Permit Variation

EPR/FP3133GL

Garston Distillation Services

Veolia ES (UK) Limited

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1. Non-technical summary

1.1. Introduction

This non-technical summary supports the application for a variation to the environmental permit held by Veolia ES (UK) Limited 'Veolia', referenced FP3133GL (as varied), to increase the capacity of the site. The expansion will add some 28,000 tonnes of processing capacity to the site. The expansion is in response to increased demand from one of the site's main customers, a major blue chip company.

The expansion will involve the addition of two Fractional Distillation columns, similar in design to the current processes that have been conducted on site for ~30 years. Site infrastructure will also need to be increased in order to service the new columns. The current plant is heated by steam, which is generated by a natural gas steam boiler. An additional two boilers which can be fired on natural gas, gas oil or solvent distillate fuel will be installed as part of the project. The distillate fuel will be produced from the waste solvent processed on-site, and will only be used to fire the boilers when it achieves End-of-Waste (EoW). An EoW Report has been submitted with this application. The plants will be cooled using evaporative cooling towers, an additional three cooling towers will need to be installed.

Additional electricity supply will need to be brought onto site, as the site is at capacity, this will be in the form of a new additional 1,000V underground cable. Additional gas will also be brought into site.

The new plant will also require the installation of storage tanks to handle the increased volume of material arriving at the site. This will involve an additional 17 storage tanks of some 3,450m^3 capacity.

There are no changes to surface water emissions, however currently emissions point W1 allows for discharges to the River Mersey at a rate of up to 35 m^3 within a 7-day period. As a result of the proposed expansion, Veolia are applying for the permitted wastewater discharge volume for discharge point W1 to increase to 100 m^3 within a 7-day period (however the composition of the effluent will remain the same).

The expansion will not involve additional land, all of the new plant and equipment will be within the current permitted area. An indicative layout of the new plant is set out in Drawing ref: VEO-20-113-1000 in Appendix A.

The site is located at:

Garston Distillation Services

King Street
Garston
Liverpool
L19 8EG

The site is centred on National Grid Reference (NGR): SJ 40040 83568, the specific location of the new infrastructure described above is as follows:

- New Process Plant centred on NGR: SJ 39993 83565.
- Bulk liquid waste tank farm centred on NGR: SJ 39978 83542.
- Supporting site infrastructure, including control room, boiler house, fuel tanks and cooling towers centred on NGR: SJ 40011 83609.
- New firewater tanks and automated fire suppression systems
- New surface water storage tanks

The existing installation consists of a waste solvent distillation facility which has numerous distillation columns fed from bulk tanks and a smaller system fed from drums. The processes can run independently or concurrently depending on the material being processed. The systems operate with a variety of columns, packing, condenser systems and vacuum ability to allow a wide range of materials to be processed efficiently. Non-recyclable solvent residues are despatched from site and processed with additional material at other Veolia facilities. Specifically:

- Section 5.3 A(1)(a)(v) – Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day: solvent reclamation or regeneration.

- Section 5.6 A(1)(a) – Temporary storage of hazardous waste.

The additional infrastructure can be considered as a substantial variation to the above activities.

1.2. Recent permit history and background to variation

The facility was built in 1991 as a joint venture between Hays and Speichim primarily to service the pharmaceutical industry and was designed to recover products of very high purity from essentially-clean feedstock. In 1997, Hays bought out Speichim and eventually sold the business to Albion Chemicals in 2002. Brenntag then purchased the facility in 2006 and Veolia Environmental Services (UK) plc finally acquired the site in 2008.

The activities carried on at the site are authorised under the Environmental Permitting Regulations via Environmental Permit EPR/FP3133GL. The establishment is also subject to control under the Control of Major Accident Hazards (COMAH) Regulations as a Lower Tier installation as a result of the presence of hazardous substances classified generically as toxic and very toxic in quantities above the qualifying thresholds.

The site occupies a parcel of land covering an area of approximately 2.5 Hectares located on the northern bank of the River Mersey.

The permit for the Garston site was first issued to Albion Distillation Services Limited under the Pollution Prevention and Control Regulations (2000) on 25th May 2006, with permit number BS5410IG. This was varied on 7th October 2008 to formalise the surface water management arrangements for the site.

The permit was then transferred to Veolia shortly after on 9th October 2008 and became permit reference FP3133GL. The permit has been subsequently varied on four occasions. The first variation (V002) was determined on 16th November 2009 to include an extension to the site boundary to incorporate the new tank farm and regularise the surface water discharge arrangements. The second variation (V003) was made to include the waste to energy facility in the form of a co-incineration plant, but this has never been commissioned. V003 was issued on 6th July 2012. V004 determined on 3rd October 2013 consolidated the permit and included the addition of two thin film distillation columns and associated plant for the treatment of an additional 20,000 tonnes of solvent-based wastes. This variation also implemented the requirements of IED.

Finally, the most recent variation (V005) issued 8th July 2016 was to reflect a new step in the solvent recovery process. This step involves the pre-treatment of waste solvent in a dedicated vessel using an acid or alkali (as appropriate) to react with certain components in a complex organic solvent mixture, to facilitate their removal in a separate, settled aqueous phase. The remaining organic phase continued to be processed via the standard distillation process as already permitted.

Site Current Capability and Operations

The solvent recovery plant offers a service for the handling, cleansing, purification and recycling of a wide range of solvents. Solvent laundering and recovery is achieved through a distillation process that separates the pure solvent from contaminants. This is accomplished either by thin film evaporation (removal of paints, oils and resins), or by fractionation, which separates mixed solvents into clean, purified products.

The plant currently has the capacity to process circa 30,000 tonne per annum of solvents; approx. 20,000 tonne via the four operational fractional distillation columns (SRU) and a

further 10,000 tonne via the process of thin film evaporation (TFE).

Other relevant site capabilities include a dual fuel gas-fired boiler capable of generating steam at 180ºC – ability to apply vacuum.

55 steel storage tanks varying in capacity from 30m³ to 100m³, with a total storage capacity of circa 2,500 m^3. In 2017 the site lost storage capability due to a number of tanks (12 x $60m^3$ carbon steel and 4 x $30m^3$ stainless steel) failing integrity testing. In late 2018, 5 new tanks were installed (1x $30m^3$, 2 x $60m^3$ and 2 x $100m^3$).

The site is lower tier COMAH and this limits the type and volume of crude waste available to the facility, as some potential enquiries would take the site to upper tier COMAH.

The site has no waste effluent discharge consent and is using external outlets for waste. This is a relevant limitation as waste disposal of water is a significant cost for the site. An effluent discharge consent has been previously explored but considered non-viable given significant capex cost £1M outweighs the benefit that any such consent would deliver.

The site is also used as a base for the North West transport depot, accommodating 13 drivers and 2 Veolia personnel responsible for the depot.

The distillation columns are fitted with condensers supplied with cooling water on a recirculation system passing through forced air fed water cooling towers.

Heat for the distillation processes is supplied in the form of steam at around 10 bar pressure from a natural gas fired steam boiler with a condensate return system and make-up water supplied by the potable mains water supply to the site.

Boiler blow down water, cooling water and small amounts of uncontaminated surface water may be discharged to the River Mersey (identified as discharge point W1 in permit FP3133GL) at a rate of up to $35m^3$ in a 7 day period.

Uncontaminated surface water runoff may be discharged to the River Mersey (identified as discharge point W3 in permit FP3133GL).

All waste water intended for discharge via W1 and W3 is held in storage, and sampled and analysed prior to discharge to ensure that it meets the quality requirements specified in the permit. All contaminated waste water, including waste water found to be unsuitable for discharge on analysis is held in separate storage pending removal from site by road tanker for third party disposal.

Waste distillation residues are shipped off site in bulk road tankers and occasionally in IBC's for third party disposal.

The distillation processes operate 24 hours per day seven days per week with a planned annual maintenance shutdown programme of around two weeks duration.

Future Expansion of the Site

The expansion will add some 28,000 tonnes of processing capacity to the site, with between £20-£30M additional turnover per annum. The expansion is in response to increased demand from one of the site's main customers, a major blue chip company.

The new plant will be more efficient in the recovery of material from the waste inputted and will be designed to maximise the value of the recovered material and minimise the use of raw materials and production of wastes from the process. The plant will better utilise heat inputs and outputs to reduce energy input demand to the plant.

The main output(s) from the plant will be of a higher quality than the current process allowing recovered material to substitute virgin material in the manufacturing chain, reducing carbon load in the supply chain in two ways. The waste material will be re-used, with the recovery being at a fraction of the energy/carbon cost of producing virgin material and secondly in that this substitutes the equivalent virgin material being manufactured.

The projected expansion will help to secure the sites medium to long-term future and be key to solvent recycling capacity within the UK in the medium term.

Pre-application advice was provided by the Environment Agency (EA) on 6th March and 13th July 2020 reference EPR/FP3133GL. The EA confirmed the application would be for a Substantial Variation of the installation permit and instructed Veolia to complete forms Part A, C2, C3 and F1. A record of the pre-application responses is referenced in Form C2.

The EA also confirmed that the two new boilers which fall in the scope of the Medium Combustion Plants (MCP) Regulations should be included within the permit as a Directly Associated Activities (DAA). Form C2.5 was also completed to add the new MCP permitted activity to the bespoke permit.

2. Application type

2.1. Background

This application relates to the expansion of the solvent recovery activities at the site with the installation of new infrastructure set out in the Non-Technical Summary.

The new plant will be more efficient in the recovery of material from the waste inputted and will be designed to maximise the value of the recovered material and minimise the use of raw materials and production of wastes from the process. The plant will better utilise heat inputs and outputs to reduce energy input demand to the plant.

This application seeks to increase the plant capacity from circa 30,000 tonnes per annum to circa 58,000 tonnes per annum.

This approach was confirmed following pre-application advice from the Environment Agency received on 6th March 2020. The Environment Agency also confirmed the application would be for a substantial variation of the permit.

2.2. Summary of permit changes and application type

- A substantial variation to a Section 5.3 A(1)(a)(v) activity to add two Fractional Distillation columns, similar in design to the current processes.
- A substantial variation to a Section 5.6 A(1)(a) activity to add 17 storage tanks of some 3,450m^3 capacity.
- the addition of two new boilers as MCP Schedule 25A activities as a DAA to the installation activities
- All new infrastructure to be located within the current permit boundary, set out on Drawing re: VEO-20-113-1005 in Appendix A.

3. Operating techniques

3.1. Current and proposed activities

3.1.1 Current extent of activities:

The solvent recovery plant offers a service for the handling, cleansing, purification and recycling of a wide range of solvents. Solvent laundering and recovery is achieved through a distillation process that separates the pure solvent from contaminants. This is accomplished either by thin film evaporation (removal of paints, oils and resins), or by fractionation, which separates mixed solvents into clean, purified products.

The Facility mainly processes waste solvents from the following industries:

1. Chemical and pharmaceutical;

2. Paints and coatings;

3. Chemical distributors; and

4. Electronics.

The plant currently has the capacity to process circa 30,000 tonnes per annum of solvents; approx. 20,000 tonnes per annum via the four operational fractional distillation columns (SRU) and a further 10,000 tonnes via the process of thin film evaporation (TFE).

Other relevant site capabilities are:

- A dual fuel gas-fired boiler capable of generating steam at 180ºC and the ability to apply vacuum.
- 55 steel storage tanks varying in capacity from 30m³ to 100m³, with a total storage capacity of circa 2,500 m^3. In 2017 the site lost storage capability due to a number of tanks (12 x 60m^3 carbon steel and 4 x 30m^3 stainless steel) failing integrity testing. In late 2018, 5 new tanks were installed (1x 30m^3, 2 x 60m^3 and 2 x 100m^3).
- The site is lower tier COMAH and this limits the type and volume of crude wastes available to the facility, as some potential enquiries would take the site to upper tier COMAH.
- The site has no waste water discharge consent and is using external outlets for waste. This is a relevant limitation as waste disposal of water is a significant cost for the site. Note that a water discharge consent has been previously explored but considered non-viable given significant capex cost £1M outweighs the benefit that any such

consent would deliver.

- The site also acts as a base to the North West transport depot, accommodating 13 drivers and 2 Veolia personnel responsible for the depot.

The distillation columns are fitted with condensers supplied with cooling water on a recirculation system passing through forced air fed water cooling towers.

Heat for the distillation processes is supplied in the form of steam at around 10 bar pressure from a natural gas fired steam boiler with a condensate return system and make-up water supplied by the potable mains water supply to the site. Boiler blow down water, cooling water and small amounts of uncontaminated surface water may be discharged to the River Mersey (identified as discharge point W1 in permit FP3133GL) at a rate of up to 35m^3 in a 7 day period.

Uncontaminated surface water runoff may be discharged to the River Mersey (identified as discharge point W3 in permit FP3133GL)

All waste water intended for discharge via W1 and W3 is held in storage, and sampled and analysed prior to discharge to ensure that it meets the quality requirements specified in the permit. All contaminated waste water, including waste water found to be unsuitable for discharge on analysis is held in separate storage pending removal from site by road tanker for third party disposal.

Waste distillation residues are shipped off site in bulk road tankers and occasionally in IBC's for third party disposal.

The distillation processes operate 24 hours per day seven days per week with a planned annual maintenance shutdown programme of around two weeks duration.

3.1.2 Proposed activities:

Overview

The expansion will not involve additional land, all of the new plant and equipment will be within the current Garston footprint. The expansion will add some 28,000 tonnes of processing capacity to the site, with between £20-£30M additional turnover per annum. The expansion is in response to increased demand from one of the site's main customers, a major blue chip company.

The expansion will involve the addition of two Fractional Distillation columns, similar in design to the current processes that have been conducted on site for ~30 years. Site infrastructure

will also need to be increased in order to service the new columns.

The current plant is heated by steam, which is generated by a natural gas steam boiler, an additional two boilers which can be fired on natural gas, gas oil or solvent distillate fuel will be installed as part of the project, it is intended that these will be fuelled using a solvent distillate produced on-site with natural gas and/or gas oil as a backup. The distillate fuel will be produced from the waste solvent processed on site, and will only be used to fire the boilers when it achieves End-of-Waste (EoW). As the EA Definition of Waste (DoW) service is currently suspended, we are unable to submit a request for an opinion on the end of waste status of the solvent derived fuel. An EoW report is therefore provided instead in Appendix J which is a self-assessment of the end of waste status of the fuel.

The plants will be cooled using evaporative cooling towers, an additional 2-3 cooling towers will need to be installed. Note that these are not cooling towers similar to the ones used on power stations, but rather smaller installations as shown in Figure 1 below:

Figure 1: Typical Cooling Tower design

Additional electricity supply will need to be brought onto site, as the site is at capacity, this will be in the form of a new additional 1000V underground cable. Additional gas will also be brought into site.

The new plant will also require the installation of storage tanks to handle the increased volume of material arriving at the site. This will involve an additional 17 storage tanks

including for fuel storage of some 3,450m3 capacity. The site currently has some 53 storage tanks.

The new plant will be more efficient in the recovery of material from the waste inputted and will be designed to maximise the value of the recovered material and minimise the use of raw materials and production of wastes from the process. The plant will better utilise heat inputs and outputs to reduce energy input demand to the plant.

The main output(s) from the plant will be of a higher quality than the current process allowing recovered material to substitute virgin material in the manufacturing chain, reducing carbon load in the supply chain in two ways. The waste material will be re-used, with the recovery being at a fraction of the energy/carbon cost of producing virgin material and secondly in that this substitutes the equivalent virgin material being manufactured.

The projected expansion will help to secure the site's medium to long-term future and be key to solvent recycling capacity within the UK in the medium term.

Operation

The process is the same methodology as the current operation of the SRU (Solvent Recovery Units) on site. Customers generating hazardous solvent wastes submit samples of their wastes for analysis. The waste is then put through a rigorous pre-acceptance process (historically complying with Sector Guidance S5.06 and more recently the new Appropriate Measures) which speciates the waste and judges whether it is acceptable to recycle. A recycling process is then mapped utilising technical expertise and lab simulations to confirm the recovery process, outline yields and costs before the site commits to accepting the waste.

On arrival at site wastes are analysed against acceptance parameters, the material is then offloaded to storage.

The fractional distillation process heats the crude material and introduces it to the fractionation column. The column concentrates and separates different boiling point components into fractions for additional separation or products. A reaction step is used to convert some of the waste into simpler molecules to ease separation and increase recoverability of the material.

Heat is provided to the crude in the form of 10Barg steam via heat exchangers and supplemented by pre-heaters. The pre-heater exchanges energy by using the incoming crude material to cool the vapour leaving the distillation column. This is a major energy saving mechanism as it reduces steam usage and evaporative cooling demand, making the process more energy efficient.

Cooling is provided as above via cross heat exchangers and additional cooling is provided by

evaporative cooling towers pumping water through additional heat exchangers.

The process will be controlled via a distributed control system (DCS) and sequence control and data acquisition modules (SCADA) via PLC, this will be supplemented by a separate Safety Instrumented System PLC, which provides a dedicated safety system operating above the process control system.

The SCADA system will allow for control over inputs, outputs, ratios, flow control, valve and pump operation from a centralised location. This will be supplemented by the use of HMI (Human Machine Interfaces) at key locations within the plant complex and local instrument displays.

The proposed layout of the new plant and associated equipment is set out in a series of drawings (ref VEO-20-113-1001 to VEO-20-113-1004) in Appendix A.

New storage tanks and associated equipment

Prior to the start of the project some enabling works are required to relocate/replace aqueous waste storage tanks on the site. This will involve the decommissioning and scrapping of five twin compartment horizontal storage tanks and associated pump/pipework network to another area on site. This will utilise current bund areas and pump bays. This will then allow for the clearance of the construction area and handover as a CDM segregated part of the site.

The CDM area will allow for continued operation of the site with minimal disruption to tanker movements and solvent recovery operations.

The scrapped waste water tanks will be cleaned on decommissioning, certified as clean and then sent for metal recycling.

The new storage tanks and bund will be designed in accordance with guidance from HSG 176 and CIRIA 736. The tanks will be flat bottomed and range in size from 50m^3 to 400m^3. The tanks will be fitted with:

- Remotely operated shut off valves linked to a high level cut-off. The valves will be fail to close.
- The tanks will be fitted with a high level cut off switch linked to the ROSOV/ESOV. The cut-off will allow sufficient ullage in the tank to avoid overfill whilst the tank ROSOV is closing. This switch will be separate to the level detection system.
- The tanks will be fitted with level detection which will link to a PLC allowing for tank telemetry to be provided local to the tank via HMI and in the control room, as well as being accessible via a secure network.
- The level detection system will also activate an alarm prior to activation of the High level cut off.

- The tanks will have a Pressure/vacuum relief valve. The pressure side will allow for normal tank breathing to a scrubber system. The vacuum side will open to atmosphere. In addition to this a separate vacuum relief valve will also be installed.

During Tanker offloading/loading operation the tanker will connect to a back venting system linked to the tank farm and to the scrubber system. This will act to contain displaced vapours within the process system.

The tanks will be fitted with a Fire engulfment valve hinged lid.

The tank farm will be built to contain 110% of the biggest tank or 25% of the bund capacity. In addition to this an allowance of 0.097m bund wall height for rainfall allowance and 0.25m bund wall height for dynamic flow allowance and 0.1m bund wall height for firefighting foam allowance.

Bund calculations are set out in Appendix B and demonstrate compliance with CIRIA 736. Fire Management proposals are also set out in Appendix B.

In addition the bund will feature a leak detection system by means of fixed position gas analysers linked to an alarm system. The bund wall height is relatively high, however a meshed walkway above the bund floor will reduce the relative height of the bund wall above the walkway ~0.9m. The gas analyser will provide a safe/not safe light system to be able to enter the bunded area. Access to the tank tops will be stairways and ladders, with two means of access and egress from each level.

The tanker offloading area will be covered to allow for two tankers to load/offload simultaneously. The offloading area will be bunded by use of a rollover entrance and exit with additional sump.

<u>New Boilers</u>

There are several boiler manufacturers under consideration. All will use a three pass wetback design with either integral or close coupled economisers and recirculation system for NOx reduction. The boilers will be able to use light oil (Low sulphur gas oil or Product Grade Distillate-solvent derived fuel) or natural gas. They will only be able to be fired on one type of fuel at a time. The Light oil will be supplied to a spinning cup design burner. The control units will be PLC controlled with links to sensors around the boiler to optimise water, air and combustion control. Each boiler net rated thermal input will be just below 10 MWth (9.925 MWth).

An example of a boiler system is detailed below.

The Cochran ST37 LN (Low NOx) packaged steam boiler is of horizontal three pass wet back

design and constructed in accordance with BS EN 12953. The boiler is designed to meet the latest European environmental legislation, the Medium Combustion Plant Directive (MCPD), when fitted with Cochran (or equivalent) combustion equipment. It complies with the requirements of the Factories Act (1961) and Guidance on Safe Operation of Boilers Ref: BG01 developed by the Safety Assessment Federation (SAFED) and the Combustion Engineering Association (CEA), the latter being the acceptance criteria for compliance with HSE and UK Inspection Authority requirements. Additionally, the Boiler is CE Marked to meet the requirements of:

- Pressure Equipment Directive
- Low Voltage Directive
- Electro-Magnetic Compliance Directive
- Machinery Safety Directive

The boilers will be required to comply with the conditions of the Medium Combustion Plant Directive (MCPD) (Directive 2015/2193). The relevant pollutants and associated emission limit values (ELVs) prescribed in the MCPD depend on the type of fuel combusted.

The proposed layout of the new plant and associated equipment is set out in a series of drawings (ref VEO-20-113-1001 to VEO-20-113-1004) in Appendix A.

3.2. Waste types

The new process plant will mainly deal with two new customer streams from a semi-conductor manufacturer and an expansion in recovery of an existing customer stream. The waste solvents from the electronic industry supplied to the Facility are received solely from a semiconductor manufacturer in Europe. The waste solvents received at the Facility from the semiconductor manufacturer are referred to as general solvent waste (GSW). The existing GSW received and processed at the Facility are called fabricated (FAB) 14 and FAB 24.

As part of the expansion of the Facility, a new distillation complex will be built to process the new waste streams generated from FAB 34. The new GSW is expected to consist of the following two streams:

1. OSS and

2. FAB 34 GSW;

FAB 34 is expected to be a wash solvent used in the semiconductor manufacturing process.

The streams will be recovered as follows.

a) OSS Cyclohexanone rich

The material is composed of ~95% Cyclohexanone with the balance being a photoresist agent. Via fractionation a high purity cyclohexanone product will be produced for sale on the open market. A fronts cut of cyclohexanone and water will be taken and used in alternative fuel manufacture for cement kilns. Residues from the process will also be blended and used for cement fuel. It is envisaged that the yields will be as in the Table 1 below.

Expected Fronts Yield On Crude	10%
Expected Inters Yield On Crude	3%
Expected Water Yield On Crude	0
Expected Product Yield On Crude	80%
Expected Back End Recycle On Crude	0
Expected Residue Yield On Crude	7%
Total	100%

Table 1: Expected yields for OSS stream

The new stream is estimated to be up to 13,000 tonnes per annum, translating this will mean 1,300 tonnes of fronts to cement fuel, 10,400 tonnes of recycled product to sale and 910 tonnes of residue, also to cement fuel.

b) FAB 34 GSW

The second stream generated is a more complex mixture of components from the semi-conductor manufacture. This will total ~15,000 tonnes per annum (max). The crude composition is envisaged to be:

Water	26%
Methyl Pentanol	7%
Butyl Acetate	20%
PGMEA	4%
Cyclohexanone	16%
Ethyl Lactate	<1%
IPA	23%
ROE	<1%

Table 2: Expected yields for FAB 34 GSW stream

The recovery of the material will be in two stages, the first stage will generate an IPA (Isopropanol) rich stream, which will be re-processed in a second stage to generate IPA product for sale.

The balance of the material at first stage will be dried and then either manufactured to a distillate fuel specification or used in paint thinners.

The alternative fuel will be burnt as a direct replacement for natural gas or gas oil in the two steam generating boilers on site, subject to it achieving End-of-Waste (EoW) or as a secondary liquid fuel for the kilns.

3.3. Process flow

Process flow diagrams are set out below. Figure 2 summaries the current operation.

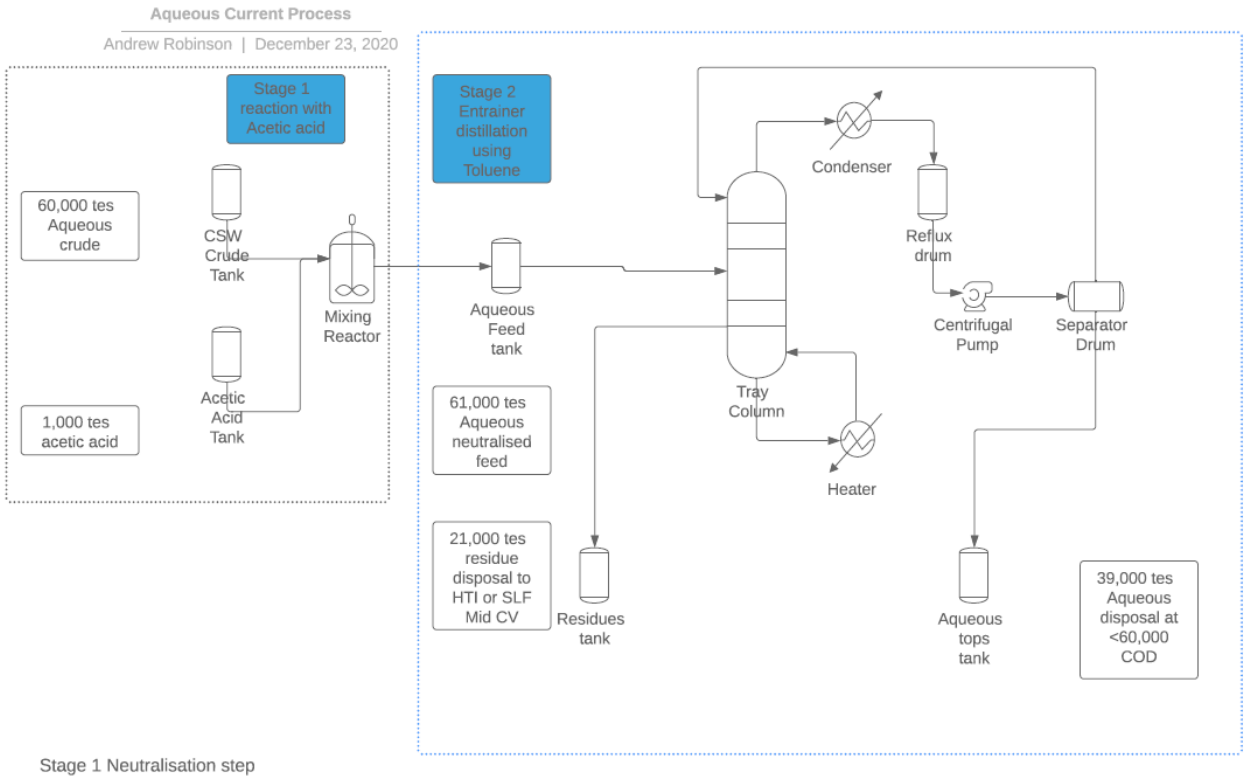

Figure 2: Summary of current process flow for solvent recovery

The process flow diagrams for the expected waste streams detailed in Section 3.2 above are set out in Figure 3 (OSS) and Figure 4 (FAB 34 GSW).

