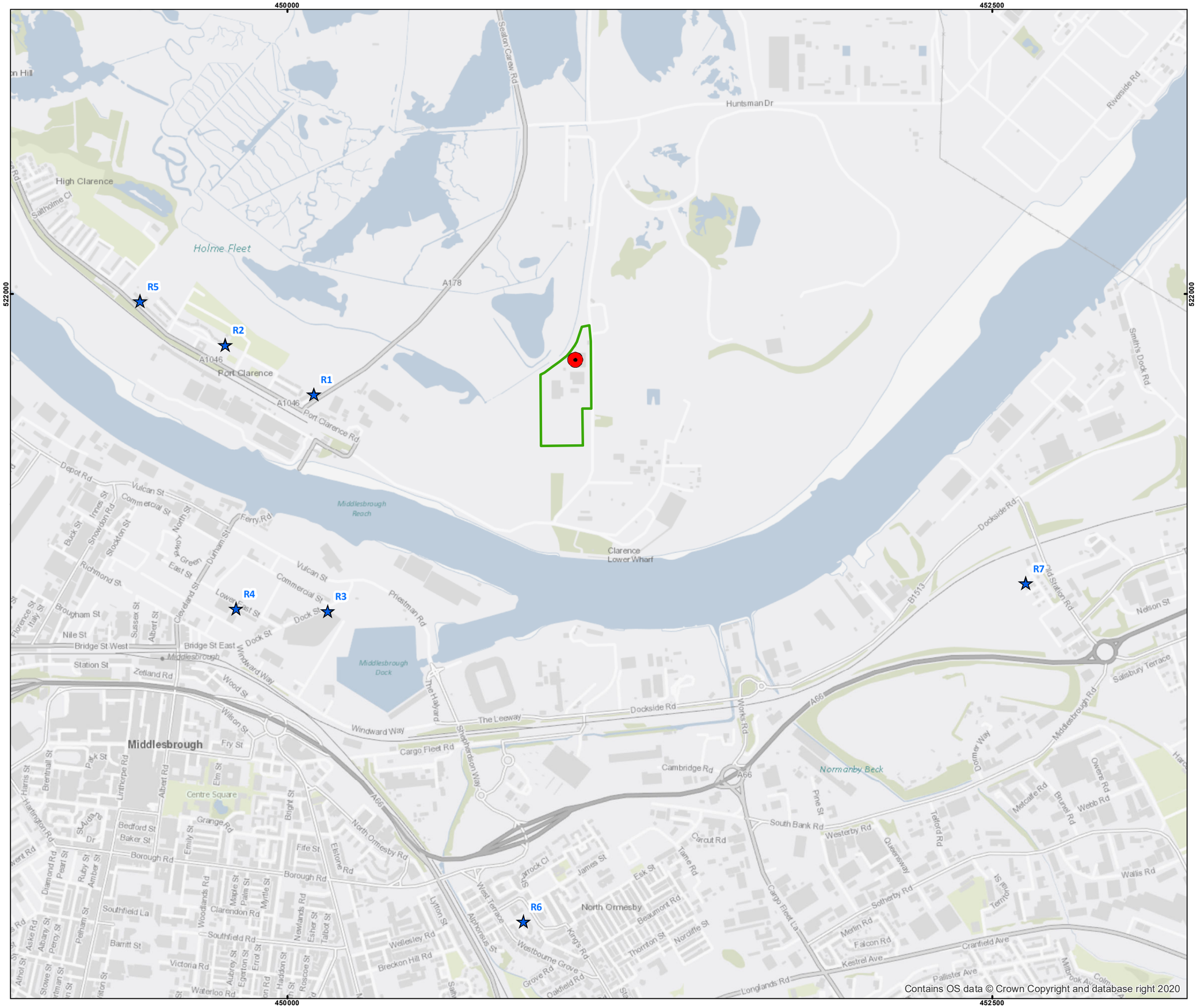
PROJECT:
EP APPLICATION

TITLE:
INSTALLATION BOUNDARY

DRAWING STATUS:	PRELIMINARY	
DRAWN BY:	AO1	DATE: 18.11.22
CHECKED BY:	DTW	DATE: 18.11.22
APPROVED BY:	JS	DATE: 18.11.22
FILENAME:	S3740-8310-0001AO1 INSTALLATION BOUNDARY R1.0	
OFFICE OF ISSUE:	STOCKPORT	
SHEET SIZE:	A2	SCALE: 1:1250

DRAWING No.: S3740-8310-0001 Sheet 1 of 1

REVISION: R1.0



Legend

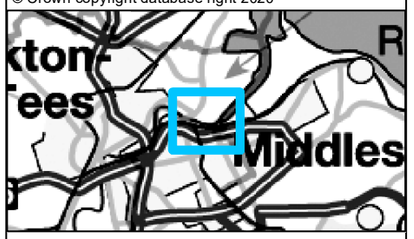
- Human Receptors
- Stack
- Installation Boundary

Note:

Client:	Port Clarence Energy Ltd
Site:	Teesside Renewable Energy Plant
Project:	3740-06 EP Application
Title:	

Figure 2: Human Sensitive Receptors

Drawn by: Stuart Nock	Date: 01/12/2022



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Scale: 1:12,500

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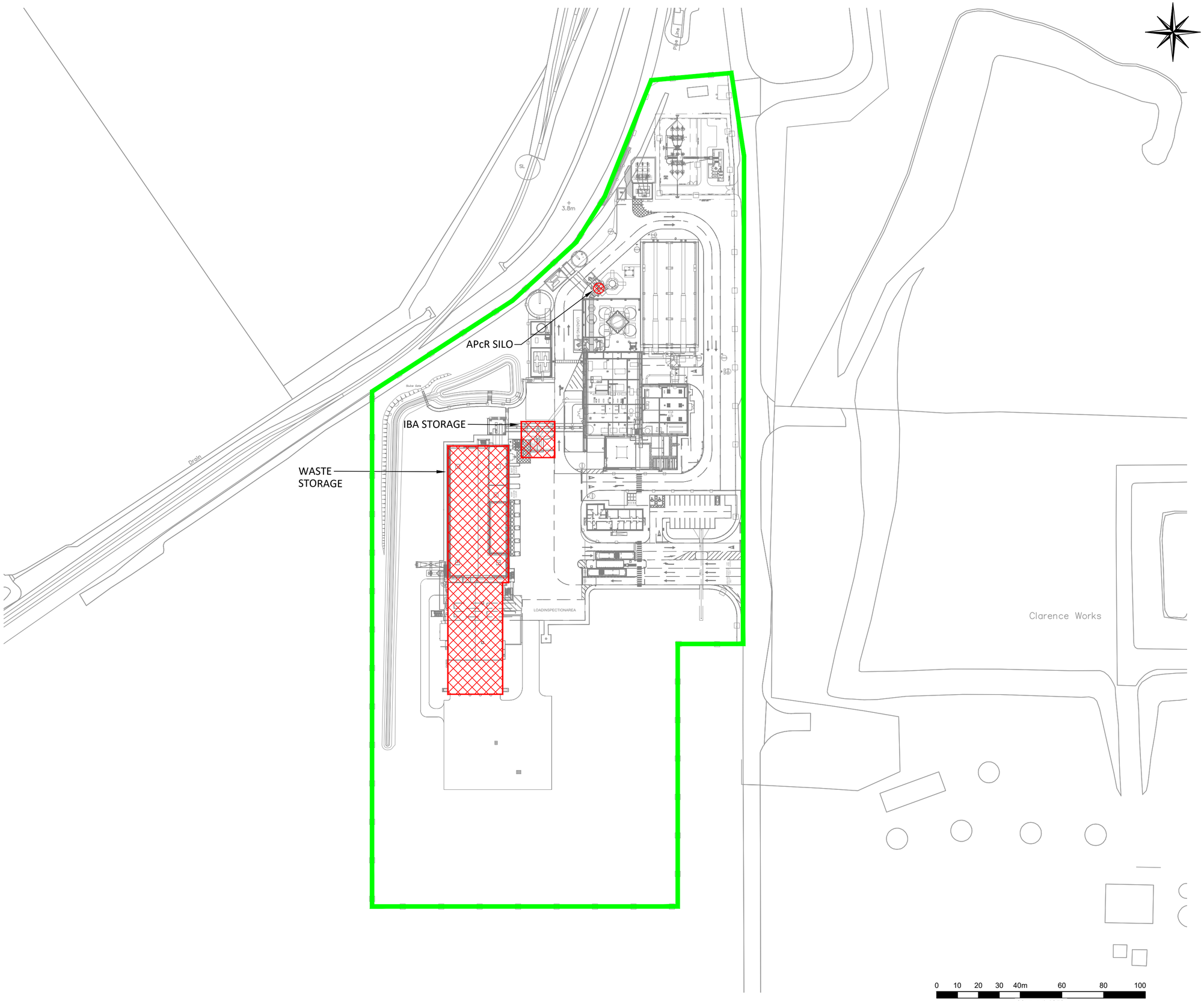