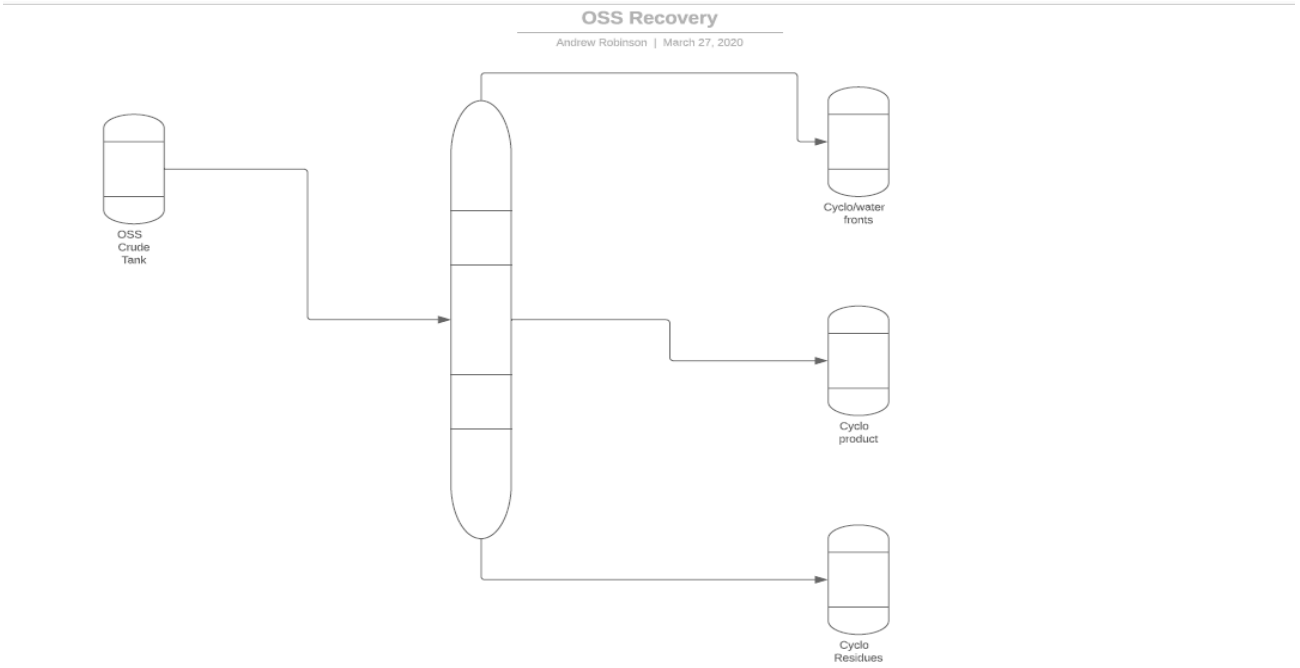

Figure 3: Summary of proposed process flow for OSS Stream

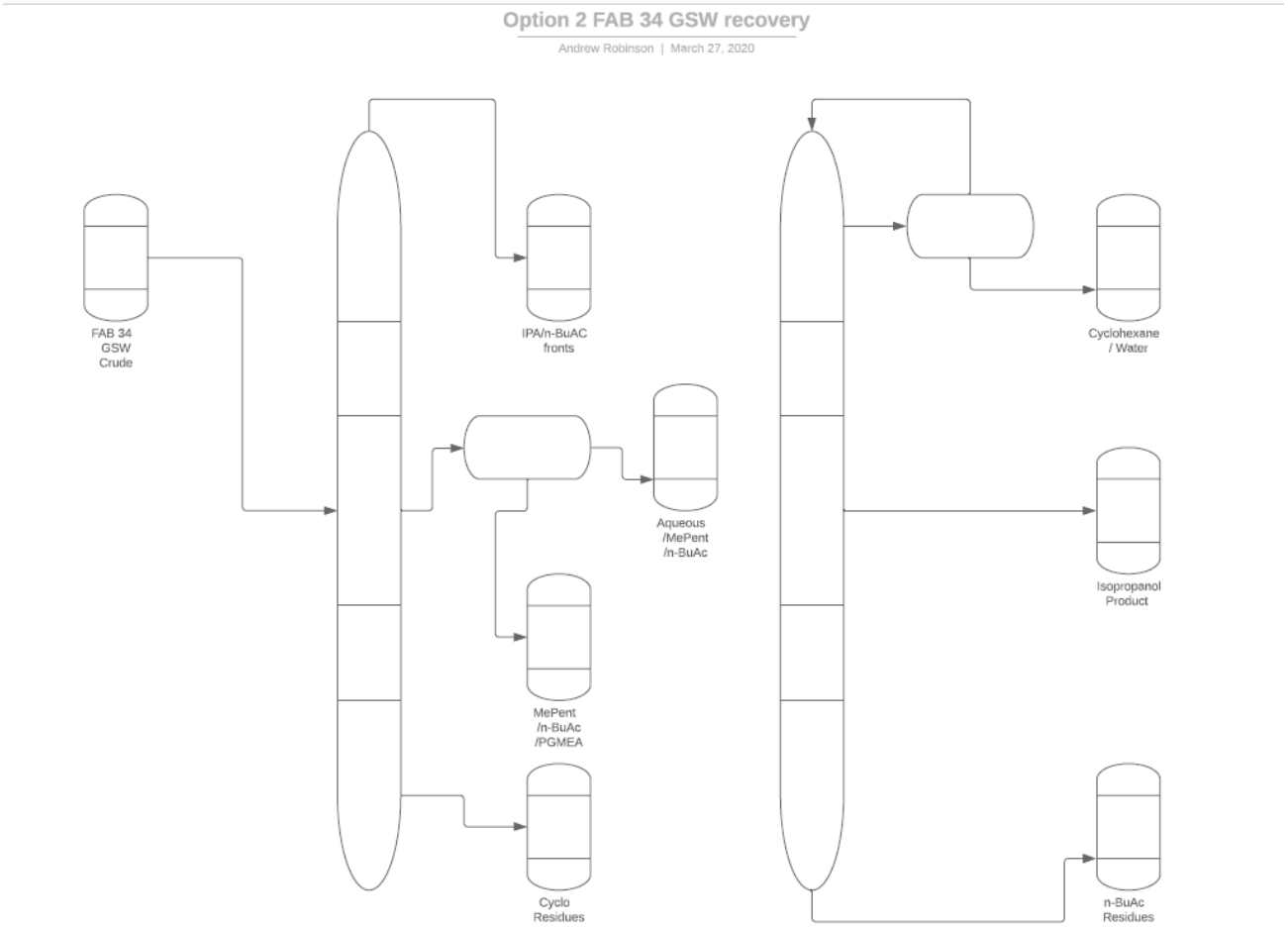

Figure 4: Summary of proposed process flow for FAB 34 GSW Stream

Piping and instrumentation drawings are entitled ‘Project Bluejay Basic P&ID’ and set out in Appendix A.

3.4. Management system

The Veolia Management System is registered and approved to standards ISO 9001, ISO 45001 and ISO 14001. The operational, monitoring and management procedures implemented at the subject facility, are in accordance with the Veolia Management System and have been audited against the requirements of the standards detailed previously.

The proposed operation will be covered by group level and local procedures which form part of the Company's documented management system. A summary of Veolia's Business Management System is provided in Appendix C.

Local procedures reflect the requirements of the Sector Guidance Note EPR5.06. These are under regular review and are updated as required for the proposed operation. An overview of the procedures is presented in Appendix C. This shows the Standard Operating Procedures (SOPs) that are current, under review and those that are no longer applicable and archived.

The existing procedures are still relevant as the new infrastructure uses the same technology as the current plant. A well established SOP Matrix is used to keep track of the operational procedures, both extant and superseded.

3.5. Waste tracking

Waste pre-acceptance, acceptance, handling and storage procedures are in place for the existing solvent recovery operation.

Veolia uses a computerised waste tracking system to update information about the available capacity, quarantine, reception, general and bulk storage areas of the facility. The Waste Information Management System (WIMS) is a complete waste information management system designed specifically for waste treatment, storage, disposal and recycling facilities linking sales, waste approval, transportation, treatment, and disposal activities. The proposed new activity will be integrated into this existing system.

3.6. Operational hours

There will be no change to the operational hours of the site resulting from the changes to the permit being requested in this application.

4. Environmental risk assessment

A qualitative environmental risk assessment 'ERA' for the operation has been produced to consider the risks associated with the proposed expansion. The ERA includes a habitats assessment and is provided in Appendix D.

The new infrastructure will be subject to the relevant detailed safety assessments required by the HSE because of the site's Lower Tier COMAH status.

4.1. Technical standards

Activities at the Garston Distillation Services Facility are covered by corporate and local procedures which form part of the Company's documented management system.

Local procedures reflect amongst other things the requirements of the Waste Treatment BREF and Sector Guidance Note S5.06 until recently - now replaced with Appropriate Measures guidance:

- Best Available Techniques (BAT) Reference Document for Waste Treatment
- Appropriate measures for permitted facilities that take Chemical Waste
- Relevant statutory instruments and related or supported technical guidance

A review of the BAT requirements of the Waste Treatment BREF and the Appropriate Measures are set out in Appendix F.

With regards to the Medium Combustion Plant, the following key technical standards or documents appy:

- Environment Agency Guidance from the Medium combustion plant and specified generator regulations collection including:
- Medium combustion plant (MCP): comply with emission limit values (August 2019);
- Medium combustion plant and specified generator permits: how to comply (July 2019);
- Monitoring stack emissions: low risk MCPs and specified generators (February 2021; replacing TGN M5)
- Monitoring emissions to air, land and water (MCERTS) (October 2020)
- Medium Combustion Plant Directive (December 2013)

4.2. Avoidance of waste production from the activity

The new plant will be more efficient in the recovery of material from the waste inputted and will be designed to maximise the value of the recovered material and minimise the use of raw materials and production of wastes from the process.

The main output(s) from the plant will be of a higher quality than the current process allowing recovered material to substitute virgin material in the manufacturing chain, reducing carbon load in the supply chain in two ways. The waste material will be re-used, with the recovery being at a fraction of the energy/carbon cost of producing virgin material and secondly in that this substitutes the equivalent virgin material being manufactured.

In addition to waste material being recycled to replace the virgin material, some solvent waste resulting from that process can also be recycled hence avoiding waste production.

From the OSS Cyclohexanone rich stream, a fronts cut of cyclohexanone and water will be taken and used in alternative fuel manufacture for cement kilns. Residues from the process will also be blended and used for cement fuel.

From the FAB 34 GSW stream, the balance of the material at first stage will be dried and then either manufactured to a distillate fuel specification or used in paint thinners.

The alternative fuel will be burnt as a direct replacement for natural gas or gas oil in the two steam generating boilers on site, subject to it achieving End-of-Waste (EoW) or as a secondary liquid fuel for the kilns.

4.3. Technical competence

Certificates of Technical Competence (awarded by WAMITAB) are set out in Appendix E.

The Current COTC holder for the Garston Distillation Services Facility is set out in Table 3 below:

Name	Type	Expiry Date	Certificate no.
Helen Milligan	TSH and TMH	23/10/22	5170610

Table 3 - COTC holders for the Garston Distillation Services Facility

4.4. BAT assessment

A BAT assessment for the additional infrastructure was carried out as part of this variation. For the purpose of this application selected key indicative BAT measures have been considered (see Appendix F).

A BAT assessment considering the use of solvent derived fuel rather than natural gas or gas oil is also provided in Appendix F. This considers:

- Whether burning solvents will give rise to higher emissions than burning other fuel;
- The difference in impacts on air quality resulting from higher emissions;
- Reduced fossil fuel usage from burning solvents and global warming impact;
- The costs associated with different fuel options.

4.5. Habitats Assessment

An assessment of the site development on adjacent designated sites is set out in the report entitled 'Preliminary Ecological Appraisal', undertaken by Wardell Armstrong and dated April 2020. This is set out in Appendix D.

The report concludes that *"direct impacts to the features for which these designated sites are notified are not anticipated to occur as a result of disturbance due to the current high baseline of disturbance on the Site and in the surrounding industrial estate. It is considered that the proposed works will not give rise to any increase in noise or lighting than that already occurring on the Site, to which the birds (which are a feature of these designated sites) are already habituated".*

Habitats are also considered as part of the Environmental Risk Assessment, also set out in Appendix D.

The impact of emissions to air on habitats is also considered in the Air Quality Assessment (AQA) provided in Appendix H.

4.6. Emissions to air

New emission points

The new plant and tank farm will have one combined emission point A9, this will run through a scrubber unit to capture the majority of the VOC's and then through a carbon capture unit before emission at high level to air. The emission point is set to be at the same height as the columns (30 m in height from main site mean level).

The two new boiler stacks will discharge their emissions to air through dedicated flues

(emissions points A8a and A8b) within a common stack. A stack height assessment has been undertaken to determine a suitable stack height. This is provided in Appendix H (AQA, Stack Height Analysis, section 8). This has determined that a stack height of 16 m provides adequate dispersion of emissions from the boilers. (from two be brought together to form one emission point, this will be at a height of 16m as defined in the Air Quality Assessment provided in Appendix H (see Stack Height Analysis, section 8).

The location of the new emission points A8a, A8b and A9 is indicated on the site plan reference VEO-20-113-1005 provided in Appendix A. Emission points A2, A3 and A4 which were removed from the permit with a previous variation have also been removed from the site plan for completeness.

Emissions from the new scrubber

An assessment of the emissions from the scrubber using the Environment Agency's H1 screening tool has been undertaken by our third party consultant Fitchtner. The input parameters for the screening assessment and the predicted ground level concentration are presented in section 7.3.1.2 and section 10.1 of the AQA respectively. A copy of the completed screening tool is also provided in Appendix H. The assessment concluded that the impact of emissions from the new scrubber stack could be screened out as 'insignificant' considering the very low predicted ground level concentrations. As such, it was not necessary to consider this minor source within the dispersion modelling.

Emissions from the new boilers

The impact of emissions from the boilers on air quality has been assessed in the AQA provided in Appendix H. This was undertaken by our third party consultant Fitchtner.

This assessment includes a review of baseline pollution levels, dispersion modelling of emissions and quantification of the impact of these emissions on local air quality considering both the protection of human health and sensitive ecosystems. Dispersion modelling of emissions from the boilers has been undertaken based on the assumption that they will operate for a maximum of 8,760 hours per year. Annual mean impacts have been assessed assuming a predicted average load of 75%, and short-term impacts have been assessed assuming 100% load. Emissions limits for each fuel have been assumed to be those prescribed in the MCPD, except it has been assumed that emissions of sulphur dioxide from the distillate fuel will be negligible as there will be a negligible quantity of sulphur in the distillate fuel. Emissions from the boilers firing distillate fuel are however anticipated to be no higher than when firing gas oil. The contribution from the permitted but not constructed CHP plant and existing boiler have been included in baseline concentrations.

The primary conclusions of the AQA are presented below. Note that the commentary

provided all relates to the operation of the boilers on distillate fuel, i.e., the greatest predicted impacts.

- The operation of the boilers is not predicted to cause exceedance of any AQAL in an area of relevant exposure;
- The overall impact of all long-term process emissions from the operation of the boilers is 'not significant' at all receptor locations and areas of relevant exposure;
- The overall impact of short-term process emissions from the operation of the boilers is 'insignificant' at all areas of relevant exposure;
- In relation to the impact at identified sensitive ecological sites, the impact of airborne emissions from the boilers will have no likely significant effect on the integrity of the sites, and the effect of nutrient nitrogen and acid deposition can be screened out as 'insignificant'.

In summary, the assessment of the boilers operating with a stack height of 16 m has shown that emissions would not have a significant impact on local air quality, the general population or the local community.

4.7. Emissions to sewer

There are currently no emissions to sewer from the foul system. This is connected to two cesspits. The site expansion will not alter this.

4.8. Emissions to surface water and groundwater

The pollution prevention measures currently implemented at the Garston site are set out below. They fall into two main categories, those relating to hardware designed to prevent the escape of potentially polluting substances to ground, groundwater or surface water, and those relating to operating techniques and operator competence. These measures will apply to the new infrastructure.

Primary containment

All vessels used for the storage of hazardous substances are designed and constructed from materials to ensure that they are fit for the duties on which they are used. Where appropriate vessels are fitted with monitoring and control equipment to prevent loss of containment of the hazardous substances (e.g. tank contents level indication and control equipment, over / under pressure relief devices etc.). The total installed bulk storage capacity for hazardous substances on site is around 2,500m^3.

Distillation columns do not contain large amounts of hazardous substances at any given point in time. However, they are designed to operate at high temperature (up to 200^{o}C) and

pressure (0-2 Bar) and are fitted with safety devices which automatically stop distillation operations if necessary, in order to protect the plant from damage.

Pipelines carrying hazardous substances are designed and constructed from materials to ensure that they are fit for the duties on which they are used and installed to ensure their integrity is not compromised by vibration or stress induced degradation. Material transfer pumps for hazardous substances are similarly specified. Fixed pipework is used wherever possible to avoid the unnecessary use of flexible hoses with the associated risk of hose and joint leakage or failure. Transfer pumps are located within bunds. Where flexible hoses are used and their termination points cannot be located in bunds for practical access reasons (e.g. tanker offloading /loading stations), the areas are served by sealed drainage systems.

Road tankers delivering hazardous substances to the site and collecting them from site are subject to separate control by others. However, they are inspected on arrival at site to ensure that they are not leaking or damaged to the extent that their integrity could be compromised. Any road tankers held on site for longer periods of time than normal receipt and offloading or loading and despatch cycles, are inspected periodically.

Packaged materials are inspected on receipt and periodically whilst held in storage to ensure that the packages are not leaking or damaged to the extent that their integrity could be compromised. The total storage capacity for hazardous substances in small containers is around 4,000 x 205 litre capacity drum equivalents

Secondary Containment

All bulk storage vessels containing hazardous substances are located in bunds. The bunds are constructed from materials which are resistant to the substances with which they may come into contact (typically reinforced concrete). However, the bunds were constructed at different times over a period of many years and were built to standards applicable at those times. The site does not hold bund design, specification and construction details.

Bund capacities are equivalent, as a minimum, to 110% of the storage capacity of the largest vessel in the bund. In the case of more recent installations (e.g. the thin film evaporation plant) storage tank bund capacities are based on 25% of the total installed vessel capacities where there are several vessels in a bund.

There are no drains installed in the bunds. Wherever possible pipework is routed over and/or around bund walls. Where pipework must pass through a bund wall, suitably designed penetration joints are installed.

All hazardous substances in small containers are stored in bunded areas. The bunds are constructed from materials which are resistant to the substances with which they may come into contact (typically reinforced concrete). There are no drains installed in the bunds. The

main storage bunds for packaged materials are uncovered. A small covered area is set aside for packaged materials selected from storage for bulking prior to distillation via the thin film evaporation plant.

Tertiary containment

All operational areas of the site have made up surfaces. All surfaces within operating plant areas are constructed from reinforced concrete with sealing materials applied to the joints between adjacent concrete slabs. The peripheral roadway around the site used by large vehicles delivering materials into site and collecting materials from site is surfaced with asphalt in non-operating plant areas. Elsewhere the roadway is constructed from reinforced concrete. Edge protection in the form of raised concrete sills in some areas and highway type kerbing in others is installed around the whole periphery of the operating site with the exception of the site access road which is up gradient of the operating site. Surface water from all areas of site except for that collected locally in bunds and sumps is collected via a combination of highway type gullies and slotted surface drains and flows through a subsurface network of drainage pipework from where it is collected and pumped into storage for sampling and analysis prior to discharge to surface water if suitable or shipment to offsite disposal by road tanker if unsuitable. The calculated hold up capacity of the tertiary containment systems is around 800m^3.

No plans are being made to make changes to the site drainage, other than the installation of 4 x 100m^3 water storage tanks. The build areas already have concrete aprons and drainage to them. Although excavation will take place, no changes to the overall concreted surface area will be made.

A drainage repair/remediation programme has taken place in 2020 in relation to all existing drainage on site to ensure it is in good condition and appropriate for the expansion of operations.

The drainage systems for the site are set out in Drawings ref: VGD-01 and VGD-02 in Appendix A.

H1 Assessment

An H1 assessment has been completed for the discharge of process effluent from the site, using both the substances/limits stated within the permit and monitoring data for the site. This was undertaken by our third party consultant Fitchtner.

Currently, emissions point W1 allows for discharges to the River Mersey at a rate of up to 35 m^3 within a 7-day period. As a result of the proposed expansion, we are applying for the permitted wastewater discharge volume for discharge point W1 to increase to 100 m^3 within a

7-day period (however the composition of the effluent will remain the same). This has been used to determine the mean flow rate used within the H1 assessment.

There may be periods where the effluent is discharged in batches over a shorter period of time It is expected that the effluent will be discharged in 27 m^3 batches, which will take a minimum of 2 hours to discharge. Therefore, to determine the maximum flow rate within the H1 assessment, it has been assumed that in these scenarios the full 27 m^3 volume of the tank can be discharged within 2 hours.

Taking the above into consideration, the following flow rates were applied within the H1 assessment:

• Mean flow rate = 100 m^3/7 days = 0.000165 m^3/s; and

• Max flow rate = 27 m^3/2 hours = 0.00375 m^3/s

A number of the pollutants stated both within the permit and also within the monitoring data provided do not have associated Environmental Quality Standards (EQS) in the H1 tool; therefore, these were excluded from the scope of the assessment. The remaining substances were assessed assuming releases at the maximum permitted concentrations. One substance (hexachlorobutadiene) is a Priority Hazardous Substance (PHS) and therefore had a Significant Load of 1 kg/year applied.

Test 1 of the assessment determines whether the pollutant concentrations are <100% of the relevant EQS. All pollutant concentrations are <100% of the relevant EQS. In accordance with the H1 guidance, this means that all pollutants screen out at the first test. As the pollutants screened out at the first test, it can be concluded that the changes to the discharge at emissions point W1 will have an insignificant impact in accordance with the H1 guidance.

A copy of the H1 report is set out in Appendix H.

4.9. Emissions to land

There will be no emissions to land resulting from the proposed changes.

4.10. Noise

A noise assessment report has been prepared by Wardell Armstrong and this is set out in Appendix I (Ref: RP/MD/GM11233/L001, dated 28th July 2020). The report was commissioned to undertake an appraisal of the proposed increase in processing capacity at the site.

The assessment concludes:

"The predicted noise levels at the existing residential dwelling are less than guideline noise levels and are expected to have no more than a low impact on the dwellings. It is therefore considered that no further mitigation would be required to reduce noise levels from the proposed development".

4.11. Odour

It is predicted that there will be no change in odour risk resulting from the proposed changes. All waste will be stored, transferred and processed within sealed systems and in line with current Appropriate Measures.

4.12. Site Condition Report

There are no plans to extend the current permit boundary. All proposed infrastructure and operations are in line with current operating techniques and will be carried out within the current permit footprint. The risks to groundwater and land are unchanged and adequately characterised in the current Site Condition Report. Therefore this report is still valid.

4.13. Flood Risk Assessment

An updated Flood Risk assessment is provided in Appendix G. This report summarised the risk from flooding as follows:

"There is the possibility of some surface water flooding at the site, albeit mainly in the lower parts. As discussed in Section 4.4, the EA's Flood Risk from Surface Water map is unlikely to account for the existing on-site surface water drainage systems in place. If an adequate on-site surface water drainage system is in place and operating satisfactorily, it would be reasonable to assume that surface water flooding is unlikely to reach more than 300mm except in the lowest parts of the site.

To address surface water flood risk it is recommended that any newly proposed infrastructure be set at a minimum of 300mm above adjacent ground levels and that the lowest parts of the site are avoided for such new infrastructure. Protecting existing infrastructure is unlikely to be practicable but may be considered".

We are implementing the recommendations into the new plant design.

4.14. Monitoring and measurement

The Veolia Management System includes procedures for inspecting the site and its perimeter on a daily basis. Monitoring of the emissions to air and water for permit compliance is also undertaken routinely. It is not anticipated that any modification to the type and frequency of monitoring should be required.

For air emission points A1 and A7, VOC monitoring is undertaken daily using a MiniRae and supplemented with VOC monitoring by specialists from each stack on an annual basis. Testing ensures compliance with the permitted limits set out in table S3.1 of the permit. It is anticipated that monitoring requirements for emissions from the new scrubber at emission point A9 will be the same as for the existing scrubber A7.

Extractive monitoring on the emissions to air from the new boilers at emission points A8a and A8b will be carried out to confirm compliance with the emission limit values as set out in the

Medium Combustion Plant Directive. This will be carried out within 4 month of the boilers becoming operational and every 3 years thereafter. The extractive monitoring will be carried out in accordance with the requirement of the permit.

It is also proposed that additional monitoring will be carried out during the commissioning of the boilers when fired on distillate fuel in line with the End Of Waste report provided in Appendix J. This would be subject to a pre-operational condition in the permit.

W1 discharge comprises of boiler water blowdown and the bleed from the cooling towers, along with some surface water as per original permit. The boiler water and the bleed from the cooling towers are stored in Tanks T1 and T1A, this waste is then transferred to Tank T32. Standard Operating Procedures (SOP507 and SOP508) have been agreed with the Local EA Officer for the management and sampling of this discharge and this includes the parameters that are analysed. Tank T32 is generally discharged weekly and it is sampled and analysed prior to this. The expansion project will include additional discharge (up to 100m^3 per 7 days from an existing volume of circa 35m^3) of the same nature from the new infrastructure including the new boilers and cooling towers, however the composition of the effluent is not expected to change.

W3 comprises of uncontaminated surface water collected on the site in the surface water interceptor. Again samples are analysed prior to discharge. The expansion of the site will not affect the composition of the surface water runoff.

Detailed local work instructions have been produced which describe the requirements of the authorisation and how they are met.

4.15. Energy efficiency

The site will use more energy given the increase in material throughput, the main energy usage will be to generate steam for the distillation plants. The increase in steam demand will be accommodated by the installation of two new boilers. The increase in fuel usage will be negated by using an alternative fuel generated as a product from the waste stream offsetting the amount of natural gas or gas oil that would be required to recover the material.

The new boilers will be generating heat to suit the demand of the on site distillation process which they are serving. They will be dimensioned for the maximum site demand plus a calculated safety factor for surges. They will only operate when there is a demand.

Measures will be implemented to optimise heat use from the new boilers within the site. This will include but not necessarily be limited to:

- use of economisers on both boilers to reclaim waste heat in the exhaust stream;
- use of a control system to manage boiler output depending on process heat demand.

In addition, whilst heat is provided to the crude in the form of 10Barg steam via heat exchangers, it is also supplemented by pre-heaters. The pre-heater exchanges energy by using the incoming crude material to cool the vapour leaving the distillation column. This is a major energy saving mechanism as it reduces steam usage and evaporative cooling demand, making the process more energy efficient.

The combined thermal rated input of the new boilers will be below 20 MWth as each new boiler's individual net rated thermal input is below 10 MWth. They are therefore outside of the scope of Schedule 24 of the Environmental Permitting Regulations which implements the Energy Efficiency Directive.

Electricity demand will be for the additional pumps and motors in the new build. The new equipment procured will be bought as an energy efficient design. Utilising inverter drives to save energy where possible.

A new transformer will be installed on site with equipment able to provide electricity much closer to unity than current equipment that will provide a much better power correction factor, thus reducing the amount of current required. The supplies will be sub-metered to allow for accurate determination of energy usage.

4.16. Raw Material Usage

The use of raw materials in the processes envisaged for the new plants are substantially less than for the current process. The main consumable for the current process has historically been Potassium Hydroxide (KOH) liquor (50%), this is used to react with the esters in the crude and convert them into their equivalent alcohols and the acetate/lactate salts. The reduction of KOH usage has been ongoing. This has been achieved in two parts, further segregation at the customer's site and the removal of one problematic compound from the waste mixture. Secondly by the revision of the process to utilise the materials in a different way e.g. in generating solvent fuel, or by use in paint thinners. A new raw material however is required for use as an entrainer in the production of dry Isopropanol.

The operation of the new boilers will also result in an increase in fuel usage. The new boilers will be able to be fired on natural gas, gas oil or solvent distillate fuel. It is anticipated that up to 5,400 tonnes a year of gas oil would be required per boiler or 4,800 tonnes of natural gas, depending on the fuel, assuming the boilers operated at 75% load all year round. A new supply of natural gas will be required as the current supply would not be of sufficient capacity.

Gas oil would be stored on site.

The increase in fossil fuel usage can however be reduced with the use of distillate fuel produced from the waste solvent processed on site. This solvent fuel will only be used to fire the boilers when it achieves End-of-Waste (EoW). An EoW Report is provided in Appendix J.

5. Assessment of change

Table 4 provides a summary of the changes being requested by this permit variation.

Aspect	Impact
Permitted Materials	No change to waste types being received. The new process plant will mainly deal with two new customer streams from a semi-conductor manufacturer and an expansion in recovery of an existing customer stream.
Releases to Air	The new plant and tank farm will have one combined emission point, this will run through a scrubber unit to capture the majority of the VOC's and then through a carbon capture unit before emission at high level to air. The emission point is set to be at the same height as the columns, known as A9. The two new boiler stacks will discharge from emission point A8a and A8b, this will be at a height of 16m. The impact of these emissions has been considered in the AQA provided by Fitchner. In summary, the assessment concluded that the impact of emissions from the new scrubber stack could be screened out as 'insignificant' and emissions from the boilers operating with a stack height of 16 m would not have a significant impact on local air quality, the general population or the local community.
Process Throughput	This application seeks to increase the plant capacity from circa 30,000 tonnes per annum to circa 58,000 tonnes per annum.
Releases to Water	No plans are being made to make changes to the site drainage. The build areas already have concrete aprons and drainage to them. Although excavation will take place, no changes to the overall concreted surface area will be made. There are no changes to surface water emissions, however currently emissions point W1 allows for discharges to the River Mersey at a rate of up to 35 m3 within a 7-day period. As a result of the proposed expansion, Veolia are applying for the permitted wastewater discharge volume for discharge point W1 to increase to 100 m3 within a 7-day period (however the composition of the effluent will remain the same).
Releases to Land	There will be no emissions to land resulting from the proposed changes.
Energy Use	The site will use more energy given the increase in material throughput, the main energy usage will be to generate steam for the distillation plants. This will be negated by using an alternative fuel generated as a product from the waste stream offsetting the amount of natural gas or gas oil that would be required to recover the material. Electricity demand will be for the additional pumps and motors in the new build. The new equipment procured will be bought as an energy efficient design. Utilising inverter drives to save energy where possible. A new transformer will be installed on site with equipment able to provide electricity much closer to unity than current equipment that will provide a much

	better power correction factor, thus reducing the amount of current required. The supplies will be sub-metered to allow for accurate determination of energy usage.
Raw Materials Use	The use of raw materials in the processes envisaged are substantially less than for the current process. The main consumable for the current process has historically been Potassium Hydroxide (KOH) liquor (50%), this is used to react with the esters in the crude and convert them into their equivalent alcohols and the acetate/lactate salts. The reduction of KOH usage has been ongoing. This has been achieved in two parts, further segregation at the customer's site and the removal of one problematic compound from the waste mixture. Secondly by the revision of the process to utilise the materials in a different way e.g. in generating solvent fuel, or by use in paint thinners. A new raw material however is required for use as an entrainer in the production of dry Isopropanol. The operation of the new boilers will also result in an increase in fuel usage. The increase in fossil fuel usage, natural gas or gas oil, can however be reduced with the use of distillate fuel produced from the waste solvent processed on site. This solvent fuel will only be used to fire the boilers when it achieves End-of-Waste (EoW).
Noise	There is predicted to be no change to noise levels by the proposed expansion of the site. The noise assessment concludes that "It is therefore considered that no further mitigation would be required to reduce noise levels from the proposed development" Noise abatement measures will be installed on the new infrastructure, where applicable.
Odour	There is predicted to be no change to odour risk by the proposed expansion of the site. All waste stored, transferred and processed within sealed systems and in accordance with the relevant Appropriate Measures.
Permitted Processes	■ A substantial variation to a Section 5.3 A(1)(a)(v) activity to add two Fractional Distillation columns, similar in design to the current processes. ■ A substantial variation to a Section 5.6 A(1)(a) activity to add 17 storage tanks of some 3,450m^3 capacity. This activity charge reduced by 90% as incidental to the installation. ■ the addition of two new boilers as a Medium Combustion Plant Schedule 25A activities as a DAA to the installation activitiesAll new infrastructure to be located within the current permit boundary.
Waste Hierarchy	The proposed changes will not affect the status of the waste within the waste hierarchy.
Waste Generation and Disposal	The new plant will be more efficient in the recovery of material from the waste inputted and will be designed to maximise the value of the recovered material and minimise the use of raw materials and production of wastes from the

	process. The main output(s) from the plant will be of a higher quality than the current process allowing recovered material to substitute virgin material in the manufacturing chain, reducing carbon load in the supply chain in two ways. The waste material will be re-used, with the recovery being at a fraction of the energy/carbon cost of producing virgin material and secondly in that this substitutes the equivalent virgin material being manufactured.

Table 4 - Assessment of change

6. Application contact information

Main contact:

Andrew Nash
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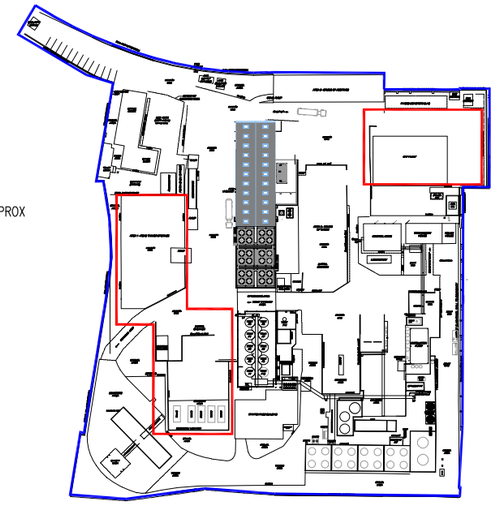
APPENDIX A

SITE PLANS and DRAWINGS

VEOLIA SITE BOUNDARY 25,874 m² APPROX

PROJECT BLUEJAY BOUNDARY (combined) 4,430 m² APPROX



EXISTING SITE LAYOUT LOCATION PLAN
(scale 1:1250)

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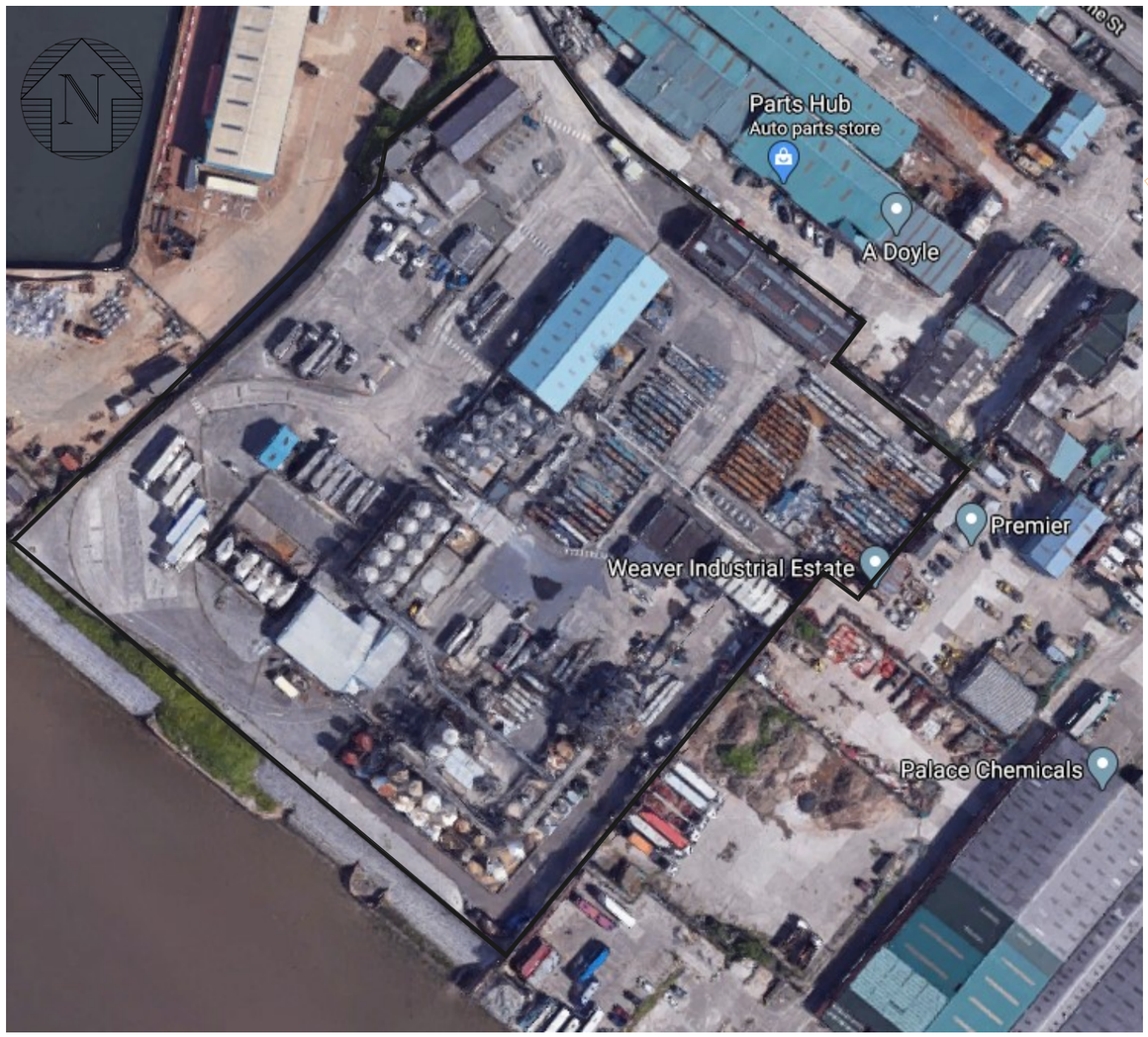
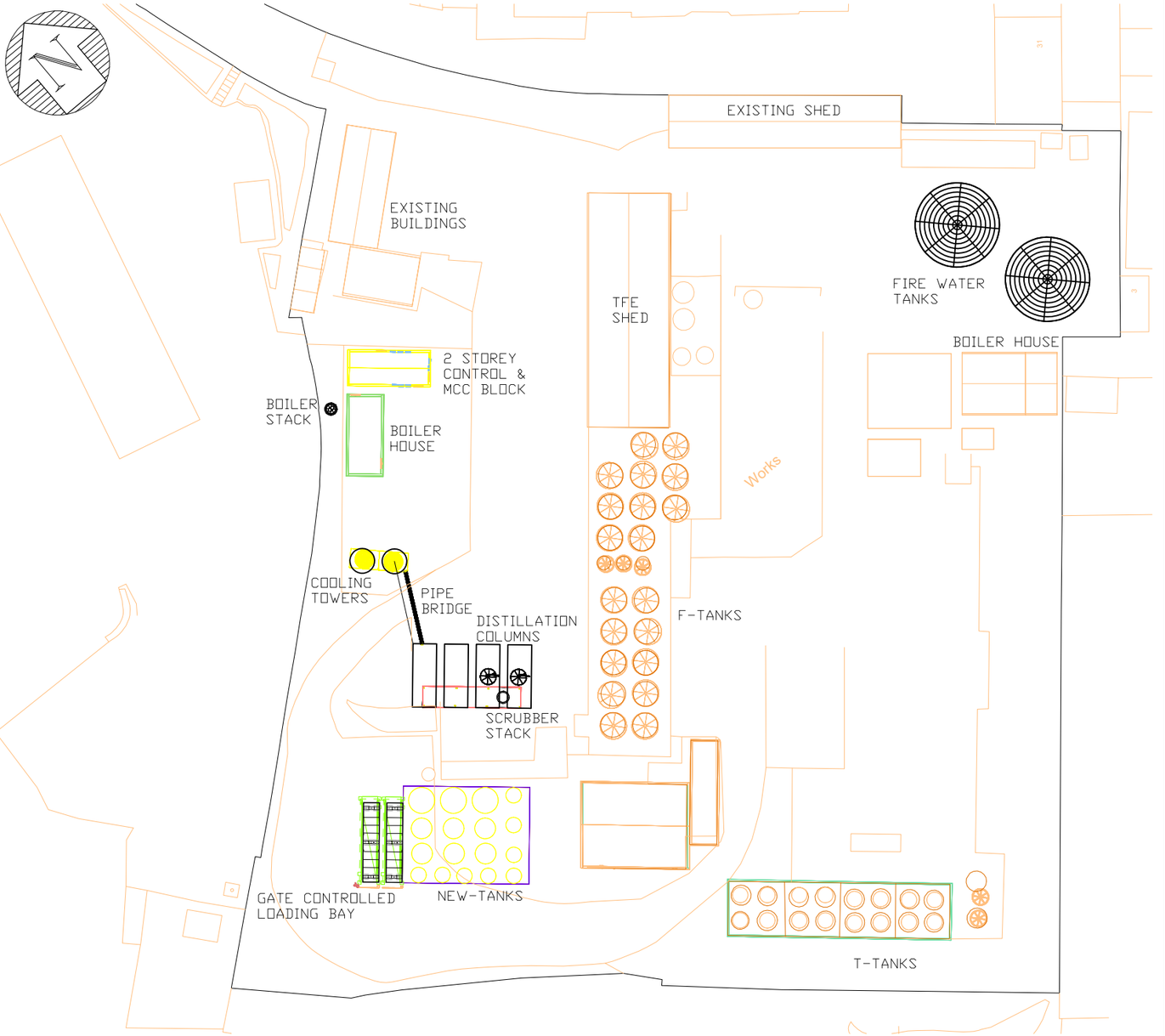
SCALE (m)



SITE LOCATION PLAN



PROPOSED NEW LAYOUT LOCATION PLAN
(scale 1:500)

REFERENCE DRAWINGS

20-113-1000	SITE LOCATION PLAN
20-113-1001	EXISTING & PROPOSED NORTH ELEVATION
20-113-1002	EXISTING & PROPOSED EAST ELEVATION
20-113-1003	EXISTING & PROPOSED SOUTH ELEVATION
20-113-1004	EXISTING & PROPOSED WEST ELEVATION
20-113-1005	PERMIT SITE PLAN
20-113-1006	COMBINED 3D MODEL & GOOGLE IMAGE

ISSUED FOR INFORMATION

ISSUE	DATE	DESCRIPTION OF ISSUE OR REVISION	BY	CHK
P5	13-08-20	PROVISIONAL ISSUE	JD	---
P4	06-08-20	PROVISIONAL ISSUE	JD	---
P3	28-07-20	PROVISIONAL ISSUE	JD	---
P2	20-07-20	PROVISIONAL ISSUE	JD	---
P1	07-07-20	PROVISIONAL ISSUE	JD	---

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ADDISON

CLIENT	VEOLIA	LOCATION	GARSTON
PLANT	GSW	SECTION	GENERAL LAYOUT

TITLE

GSW BLUEJAY BUILD
PLANNING PROPOSAL
SITE LOCATION PLAN

DRN	JD
DATE	07.07.20
CHK	
APPD	

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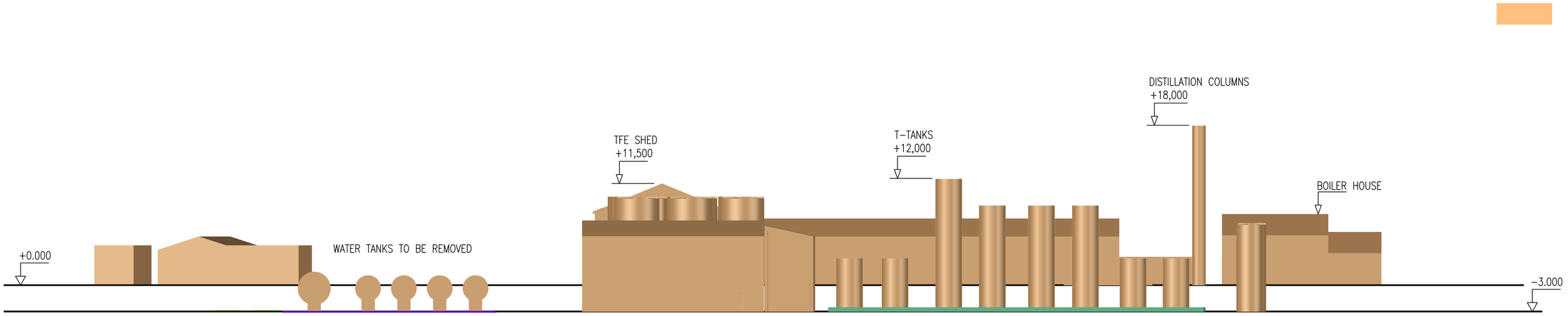
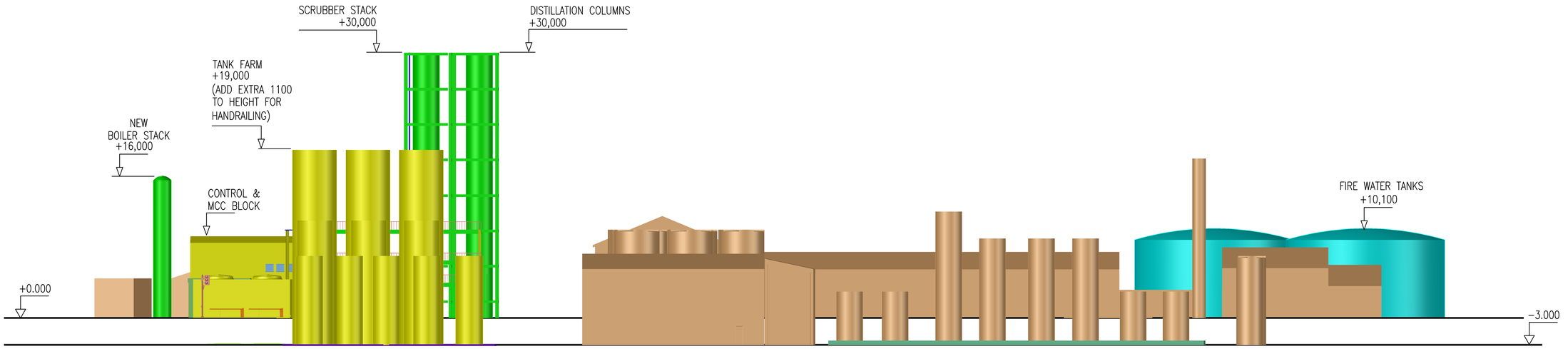
PROJECT TITLE	BLUEJAY
SCALE	AS SHOWN
SIZE	A1
DRAWING NUMBER	ISSUE
VEO-20-113-1000	P5



EXISTING ELEVATION LOOKING NORTH



PROPOSED ELEVATION LOOKING NORTH

REFERENCE DRAWINGS

20-113-1000	SITE LOCATION PLAN
20-113-1001	EXISTING & PROPOSED NORTH ELEVATION
20-113-1002	EXISTING & PROPOSED EAST ELEVATION
20-113-1003	EXISTING & PROPOSED SOUTH ELEVATION
20-113-1004	EXISTING & PROPOSED WEST ELEVATION
20-113-1005	PERMIT SITE PLAN
20-113-1006	COMBINED 3D MODEL & GOOGLE IMAGE

ISSUED FOR INFORMATION

ISSUE	DATE	DESCRIPTION OF ISSUE OR REVISION	BY	CH'K
P9	06-05-21	PROVISIONAL ISSUE	AMc	---
P8	04-05-21	PROVISIONAL ISSUE	AMc	---
P7	28-04-21	PROVISIONAL ISSUE	AMc	---
P6	20-08-20	PROVISIONAL ISSUE	JD	---
P5	13-08-20	PROVISIONAL ISSUE	JD	---
P4	05-08-20	PROVISIONAL ISSUE	JD	---
P3	28-07-20	PROVISIONAL ISSUE	JD	---
P2	20-07-20	PROVISIONAL ISSUE	JD	---
P1	07-07-20	PROVISIONAL ISSUE	JD	---

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Website : www.addisonproject.co.uk
e-mail : design@addisonproject.co.uk

ADDISON

CLIENT	VEOLIA	LOCATION	GARSTON
PLANT	GSW	SECTION	GENERAL LAYOUT

TITLE

GSW BLUEJAY
PLANNING PROPOSAL
EXISTING AND PROPOSED
NORTH ELEVATIONS

DRN	JD
DATE	07.07.20
CH'K	
APPD	

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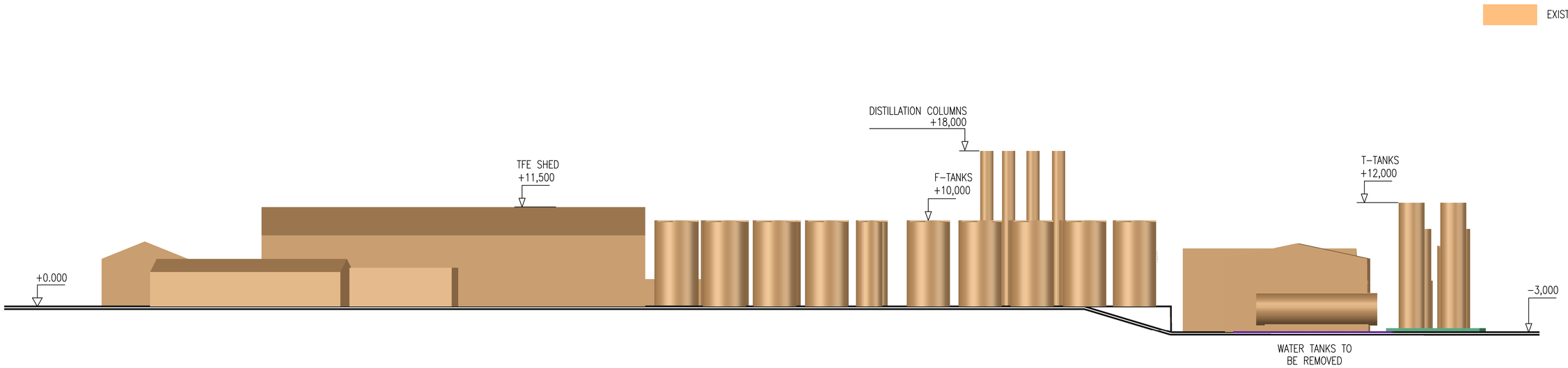
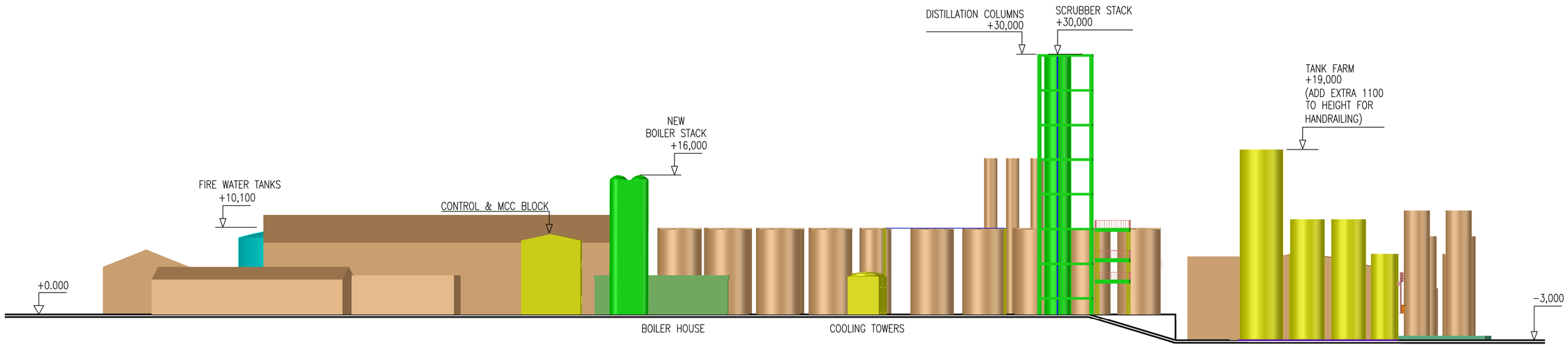
PROJECT TITLE	BLUEJAY	
SCALE	1:250	SIZE A1
DRAWING NUMBER		ISSUE
VEO-20-113-1001		P9



EXISTING ELEVATION LOOKING EAST



PROPOSED ELEVATION LOOKING EAST

REFERENCE DRAWINGS

20–113–1000	SITE LOCATION PLAN
20–113–1001	EXISTING & PROPOSED NORTH ELEVATION
20–113–1002	EXISTING & PROPOSED EAST ELEVATION
20–113–1003	EXISTING & PROPOSED SOUTH ELEVATION
20–113–1004	EXISTING & PROPOSED WEST ELEVATION
20–113–1005	PERMIT SITE PLAN
20–113–1006	COMBINED 3D MODEL & GOOGLE IMAGE

ISSUED FOR INFORMATION

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P2	20-07-20	PROVISIONAL ISSUE	JD	---
P1	07-07-20	PROVISIONAL ISSUE	JD	---

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ADDISON

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PLANT	GSW	SECTION	GENERAL LAYOUT

TITLE

GSW BLUEJAY
PLANNING PROPOSAL
EXISTING AND PROPOSED
EAST ELEVATIONS

DRN	JD
DATE	07.07.20
CH'K	
APPD	

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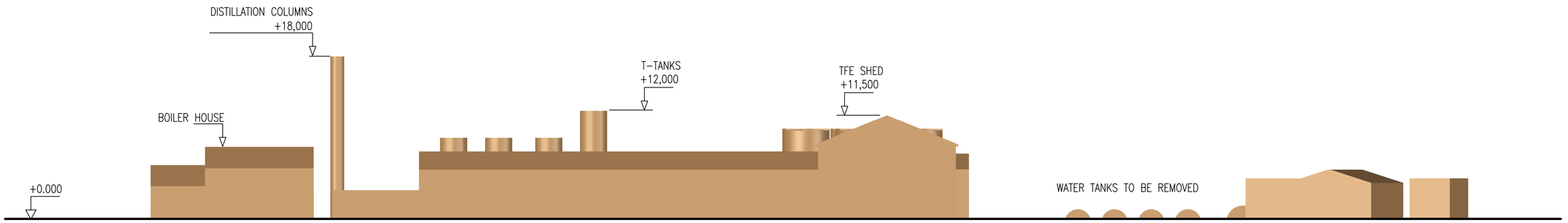
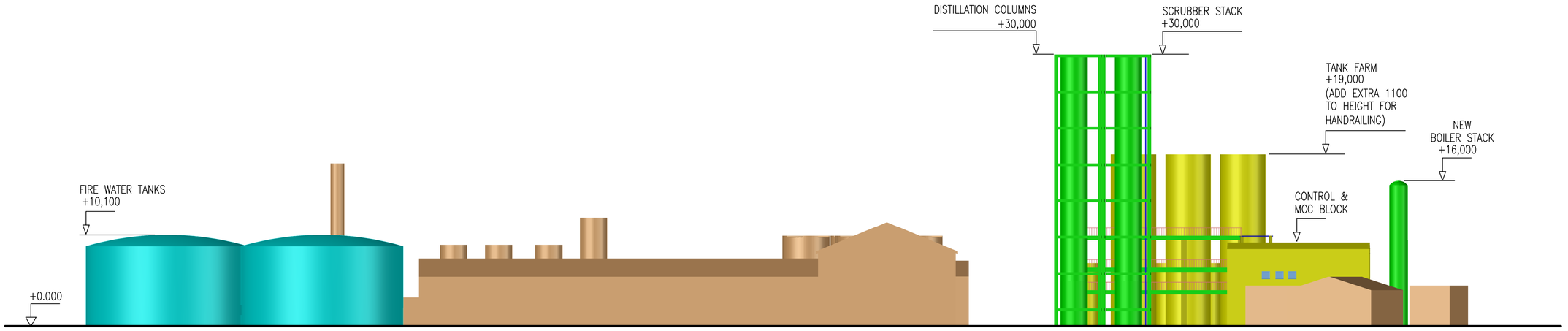
PROJECT TITLE	BLUEJAY	
SCALE	1:250	SIZE A1
DRAWING NUMBER		ISSUE
VEO-20-113-1002		P9

EXISTING BUILDING



EXISTING ELEVATION LOOKING SOUTH



PROPOSED ELEVATION LOOKING SOUTH

REFERENCE DRAWINGS

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20–113–1002	EXISTING & PROPOSED EAST ELEVATION
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20–113–1004	EXISTING & PROPOSED WEST ELEVATION
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ISSUED FOR INFORMATION

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P2	20-07-20	PROVISIONAL ISSUE	JD	---
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ADDISON

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PLANT	GSW	SECTION	GENERAL LAYOUT

TITLE

GSW BLUEJAY
PLANNING PROPOSAL
EXISTING AND PROPOSED
SOUTH ELEVATIONS

DRN	JD
DATE	07.07.20
CH'K	
APPD	

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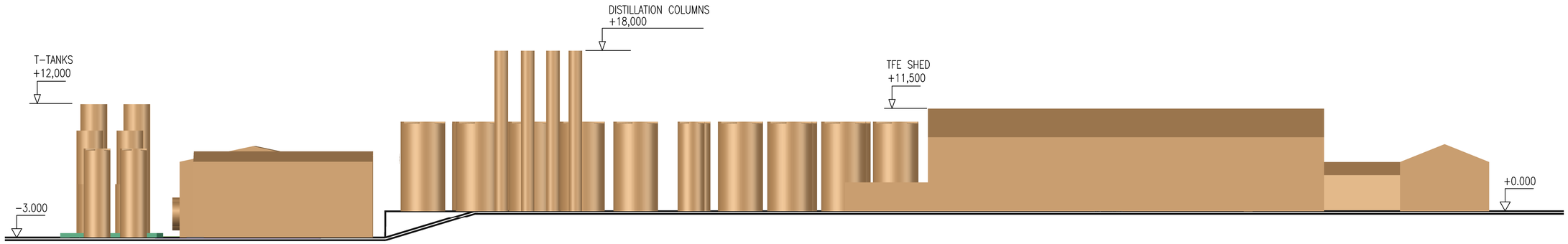
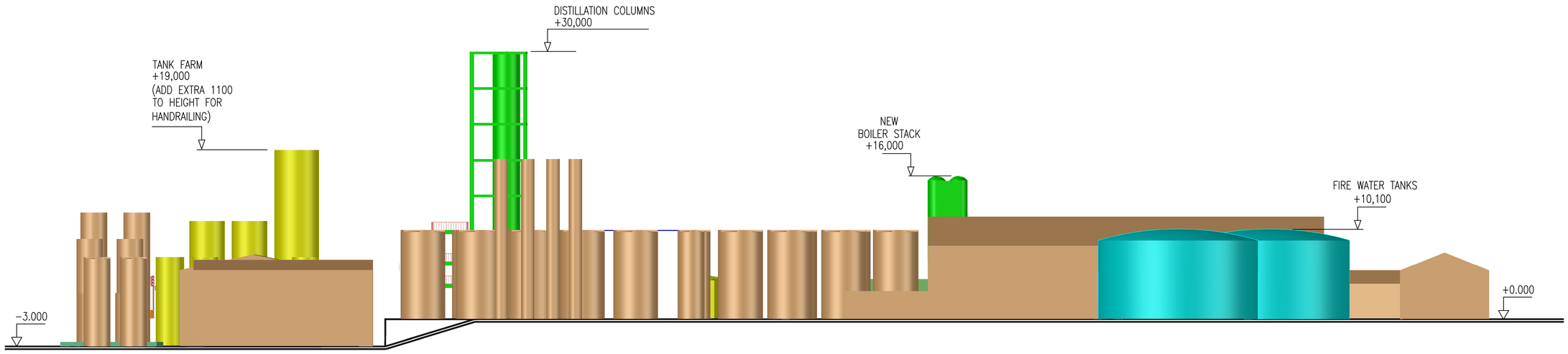
PROJECT TITLE	BLUEJAY	
SCALE	1:250	SIZE A1
DRAWING NUMBER		ISSUE
VEO-20-113-1003		P9

EXISTING BUILDING



EXISTING ELEVATION LOOKING WEST



PROPOSED ELEVATION LOOKING WEST

REFERENCE DRAWINGS

20-113-1000	SITE LOCATION PLAN
20-113-1001	EXISTING & PROPOSED NORTH ELEVATION
20-113-1002	EXISTING & PROPOSED EAST ELEVATION
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20-113-1006	COMBINED 3D MODEL & GOOGLE IMAGE

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ADDISON

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TITLE

GSW BLUEJAY
PLANNING PROPOSAL
EXISTING AND PROPOSED
WEST ELEVATION

DRN	JD
DATE	07.07.20
CH'K	
APPD	

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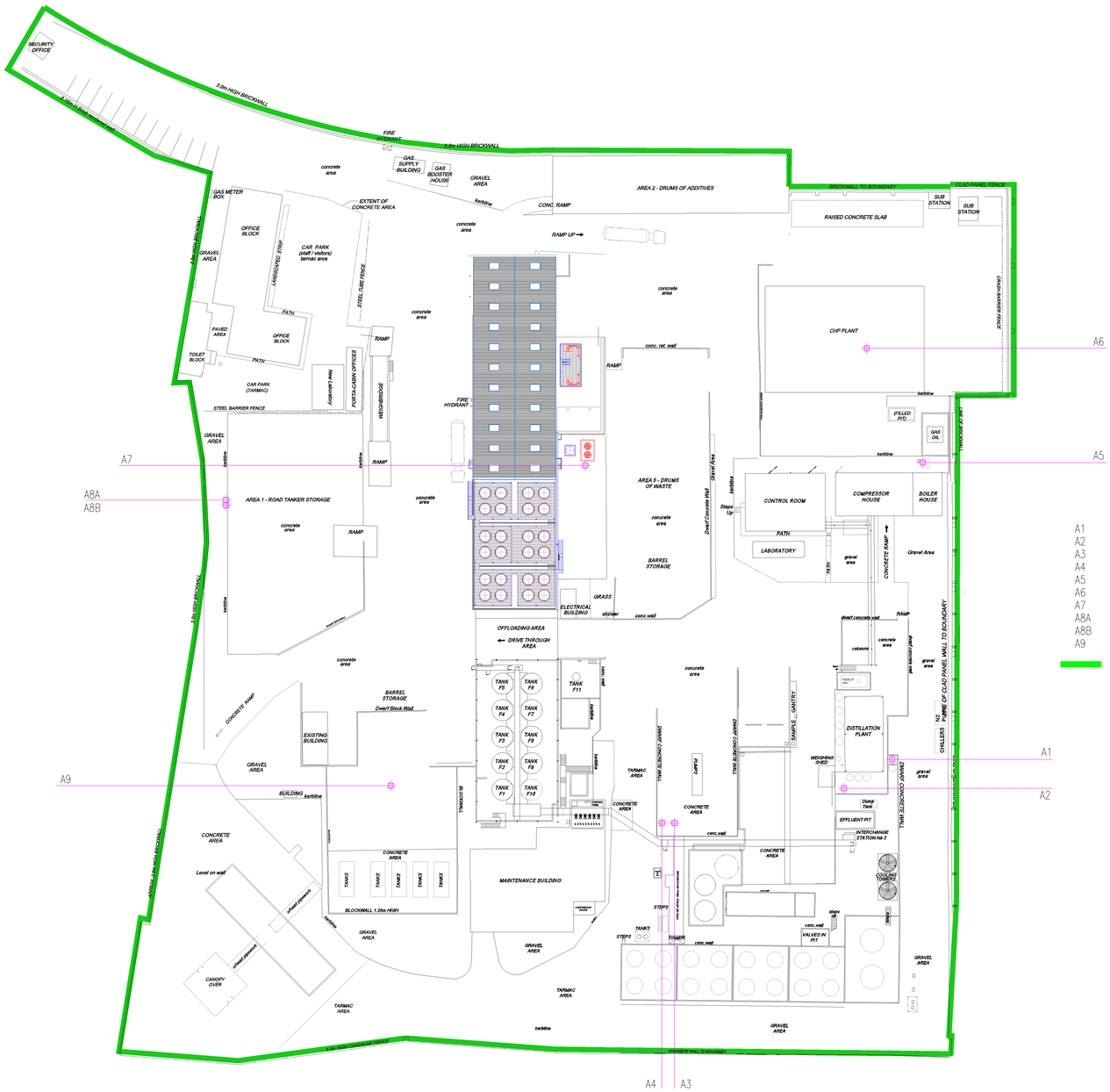
PROJECT TITLE	BLUEJAY	
SCALE	1:250	SIZE A1
DRAWING NUMBER		ISSUE
VEO-20-113-1004		P9