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- INSTALLATION BOUNDARY
- INDICATIVE WASTE STORAGE AREAS

REV.	DETAILS OF REVISION	DRAWN	CHKD	APR	DATE
R2.0	LAYOUT MODIFIED	AO1	DTW	JS	29.11.22
R1.0	PRELIMINARY	AO1	DTW	JS	18.11.22

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CLIENT: PORT CLARENCE ENERGY LIMITED

SITE: PORT CLARENCE, TEESIDE

PROJECT: EP APPLICATION

TITLE: INDICATIVE WASTE STORAGE AREAS

DRAWING STATUS:	PRELIMINARY	
DRAWN BY:	AO1	DATE: 18.11.22
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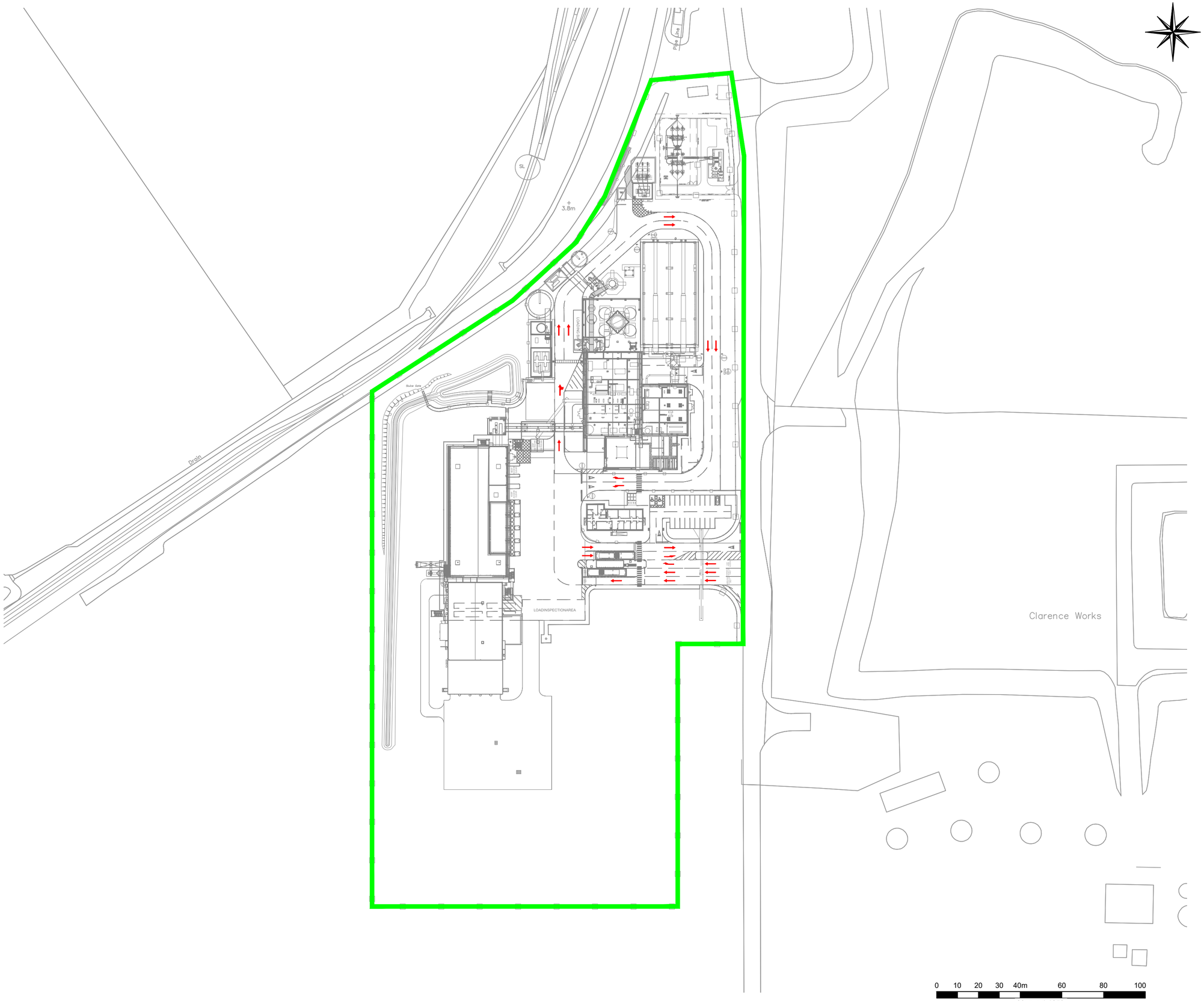
FILENAME:	S3740-8310-0006AO1 INDICATIVE WASTE STORAGE AREAS R2.0	
OFFICE OF ISSUE:	STOCKPORT	
SHEET SIZE:	A2	SCALE: 1:1250