A1	VENT TO SCRUBBER
A2	VENT FROM D500
A3	VENT FROM TANKS 17 & 20
A4	VENT FROM TANKS 18 & 19
A5	BOILER STACK
A6	EXHAUST STACK CHP
A7	VENT FROM SCRUBBER
A8A	NEW BOILER STACK
A8B	NEW BOILER STACK
A9	NEW PLANT & TANK SCRUBBER

SITE BOUNDARY

PERMIT SITE PLAN SCALE 1:500

REFERENCE DRAWINGS

20-113-1000	SITE LOCATION PLAN
20-113-1001	EXISTING & PROPOSED NORTH ELEVATION
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20-113-1006	COMBINED 3D MODEL & GOOGLE IMAGE

ISSUED FOR INFORMATION

ISSUE	DATE	DESCRIPTION OF ISSUE OR REVISION	BY	CHK
P8	06-05-21	KEY AMENDED TO REFLECT NEW EQUIPMENT	AMc	ID
P7	17-09-20	EA SITE BOUNDARY COLOUR REVISED.	JD	CG
P6	16-09-20	SITE BOUNDARY ADDED.	JD	CG
P5	13-08-20	PROVISIONAL ISSUE	JD	CG
P4	05-08-20	PROVISIONAL ISSUE	JD	CG

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PLANT	GSW	SECTION	GENERAL LAYOUT

TITLE
GSW BLUEJAY
PLANNING PROPOSAL
PERMIT SITE PLAN

DRN	JD
DATE	07.07.20
CHK	
APPD	

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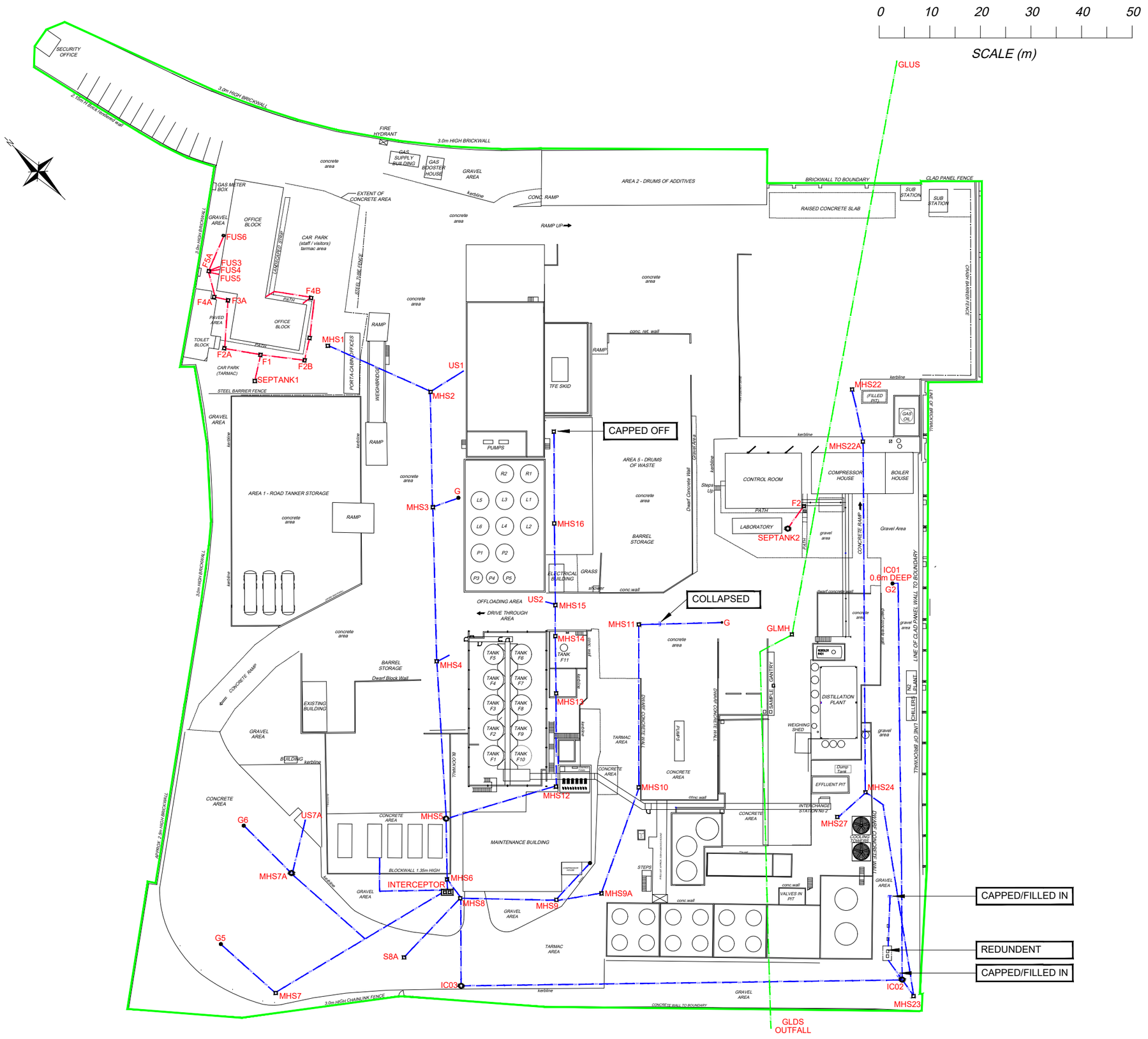
PROJECT TITLE	BLUEJAY
SCALE	1:500
SIZE	A1
DRAWING NUMBER	ISSUE
VEO-20-113-1005	P8



LEGEND

- Site Boundary
- Storm Water Sewers — SW
- Foul Water Sewers — FW
- Garston Line — SW
- Manhole — MH
- Manhole — MH
- Gully — G

ISSUE	DETAILS	INTL	DATE
A	FOR APPROVAL	CH	09.12.19

VEOLIA ENVIRONMENTAL SERVICES
KING STREET, GARSTON
LIVERPOOL, L19 8EG
Tel: 0151 427 4305
Web: www.veolia.co.uk

LOCATION

VEOLIA GARSTON, LIVERPOOL

PROJECT

BUNDED STORAGE ZONES AND EXPLORATORY HOLE LOCATION PLAN

DRAWING TITLE

SITE PLAN SHOWING DRAINAGE LAYOUT

	Initials	Date	Scales
DRWN	CH	Dec 2019	1:750 @ A3
CHKD			
APPD			

DWG NO. VGD - 01

ACAD REF

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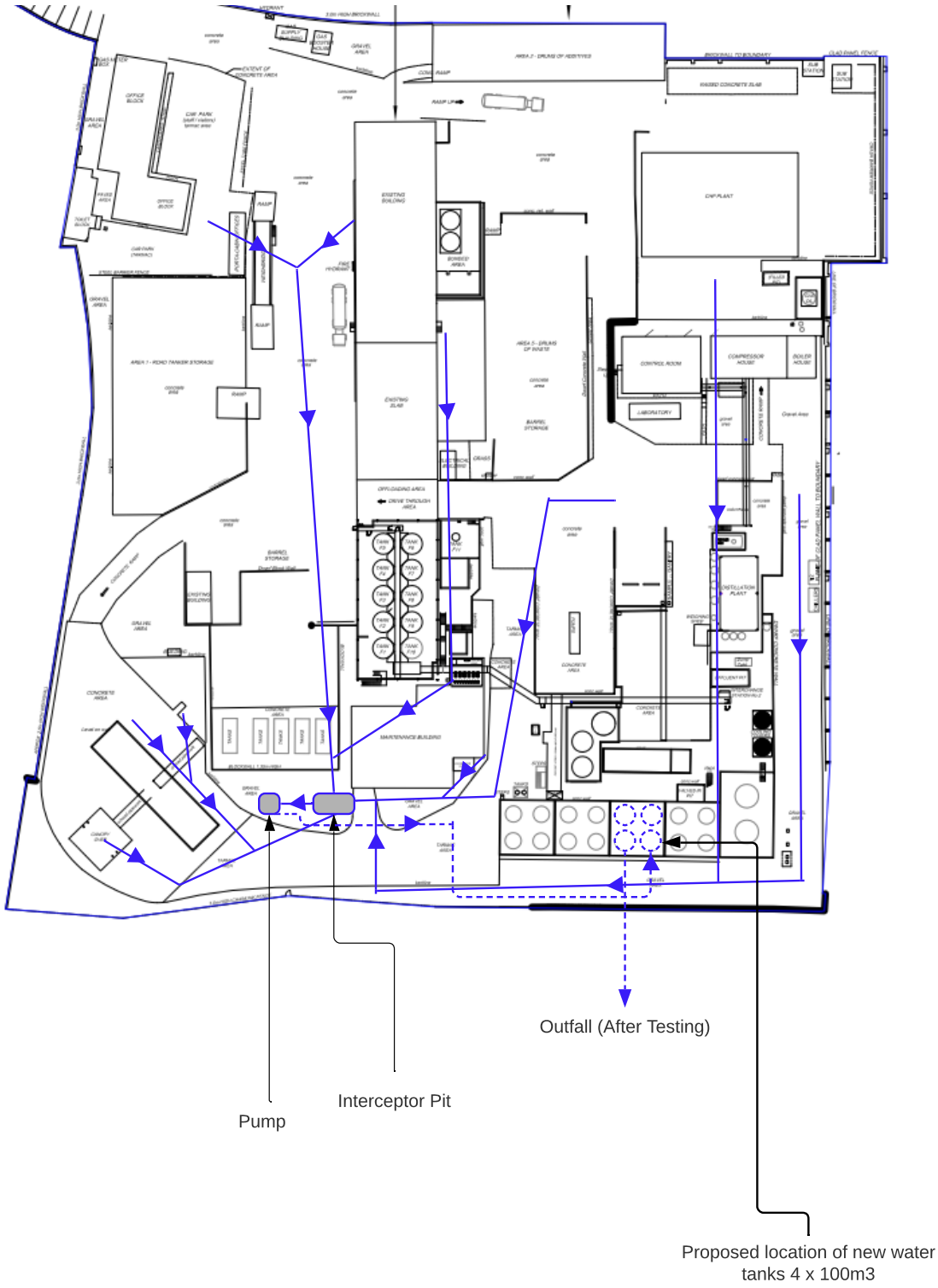
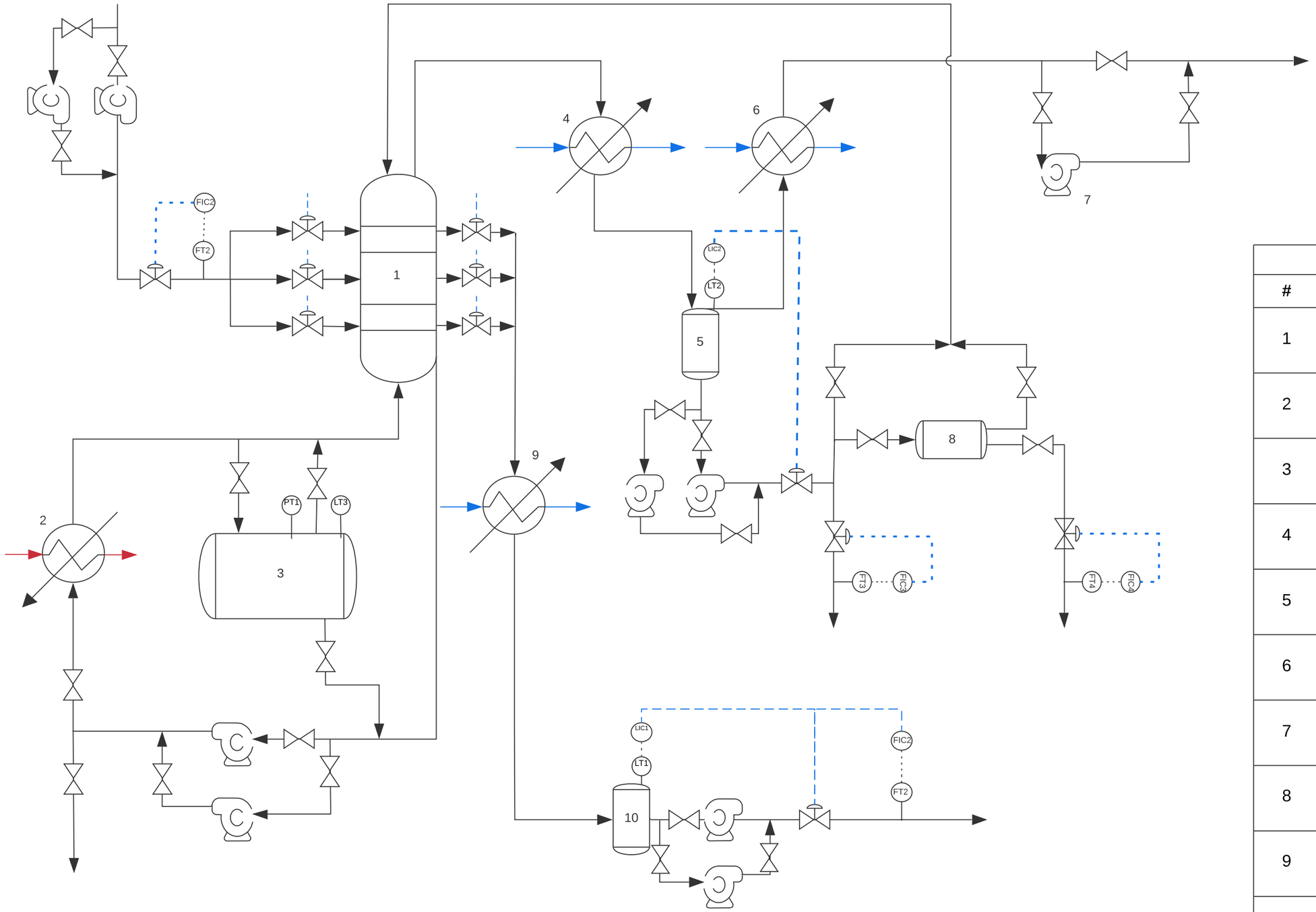
W3 - Proposed Site Drainage For Blue Jay (Plan Ref: VGD-02)



Project Bluejay Basic P&ID

michael.paterson | March 25, 2020

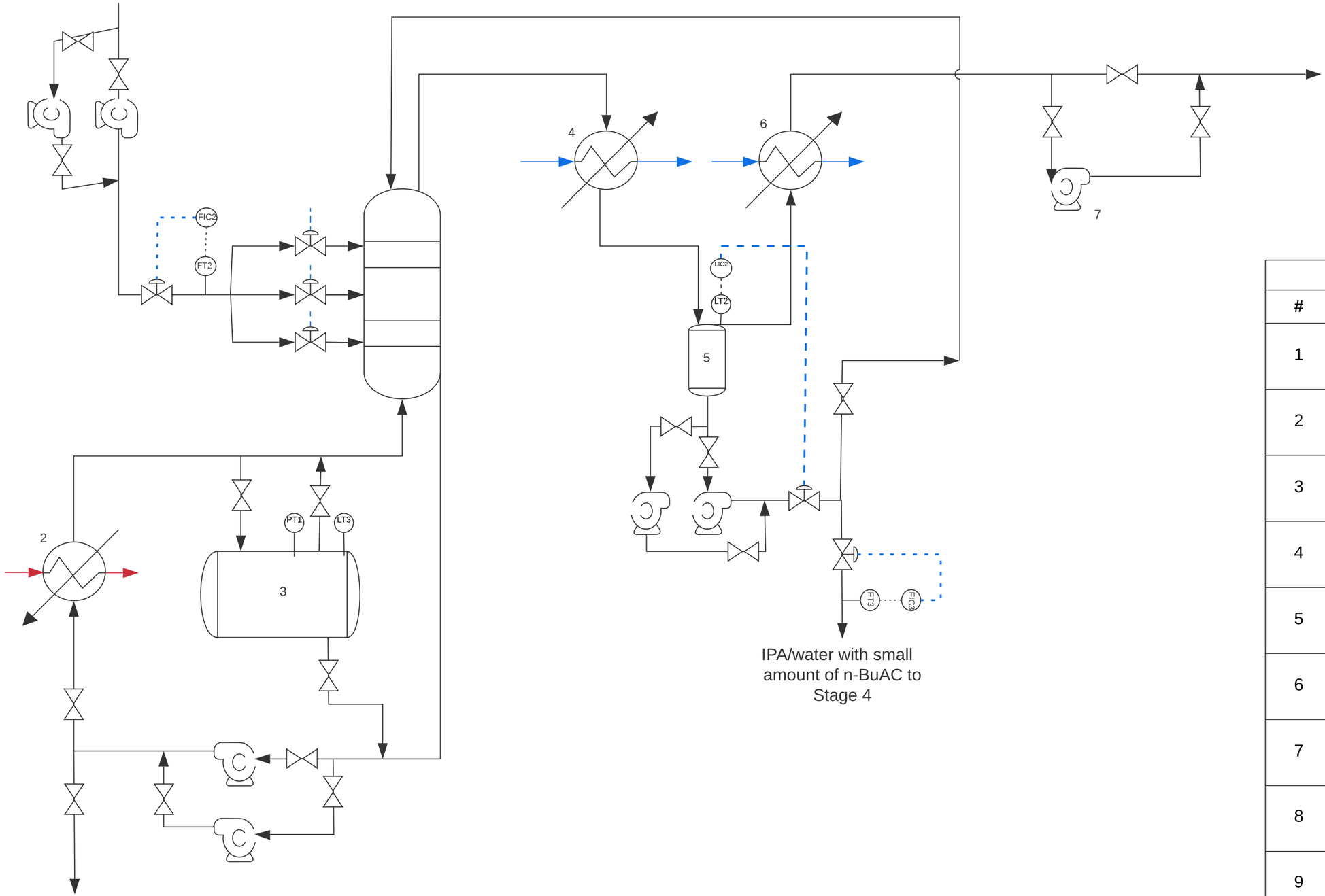


Legend		
#	**Symbol**	**Description**
1		Distillation Column
2		Reboiler
3		Kettle
4		Main Condenser
5		Reflux Pot
6		Vent Condenser
7		Vacuum Pump
8		Separator drum
9		Product Cooler
10		Bottoms Drum

Project Bluejay Basic P&ID

michael.paterson | March 25, 2020

GSW Crude feed



IPA/water with small amount of n-BuAC to Stage 4

Legend		
#	**Symbol**	**Description**
1		Distillation Column
2		Reboiler
3		Kettle
4		Main Condenser
5		Reflux Pot
6		Vent Condenser
7		Vacuum Pump
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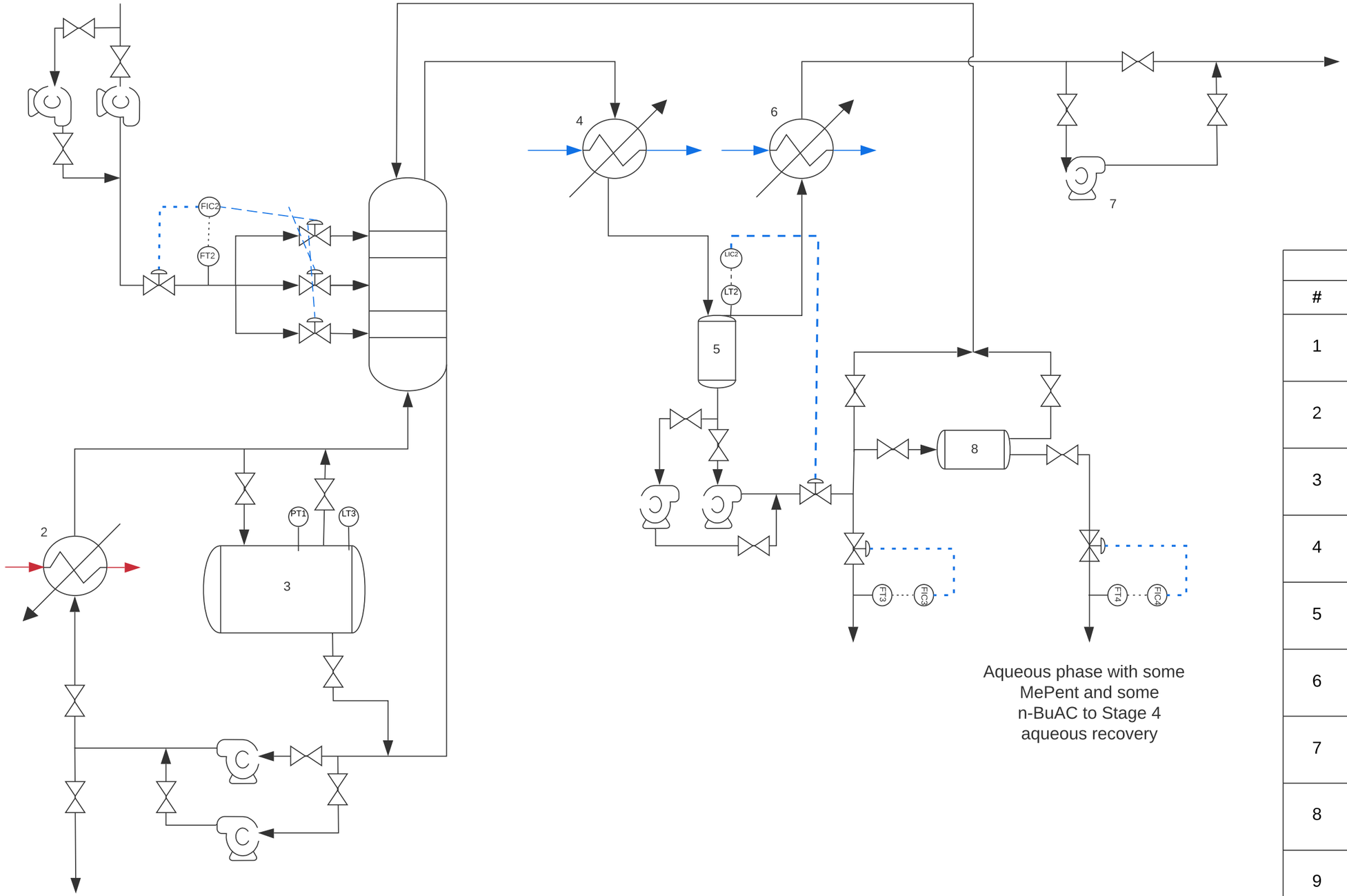
Project Bluejay Basic P&ID

michael.paterson | March 25, 2020

GSW Crude feed



Aqueous phase with some MePent and some n-BuAC to Stage 4 aqueous recovery

Legend		
#	**Symbol**	**Description**
1		Distillation Column
2		Reboiler
3		Kettle
4		Main Condenser
5		Reflux Pot
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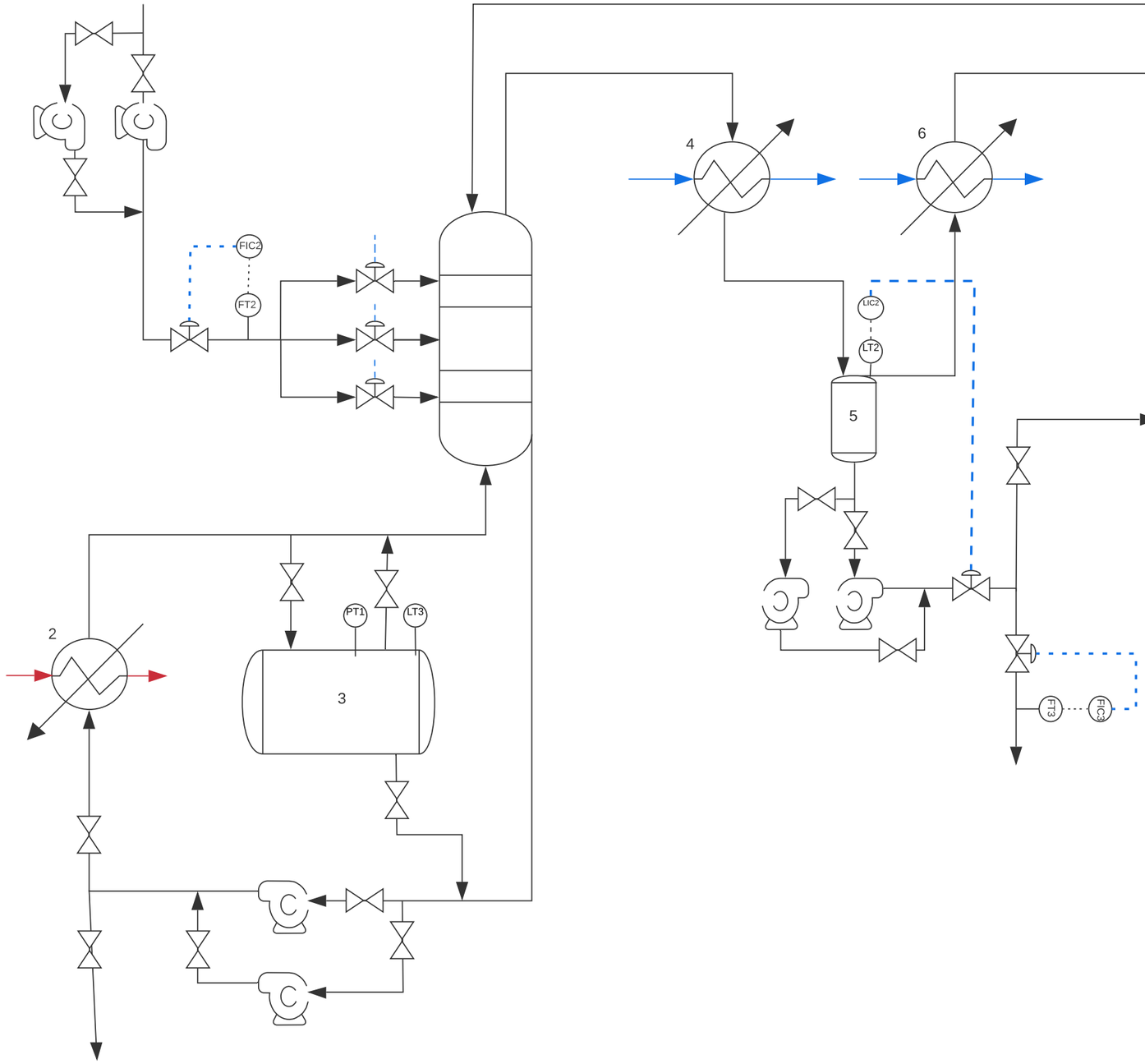
10		Bottoms Drum

Project Bluejay Basic P&ID

michael.paterson | March 25, 2020

GSW Crude feed



MePentanol, n-BuAC, PGMEA to Thinners

Cyclohexanone rich (low PGMEA, some Ethyl Lactate to Stage 2)

Legend		
#	**Symbol**	**Description**
1		Distillation Column
2		Reboiler
3		Kettle
4		Main Condenser
5		Reflux Pot
6		Vent Condenser
7		Vacuum Pump
8		Separator drum
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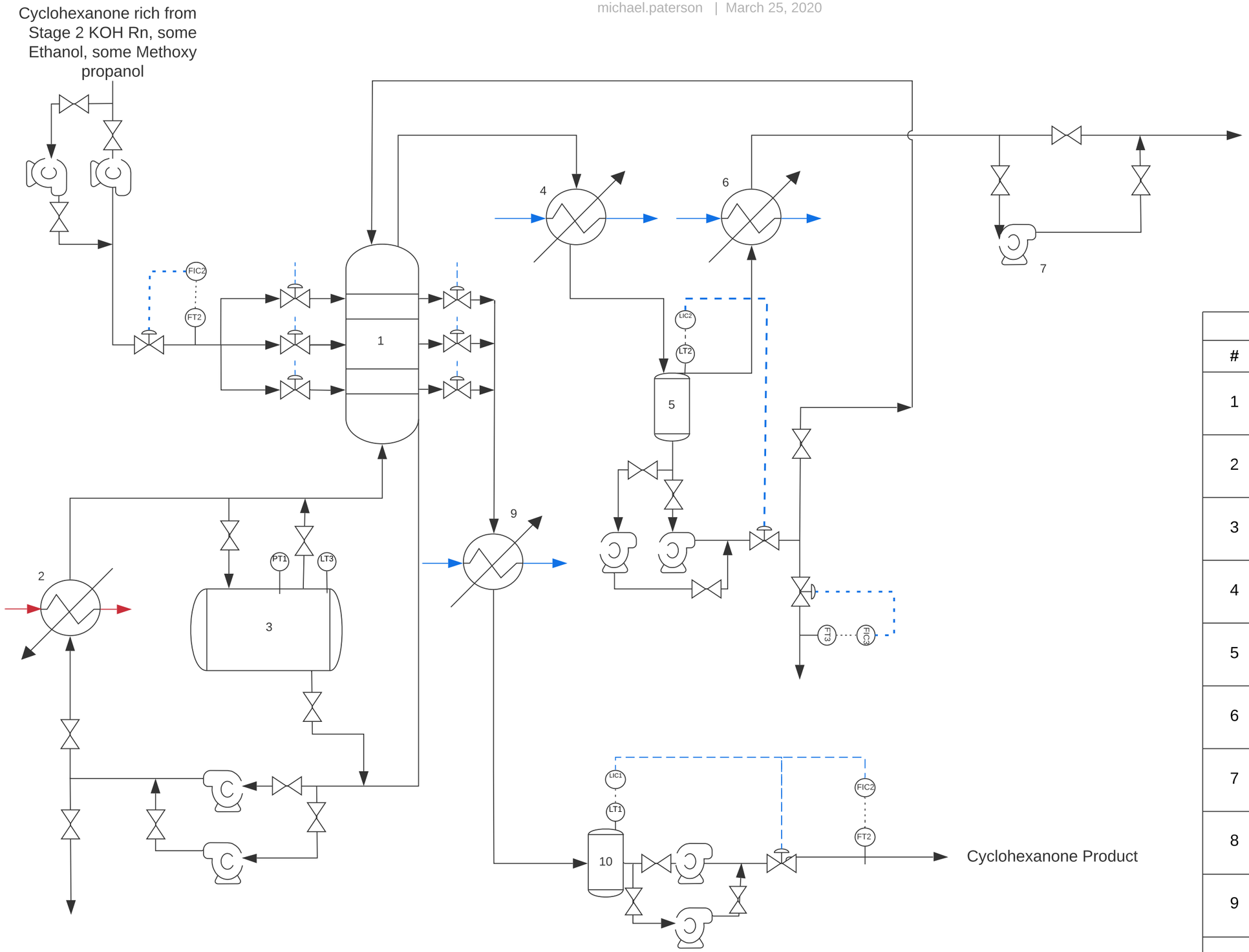
10		Bottoms Drum

Project Bluejay Basic P&ID

michael.paterson | March 25, 2020



Legend		
#	**Symbol**	**Description**
1		Distillation Column
2		Reboiler
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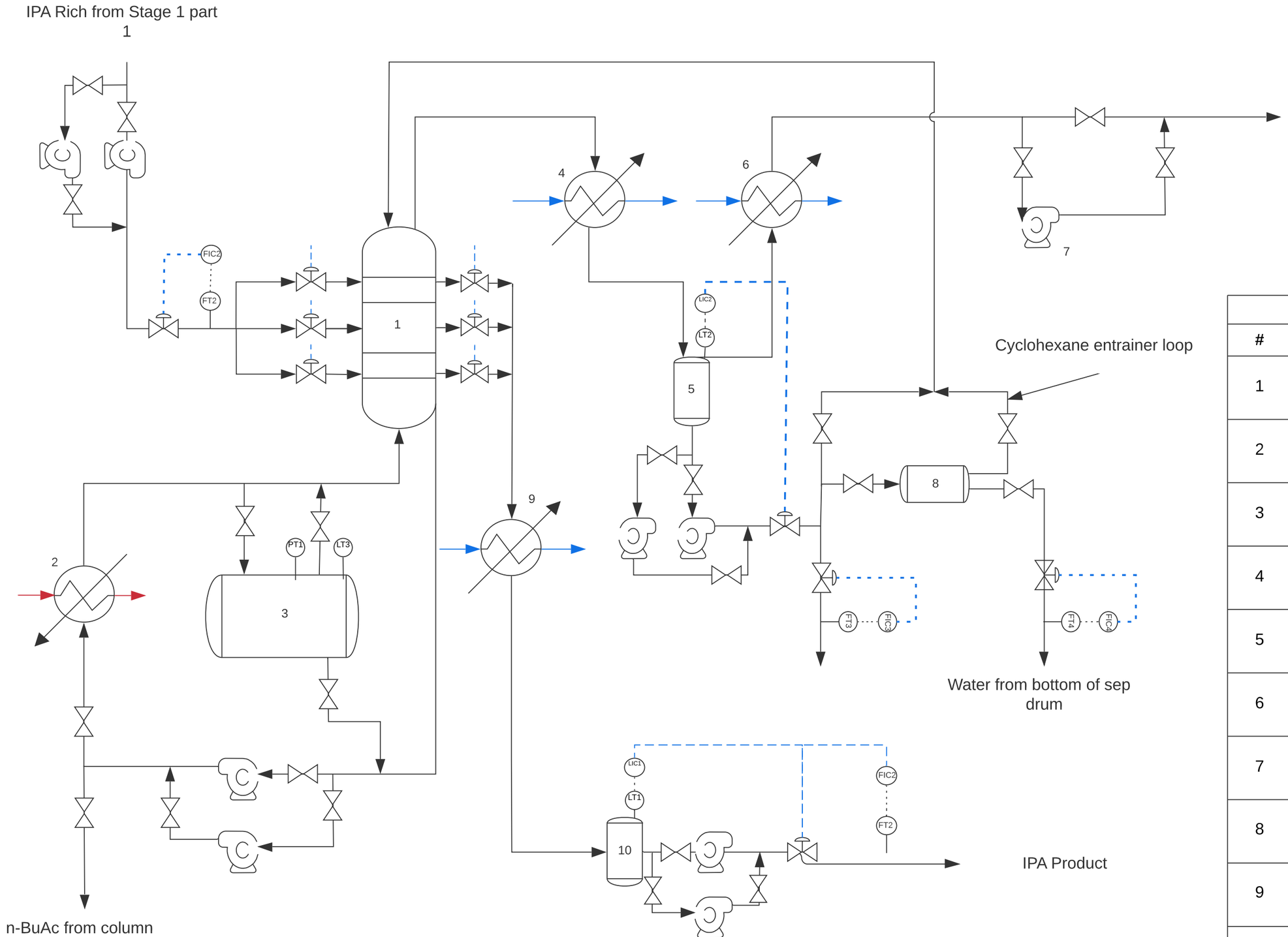
Project Bluejay Basic P&ID

michael.paterson | March 25, 2020



Legend		
#	**Symbol**	**Description**
1		Distillation Column
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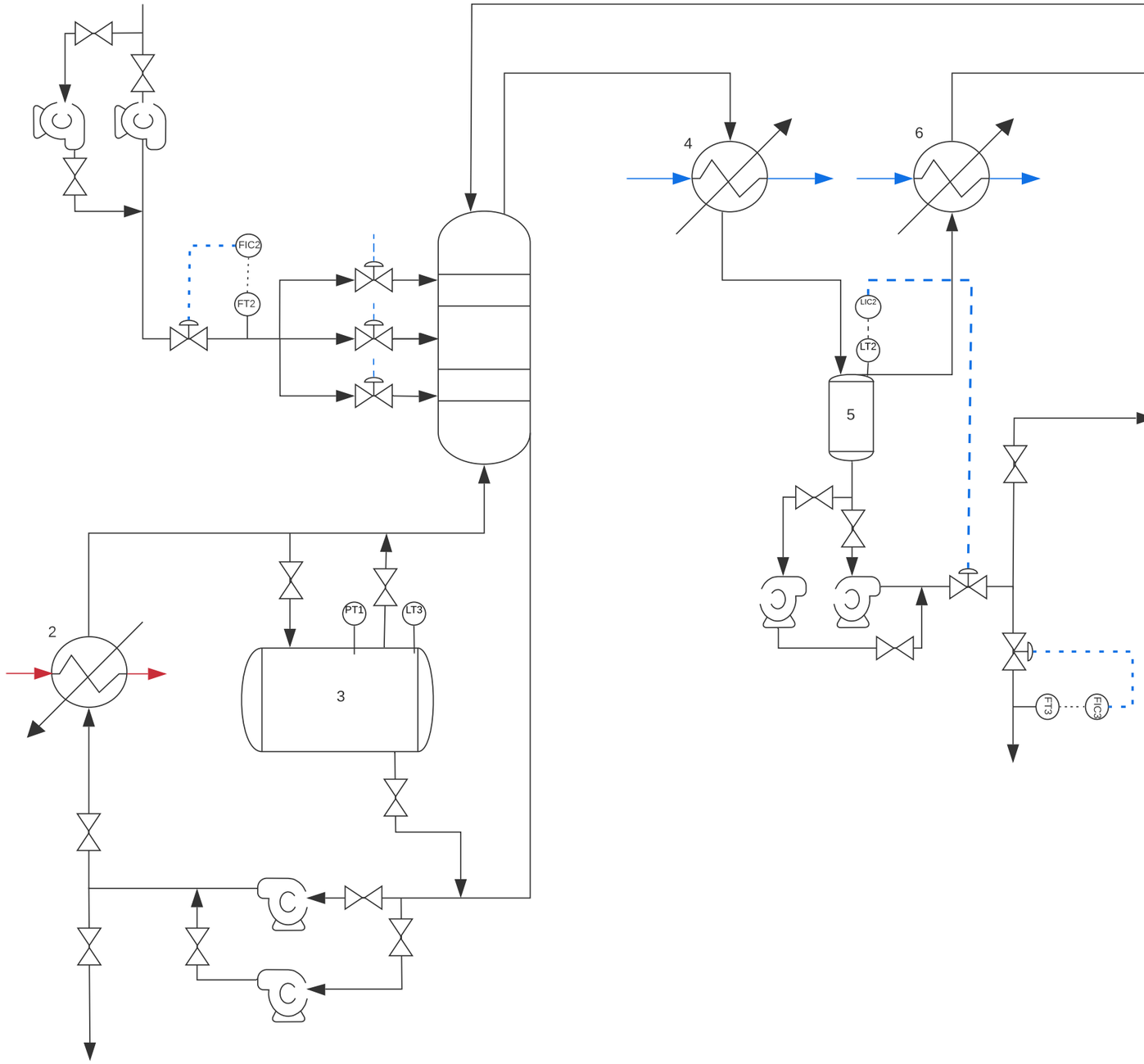
michael.paterson | March 25, 2020



Legend		
#	**Symbol**	**Description**
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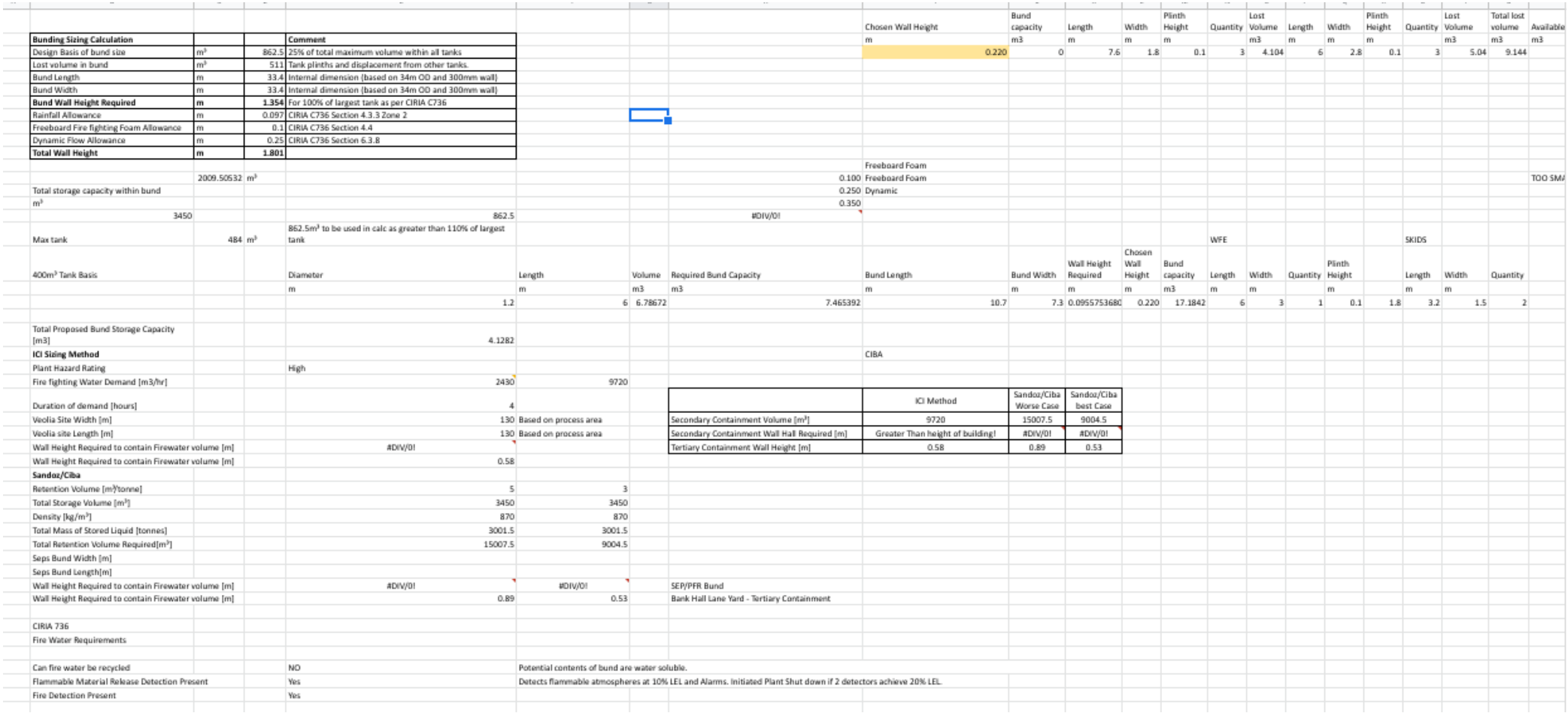
APPENDIX B

TANK BUND CALCULATIONS and PROPOSED FIRE MANAGEMENT



Bunding Sizing Calculation			Comment
Design Basis of bund size	m^3	862.5	25% of total maximum volume within all tanks
Lost volume in bund	m^3	511	Tank plinths and displacement from other tanks.
Bund Length	m	33.4	Internal dimension (based on 34m OD and 300mm wall)
Bund Width	m	33.4	Internal dimension (based on 34m OD and 300mm wall)
Bund Wall Height Required	**m**	**1.354**	For 100% of largest tank as per CIRIA C736
Rainfall Allowance	m	0.097	CIRIA C736 Section 4.3.3 Zone 2
Freeboard Fire fighting Foam Allowance	m	0.1	CIRIA C736 Section 4.4
Dynamic Flow Allowance	m	0.25	CIRIA C736 Section 6.3.8
Total Wall Height	**m**	**1.801**	

								Chosen Wall Height	Bund capacity	Length	Width	Plinth Height	Quantity	Lost Volume	Length	Width	Plinth Height	Quantity	Lost Volume	Total lost volume	Available		
								m	m3	m	m	m		m3	m	m	m		m3	m3	m3		
								0.220	0	7.6	1.8	0.1	3	4.104	6	2.8	0.1	3	5.04	9.144			
								Freeboard Foam															
	2009.50532	m^3				0.100	Freeboard Foam														TOO SMA		
Total storage capacity within bund						0.250	Dynamic																
m^3						0.350																	
3450			862.5			#DIV/0!																	
Max tank	484	m^3	862.5m^3 to be used in calc as greater than 110% of largest tank										WFE					SKIDS					
400m^3 Tank Basis			Diameter	Length	Volume	Required Bund Capacity	Bund Length	Bund Width	Wall Height Required	Chosen Wall Height	Bund capacity	Length	Width	Quantity	Plinth Height		Length	Width	Quantity				
			m	m	m3	m3	m	m	m	m	m3	m	m		m		m	m					
			1.2	6	6.78672	7.465392	10.7	7.3	0.095573680	0.220	17.1842	6	3	1	0.1	1.8	3.2	1.5	2				
Total Proposed Bund Storage Capacity [m3]			4.1282																				
ICI Sizing Method							CIBA																
Plant Hazard Rating			High																				
Fire fighting Water Demand [m3/hr]			2430	9720																			
Duration of demand [hours]			4																				
Veolia Site Width [m]			130	Based on process area																			
Veolia site Length [m]			130	Based on process area																			
Wall Height Required to contain Firewater volume [m]			#DIV/0!																				
Wall Height Required to contain Firewater volume [m]			0.58																				
Sandoz/Ciba																							
Retention Volume [m^3/tonne]			5	3																			
Total Storage Volume [m^3]			3450	3450																			
Density [kg/m^3]			870	870																			
Total Mass of Stored Liquid [tonnes]			3001.5	3001.5																			
Total Retention Volume Required[m^3]			15007.5	9004.5																			
Seps Bund Width [m]																							
Seps Bund Length[m]																							
Wall Height Required to contain Firewater volume [m]			#DIV/0!	#DIV/0!		SEP/PFR Bund																	
Wall Height Required to contain Firewater volume [m]			0.89	0.53		Bank Hall Lane Yard - Tertiary Containment																	
CIRIA 736																							
Fire Water Requirements																							
Can fire water be recycled			NO	Potential contents of bund are water soluble.																			
Flammable Material Release Detection Present			Yes	Detects flammable atmospheres at 10% LEL and Alarms. Initiated Plant Shut down if 2 detectors achieve 20% LEL.																			
Fire Detection Present			Yes																				

	ICI Method	Sandoz/Ciba Worse Case	Sandoz/Ciba best Case
Secondary Containment Volume [m^3]	9720	15007.5	9004.5
Secondary Containment Wall Hall Required [m]	Greater Than height of building!	#DIV/0!	#DIV/0!
Tertiary Containment Wall Height [m]	0.58	0.89	0.53

PYRO PROTECTION LIMITED

Saddleworth Business Centre
Huddersfield Road
Delph, Oldham OL3 5DF
Telephone: 01457 879222
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Veolia Limited
8th Floor
210 Pentonville Road
London
N1 9JY

Date: 18th October 2020

Our Ref: 5085 Rev 1

FOR THE ATTENTION OF BRETT HOARE

Dear Brett,

VEOLIA GARSTON SOLVENT RECOVERY FACILITY & PROJECT BLUEJAY

Further to your recent enquiry we now have pleasure in providing our proposal for the fire protection of the Garston solvent recovery facility.

Site Summary

The Garston Solvent Recycling Facility is a lower tier COMAH (control of major accident hazards) site.

It receives via road tanker and road trailer (drums & IBC's) hazardous waste solvents, which are then recycled through one of two solvent recovery plants, recovering ethanol, and from paint washings mainly xylene and toluene.

The site has fire detection systems installed but has no automatic fire suppression systems on the site.

There are three fire hydrants locations onsite, but details of available flow and pressure (or a flow testing regime) are currently unknown.

One of the fire hydrants can be used to provide a water supply for the water storage tank infill lines.

Basis of proposal

To design, supply, install, test and commission tank farm fire suppression systems (TK01, TK02 & TK03 – see blockplan for details) and tanker off-loading bay protection (TOL01 & TOL02). The systems will also be foam enhanced and provided with a commensurate water supply (approximately 24,000 litres/minute) with a total stored water supply adequate for a 120-minute operation period.

In addition to the existing plant protection proposed, additional deluge protection is proposed to the new Project BlueJay tank farm and the adjoining Process Plant.

The flowrate for the new tank farm, given the proximity of the tanks will require a commensurate water supply (approximately 42,000 litres/minute) with a total stored water supply adequate for a 120-minute operation period.

This therefore supersedes the earlier water supplies required to protect the existing plant.

Please note our concerns that the new tank farm and the existing solvent tanks are, in our view, and possibly that of an insurer insufficiently remote from one another to prevent fire spread should a major incident occur. Therefore either additional separation distance may be required, the introduction of passive fire separation, or an increase in the water supplies to allow for the operation of more than one fire zone.

Please also note that the process structure is relatively close to the new tank farm and will also form part of the fire risk assessment required.

Scope of works

The areas are listed as follows along with accompanying notes specific to those areas.

A. Tank Farm TK 01 to TK03 - New Deluge Protection Systems

Tanker Off-Loading Area & Tank Farm Deluge Protection

The new system will be set-up to provide, via a FireDos foam enhancement proportioning system, a 3% foam enhancement to the deluge spray system covering the tank farms TK 01 & TK02 and the tank off-loading bay that straddles the area between the tanker off-loading bay TOL1 and at a flow rate estimated to be approximately 24,000 litres per minute.

Tank Farm TK 03 and Tanker Off-loading bay TOL02 (assumed to be three tanker off-loading positions) will be dealt with as separate operating areas given the separation distances between those areas and the larger initial zone of protection.

The new tank off-loading bay and tank farm deluge system has been calculated to provide a minimum flowrate of 10.2mm/min over the entire surface area of the solvent tanks and any tanker parked inside the tanker bay, supplemented with 3% Aqueous Film Forming Foam (AFFF) Alcohol Resistant type, in accordance with NFPA 15 Standard for Water Spray Fixed Systems and NFPA 16 Standard for the Installation of Foam - Water Spray Systems.

The system would comprise of an array of ‘hot-dip’ galvanised steel pipework with distribution and range pipes at two levels on each tank terminating with FM approved D3 spray nozzles located at between two and three on each tank; the area is outlined on the blockplan attached.

The system detection and activation is controlled via a dry pilot actuation line of detector sprinklers installed at the highest level of the deluge suppression system, which would open and release the water pressure holding the diaphragm closed thus allowing the diaphragm to open.

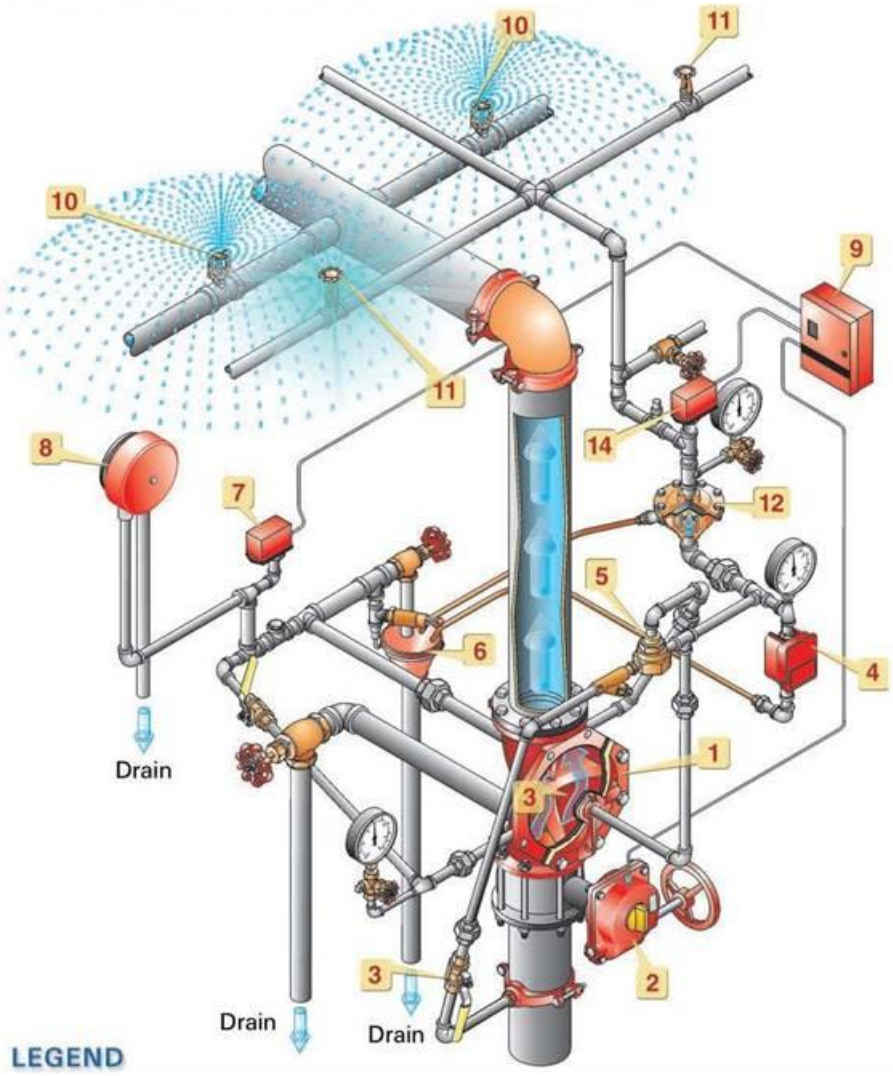
The installation control valves comprise of a diaphragm valve, which when in the stand-by position will be held closed by the water pressure from the site fire main. Each deluge valve has a pressure switch integral and is assumed to provide a signal of system operation to the site BMS if required.

It is assumed that a total of 5 DV5 deluge control valves will be required.

The dry pilot line will be charged with air from the existing plant air supply.

Typical tank farm in operation

TYPICAL DRY PILOT ACTUATED DELUGE INSTALLATION CONTROL VALVE



1	Deluge Valve	2	Isolation Valve	3	Diaphragm Supply Valve
4	Manual Control Station	5	Automatic Shut-off Valve	6	Automatic Drain Valve
7	Pressure Switch	8	Water Motor Gong	9	Releasing Panel
10	Spray Nozzle	11	Pneumatic Detector	12	Air-water actuator
13	Air Supply Inlet	14	Pressure Switch (Air)		

Project BlueJay Tank Farm - New Deluge Protection Systems

Twin Tanker Off-Loading Area & Tank Farm Deluge Protection

The new system will be set-up to provide, via a FireDos foam enhancement proportioning system, a 3% foam enhancement to the deluge spray system covering the new Project BlueJay tank farm and the tanker off-loading bay that adjoins the tank farm at a flow rate estimated to be approximately 42,000 litres per minute.

The new tank farm and the tanker off-loading bays will be dealt with as separate operating areas and as such passive fire separation may be required.

The new tanker off-loading bay and tank farm deluge system has been calculated to provide a minimum flowrate of 10.2mm/min over the entire surface area of the solvent tanks and any tanker parked inside the tanker bay, supplemented with 3% Aqueous Film Forming Foam (AFFF) Alcohol Resistant type, in accordance with NFPA 15 Standard for Water Spray Fixed Systems and NFPA 16 Standard for the Installation of Foam - Water Spray Systems.

The system would comprise of an array of ‘hot-dip’ galvanised steel pipework with distribution and range pipes at two levels on each tank terminating with FM approved D3 spray nozzles located at between two and three on each tank; the area is outlined on the blockplan attached.

The system detection and activation is controlled via a dry pilot actuation line of detector sprinklers installed at the highest level of the deluge suppression system, which would open and release the water pressure holding the diaphragm closed thus allowing the diaphragm to open.

The installation control valves comprise of a diaphragm valve, which when in the stand-by position will be held closed by the water pressure from the site fire main. Each deluge valve has a pressure switch integral and is assumed to provide a signal of system operation to the site BMS if required.

It is assumed that a total of 5 DV5 deluge control valves will be required.

The dry pilot line will be charged with air from the existing plant air supply.

Project BlueJay Tank Farm - New Deluge Protection Systems

Process Plant Deluge Protection

The new system will be set-up to provide, via a FireDos foam enhancement proportioning system, a 3% foam enhancement to the deluge spray system covering the new Project BlueJay Process Plant over a total of three separate levels.

The new process plant and the new tank farm will be dealt with as separate operating areas and as such passive fire separation may be required.

The new process plant deluge system has been calculated to provide a minimum flowrate of 10.2mm/min over the entire surface area of the process plant footplate over three levels, supplemented with 3% Aqueous Film Forming Foam (AFFF) Alcohol Resistant type, in accordance with NFPA 15 Standard for Water Spray Fixed Systems and NFPA 16 Standard for the Installation of Foam - Water Spray Systems.

The system would comprise of an array of ‘hot-dip’ galvanised steel pipework with distribution and range pipes at two levels on each tank terminating with FM approved D3 spray nozzles located at between two and three on each tank; the area is outlined on the blockplan attached.

The system detection and activation is controlled via a dry pilot actuation line of detector sprinklers installed at the highest level of the deluge suppression system, which would open and release the water pressure holding the diaphragm closed thus allowing the diaphragm to open.

The installation control valves comprise of a diaphragm valve, which when in the stand-by position will be held closed by the water pressure from the site fire main. Each deluge valve has a pressure switch integral and is assumed to provide a signal of system operation to the site BMS if required.

It is assumed that a total of 5 DV5 deluge control valves will be required.

The dry pilot line will be charged with air from the existing plant air supply.

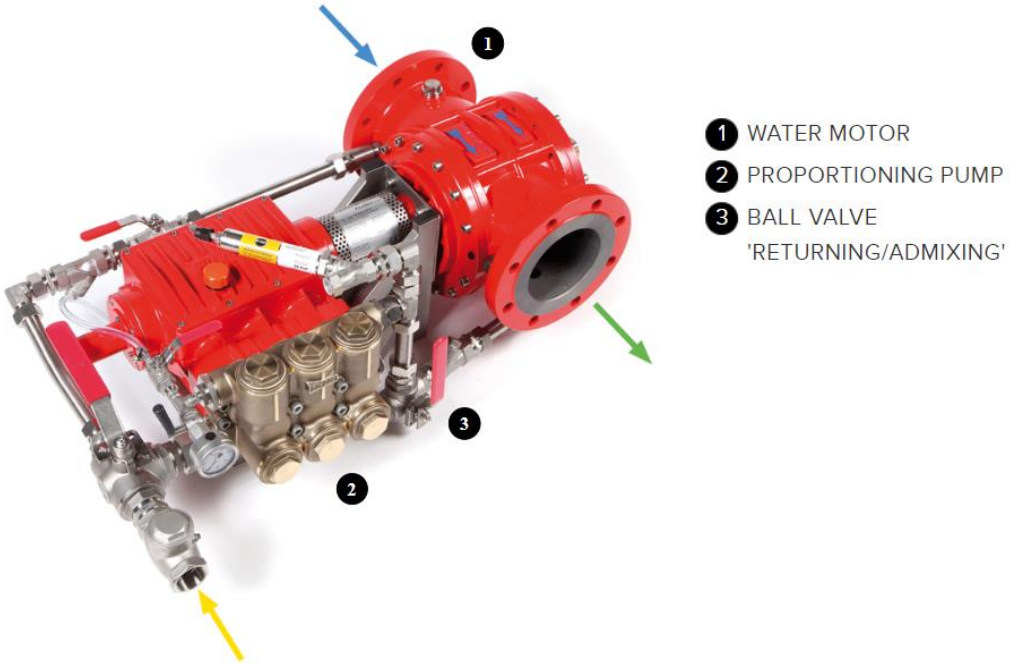
Foam Enhancement – FireDos foam enhancement

The entire fire detection system will have foam enhancement added at source to provide a maximum flow rate estimated to be approximately 42,000 litres per minute with three off FireDos units (15,000 lpm) installed in series.

The atmospheric foam tank has a holding capacity of approximately 14,000 litres, which will be provide a foam discharge time (at the maximum flow rate) of 10 minutes. The new atmospheric foam tank will be of HDPE construction and will contain a 3% Aqueous Film Forming Foam (AFFF) Alcohol Resistant type.

All the above equipment will be supplied and installed at the water source (pumphouse) for site wide distribution.

Typical deluge control valves and atmospheric foam storage tank



Typical FireDos foam proportioning unit

A. Water Supply Arrangement

The water supplies will be located as shown on the block plan see appendix A.