DRAWING No.: S3740-8310-0006 Sheet 1 Of 1

REVISION: R2.0



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LEGEND

- INSTALLATION BOUNDARY
- INDICATIVE ACCESS ROUTES/POINTS

REV.	DETAILS OF REVISION	DRAWN	CHKD	APR	DATE
R1.0	PRELIMINARY	AO1	DTW	JS	18.11.22

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0161 476 0032
Website: www.fichtner.co.uk

CLIENT:
PORT CLARENCE ENERGY LIMITED

SITE:
PORT CLARENCE, TEESIDE

PROJECT:
EP APPLICATION

TITLE:
INDICATIVE ACCESS ROUTES

DRAWING STATUS:	PRELIMINARY	
DRAWN BY:	AO1	DATE: 18.11.22
CHECKED BY:	DTW	DATE: 18.11.22
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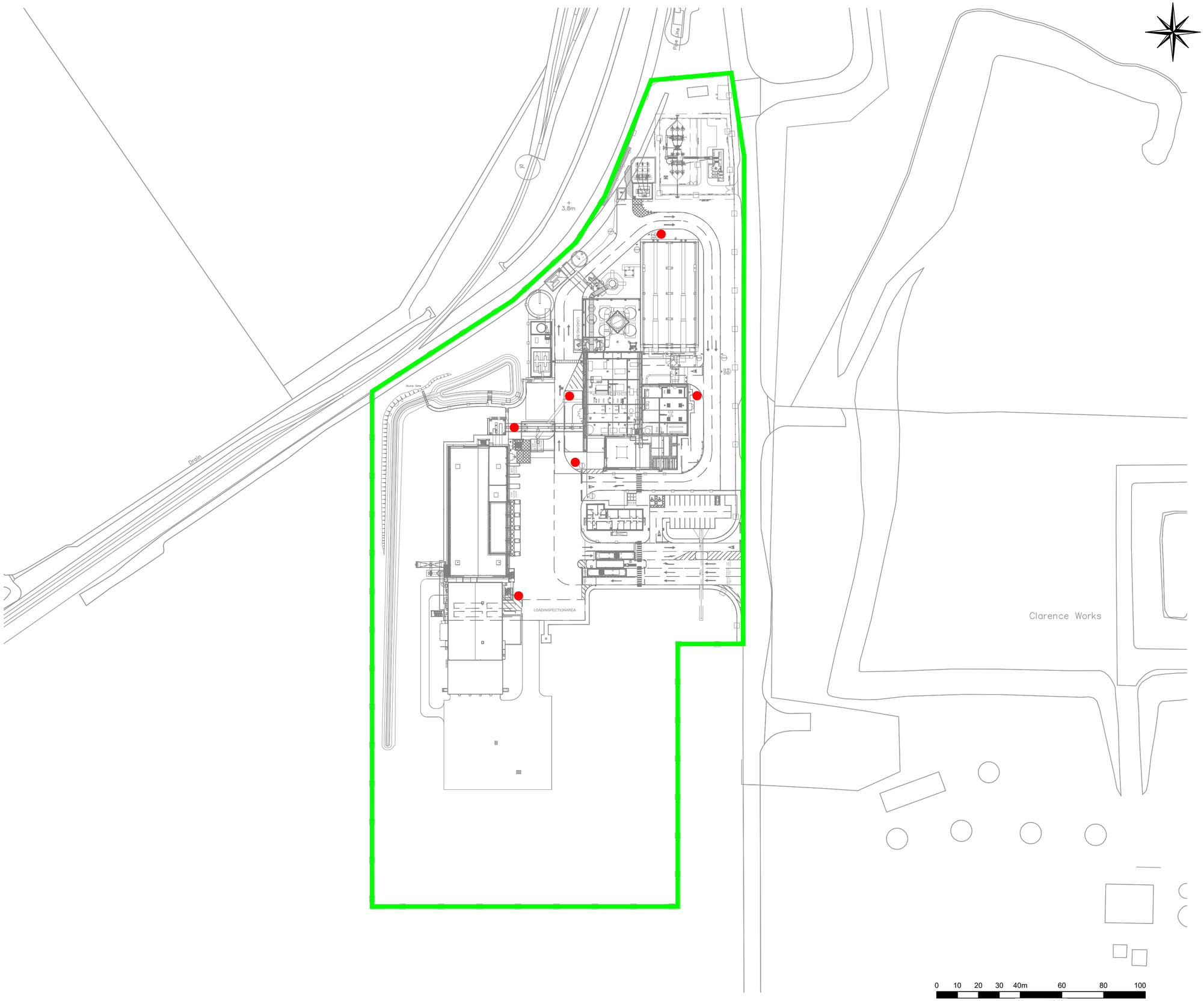
FILENAME:	S3740-8310-0003AO1 INDICATIVE ACCESS ROUTES R1.0	
OFFICE OF ISSUE:	STOCKPORT	
SHEET SIZE:	A2	SCALE: 1:1250