The original water supplies required for the protection of the existing plant (24,00 litres/min) have been superseded by the greater demand required for the new solvent tank farm.

The motive power will be provided by dedicated water supplies which will comprise of three off Factory Mutual approved diesel driven pump sets rated at 15,250 at 9.54b drawing water from two off cylindrical FM approved water storage tanks each with an effective capacity of 2,545m³ and are 18.00m dia x 10.0m high.

A fourth pumpset rated as per the above sets – diesel powered – is provided as a back-up.

The proposed water supplies are sized to provide a 120 minutes supply for the deluge systems inclusive of a hose stream allowance of 1,900 l/min.

The deluge system water tanks are assumed to be fed from the existing fire hydrant point onsite.

The fire pumps are designed to operate automatically on sensing a pressure drop within the system pipework. Once operated the fire pumps need to be turned off manually.

A small jockey pump is connected to the system pipework which is fully automatic and set to maintain the system pressure above that at which the main fire pump will operate. In the event of a sprinkler head being activated the loss of water and consequent drop in pressure is greater than the jockey pump duty and the main fire pumps are called into action.

The water supplies will require a power supply terminating in the pump room with a TP&N isolator, to be provided by others. The supply is for the pump room ancillary equipment and would be capable of delivering approximately 120amps 3ph; this can be taken from a local distribution board. Interfaces with other services

The following interfaces with other services will be required:

Electrical

- Non-essential power supply to the pumproom ancillary equipment – 120a 3ph
- Wiring of valve-set limit switches to BMS Panel
- Power supply adjacent to the location of the pump monitoring panel
- Off-site alarm signaling from each deluge control valve to BS EN 16.3.

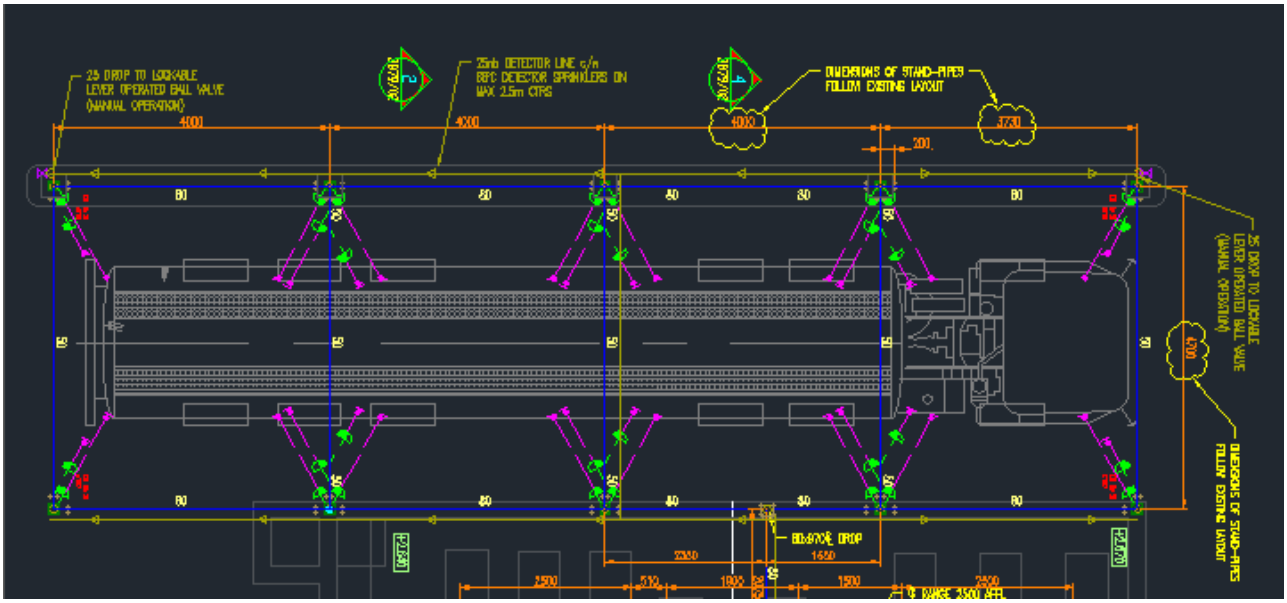
Builders' work

All builders' work requirements including:

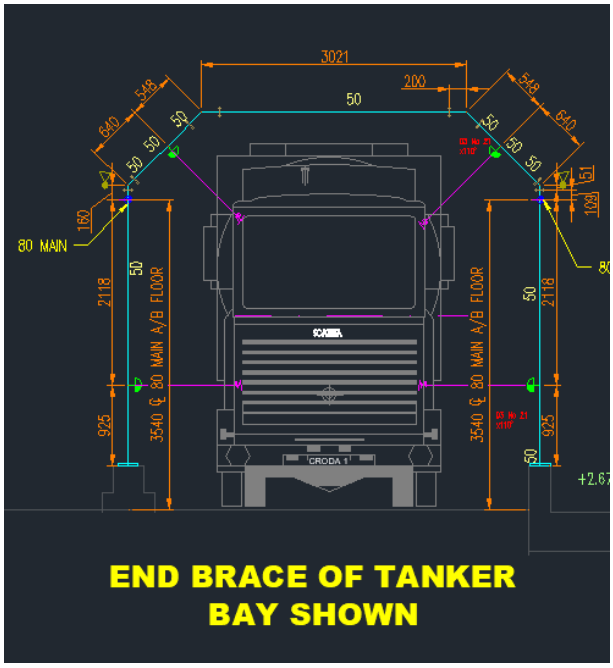
1. Fire pump room building erection including fire pump plinths etc.
2. Tank base for sprinkler water storage tanks approximately 18.7m diameter each.
3. Pipe bridges for supply main over road crossings approximately 100m overall.
4. Underground trench for the new tank farm delivery main – circa 1m (dependent on soil conditions) x 200m suitable for a 630mm delivery main.
5. Drainage for fire pump room and externally at deluge control valves (1 off pumphouse + 4 off local deluge GRP enclosures).
6. Holes in walls and making good.
7. Water supply to sprinkler tank.

For deluge block detailing all the above refer to Appendix A.

Typical water storage tank and GRP enclosure.



Typical single tanker off-loading bay



Typical tanker off-loading bay

Typical tanker off-loading bay deluge/spray protection in operation

Typical tanker off-loading bay deluge/spray protection in operation

Exclusions

1. Unless noted otherwise all work is assumed to be able to be carried out during normal working hours (Monday to Friday 08.00 to 18.00).
2. Holes in walls or floors for pipe work penetration and making good afterwards.
3. Painting of pipe work. Unless noted otherwise pipework will be finished in 'hot-dip' galvanised finish.
4. Removal of any redundant materials from site.
5. All civil works, including pumphouse, tank bases, trench creation/reinstatement and four off local GRP enclosure bases.
6. Existing pipe bridges are assumed to be usable, however additional pipe bridges (approximately 100m) may also be required depending on site restrictions.
7. All fixed access equipment.
8. Off-load and placement of foam bladdertank.
9. Provision of tools and equipment for working in ATEX rated environments
10. Unloading of bulk deliveries - pipework, brackets, etc.

Commercial conditions

Veolia, Garston Solvent Recovery Facility Fire Suppression Budget Cost Summary					
	Area	Cost	Electrics	Scaffold	Estimated Programme
Option		(£)	(£)	(£)	(Weeks)
A	Existing Tank Farm Protection to TK01, TK02 & TK03 Inclusive of water supply delivery main	476,000.00			90 days
B	New Project BlueJay Tank Farm Protection (underground delivery main included in the revised water supply costs).	511,000.00			100 days
C	Tanker Off-loading TOL01 & TOL02 Inclusive of water supply delivery main	186,000.00			43 days
D	New Project BlueJay twin tanker off-loading bays	85,000.00			20 days
E	New Project BlueJay Process Plant Deluge Protection – 3 levels at 30m x 15m floorplate – excluding distillation columns	116,000.00			45 days
F	Water Supplies – 4 OFF 15,250 l/min @ 9.54b FM approved pumps (3 primary + 1 back-up) & 2 OFF 2,545m3 tanks	1,965,000.00			40 days
G	FireDOS Foam Enhancement to all operating systems – based on maximum flow rate of 42,000 l/min – circa 13,500 litres of foam based on 10 minute operation	312,000.00			30 days
H	GRP pumphouse & 4 OFF remote valveset enclosures	54,000			20 days

All budget cost proposals are current as of October 2020.

All prices are exclusive of VAT which will be charges at the current rate.

Prices will be valid for a period of 30 days from the date of this quotation.

All costs are exclusive of water supply, civil and electrical works that will be required to complete the installation of new fire suppression systems.

Yours faithfully,

Matthew Smith BSc (Hons) MIFIRE

APPENDIX C

EMS SUMMARY AND SOP MATRIX

Veolia's Management System

Environmental Control | January 2021

Scope and Structure

All the activities undertaken as part of the Company's business are carried out in a controlled and legal manner, to ensure safety in operations, prevent damage and adverse environmental impacts. The management system structure allows us to meet and exceed the expectations of our customers and stakeholders, including regulatory authorities.

Veolia operates under an integrated management system that defines the business procedures, formulated to assist in meeting business objectives across the entire scope of Veolia's activities. The system is externally certified to ISO:14001 and therefore is subject to both internal and external audits to ensure compliance and to promote continual improvement. The Management System is an electronic platform, allowing widespread access across the business. The structure of the Management System revolves around Veolia Minimum Requirements and their associated toolkits, which are activity specific documents setting the minimum standards for Veolia locations that cover holistic risk.

In addition, there may be site specific procedures and working instructions which are maintained at site level, which can include matrices that demonstrate implementation of the management system.

All business representatives within Veolia work closely together to ensure that the information reflects a standardised and coordinated Veolia approach to the way we do business. Documents are regularly reviewed and communicated to employees and stakeholders.

Veolia is externally certificated to ISO 9001, ISO 14001, ISO 45001 and ISO 22301 by Lloyds Register who routinely audit a sample of sites to check compliance and adherence to the standards.

Certification details

Standard	Certification Number	Date of issue	Expiry Date
ISO 14001:2015 ISO 9001:2015 ISO 45001:2018 ISO 50001:2011 ISO 22301:2012	10209767	31st July 2019	31st March 2021

Environmental Aspects and Impacts

Veolia has a documented procedure to identify the operation's activities carried out on site, evaluate environmental aspects and impacts, and manage and minimise these where possible. Normal and abnormal operating conditions are considered, as well as direct and indirect aspects, incidents, potential emergency situations, and past, current and planned activities. Sites are required to review this annually or after any significant operational changes and amend accordingly.

Objectives and Targets

Veolia's Management System

Environmental Control | January 2021

Procedures are in place for the management, identification and review of objectives and targets. Sites are responsible for ensuring that specific targets are set, which both drive continual improvement on a site basis and contribute to overall strategic objectives.

Training and Competence

Veolia has a dedicated people development department that offers a wide range of training across the business, including Environmental Awareness and Environmental Permitting courses to enable managers and supervisors to responsibly manage sites in line with company procedures and legal requirements. COTC courses and refreshers are also offered to ensure technically competency standards are maintained. Further site based training is offered in the form of environmental updates examples include spill response, EWC codes and Hazardous waste changes.

All new staff are subject to a company induction which provides them with the tools to carry out their roles in a safe and competent manner

Reporting

Veolia uses AVA to monitor the environmental performance of sites and contracts. AVA enables trends to be identified and the appropriate action to be taken to mitigate and minimise environment related issues.

AVA is an internet based reporting system. This web-based tool allows all environmental accidents, incidents and near-misses to be reported by any user. There is also a function that allows for the reporting of any communication from an enforcing authority such as the Environment Agency including CAR reports. The system assigns an accountable person to take actions, in order to ensure continual improvement and appropriate controls are put in place.

Annual reporting is completed using our company wide global report, which contributes to the tracking and monitoring of our environmental and operational attributes.

Legislation

Veolia regularly reviews current legislation with industry groups, trade associations (ESA, CIA, and CIWM), regulatory bodies and internal staff to ensure that we are abreast of and implement appropriately any new legislative requirements that would affect our operations and our clients. This enables the review of new legislation, raising awareness and coordinating responses on draft legislation and consultations.

Veolia subscribe to CEDREC and Pegasus, a specialist organisation who translate complex laws into plain English for England, Wales, Scotland and Northern Ireland, providing expert relevant information that covers both Health & Safety and Environmental legislation. CEDREC's team of expert legal authors are able to provide a combination of legal expertise and practical experience thus offering a succinct overview of any relevant piece of legislation.

On an annual basis, permitted sites will undertake permit audits to ensure full compliance to the conditions thereof. In addition, all locations will undertake an Other Legal Requirements audit to ensure that legislative requirements are met.

Veolia's Management System

Environmental Control | January 2021

Auditing

The Head of Assurance has the overall responsibilities for the auditing programme across Veolia, in order to ensure that all parts of the management system, quality, health and safety and environment are evaluated in terms of their adequacy and effectiveness and its compliance with legislation and regulatory requirements. The frequency is determined based on the level of risk, operation complexity, incidents and previous audit findings. All sites are audited in a three year period and all procedures are covered in that period. Each year the head of assurance determines and agrees with the external certification body the program of surveillance audits.

Audit reports and associated tasks are logged onto our audit database (AVA) and notified to the relevant managers with a timescale for closure. Evidence is required from the site managers for these tasks to be closed out by the auditor in a timely manner. Audit findings are analysed by Managers in order to detect and eliminate potential causes of non-conformances and thus prevent recurrence, wherever possible.

Analysis of the audit findings are included in the agenda for each Site Management Review. All audit findings that have an impact on the integrity of the Management System are included in the agenda of the Corporate Management Review. All managers must implement any changes to local procedures or other documents found to be necessary as a result of audit findings.

Veolia sites are also subject to external audits from our certification body, Veolia's parent company, Regulators (e.g. HSE and Environment Agency) and customers.

GARSTON SOLVENT RECOVERY FACILITY SOP INDEX

REF (SOP/4/...)	SOP TITLE	Safety Critical	Revision Number	Issue Date	Review Date	New Template	Competence Check List	Responsibility	Liinked MAH	Linked RA	Linked COSHH
Back	Quality (SOP 010 - SOP200)										
10	Overview of Garston Business Management		8	Jan-20	Jan-22	Y	n/a	ES	1, 2, 3, 4		
11	Document Control and Issue		3	Jul-20	Aug-22	Y	n/a	NP			
12	Organisation Chart		17	Jan-20	Jan-22	Y	n/a	ES			
13	Garston Site Rules		4	Jan-20	Jan-22	n/a	n/a	NP			
22	Processing New Enquiries	x	13	Oct-19	Oct-21	Y	Y	HM	2, 3, 4	16a	
~~25~~	~~Sales Order Receipt and Processing~~		~~15~~	~~Jan-15~~	~~Jan-17~~			~~DK~~			
30	Approval & Re-evaluation of Suppliers		19	Feb-20	Feb-22	Y	n/a	ES			
35	Purchasing and Invoicing		17	Feb-20	Feb-22	Y	n/a	JB			
36	Production Planning		11	Jan-20	Jan-22	Y	n/a	NP			
38	Customs & Excise Procedures		15	Jan-20	Jan-22	Y	n/a	HM			
40	Material Acceptance	x	30	May-20	Jun-22	Y	Y	HM/NP	1, 2, 3, 4	14, 16a, 16b	
45	Plant Maintenance	X	15	Jan-20	Jan-22	Y	n/a	PP	1, 2, 3, 4	13, MH2	
~~50~~	~~Product Identification & Traceability~~		~~14~~	~~Sep-14~~	~~Sep-16~~			~~HM~~	~~1, 3~~		
61	Control of Production		14	Feb-20	Feb-22	Y	n/a	NP			
~~65~~	~~Calibration of Test Equipment~~		~~8~~	~~Sep-14~~	~~Sep-16~~		~~n/a~~	~~HM~~	1		
71	Quality Control	X	16	May-20	Jun-22		n/a	HM	2, 3	14, 16b, 16c	
~~80~~	~~Waste Control~~		~~20~~	~~Sep-14~~	~~Sep-16~~		~~n/a~~	~~HM/DK~~	2, 3, 4		
108	Product Despatch		15	Jul-19	Jul-21	Y	Y	CM	1, 2, 3, 4	14, 16a, 16b, 16c	
~~109~~	~~TFE Product Despatch~~		~~1~~	~~Sep-14~~	~~Sep-16~~		~~Y~~	~~NP/NP~~	~~1, 2, 3, 4~~	~~14, 16a, 16b, 16c, 21~~	
110	Rejected Material		11	Feb-20	Feb-22	Y		CM/NP		14, 16a, 16b, 16c	
135	Training and Competence Monitoring		15	Sep-18	Sep-20	Y	n/a	NP	1, 2, 3, 4		
136	TFE Drum/IBC Compound Stock Management		2	Feb-20	Feb-22	Y	Y	AN	3	16a	
137	Complaints and Concerns Handling		15	Feb-20	Feb-22	Y		HM			

REF (SOP/4/...)	SOP TITLE	Safety Critical	Revision Number	Issue Date	Review Date	New Template	Competence Check List	Responsibility	Liinked MAH	Linked RA	Linked COSHH
Back	**PROCESS (SOP 201 - SOP 500)**	??									
~~202~~	~~CTC for Ineos (D200 + D300)~~		~~7~~	~~Feb-10~~	~~Feb-12~~			~~NP/HM~~		~~5, MAH1~~	~~5~~
~~206~~	~~Dry IPA from Various (D100/D200)~~		~~5~~	~~May-18~~	~~May-20~~	~~Y~~	~~Y~~	~~NP/HM~~		~~MAH1~~	~~13~~
~~207~~	~~Ethanol 94/96 from Various (D400)~~		~~10~~	~~Jul-13~~	~~Jul-15~~			~~NP/HM~~		~~MAH1~~	~~8~~
~~220~~	~~Dry THF for Pentagon (D100/D200/D400)~~		~~5~~	~~Mar-13~~	~~Mar-15~~			~~NP/HM~~		~~MAH1~~	~~17~~
~~228~~	~~Dry Acetonitrile from Various (D100/D200)~~		~~5~~	~~Feb-14~~	~~Feb-16~~			~~NP/HM~~		~~MAH1~~	~~1~~
~~230~~	~~Dry Ethanol from AstraZeneca (D100/200)~~		~~9~~	~~Sep-10~~	~~Sep-12~~			~~NP/HM~~		~~MAH1~~	~~8~~
230a	Ethanol 99 from GSK Montrose (D100)		5	Jun-20	Jun-22	Y	Y	NP		MAH1	8
~~230b~~	~~Ethanol 99 from GSK Montrose (D300)~~		~~1~~	~~Jun-14~~	~~Jun-16~~			~~NP/HM~~		~~MAH1~~	~~8~~
~~237~~	~~IPS2 from Various Suppliers (D100 or D200)~~		~~5~~	~~Jul-16~~	~~Jul-18~~	~~Y~~	~~Y~~	~~NP/HM~~		MAH1	13
~~237a~~	~~IPS2 from GSK Irvine (D400)~~		~~3~~	~~Jan-17~~	~~Jan-19~~	~~Y~~		~~NP/HM~~		MAH1	13
~~237c~~	~~IPS2 from GSK Irvine (D100/D200)~~		~~5~~	~~Feb-17~~	~~Feb-19~~	~~Y~~		~~NP/HM~~		~~MAH1~~	~~13~~
~~240~~	~~Toluene from Various Suppliers (D400)~~		~~9~~	~~Jul-12~~	~~Jul-14~~			~~NP/HM~~		~~MAH1~~	~~18~~
~~240a~~	~~Toluene from DSM (D400)~~		~~1~~	~~Mar-15~~	~~Mar-17~~			~~NP/HM~~		~~MAH2~~	~~18~~
~~240b~~	~~Toluene From Aesica (D400)~~		~~1~~	~~Jul-15~~	~~Jul-17~~			~~NP/HM~~		~~MAH3~~	~~18~~
~~242~~	~~Methanol from Various (D100/D200/D300)~~		~~3~~	~~Feb-10~~	~~Feb-12~~			~~NP/HM~~		~~MAH1~~	~~15~~
~~242a~~	~~Methanol from Various (D400)~~		~~2~~	~~Jan-15~~	~~Jan-17~~			~~NP/HM~~		~~MAH1~~	~~15~~
~~242b~~	~~Methanol From Novartis WO499 (D400)~~		~~1~~	~~Mar-13~~	~~Mar-15~~			~~NP/HM~~		~~MAH1~~	~~15~~
~~242c~~	~~Methanol From Gibson Waste (Centrica) Toll (D100/200/300)~~		~~1~~					~~NP/HM~~			
~~253~~	~~DMF from Various (D400)~~		~~4~~	~~Mar-13~~	~~Mar-15~~			~~NP/HM~~		~~MAH1~~	~~6~~
~~261~~	~~Azeotropic ACN for Genzyme (D100/D200/D300)~~		~~7~~	~~Jul-13~~	~~Jul-15~~			~~NP/HM~~		~~MAH1~~	~~1~~
~~261a~~	~~Azeotropic ACN for Genzyme (D400)~~		~~8~~	~~Sep-11~~	~~Sep-13~~			~~NP/HM~~		~~MAH1~~	~~1~~

REF (SOP/4/...)	SOP TITLE	Safety Critical	Revision Number	Issue Date	Review Date	New Template	Competence Check List	Responsibility	Liinked MAH	Linked RA	Linked COSHH
~~264~~	~~Dry THF from Various (D100/D200)~~		~~5~~	~~Feb-10~~	~~Feb-12~~			~~NP/HM~~		~~MAH1~~	~~17~~
~~264a~~	~~THF For GSK Ireland (D100/200)~~		~~1~~	~~Feb-11~~	~~Feb-13~~			~~NP/HM~~		~~MAH1~~	~~17~~
~~269~~	~~Re-working Dirty Waste Solvent (D100/D200/D300)~~		~~2~~	~~Feb-10~~	~~Feb-12~~			~~NP/HM~~		MAH1	
~~269a~~	~~Reprocessing Dirty Waste Solvents (D400)~~		~~1~~	~~Jul-11~~	~~Jul-13~~			~~NP/HM~~		MAH1	
~~276~~	~~Acetone from Various (D100/D200/D300)~~		~~3~~	~~Feb-10~~	~~Feb-12~~			~~NP/HM~~		~~MAH1~~	~~1~~
~~283~~	~~Toluene/IMS from AstraZeneca (D100/D200)~~		~~4~~	~~Jul-11~~	~~Jul-13~~		~~Y~~	~~NP/HM~~		MAH1	12, 18
~~283a~~	~~Toluene (plus Isopropanol) from Various (D100/200)~~		~~1~~	~~Oct-15~~	~~Oct-17~~			~~NP/HM~~			
~~283b~~	~~Toluene /IMS from Astra Zeneca (D300)~~		~~4~~	~~Jan-17~~	~~Jan-19~~	~~Y~~		~~NP/HM~~			
~~289a~~	~~Xylene for Macfarlane Smith (D400)~~		~~7~~	~~Sep-16~~	~~Sep-18~~			~~NP/HM~~		~~MAH1~~	~~4~~
289	Xylene for Macfarlane Smith (D300)		5	Jun-20	Jun-22	Y		NP			
~~290~~	~~Methoxypropanol from Silberline (D100/D200)~~		~~5~~	~~Oct-14~~	~~Oct-16~~			~~NP/HM~~		~~MAH1~~	
~~293~~	~~Ethyl Acetate from Various (D100/D200/D300)~~		~~4~~	~~Feb-10~~	~~Feb-12~~			~~NP/HM~~		~~MAH1~~	~~9~~
~~298~~	~~Dry IPA for Kemfine (D100/D200)~~		~~6~~	~~Feb-17~~	~~Feb-19~~	~~Y~~		~~NP/HM~~		~~MAH1~~	~~13~~
~~303~~	~~MDC from Various (D200/D300)~~		~~4~~	~~May-18~~	~~May-20~~			~~HM~~		MAH1	14
~~303b~~	~~MDC from Veolia Ireland (D400)~~		~~4~~	~~Nov-16~~	~~Nov-18~~	~~Y~~	~~Y~~	~~NP/HM~~		MAH1	14
~~304~~	~~Mixed Hydrocarbons for FMC (D200/D300)~~		~~4~~	~~Mar-12~~	~~Mar-14~~			~~NP/HM~~		~~MAH1~~	
~~305~~	~~IDA 96 from Convatec (D100/D200/D300)~~		~~3~~	~~May-11~~	~~May-13~~			~~NP/HM~~		~~MAH1~~	~~12~~
~~306~~	~~Dry ACN from AstraZeneca (D400 + D100)~~		~~2~~	~~Feb-10~~	~~Feb-12~~			~~NP/HM~~		~~MAH1~~	~~1~~
~~307~~	~~Dry ACN for BMS (D100)~~		~~2~~	~~Feb-10~~	~~Feb-12~~			~~NP/HM~~		~~MAH1~~	~~1~~
~~312~~	~~NPP from RFMD~~		~~2~~	~~Aug-11~~	~~Aug-13~~			~~NP/HM~~		~~MAH1~~	
~~313~~	~~n-Butanol from Various~~		~~1~~	~~Nov-10~~	~~Nov-12~~			~~NP/HM~~		~~MAH1~~	
~~314~~	~~n-Propyl Bromide for Contract Chemicals~~		~~1~~	~~Jul-11~~	~~Jul-13~~			~~NP/HM~~		~~MAH1~~	
~~315~~	~~Ethanol 96 for Brenntag (D100/D200/D300)~~		~~1~~	~~Feb-12~~	~~Feb-14~~			~~NP/HM~~		~~MAH1~~	~~8~~

REF (SOP/4/...)	SOP TITLE	Safety Critical	Revision Number	Issue Date	Review Date	New Template	Competence Check List	Responsibility	Liinked MAH	Linked RA	Linked COSHH
~~316~~	~~TSDA 7 from Sodexo (D100/D200/D300)~~		~~1~~	~~Mar-13~~	~~Mar-15~~			~~NP/HM~~		~~MAH1~~	
317	Heptanes/EtAc from Novartis W8605 (D300)		3	May-20	May-22	Y	Y	NP/HM		MAH1	9, 11
~~318~~	~~Acetic Acid from Syngenta (D300)~~		~~1~~	~~Mar-13~~	~~Mar-15~~			~~NP/HM~~		~~MAH1~~	
~~319~~	~~Wet Purge Aniline from Huntsman (D400)~~		~~1~~	~~Jan-14~~	~~Jan-16~~			~~NP/HM~~		MAH1	
~~319a~~	~~Wet Purge Aniline from Huntsman (D400)~~		~~2~~	~~Jul-14~~	~~Jul-16~~			~~NP/HM~~		MAH1	
~~320~~	~~MEK/Toluene from Essar (D100 or D300)~~		~~1~~	~~Sep-14~~	~~Sep-16~~			~~NP/HM~~		~~MAH1~~	~~18~~
~~321~~	~~Trial Cyclohexanone – Apollo (D100/200)~~		~~2~~	~~Jul-16~~	~~Jul-18~~	~~Y~~		~~NP/HM~~		~~MAH1~~	~~35~~
~~321a~~	~~Cyclohexanone Tops – Apollo (D100/200)~~		~~2~~	~~Jun-15~~	~~Jun-17~~			~~NP/HM~~		MAH1	35
321b	Cyclohexanone – Intel (D400) Under Vacuum system	X	5	Sep-20	Sep-22	Y		HM/NP		MAH1	35
~~322~~	~~MDC / Isopropyl Acetate from Shasun (D300)~~		~~1~~	~~Sep-15~~	~~Sep-17~~			~~NP/HM~~		~~MAH1~~	
~~323~~	~~Isopropyl Acetate from Shasun (D400)~~		~~1~~	~~Oct-15~~	~~Oct-17~~			~~NP/HM~~		~~MAH1~~	
~~324~~	~~Trial Cyclohexanone – Apollo (Pre-treatment)~~		~~1~~	~~Dec-15~~	~~Dec-17~~	~~Y~~		~~NP/HM~~		~~MAH1~~	~~35~~
~~325a~~	~~Ethanol 94 grade – Sandvik (Toll Recycle) (D100/200)~~		~~1~~	~~Dec-15~~	~~Dec-17~~			~~NP/HM~~		~~MAH1~~	~~35~~
325	Ethyl Acetate / Cyclohexane (D300)	X	1	Oct-18	Oct-20			HM		MAH1	35
~~326~~	~~Toll Acetonitrile/NPE - Fine Organics (D400)~~		~~1~~	~~Feb-16~~	~~Feb-18~~	~~Y~~		~~NP/HM~~		~~MAH1~~	~~1, 39~~
~~327~~	~~Acetone/Heptanes – ex GSK Worthing for TFE Thinners (D400)~~		~~2~~	~~Feb-17~~	~~Feb-19~~	~~Y~~		~~NP/HM~~		MAH1	2, 11
328	CSW Intel (D200)	X	3	Sep-20	Sep-22	Y		HM/NP		MAH1	18,41,45
~~329~~	~~Etac / Isopropanol – Veolia Ireland (D400)~~		~~1~~	~~Nov-16~~	~~Nov-18~~			~~NP/HM~~		~~MAH1~~	~~9, 13~~
~~330~~	~~Methyl acetate / Methanol (D300)~~		~~1~~	~~Nov-16~~	~~Nov-18~~			~~NP/HM~~		~~MAH1~~	~~15, 38, 44~~

REF (SOP/4/...)	SOP TITLE	Safety Critical	Revision Number	Issue Date	Review Date	New Template	Competence Check List	Responsibility	Liinked MAH	Linked RA	Linked COSHH
~~330a~~	~~Methanol / Methyl acetate – GSK Worthing (D200)~~		~~3~~	~~Jun-17~~	~~Jun-19~~	~~Y~~		~~NP/HM~~		~~MAH1~~	~~15, 38, 44~~
~~331~~	~~Thin Crude TFE Thinners (D300)~~		~~3~~	~~Jun-17~~	~~Jun-19~~	~~Y~~		~~NP/HM~~		~~MAH1~~	~~2, 8, 18~~
Back	**STANDING (SOP 501 - SOP 800)**										
501	Column Operation	X	11	Feb-20	Feb-22	Y	Y	NP	1, 4	32	As
503	D400 Column Operation	X	12	Nov-18	Nov-20	Y		NP	1, 4	32	
521	Column Washing		11	Dec-18	Dec-20	Y		NP		24	
~~502~~	~~Reboiler Operation~~	~~X~~	~~5~~	~~Oct-13~~	~~Oct-15~~		~~Y~~	~~NP/TL~~	~~1, 4~~		~~17~~
517	Operation of Thin Film Evaporator (TFE)	X	3	Jan-19	Jan-21	Y	Y	NP	1, 4	21	
505	SRU Control of Emissions		19	May-19	May-21	Y	Y	HM	3, 4	1	3, 16
548	TFE Abatement Operation		2	May-19	May-21	Y	Y	HM		MH11	
506	Replacement of Activated Carbon Absorbers	??	7	Feb-20	Feb-22	Y	Y	NP	3, 4	MH6	3
507	Waste Pit and Surface Water Interceptor		10	01/10/2019	Oct-21	Y	Y	NP	2, 3	34	
508	Storage & Disposal of Boiler Blowdown/Cooling Tower Bleed		6	Oct-19	Oct-21	Y		NP			
509	Operation of Surface Water Collection Plant		5	May-19	May-21	Y		HM			
511	Boiler Operation	x	11	Feb-20	Feb-22			NP/STL		2, MH3. MH11	
512	Operation of Air Compressors		9	Jan-20	Jan-22			NP/PP		3	
513	Cooling Water System	x	12	Feb-20	Feb-22			NP/PP		MH4, MH5. MH11	24, 25, 28
~~514~~	~~Chiller Systems~~										
516	Nitrogen Membrane Operation	x	5	Feb-20	Feb-22	Y		NP			
1808	Safe Operation of Cooling Towers	x	8	Jan-19	Jan-21			NP/HM			21 - 28
523	Tank washing		11	Feb-20	Feb-22	Y		NP/STL		23	

REF (SOP/4/...)	SOP TITLE	Safety Critical	Revision Number	Issue Date	Review Date	New Template	Competence Check List	Responsibility	Liinked MAH	Linked RA	Linked COSHH
504	Use of Flexible Chemical Hoses including Line	X	11	Nov-19	Nov-21	Y	Y	NP/CM	1	MH10	
522	Operation of Valves and Lines including Clearing and Cleaning		12	Feb-20	Feb-22	Y		NP		13, MH10	
~~524~~	~~Operation of Valves and Lines~~	~~X~~	~~2~~	~~Dec-11~~	~~Dec-13~~				1, 3	MH10	
~~525~~	~~Unblocking Lines~~	~~X~~	~~1~~	~~Mar-11~~	~~Mar-13~~				1, 2, 3		
~~1824~~	~~Use of Flexible Chemical Hoses~~		~~3~~	~~Jul-13~~	~~Jul-15~~					MH10	
531	Unloading and Loading a Roadtanker (including Isotanks)	X	24	Feb-20	Feb-22	Y	Y	CM	1, 2, 3, 4	4. MH10	
~~534~~	~~Isotank Operation~~	~~X~~	~~6~~	~~Dec-11~~	~~Dec-13~~				1, 2, 3	16b	
547	Tanker Sampling	X	2	Feb-19	Feb-21	Y		CM	1, 2, 3, 4	16c	
~~532~~	~~Drum inspection~~		~~6~~	~~Aug-12~~	~~Aug-14~~						
~~533~~	~~Drum Filling/Emptying~~	~~X~~	~~12~~	~~Mar-15~~	~~Mar-17~~				~~1~~	20, MH8, MH9	
537	Drum/IBC Bulking - TFE	X	4	Jan-20	Jan-22		Y	NP	1	20, MH8, MH9	
541	Cold Weather Shutdown		8	Jan-20	Jan-22			NP/STL			
542	Procedure in the Event of a Power Cut	X	7	Oct-19	Oct-21			NP/STL	1		
543	Procedure in the Event of a Chemical Spillage	X	6	Nov-19	Nov-21		Y	NP	1, 2, 3, 4		
545	Plant Start up and Shut Down	X	6	Jan-20	Jan-22			NP/STL		13	
548	TFE Monitoring Abatement	X	2	May-19	May-21	Y		HM			
549	Tank to Tank Transfers	X	2	Feb-20	Feb-22	Y		CM/STL			
550	Heavy Bottoms Drum Bulking		2	Jan-20	Jan-22	Y		STL		38??	
~~551~~	~~Recommissioning of F10 after maintenance on pre-~~		~~1~~	~~Aug-17~~	~~Aug-19~~	~~Y~~		~~HM~~			
552	Cold Weather site preparations (gritting)		1	Under review				NP			
553	Changing TFE Oil Scrubber in Haven scrubber		2	Jun - 20	Jun-22	Y		NP			

REF (SOP/4/...)	SOP TITLE	Safety Critical	Revision Number	Issue Date	Review Date	New Template	Competence Check List	Responsibility	Liinked MAH	Linked RA	Linked COSHH
554	Scrubber Valve Locking		1	full review in				NP			
~~555~~	~~Off Loading from LB8 to L1~~	~~X~~	~~1~~		~~Jan-02~~	~~Y~~		~~HM~~			
~~556~~	~~CSW discharge and addition of actic acid. In addition~~	~~X~~	~~1~~	~~1-May-19~~	~~May-21~~	~~Y~~		~~HM~~			
557	Discharging Acetic Acid to IBCs	x						NP			
558	Access & Addition of Acetic Acid to Thinners Tanker	x	1	19/3/20	Mar-21	Y		NP			
559	Labelling of site containers	X						HM/NP			
Back	**STANDARD LAB (SOP 801 - SOP 1100)**	X									
816	Development of New Enquiries		5	Nov-19	Dec-21	Y		HM		14	
838	Thermal Stability Unit	X	3	Jun-19	Jun-21	Y	Y	HM	2, 3, 4	14	
835	Buchi Glass Oven Micro-distillation		3	May-20	Jun-22	Y	Y	HM/EK		14	
~~827~~	~~Assessment of compatibility in mixtures.~~	X	2	Nov-18	Dec-20	Y		T3		14	
~~814~~	~~Control of Laboratory Reagents~~		~~3~~	~~Jan-14~~	~~Jan-16~~			~~HM/AK~~		~~14~~	
801	Measurement of Acidity and Alkalinity		9	Sep-19	Sep-21	Y	Y	HM/EK		14	
802	Measurement of Water Content		7	May-20	May-22	Y	Y	HM/EK		14	
~~802a~~	~~Measurement of Water Content using 870 KF~~		~~1~~	~~Aug-17~~	~~Aug-19~~					~~14~~	
~~1320~~	~~*Metrohm*~~		~~5~~	~~Feb-14~~	~~Feb-16~~					~~14~~	
803	GC Analysis	x	7	Sep-19	Sep-21	Y	Y	HM/EK		14	
~~1340~~	~~*GC*~~		~~4~~	~~Feb-14~~	~~Feb-16~~					~~14~~	
805	Measurement of Density DMA500 & DMA 35	x	5	Sep-19	Sep-21	Y	Y	HM/EK		14	
837	Paar Density Meter DMA500 - Hanna EC215		3	Jul-18	Jul-20	Re-use number Change				14	
~~1180~~	~~*Density Meter DMA 35*~~		~~6~~	~~Feb-14~~	~~Feb-16~~	~~Merged into 805~~				~~14~~	
831	Sampling and Analysis of Drummed Feedstock	X	3	Sep-19	Sep-21	Y		AN	2, 3, 4		
841	Preparing Bulking Recipes for TFE Processing	X	3	02/2019	Feb-21	Y		AN	2, 3, 4		

REF (SOP/4/...)	SOP TITLE	Safety Critical	Revision Number	Issue Date	Review Date	New Template	Competence Check List	Responsibility	Liinked MAH	Linked RA	Linked COSHH
839	TFE Product Corrosion		3	May-20	Jun-22	Y	Y	HM/AN		14	
~~840~~	~~Caustic Test For Thinners As "Export" Grade~~		~~1~~	~~Feb-15~~	~~Feb-17~~			~~HM/AN~~		~~14~~	
~~842~~	~~Testing Regime for Finished Products~~		~~1~~	~~Jan-16~~	~~Jan-18~~			~~HM/AN~~		~~14~~	
810	Measurement of pH - 848 Titrino Plus - Hanna HI2210		9	May-19	May-21	Y	Y	HM/EK		14	
~~810a~~	~~Measurement of pH - Hanna HI2210~~		~~1~~	~~Jul-14~~	~~Jul-16~~	~~Merge to 810~~				~~14~~	
813	Measurement of flash point	x	10	Feb-20	Feb-22	Y		HM/EK		14	
834	Calorific Value (Parr 6200)		5	Feb-20	Feb-22	Y		HM/EK		14	
808	Miscibility in Water		7	May-20	May-22	Y	Y	HM/EK		14	
~~809~~	~~Odour on Dilution~~		~~4~~	~~Jan-14~~	~~Jan-16~~	~~no longer in use~~				~~14~~	
811	Measurement of Residue		6	Jun-20	Jul-22	Y		HM/EK		14	
812	Measurement of Alcoholic Strength		8	Feb-20	Feb-22	Y		HM/EK		14	
807	Measurement of Colour		6	May-20	May-22	Y		HM/EK		14	
~~1300~~	~~*Lovibond*~~		~~5~~	~~Feb-14~~	~~Feb-16~~	~~Merged into 807~~				~~14~~	
824	Biological Oxygen Demand		5	May-20	May-22	Y	Y	HM/EK		14	
825	Chemical Oxygen Demand		5	Feb-20	Feb-22	Y		HM/EK		14	
832	Ammoniacal Nitrogen (Hach Lange)		4	May-20	May-22	Y		HM/EK		14	
833	Suspended Solids in water		3	May-20	May-22	Y	Y	HM/EK		14	
828	Total Organic Carbon (TOC)		5	May-20	May-22	Y	Y	HM/EK		14	
806	Measurement of Boiler and Cooling Water		5	Sep-19	Sep-21	Y		HM/EK		14	
~~1330~~	~~*Conductivity Meter*~~		~~3~~	~~Feb-14~~	~~Feb-16~~	~~Merged into 837~~				~~14~~	
830	Operation, Maintenance & Calibration Of MiniRAE		6	May-20	May-22	Y		HM/EK		14	
~~829~~	~~Surfactant Concentration in Surface Water~~		~~2~~	~~Jan-14~~	~~Jan-16~~	~~11/16 as redundant~~				~~14~~	
~~826~~	~~Acetic Acid Content of Pyridine~~		~~2~~	~~Jan-14~~	~~Jan-16~~	~~11/16 as redundant~~				~~14~~	
~~804~~	~~Measurement of Peroxide Content~~		~~3~~	~~Jan-14~~	~~Jan-16~~	~~11/16 as redundant~~				~~14~~	
~~836~~	~~Brook Viscometer~~		~~1~~	~~Jun-14~~	~~Jun-16~~	~~11/16 as redundant~~				~~14~~	
826	Addition of Acetic Acid to Corrosive solvent waste		3	Sep-19	Sep-21	Y		HM/EK			

REF (SOP/4/...)	SOP TITLE	Safety Critical	Revision Number	Issue Date	Review Date	New Template	Competence Check List	Responsibility	Liinked MAH	Linked RA	Linked COSHH
844	Addition of Caustic to GSW		3	Jun-19	Jun-21	Y		HM/EK			
Back	**MAINTENANCE (SOP 900 - SOP 1100)**	X									
	Bulk Storage Tanks Proof Test Methods										
PTM 007	High/High Level Trip on F Tanks	X	3	Jul-20	Jul-22	Y		PP	1, 2, 3, 4	13	
PTM 008	High/ High Level on T Tanks	X	3	Jul-20	Jul-22	Y		PP	1, 2, 3, 4	13	
PTM 010	High/High Level Trip on TFE Tanks	X	3	Jul-20	Jul-22	Y		PP	1, 2, 3, 4	13	
PTM 007	High Level Trip on F Tanks	X	2	Jul-20	Jul-22	Y		PP	1, 2, 3, 4	13	
PTM-12	High Level on T Tanks	X	2	Jul-20	Jul-22	Y		PP	1, 2, 3, 4	13	
PTM-12	High Level Trip on TFE Tanks	X	2	Jul-20	Jul-22	Y		PP	1, 2, 3, 4	13	
PTM 11	Pressure Relief Valve TFE Tanks	X	1	Jan-19	**Jan-21**	Y		PP	1, 2, 3, 4	13	
	Flame Engulfment Protection F Tanks	X			**Jan-02**			PP			
	Flame Engulfment Protection T Tanks	X			**Jan-02**			PP			
	ROSOV Valves T Tanks	X			**Jan-02**			PP			
	ROSOV Valves TFE Tanks	X			**Jan-02**			PP			
	ROSOV Valves F Tanks	X			**Jan-02**			PP			
	SRU Proof Test Methods										
PTM02	D100 Reflux Pot High Level	X	1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
PTM05	D100 Column High Level	X	1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
PTM03	D100 Bursting Disc	X	1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
PTM02	D200 Reflux Pot High Level	X	1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
PTM05	D200 Column High Level	X	1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
PTM03	D200 Bursting Disc	X	1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
PTM02	D300 Reflux Pot High Level	X	1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	

REF (SOP/4/...)	SOP TITLE	Safety Critical	Revision Number	Issue Date	Review Date	New Template	Competence Check List	Responsibility	Liinked MAH	Linked RA	Linked COSHH
PTM05	D300 Column High Level	X	1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
PTM03	D300 Bursting Disc	X	1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
PTM02	D400 Reflux Pot High Level	X	1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
PTM05	D400 Column High Level	X	1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
PTM03	D400 Bursting Disc	X	1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
PTM09	Cooling Water Low Flow	X	1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
PTM13	Temperature Probes D100	X	A1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
PTM13	Temperature Probes D200	X	A1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
PTM13	Temperature Probes D300	X	A1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
PTM13	Temperature Probes D400	X	A1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
	TFE Proof Test Methods										
929	Nitrogen Seal Vac Pump Sensor	X	1	Jan-19	**Jan-21**	Y		PP	1, 2, 3, 4	13	
930	Flow Meter	X			**Jan-02**			PP	1, 2, 3, 4	13	
PTM03	Bursting Disc	X	1	Jul-20	Jul-22			PP	1, 2, 3, 4	13	
	Temperature Probe	X			**Jan-02**			PP	1, 2, 3, 4	13	
	TFE Residue Pot High Level	X			**Jan-02**			PP	1, 2, 3, 7	13	
	General PPM										
1008	TFE Drum Bulking Lifting Equipment Inspection		1	Apr-20	Apr-22			PP			
1009	Storage Tank PVRV inspection		1	Apr-20	Apr-22			PP			
1010	Tank ROSOV Inspection	X	1	Apr-20	Apr-22			PP			
1011	TFE Pipeline Outlet and Valves Inspection		1	Apr-20	Apr-22			PP			
	General Maintenance										
~~536~~	~~Management of On-site ContaiNPent~~		~~2~~	~~Jan-12~~	~~**Jan-14**~~			PP/NP	1, 2, 3, 4		

REF (SOP/4/...)	SOP TITLE	Safety Critical	Revision Number	Issue Date	Review Date	New Template	Competence Check List	Responsibility	Liinked MAH	Linked RA	Linked COSHH
45	Plant Maintenance	X	15	Jan-20	Jan-22			PP	1, 2, 3, 5		
935	Conducting Site PPMs	X			**Jan-02**			PP			
546	Garston Distillation Workshop Hot Work	X	2	Sep-13	May-22			PP/NP		Fire 4, 11, 19	
~~1830~~	~~EC&I Inspection and Testing~~	~~X~~	~~2~~	~~X~~	~~X~~		~~X~~	~~X~~			
1820	Preparation for Breaking into Process Lines	X	5	Jun-20	Jun-22	Y		NP		13	
1012	Removal and Replacement of a Flow Meter		1	Apr-20	Apr-22			PP			
1013	Removal and Replacement of a Gas Booster Fan		1	Apr-20	Apr-22			PP			
1014	Opening Column Manway for Inspections	X	1	Apr-20	Apr-22			PP			
1015	Repair of Steam Leak on the Plant	X	1	May-20	May-22			PP			
1016	Removing and Repairing Pumps	X	1	Apr-20	Apr-22			PP			
1017	Repair of Damaged or Blocked Pipe	X	1	May-20	May-22			PP			
Back	**CALIBRATION MANUAL (SOP 1101 - SOP1400)**										
1105	~~Schedule~~		~~13~~	~~Feb-14~~	~~**Feb-16**~~			HM		N/A	
1120	~~Accurate Balance~~		~~8~~	~~Feb-14~~	~~**Feb-16**~~			HM		14	
1130	~~Rough Balance~~		~~8~~	~~Feb-14~~	~~**Feb-16**~~			HM		14	
1190	~~Check Weights~~		~~7~~	~~Feb-14~~	~~**Feb-16**~~			HM		14	
1200	~~Plant Scale~~		~~3~~	~~Feb-14~~	~~**Feb-16**~~			HM		14	
1230	~~Standard Thermometers~~		~~3~~	~~Feb-14~~	~~**Feb-16**~~			HM		14	
1240	~~Weighbridge~~		~~3~~	~~Feb-14~~	~~**Feb-16**~~			HM		14	
1350	~~Fume Cupboard Performance~~		~~3~~	~~Feb-14~~	~~**Feb-16**~~			HM		14	
Back	**ENVIRONMENTAL (SOP 1401 - SOP 1600)**										
1405	EMS Organisation and Responsibilities		22	Jun-20	Jun-22	Y	n/a	HM	1	N/A	N/A
~~1410~~	~~Environmental Policy~~		~~9~~	~~Jun-15~~	~~**Jun-17**~~	~~Y~~	~~n/a~~	~~DK~~	~~1~~	~~N/A~~	~~N/A~~

REF (SOP/4/...)	SOP TITLE	Safety Critical	Revision Number	Issue Date	Review Date	New Template	Competence Check List	Responsibility	Liinked MAH	Linked RA	Linked COSHH
1415	Maintenance of EMS		16	Jun-20	May-22	Y	n/a	ES	1	N/A	N/A
1420	Compliance with PPC Regulations		15	Jan-20	Jan-22	Y	n/a	HM	1	N/A	N/A
1425	Site Protection & Monitoring Programme		8	Jan-20	Jan-22	Y	n/a	HM	1	N/A	N/A
1430	Site Waste Control	X	9	Jan-20	Jan-22	Y	n/a	NP		N/A	N/A
1435	Excavation Procedure	X	3	under review		Y	n/a	NP		N/A	N/A
~~Appendix 1~~	~~Current PPC Permit~~		~~5~~	~~Jul-16~~		~~n/a~~	~~n/a~~	~~ES~~		~~N/A~~	~~N/A~~
~~Appendix 2~~	~~Improvement IC2 - Response~~			~~Jun-07~~		~~n/a~~		~~N/A~~		~~N/A~~	~~N/A~~
Appendix 3	Site Closure Plan		4	May-20	May-22			ES/NP		N/A	N/A
Back	**HEALTH & SAFETY (SOP 1801 - SOP 2000)**	x									
BCP	Business Continuity Plan	X	72	Aug-16	Apr-21	Y	n/a	ES/NP	1, 2	N/A	N/A
~~1802~~	~~Site Safety Health & EnviroNPent Policy~~		~~11~~	~~Jun-16~~	~~Jun-18~~	~~Y~~	~~n/a~~	~~NP/DK~~	~~1, 2, 3, 4~~		
~~1803~~	~~Use of Ladders~~		~~5~~	~~Nov-13~~	~~Nov-15~~			~~/NP~~			
1805	COSHH Regulations	X	7	Jan-20	Jan-22	Y		HM			
1806	Personal Protective Equipment		8	Jan-20	Jan-22	Y		NP			
~~1809~~	~~Permit to Work~~		~~11~~	~~Nov-12~~	~~Nov-14~~						
~~1813~~	~~Control of Contractors (GD)~~		~~7~~	~~Nov-13~~	~~Nov-15~~			~~/NP~~	~~1, 2, 3, 4~~		
1814	Major Accident Prevention Policy (MAPP)		14	Under review		Y		ES/NP			
1815	Site Emergency Plan	X	30	Nov-15	Aug-22	Y	n/a	ES/NP/STL	1, 2, 3, 4		
1817	Work & Safety Equipment		6	Jan-20	Jan-22			NP		FA1	
~~1818~~	~~First Aid & Injury Reporting~~		~~5~~	~~Nov-13~~	~~Nov-15~~			~~GG//NP/HM/DK~~		~~FA1~~	
~~1819~~	~~Inspection of Bulk Storage Tanks~~		~~6~~	~~Jun-16~~	~~Jun-18~~	~~Y~~		~~PP/NP~~		~~13~~	
~~1821~~	~~Portable Appliance Testing~~		~~5~~	~~Nov-11~~	~~Nov-13~~						
~~1822~~	~~Use of the Dry Waste Skip~~		~~5~~	~~Jul-13~~	~~Jul-15~~			~~NP/NP~~			
1825	COMAH Regulations	X	7	Jan-20	Jan-22	Y	n/a	ES/HM	3		

REF (SOP/4/...)	SOP TITLE	Safety Critical	Revision Number	Issue Date	Review Date	New Template	Competence Check List	Responsibility	Liinked MAH	Linked RA	Linked COSHH
~~1826~~	~~Near Miss Reporting~~		~~5~~	~~Nov-13~~	~~Nov-15~~			~~GG//NP/HM/DK~~			
~~1827~~	~~Use of Lifting Equipment~~		~~3~~	~~Nov-13~~	~~Nov-15~~			~~/NP/PP~~			
~~1828~~	~~Asbestos Management~~		~~3~~	~~Aug-11~~	~~Aug-13~~			~~NP~~		~~6~~	
1829	Lone Working		1	Jul-13	Jul-15			NP			
GMTP	Traffic Management Plan		2	Jun-20	Jun-22	Y	n/a	NP	1, 3, 4	15	
1831	DSEAR Regulations	X	2	Jul-20	Jul-22	Y		ES/NP			
1833	Garston HCDG Security Plan		2	Jul-20	Jul-22	Y	n/a	CM/NP	1,2,3,4		
1834	Alarm Management	X	1		DRAFT			ES/NP	1, 2, 3, 4		

APPENDIX D

ENVIRONMENTAL RISK ASSESSMENT and ECOLOGICAL ASSESSMENT

Source	Pathway	Receptor	Harm	Likelihood	Consequence	Magnitude of Risk	Justification of Magnitude	Risk Management	Residual Risk
Release of Emissions to Air	Combustion of fuel in the new Boilers						Refer to Air Quality Assessment in Appendix H of the Supporting Statement		
Release of Emissions to Air	Emissions from new plant and tank farm via carbon scrubber						Refer to H1 Assessment and AQA in Appendix H of the Supporting Statement		
Release of particulate matter (dusts) and micro-organisms (bio aerosols)	Atmosphere and then inhalation	Local human population & Site staff	Harm to human health (respiratory irritation and illness)	Low	High	Medium	Permitted wastes do not include wastes that solely consist of dusts, powders or loose fibres Solvent Recovery activities within closed systems Local residents are often sensitive to dust	*New Solvent Recovery Operation:* Waste not of a dusty nature. All loads of waste entering the site will be contained Waste to be stored in purpose built storage tanks. Waste to be processed within closed systems – distillation columns connected to air emissions scrubbing system. *New Storage Tanks:* Waste of a liquid nature and stored within sealed tanks Tanks connected to air emissions scrubbing system Waste transferred via sealed systems *Habitats Assessment:* The Mersey Estuary RAMSAR, SSSI, LWS site is located adjacent to the site. This habitat has the potential for low/negligible impact by particulate matter due to the nature of the waste types processed by the operations. Banks Road and Garston Gasworks LWS is located 620m north-east. This habitat has the potential for negligible impact by particulate matter due to the	Negligible

								nature of the waste types processed by the operations and the distance from the site. No other designated sites are located within 1km of the site	
	Atmosphere and then deposition	Local human population	Nuisance –dust on cars, clothing etc.	Low	Medium	Low	As above	As above	Negligible
Release of litter	Atmosphere and then deposition	Local human population and livestock	Nuisances, loss of amenity and harm to animal health	Low	Medium	Low	Permitted wastes do not include wastes that have the potential to cause littering Solvent Recovery activities within closed systems Local residents are often sensitive to litter	*New Solvent Recovery Operation:* Waste does not have the potential to cause littering issues. All loads of waste entering the site will be contained Waste to be stored in purpose built storage tanks. Waste to be processed within closed systems *New Storage Tanks:* Waste of a liquid nature and stored within sealed tanks Tanks connected to air emissions scrubbing system Waste transferred via sealed systems *Habitats Assessment:* The Mersey Estuary RAMSAR, SSSI, LWS site is located adjacent to the site. This habitat has the potential for low/negligible impact by windblown litter due to the nature of the waste types processed by the operations. Banks Road and Garston Gasworks LWS is located 620m north-east. This habitat has the potential for negligible impact by windblown litter due to the nature of the waste types processed by the operations and the distance from the site. No other designated sites are located within 1km of the site	Negligible
Mud on Roads	Vehicles entering and leaving site	Local human population and livestock	Nuisances, loss of amenity and road traffic accidents	Low	Medium	Low	Permitted wastes do not include wastes that have the potential to cause mud.	*New Solvent Recovery Operation:* Waste does not have the potential to cause mud on the road issues. All roads leading to the site and within the site are sealed and paved.	Negligible

							Local residents are often sensitive to mud on roads Road Safety	All loads of waste entering the site will be contained Waste to be stored in purpose built storage tanks. Waste to be processed within closed systems *New Storage Tanks:* Waste of a liquid nature and stored within sealed tanks Waste transferred via sealed systems *Habitats Assessment:* The Mersey Estuary RAMSAR, SSSI, LWS site is located adjacent to the site. This habitat has the potential for negligible impact by mud on the road due to the paved road surfaces on site and nature of the operations. Banks Road and Garston Gasworks LWS is located 620m north-east. This habitat has the potential for negligible impact by mud on the road due to the paved road surfaces on site and nature of the operations. Also the distance from the site. No other designated sites are located within 1km of the site	
Odour	Atmosphere and then inhalation	Local human population	Nuisances, loss of amenity	Low	Medium	Low	Permitted wastes may have the potential to cause odour if not contained. Local residents are often sensitive to odour	*New Solvent Recovery Operation:* All loads of waste entering the site will be contained Waste to be stored in purpose built storage tanks. Waste to be processed within closed systems – distillation columns connected to air emissions scrubbing system. *New Storage Tanks:* Waste of a liquid nature and stored within sealed tanks Tanks connected to air emissions scrubbing system Waste transferred via sealed systems *Habitats Assessment:* The Mersey Estuary RAMSAR, SSSI, LWS site is located adjacent to the site. This habitat has the potential for low impact by odour due to the nature of the operations.	Very Low

								Banks Road and Garston Gasworks LWS is located 620m north-east. This habitat has the potential for negligible impact by odour due to the nature of the operations and the distance from the site. No other designated sites are located within 1km of the site	
Noise and vibrations	Atmosphere and ground for vibrations	Local human population	Nuisances, loss of amenity	Medium	Medium	Medium	The additional infrastructure may have the potential to cause additional noise. However the noise assessment set out in Appendix I of the Supporting Statement concludes that no further mitigation would be required to reduce noise levels from the proposed development Local residents are often sensitive to noise	*New Solvent Recovery Operation:* All loads of waste entering the site will be contained Waste to be stored in purpose built storage tanks. Waste to be processed within closed systems – distillation columns connected to air emissions scrubbing system. *New Storage Tanks:* Waste of a liquid nature and stored within sealed tanks Waste transferred via sealed systems *Habitats Assessment:* The Mersey Estuary RAMSAR, SSSI, LWS site is located adjacent to the site. This habitat has the potential for low impact by noise and vibrations due to the nature of the operations. Banks Road and Garston Gasworks LWS is located 620m north-east. This habitat has the potential for negligible impact by noise and vibrations due to the nature of the operations and the distance from the site. No other designated sites are located within 1km of the site	Low
Animals, Pests and insects	Atmosphere and land	Local human population	Nuisances, loss of amenity, harm to heath	Low	Medium	Low	Permitted wastes do not include wastes that have the potential to attract pests and insects Local residents are often sensitive to pests and insects	*New Solvent Recovery Operation:* Waste does not have the potential to attract pests and insects All loads of waste entering the site will be contained Waste to be stored in purpose built storage tanks. Waste to be processed within closed systems *New Storage Tanks:*	Negligible

								Waste of a liquid nature and stored within sealed tanks Waste transferred via sealed systems Specialist contractors used for pest control *Habitats Assessment:* The Mersey Estuary RAMSAR, SSSI, LWS site is located adjacent to the site. This habitat has the potential for negligible impact by pests and insects due to the nature of the waste types processed by the operations. Banks Road and Garston Gasworks LWS is located 620m north-east. This habitat has the potential for negligible impact by pests and insects due to the nature of the waste types processed by the operations and the distance from the site. No other designated sites are located within 1km of the site	
Spillage of waste, contaminated rainwater run-off	Direct runoff from site across ground surface via surface water drains	Surface water	Surface Water pollution – harm to ecology	Medium	Medium	Medium	Site located in FZ1 and at low potential from flooding from surface water. Refer to Flood Risk Assessment in Appendix G of the Supporting Statement. Refer to H1 Assessment in Appendix H of the Supporting Statement for assessment of increase flows via W1	*New Solvent Recovery Operation:* All loads of waste entering the site will be contained Waste to be stored in purpose built storage tanks. Waste to be processed within closed systems Impermeable surface and sealed drainage throughout the site. No direct emissions to the River Mersey. All discharges controlled by procedures and adherence to permitted emission limits. Regular inspection of drainage system Regular maintenance of drainage system Adherence to Flood RA recommendations *New Storage Tanks:* Tanks located within an appropriately sized bund Transfer pipework either located within this bund or outside which is also sealed Waste transferred via sealed systems Regular inspection of bunds and transfer equipment	Low

								Regular maintenance of bunds and transfer equipment *Habitats Assessment:* The Mersey Estuary RAMSAR, SSSI, LWS site is located adjacent to the site. This habitat has the potential for low impact by contaminated surface water due to the waste being held within dedicated storage tanks and transferred/processed within sealed systems. Also considering the sealed surface and management/monitoring systems employed. Banks Road and Garston Gasworks LWS is located 620m north-east. This habitat has the potential for negligible impact by contaminated surface water due to the management systems employed by the operations and the distance from the site. No other designated sites are located within 1km of the site	
	Direct runoff from site across ground surface via defects in site surface	Ground water	Groundwater Pollution	Low	Medium	Low	Site is not located within a groundwater source protection zone	*New Solvent Recovery Operation:* All loads of waste entering the site will be contained Waste to be stored in purpose built storage tanks. Waste to be processed within closed systems Impermeable surface and sealed drainage throughout the site. Regular inspection of drainage system Regular maintenance of drainage system. Monitoring of groundwater in accordance with Site Condition Report. *New Storage Tanks:* Tanks located within an appropriately sized bund Transfer pipework either located within this bund or outside which is also sealed Waste transferred via sealed systems Regular inspection of bunds and transfer equipment Regular maintenance of bunds and transfer equipment *Habitats Assessment:*	Very Low

								The Mersey Estuary RAMSAR, SSSI, LWS site is located adjacent to the site. This habitat has the potential for low impact by contaminated groundwater due to the waste being held within dedicated storage tanks and transferred/processed within sealed systems. Also considering the sealed surface and management/monitoring systems employed. Banks Road and Garston Gasworks LWS is located 620m north-east. This habitat has the potential for negligible impact by contaminated groundwater due to the management systems employed by the operations and the distance from the site.	
	Direct runoff from site across ground surface via defects in site surface	Land	Soil Contamination	Low	Medium	Low	Site has a long history of previous Industrial uses	*New Solvent Recovery Operation:* All loads of waste entering the site will be contained Waste to be stored in purpose built storage tanks. Waste to be processed within closed systems Impermeable surface and sealed drainage throughout the site. Regular inspection of surface and drainage system Regular maintenance of surface and drainage system. Monitoring of groundwater in accordance with Site Condition Report. *New Storage Tanks:* Tanks located within an appropriately sized bund Transfer pipework either located within this bund or outside which is also sealed Waste transferred via sealed systems Regular inspection of bunds and transfer equipment Regular maintenance of bunds and transfer equipment *Habitats Assessment:* The Mersey Estuary RAMSAR, SSSI, LWS site is located adjacent to the site. This habitat has the potential for low impact by contaminated soil due to	Very Low

								the waste being held within dedicated storage tanks and transferred/processed within sealed systems. Also considering the sealed surface and management/monitoring systems employed. Banks Road and Garston Gasworks LWS is located 620m north-east. This habitat has the potential for negligible impact by contaminated soil due to the management systems employed by the operations and the distance from the site.	