DRAWING No.: S3740-8310-0003 Sheet 1 Of 1

REVISION: R1.0



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DO NOT SCALE

LEGEND

- INSTALLATION BOUNDARY
- APPROXIMATE INDICATIVE LOCATION OF FIRE HYDRANTS 12m FROM THE BUILDING, NO GREATER THAN 90m APART.

REV.	DETAILS OF REVISION	DRAWN	CHKD	APR	DATE
R2.0	LAYOUT MODIFIED	AO1	DTW	JS	29.11.22
R1.0	PRELIMINARY	AO1	DTW	JS	18.11.22

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SITE:
PORT CLARENCE, TEESIDE

PROJECT:
EP APPLICATION

TITLE:
INDICATIVE FIRE HYDRANTS

DRAWING STATUS:	PRELIMINARY	
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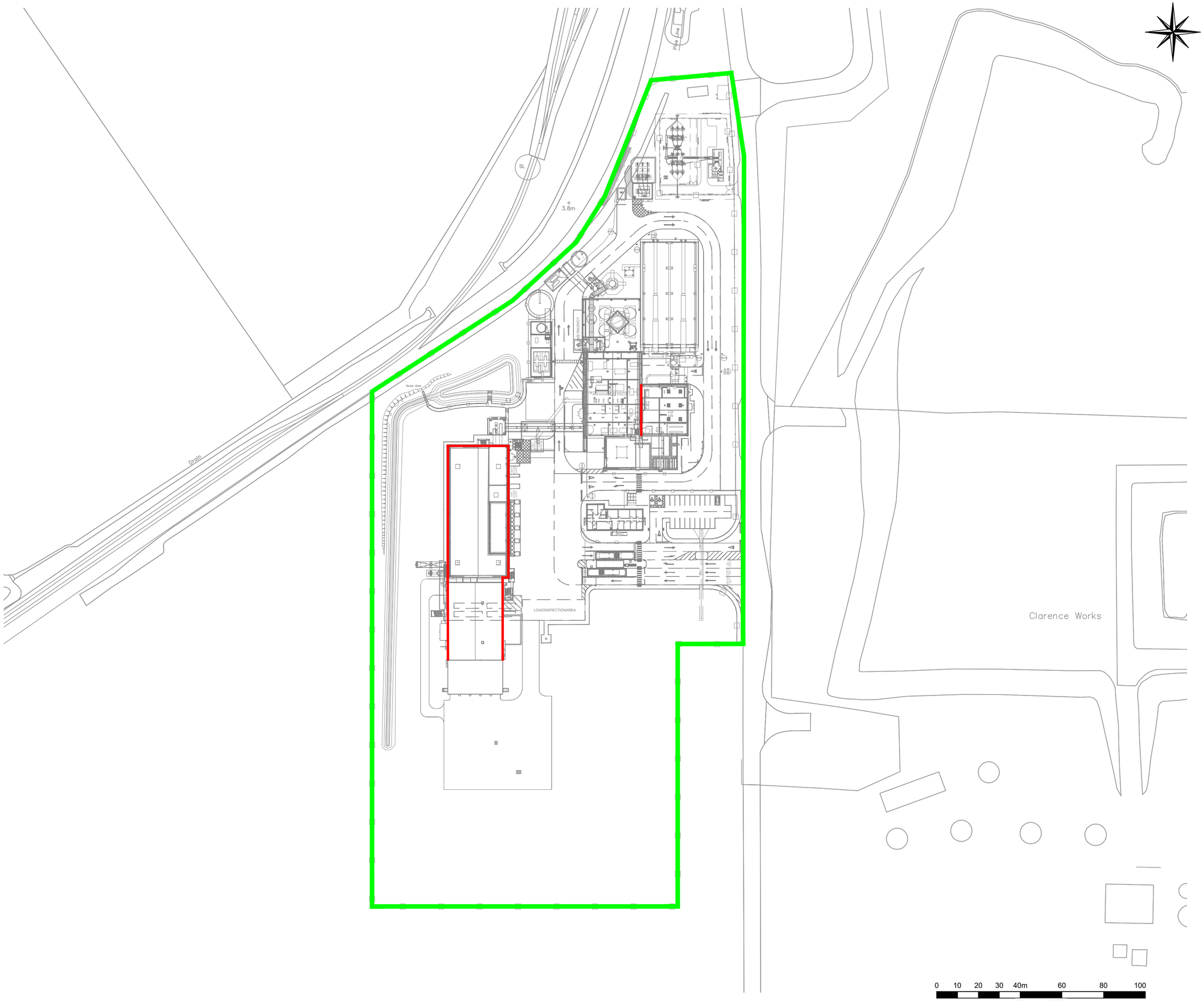
CHECKED BY:	DTW	DATE: 18.11.22
APPROVED BY:	JS	DATE: 18.11.22
FILENAME:	S3740-8310-0004AO1 INDICATIVE FIRE HYDRANTS R2.0	
OFFICE OF ISSUE:	STOCKPORT	
SHEET SIZE:	A2	SCALE: 1:1250

DRAWING No.: S3740-8310-0004 Sheet 1 Of 1

REVISION: R2.0



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LEGEND

- INSTALLATION BOUNDARY
- INDICATIVE FIRE WALLS

REV.	DETAILS OF REVISION	DRAWN	CHKD	APR	DATE
R2.0	LAYOUT MODIFIED	AO1	DTW	JS	29.11.22
R1.0	PRELIMINARY	AO1	DTW	JS	18.11.22

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PORT CLARENCE ENERGY LIMITED

SITE:
PORT CLARENCE, TEESIDE

PROJECT:
EP APPLICATION

TITLE:
INDICATIVE FIRE WALLS

DRAWING STATUS:	PRELIMINARY	
DRAWN BY:	AO1	DATE: 18.11.22
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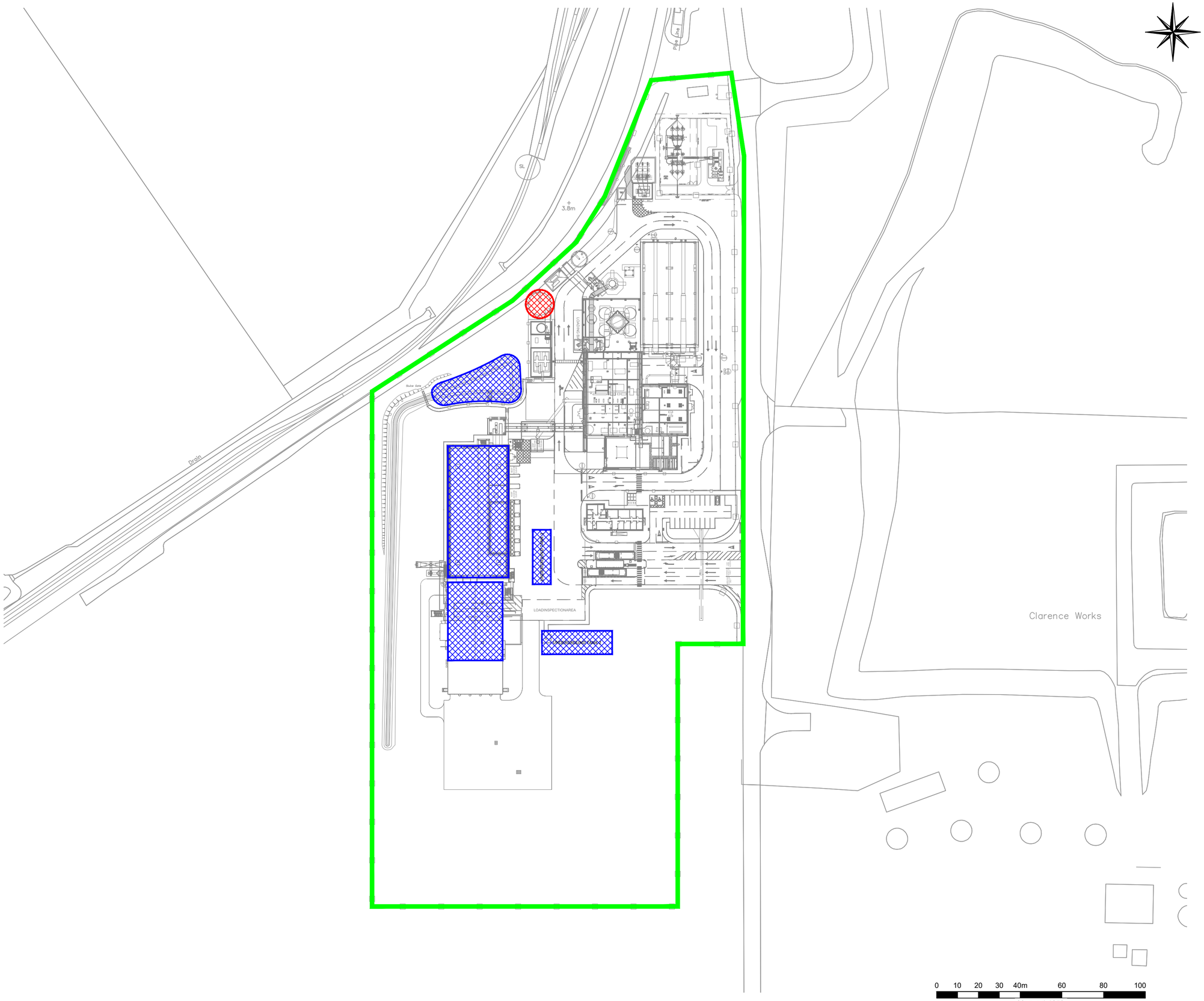
OFFICE OF ISSUE:	STOCKPORT	
SHEET SIZE:	A2	SCALE: 1:1250

DRAWING No.: S3740-8310-0005 Sheet 1 Of 1

REVISION: R2.0



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DO NOT SCALE

LEGEND

- INSTALLATION BOUNDARY
- INDICATIVE FIREWATER STORAGE
- INDICATIVE FIREWATER CONTAINMENT

REV.	DETAILS OF REVISION	DRAWN	CHKD	APR	DATE
R2.0	LAYOUT MODIFIED	AO1	DTW	JS	29.11.22
R1.0	PRELIMINARY	AO1	DTW	JS	18.11.22

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CLIENT: PORT CLARENCE ENERGY LIMITED

SITE: PORT CLARENCE, TEESIDE

PROJECT: EP APPLICATION

TITLE: INDICATIVE FIREWATER CONTAINMENT

DRAWING STATUS:	PRELIMINARY	
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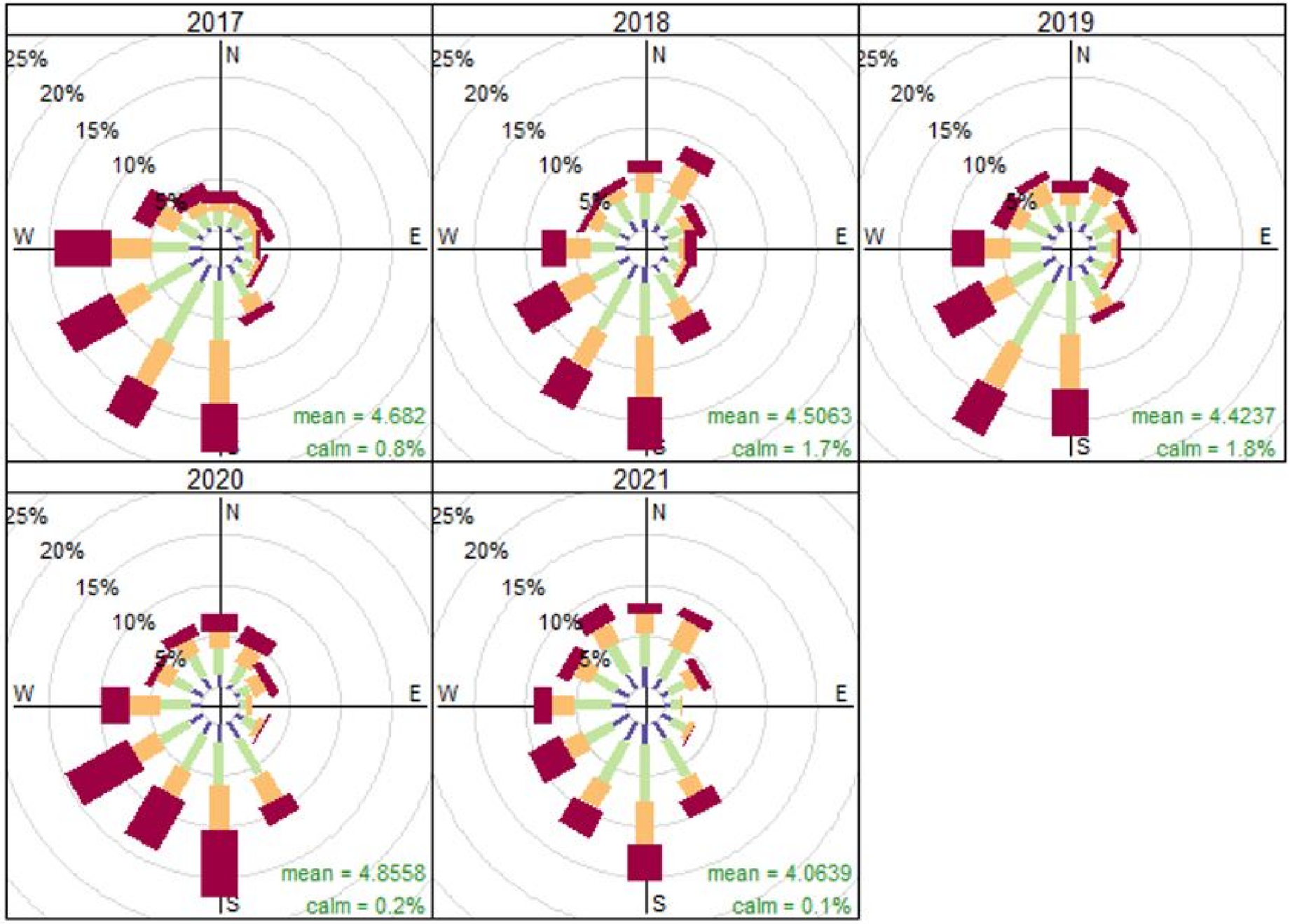
SHEET SIZE:	A2	SCALE: 1:1250

DRAWING No.: S3740-8310-0007 Sheet 1 Of 1

REVISION: R2.0

B Wind roses



Frequency of counts by wind direction (%)

Client:	Port Clarence Energy Limited
Site:	Teeside Renewable Energy Plant
Project:	3740
Title:	

Wind Roses
Durham Tees Valley 2017-2021

Drawn by: HKL	Date: 11/11/2022

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