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WASTE RESOURCE MANAGEMENT

VEOLIA ENVIRONMENTAL

LAND AT KING STREET, GARSTON, MERSEYSIDE

PRELIMINARY ECOLOGICAL APPRAISAL

APRIL 2020

wardell armstrong

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VEOLIA ENVIRONMENTAL

LAND AT KING STREET, GARSTON, MERSESYSIDE

PRELIMINARY ECOLOGICAL APPRAISAL

APRIL 2020

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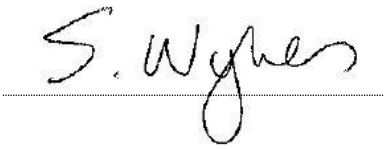

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APPENDICES

DRAWINGS	**TITLE**
ST18077-001	Extended Phase 1 Habitat Plan

EXECUTIVE SUMMARY

Wardell Armstrong LLP was commissioned by Veolia Environmental to undertake a Preliminary Ecological Appraisal of a proposed development at King Street, Garston, Merseyside, national grid reference SJ 40052 83603. WA carried out an Extended Phase 1 Habitat Survey of the Survey Area on 26th March 2020.

The area of detailed ecological study referred to as the 'Site' comprises land covering approximately 2.7 hectares, primarily composed of hardstanding and industrial buildings.

There are five designated sites within 2km of the Site, including the statutory designated sites of the Mersey Estuary SPA, SSSI and Ramsar which are directly adjacent to the Site. The four remaining non-statutory designated sites are Local Wildlife Sites. Development proposals are not anticipated to impact upon any of the LWS as they are distant and not ecologically connected to the Site.

The designated features of the Mersey Estuary designated sites are not considered to be directly impacted by the proposals as they will not give rise to any additional impacts above the baseline already present on the Site. However, the following will need to be considered further:

- Indirect impacts as a result of emissions to the air should be investigated further for the likely significant effects upon the Mersey Estuary SSSI, SPA and Ramsar.

Impacts upon nesting birds are considered in the report with avoidance and mitigation measures identified:

- Avoidance of building demolition during bird nesting season, but if this is not possible, a pre-demolition check is to be undertaken by an ecologist to check for the presence of nesting birds.

1 INTRODUCTION

1.1 Terms of Reference

1.1.1 Wardell Armstrong LLP (WA) was commissioned by Veolia Environmental to undertake a Preliminary Ecological Appraisal (PEA) of a proposed development at King Street, Garston, Merseyside (National Grid Reference SJ 40052 83603).

1.1.2 This report has been produced with reference to current guidelines for Phase 1 Habitat Survey (Joint Nature Conservation Committee, 2010), Guidelines for Preliminary Ecological Appraisal (Chartered Institute of Ecology and Environmental Management, 2017) and British Standards for Biodiversity – Code of Practice for Planning and Development (British Standards Institute, 2013).

1.1.3 The purpose of the PEA is to identify the likely ecological constraints associated with a project; any mitigation measures or additional surveys likely to be required and the opportunities offered by a project to deliver ecological enhancement.

1.1.4 The following ecological features have been considered:

- Statutory and non-statutory designated conservation areas;
- Areas of Ancient Woodland;
- Legally Protected Species;
- Priority Habitats and Species[1]; and
- Invasive species.

1.2 Site Context

1.2.1 The area of detailed ecological study referred to as the 'Site' comprises approximately 2.7 hectares of land comprising of an existing hazardous waste site. The Site is bounded by industrial developments to the north and east, with Stalbridge Dock to the west and the Mersey Estuary to the south. The Site is approximately 2.5km west of Liverpool John Lennon Airport.

[1] Priority habitats and species are as follows:

- In England, those under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006
- Those listed as being a priority for conservation within the relevant Local Biodiversity Action Plan (BAP)
- Those Red Listed using International Union for the Conservation of Nature (IUCN) criteria
- Those in the Birds of Conservation Concern (BoCC) listed as Red or Amber
- Those listed at Nationally Rare or Nationally Scarce species

1.2.2 The proposed development includes the installation of new cooling towers and columns, boilers and water tanks and these works are expected to be limited to certain small areas of the Site, hereafter referred to as the “Development Area”.

2 METHODOLOGY

2.1 Desk Study

2.1.1 The desktop study was informed by review of existing available information provided by Merseyside BioBank and from available internet-based resources for a 2km search radius from the Survey Area boundary. OS and satellite mapping were also used to gain contextual habitat information.

2.1.2 Specific information was sought for:

- Statutory designated sites;
- Locally designated sites;
- Ancient woodland[2];
- Protected and priority species;
- s.41 habitats and species; and
- Local Biodiversity Action Plan (LBAP) priority habitats and species.

2.2 Extended Phase 1 Habitat Survey

2.2.1 WA carried out an Extended Phase 1 Habitat Survey of the Site on 26th March 2020. The survey was carried out by an experienced Ecologist from WA, who is also an experienced ornithologist.

2.2.2 The survey broadly followed the 'Extended Phase 1' methodology (Institute of Environmental Assessment (IEA), 1995 and JNCC 2010). Each of the main habitats were classified according to the relevant criteria including vegetation composition expressed according to the DAFOR[3] system.

[2] As defined by Natural England on their Inventory of Ancient Woodlands

[3] **Dominant (D)** is used to refer to a single plant species that covers almost the entirety of a habitat so it is rarely used except for homogenous stands of vegetation.

Abundant (A) is used when a plant species is very common on a site and encountered throughout the habitat and with a high % cover i.e. >30%.

Frequent (F) is used when many plants are encountered throughout the habitat and approximately at 15-30% cover.

Occasional (O) is used where several plants are found, scattered throughout the habitat and approximately at <15% cover.

Rare (R) is used when one or two individual plants are present.

2.2.3 In addition to the mapping and description of habitats, incidental observations of protected and/or notable species and the potential for such species to occur on Site (and in the surrounding landscape where relevant) were also recorded onto secure digital media for mapping and data collection.

2.2.4 Broad habitats are mapped on Drawing ST18077-001 *Extended Phase 1 Habitat Plan* with appropriate references identifying features of particular note.

2.3 Preliminary Building Assessment

2.3.1 A total of two structures to be affected by development works were located within the Site and were assessed in 2020.

2.3.2 A preliminary building assessment for bats was undertaken during the field survey; the buildings were assessed externally, and internally where access was possible, for their potential to support roosting bats, and any evidence of roosting bats.

2.3.3 The building was systematically searched for signs indicating presence or potential presence of bat roosts using a high-powered torch and binoculars. The bat survey was undertaken in line with current bat survey guidelines (Collins, 2016). The assessment included a search for the following features:

- Access points and suitable roosting features;
- Gaps around doorways, windowsills, window panes, walls, spaces beneath lifted corrugated metal flashing, in gable ends, and beneath flat roofs, and gaps in brickwork, and in cavity walls;
- Signs indicating possible bat use; and
- Scratches and/or staining at entrance points, bat droppings in, around or below entrance, audible squeaking in warm weather, distinctive smell of bats, smoothing of surface around a cavity, and feeding remains.

2.3.4 The structures were also searched for signs of nesting birds.

2.4 Nomenclature

2.4.1 Vascular plant names follow '*New Flora of the British Isles'* (Stace, 2010) with vernacular names as provided in the Botanical Society of the British Isles website (BSBI, 2013).

2.4.2 All fauna names follow those on the National Biodiversity Network (NBN) Gateway (NBN, 2013).

2.4.3 The common and scientific name of species/taxa is provided (if available) when first mentioned in the text, with only the vernacular name referred to thereafter.

2.5 Caveat

2.5.1 Ecological surveys are limited by factors that affect the presence of plants and animals such as time of year, weather, migration patterns and behaviour. The survey was undertaken in March and therefore represents a valid sample of ecological evidence present on that date/season. The report is not designed, nor is it required to, present a complete inventory of flora and fauna.

2.5.2 The absence of desk study records is not relied upon to determine absence of a species. Often, the absence of records is a result of under-recording within the given search area and as such the experience of the ecologist concerned together with a range of additional factors, such as the presence or absence of potential supporting habitat, is used to infer likely presence or absence.

2.5.3 An indicative assessment of potential adverse effects is provided, although this is not a substitute for a full Ecological Impact Assessment.

2.6 Quality Assurance & Environmental Management

2.6.1 The surveys and assessments have been overseen by and the report checked and verified by a full member of CIEEM, whom is bound by its code of professional conduct.

2.6.2 All surveys and assessments have been undertaken with reference to the recommendations given in British Standard BS 42020, and as stated within specialist guidance, as appropriate, and are referenced separately.

3 RESULTS AND EVALUATION

3.1 Desk Study

Statutory and Non-Statutory Designated Sites

3.1.1 Desk study results for designated sites within a 2km search radius are evaluated in Table 1, below. Sites which are considered potentially sensitive to the development proposals are highlighted in bold text and are discussed in detail in the final sections of the report

3.1.2 The search area is extended to allow for the inclusion of Impact Risk Zones (IRZ)[2] for more distant Sites of Special Scientific Interest (SSSI). IRZs identify the broad locations and types of development which have the potential to impact a SSSI.

3.1.3 The sensitivity of sites is considered by virtue of:

- their supported species or habitat assemblages;
- their distance and/or ecological connectivity to the application site; and/or
- the nature of the perceived impacts.

3.1.4 Sites for which potential adverse effects are not anticipated are excluded from further assessment.

Table 1: Designated Sites Evaluation.

Site Name and Status[4]	Reason for Designation	Potential Adverse Effects
Site name Mersey Estuary Designation SSSI, Ramsar, SPA, LWS Distance Immediately adjacent Direction South west	**The Mersey Estuary is an internationally important site for wildfowl consisting of large areas of intertidal sand and mudflats. The site also includes areas of reclaimed marshland, salt-marshes and brackish marshes. During the winter the estuary supports large numbers of wildfowl and waders and is a valuable staging post for migrating birds.**	**Yes – Site is within the IRZ for the Mersey Estuary SSSI, which identifies that all types of development (excluding householder applications) should be considered for their potential to adversely impact this designated site.**
Site name Banks Road and Garston Gasworks **Designation** LWS	A complex mosaic of unimproved dry neutral and acidic marshy grasslands providing a patchwork of habitats for a	No – This designated site is separated from the Site by industrial and residential developments, limiting

[2] https://data.gov.uk/dataset/sssi-impact-risk-zones

[4] SPA – Specially Protected Area, SAC – Special Area for Conservation, Ramsar – site designated under the Ramsar Convention, SSSI – Site of Special Scientific Interest, NNR – National Nature Reserve, LNR – Local Nature Reserve, LWS - Local Wildlife Site.

Table 1: Designated Sites Evaluation.		
Site Name and Status[4]	**Reason for Designation**	**Potential Adverse Effects**
Distance 620m **Direction** North east	diverse flora, typical of naturally-colonising industrial land. Supports good numbers of typical grassland butterfly species and breeding birds.	the ecological connectivity. Additionally, due to the current high baseline of disturbance on the Site it is not considered that the proposed works will give rise to any significant increase in disturbance above the baseline.
Site name Cressington Heath **Designation** LWS **Distance** 1.2km **Direction** North west	Cressington Heath was developed on abandoned railway sidings associated with Garston Docks and formed a rich mosaic of habitats with a large variety of flora. However, the site has since been developed for housing so only small areas remain. The remaining areas of lowland heathland and acid grassland have not been surveyed for plant species post-development.	No – There is extremely limited ecological connectivity to the Site due to the presence of industrial and residential developments as well as road infrastructure.
Site name Speke Hall & Adjacent Land **Designation** LWS **Distance** 1.6km **Direction** East	This LWS includes the National Trust's Speke Hall estate and part of the former Liverpool airport, comprising a high diversity of habitats ranging from woodland, semi-improved grassland and ponds and ditches. The site supports a large diversity of breeding birds, including grey partgidge, skylark, sedge warbler, blackcap, whitethroat, chiffchaff and kestrel.	No – While there is some ecological connectivity to this designated site along the Mersey Estuary, due to the current high baseline of disturbance on the Site it is not considered that the proposed works will give rise to any significant increase in disturbance, above the baseline.
Site name Allerton Cemetery **Designation** LWS **Distance** 1.9km **Direction** North east	A large cemetery comprising semi-improved and improved grassland and mature semi-natural plantation woodland. The site has a diverse flora.	No – There is extremely limited ecological connectivity to the Site due to the presence of industrial and residential developments as well as road infrastructure.

Ancient Woodland

3.1.5 There are no ancient woodland sites within the 2km search boundary. Stockton's Wood AW is part of Speke Hall Estate, but located outside of the 2km search boundary. Due to the distance, adverse impacts are considered unlikely.

3.2 Field Survey

Habitats

3.2.1 All habitats within the Site are described in Table 2 below. The conservation value of habitats is provided.

3.2.2 Habitats which could be subject to adverse effects and which are UK or local priority habitats are indicated with bold text and are discussed in Section 4 *Discussion and Recommendations*. Habitats for which potential adverse effects are not anticipated or which are not UK or local priority habitats are excluded from further assessment.

3.2.3 The location and extent of habitats is shown on Drawing ST18077-001 *Extended Phase 1 Habitat Plan*.

Table 2: Habitat Description and Evaluation			
Phase 1 Habitats	**s.41**	**LBAP**	**Adverse Impacts?**
Buildings Buildings and industrial structures are present throughout the Site.  	X	X	None- buildings in their own right are not a priority or protected habitat. However, they could support protected species.

Table 2: Habitat Description and Evaluation			
Phase 1 Habitats	**s.41**	**LBAP**	**Adverse Impacts?**
Other Habitat – Hard Standing The majority of the Site consists of concrete roads, hard standing and car parking areas.  	X	X	None – this has no biodiversity value.

3.3 Preliminary Building Assessment

Building 1

3.3.1 Building 1 is a structure of corrugated steel with two open sides, currently used for storage. This structure is due for demolition as part of the proposed works.

3.3.2 The structure has negligible bat potential due to its open and exposed structure.

3.3.3 The presence of unoccupied bird nests confirmed historical use of the building by nesting birds.

Figure 1: Building 1

Figure 2: Unoccupied bird nest in Building 1

Building 2

3.3.4 Building 2 is a small structure of corrugated steel with a door at the front. This structure is due for demolition as part of the proposed works.

3.3.5 No potential bat roosting features were recorded, so the building is considered to have negligible potential for roosting bats.

3.3.6 There was no evidence of use by nesting birds.

Figure 3: Building 2

3.4 Species

3.4.1 Protected species and species of principal importance nationally and locally are evaluated in Table 3 below in order to identify potential adverse effects from the proposed development.

3.4.2 Presence/absence and likelihood of significant impacts is based on, but not limited to, the following criteria:

- Desk study records;
- Evidence found during the survey;
- Presence, extent, quality and viability of supporting on-Survey Area habitat;
- Ecological connectivity to viable off-site habitats; and
- Perceived impacts of habitat loss/impact to individuals in relation to proposals.

3.4.3 Species for which adverse effects are predicted are discussed in greater detail in Section 5 *Discussions and Recommendations*.

3.4.4 Species/taxa for which potential adverse effects are not anticipated are excluded from this document.

Table 3: Species Results and Evaluation				
Receptor	**Desk Study Record**	**Status[5]**	**Supporting Habitat**	**Potential Adverse Effects**
Bats	60 records received, of three species and two species groups. Species reported were common pipistrelle *Pipistrellus pipistrellus*, noctule *Nyctalus noctule* and soprano pipistrelle *Pipistrellus pygmaeus* Some were not identified to species level (*Myotis spp., Pipistrellus spp.*). There were 14 records of unidentified bat species. No records are within 1km of the Site. The closest records are from 2012 when 6 bats were recorded 1.2km from the Site. The most recent record is from 2019 of an unidentified bat species 1.4km away from the Site.	EPS, WCA, s.41,	Buildings within the Site may provide bat roosting opportunities. As the Site is primarily hardstanding and industrial buildings, it is considered very poor habitat for foraging bats.	No – The buildings to be affected by works were inspected as being of negligible suitability for roosting bats. As the Site is subject to continual disturbance and floodlighting it is considered unlikely to support any notable usage by foraging or commuting bats.
Birds	**121 records were found for bird species within 2km of the Site.**	**s.41, WCA BoCC**	**Buildings within the Site could provide nesting opportunities. Several nests were**	**Yes – If potential bird nesting habitat is lost i.e. buildings.**

[5] EPS – European Protected Species, WCA – Wildlife and Countryside Act, A1 – Annex 1 (Birds Directive), BA – Protection of Badgers Act, s.41- species listed under section 41 of the NERC Act as species of principal importance

Table 3: Species Results and Evaluation				
Receptor	**Desk Study Record**	**Status[5]**	**Supporting Habitat**	**Potential Adverse Effects**
	The nearest record is for a house sparrow, *Passer domesticus* in 2001 recorded within the Site. A yellowhammer *Emberiza citrinella* was recorded 60m from the Site boundary in 2007. Other records within 2km include barn owl Tyto alba, bullfinch Pyrrhula pyrrhula, Dunnock Prunella modularis, grasshopper warbler Locustella naevia, grey partridge Perdix perdix, house martin Delichon urbicum, lapwing Vanellus vanellus, linnet Linsria cannabina, reed bunting Emberiza schoeniclus, skylark Alauda arvensis, song thrush Turdus philomelos, starling Sturnus vulgaris, swift Apus apus and willow tit Poecile montana.		**discovered during the Site visit in building 1.**	

3.5 Invasive Species

3.5.1 No invasive non-native species of flora or fauna were identified during the survey.

4 DISCUSSION AND RECOMMENDATIONS

4.1 Introduction

4.1.1 The following designated sites, habitats and species (receptors) have been evaluated as being subject to potential adverse effects:

- Designated Sites - Mersey Estuary SSSI, SPA & Ramsar; and
- Protected /Priority Species – nesting birds (general).

4.1.2 The nature of potential effects, requirements for further surveys, and proposed mitigation/compensation are discussed below for each of the identified potential sensitive receptors.

4.2 Designated Sites

Mersey Estuary SSSI, SPA & Ramsar

4.2.1 Direct impacts to the features for which these designated sites are notified are not anticipated to occur as a result of disturbance due to the current high baseline of disturbance on the Site and in the surrounding industrial estate. It is considered that the proposed works will not give rise to any increase in noise or lighting than that already occurring on the Site, to which the birds (which are a feature of these designated sites) are already habituated.

4.2.2 In addition, the proposed heights of the new infrastructure will not be any higher than already exists of the Site, therefore it will not impact on any existing flight lines to and from the Mersey Estuary designated sites.

4.2.3 Indirect impacts as a result of new emissions to the air have the potential to impact upon the Mersey Estuary designated site. The air quality assessment for the proposed development will detail the emissions that will result from the proposals. This should be used to investigate the potential for likely significant effects as a result of emissions to air on the Mersey Estuary designated sites.

4.3 Protected / Priority Species

Nesting Birds

4.3.1 It is recommended that demolition of building 1 is undertaken outside of the usual bird breeding season (normally taken to be March-August inclusive). If such timescales cannot be accommodated, a check for the presence of active nests and nesting birds

should be undertaken by a suitably qualified ecologist prior to the demolition of the building. Any active nests should be identified and protected subject to the relevant legal provisions until the nesting attempt is complete.

5 REFERENCES

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Appendix 1

Legislation and Policy Summary

Appendix 1 – Legislation and Policy Summary

Legislation for Habitats/Sites

Designated Site/Habitat	Status
Ramsar Sites	Ramsar Sites are wetlands of international importance designated following The Ramsar Convention. RAMSAR sites have the same level of protection as SSSIs under the Wildlife and Countryside Act 1981 (as amended).
SPA (Special Protection Areas)	SPAs are classified in accordance with Article 4 of the EC Directive on the Conservation of Wild Birds (79/409/EEC), the Birds Directive. They are they seek to protect the habitats of rare and vulnerable birds, listed in Annex I of the Birds Directive, and for regularly occurring migratory species. The Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 implement the Birds Directive in the UK.
SAC (Special Areas for Conservation)	SACs are strictly protected areas which represent typical European Union of habitats and (non-bird) species listed in Annexes I and II of the EC Habitats Directive. The Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 implement the Habitats Directive in the UK.
SSSI (Sites of Special Scientific Interest)	SSSIs protect the best examples of the UK's flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were renotified under the Wildlife and Countryside Act 1981 (as amended). Modified provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000.
NNR (National Nature Reserves)	NNRs are examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. NNRs are declared by the statutory country conservation agencies under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981 (as amended). Legal protection of NNRs is provided under The Wildlife and Countryside Act 1981 (as amended).
Hedgerows	All hedgerows are protected by the Hedgerows Regulations 1997, under which it is an offence to remove or destroy certain hedgerows without planning consent or permission from the Local Planning Authority. These regulations do not apply to any hedgerow within the curtilage of, or marking the boundary of the curtilage of, a dwelling house.
LNR (Local Nature Reserves)	Designated by the National Parks and Access to the Countryside Act 1949, LNRs may be declared for nature conservation by local authorities after consultation with the relevant statutory nature conservation agency. Legal protection of LNRs is provided under The Wildlife and Countryside Act 1981 (as amended).

Legislation for Species

Species	**Legal Status**
European Legislation	
Creeping Marshwort, Early Gentian, Fen Orchid, Floating-leaved Water Plantain, Killaney Fern, Lady's Slipper, Shore Dock, Slender Naiad, Yellow Marsh Saxifrage	Under the Conservation of Habitats and Species Regulations 2017 (and as amended), it is illegal to deliberately pick, collect, uproot or destroy any such species.
Bats, Dormouse, Otter, Wild Cat, Great Crested Newt, Natterjack Toad, Sand Lizard, Smooth Snake, Large Blue Butterfly	These animals and their breeding sites or resting places are protected under Regulation 41 of the Conservation of Habitats and Species Regulations 2017 (and as amended), which makes it illegal to: • Deliberately capture, injure or kill any such animal or to deliberately take or destroy their eggs; • Deliberately disturb[6] such an animal; and • Damage or destroy a breeding site or resting place of such an animal. European Protected Species (EPS) licenses can be granted by Natural England in respect of development to permit activities that would otherwise be unlawful under the Conservation Regulations, providing that the following 3 tests (set out in the EC Habitats Directive) are passed, namely: • The development is for reasons of overriding public interest; • There is no satisfactory alternative; and • The favourable conservation status of the species concerned will be maintained and/or enhanced. Under Regulation 9(5) of the Conservation Regulations, Planning Authorities have a duty to 'have regard to the requirements of the EC Habitats Directive' i.e. LPA's must consider the above 3 'tests' when determining whether Planning Permission should be granted for developments likely to cause an offence under the Conservation Regulations.

[6] Under the Conservation Regulations, disturbance of protected animals includes in particular any disturbance which is likely to: (i) impair their ability to survive, breed or reproduce, or to rear or nurture their young or to hibernate or migrate; (ii) significantly affect the local distribution or abundance of the species in question.

Species	**Legal Status**
Domestic (UK) Legislations	
Bats, Dormouse, Great Crested Newt, Heath Fritillary, High Brown Fritillary, Large Blue, Marsh Fritillary, Natterjack Toad, Pine Martin, Otter, Red Squirrel, Sand Lizard, Smooth Snake, Swallowtail, Water Vole, Wildcat	These animals receive full protection under the Wildlife and Countryside Act 1981 (and as amended), which makes it illegal (subject to certain exceptions) to: • Intentionally kill, injure or take any such animal; • Intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any such animal; and • Intentionally or recklessly disturb such animals while they occupy a place used for shelter or protection.
Adder, Common Lizard, Grass Snake, Slow Worm, White-clawed Crayfish	These animals receive partial protection under The Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000), which provide protection against intentional killing or injury of any such animal.
Nesting Birds	All wild birds (as defined by the act) are protected under the Wildlife and Countryside Act 1981 (and as amended), which makes it illegal (subject to exceptions) to: • Intentionally kill, injure or take any wild bird; • Take, damage or destroy the nest (whilst being built or in use) or eggs of any wild bird.
WCA Schedule 1 listed Birds	Additional protection is provided to birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (and as amended). In addition to the offences detailed above relating to all wild birds, it is illegal to: • Intentionally or recklessly disturb any bird listed on Schedule 1, or their dependent young while nesting.
Badgers	The Protection of Badgers Act 1992 makes it illegal to wilfully kill or injure a Badger, or attempt to do so and to intentionally or recklessly interfere with a Badger sett. This includes: • damaging or destroying an active sett; • obstructing access to a sett; and • disturbing a Badger while it is occupying a sett. Licences can be granted to permit sett closure and/or disturbance between July and November inclusive (i.e. outside the sow pregnancy/birth period).
Wild Mammals	The Wild Mammals (Protection) Act 1996 provides legal protection to all wild mammals (as defined by the act) against the following actions: mutilate, kick, beat, nail, or otherwise impale, stab, burn, stone, drown, crush, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering.

Species	Legal Status
Invasive Species	
WCA Schedule 9 listed animals (Part 1) and plants (part 2)	Certain species of plants and animals that do not naturally occur in Great Britain have become established in the wild and represent a threat to the natural fauna and flora. Section 14 of the Wildlife & Countryside Act prohibits the release of any animal species that are: "*not ordinarily resident in and is not a regular visitor to Great Britain in a wild state*"

Policy Summary

Section 40 of the Natural Environment and Rural Communities (NERC) Act imposes a legal duty on Planning Authorities to 'have regard' to the conservation of biodiversity when considering planning applications.

Section 41 of the NERC Act requires the Secretary of State to publish a list of species and habitats of principal importance for conserving biodiversity in the UK. Such Biodiversity Action Plan (BAP) Habitats and Species (2007) do not offer the species any specific protection but help to highlight the species importance at a national level. This list is used by Local Planning Authorities to identify the species and habitats that should be afforded priority when applying the requirements of the National Planning Policy Framework (NPPF).

The NPPF underpins the Government's planning policies for England and how these are to be applied. The central theme of the NPPF is a presumption in favour of sustainable development. This presumption does not apply where development requiring Appropriate Assessment under the Birds or Habitats Directives is being considered, planned or determined.

The NPPF states:

> *'When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:*
>
> - *if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
> - *proposed development on land within or outside a Site of Special Scientific Interest (SSSI) likely to have an adverse effect on a SSSI (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the*

impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of SSSIs;

- *development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;*
- *opportunities to incorporate biodiversity in and around developments should be encouraged;*
- *planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss; and*
- *the following wildlife sites should be given the same protection as European sites: potential Special Protection Areas (SPA) and possible Special Areas of Conservation (SAC); listed or proposed Ramsar sites; and sites identified, or required, as compensatory measures for adverse effects on European sites, potential SPAs, possible SACs, and listed or proposed Ramsar sites.'*

The NPPF requires the Planning Authority to have a responsibility to promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan. In addition, the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

DRAWINGS

339800mE
339900mE
340000mE
340100mE
383700mN
383600mN
383500mN
Blackburne Street
Weaver Industrial Estate
PROPOSED BOILER AND COOLING TOWER
PROPOSED COLUMNS
PROPOSED TANK FARM
PROPOSED WATER TANKS
1
2
SCALE BAR
0m 50 100 150
Metres
River Mersey
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DO NOT SCALE FROM THIS DRAWING

KEY

- Survey boundary
- Existing buildings and hardstanding
- Indicative location of proposed structures
- Mersey Estuary SSSI
- 1 Building numbers

NOTES

Coordinates to British National Grid
Boundaries are indicative. Aerial imagery is for context purposes only and may not show recent development sites.
Contains public sector information.
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REVISION	DETAILS	DATE	DR'N	CHK'D	APP'D
A	First Issue	17/01/20	MAB	JB	SEW

CLIENT: VEOLIA ENVIRONMENTAL

PROJECT: KINGS STREET, GARSTON

DRAWING TITLE: EXTENDED PHASE 1 HABITAT PLAN

DRG No.	REV
ST18077-001	A

DRG SIZE	SCALE	DATE
A3	1:1250	16/04/2020

DRAWN BY	CHECKED BY	APPROVED BY
MAB	JB	SEW

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\\WA.LOCAL\PROJECTS\ST\ST18077 - KINGS STREET GARSTON MERSEYSID\03 - DESIGN\AUTOCAD\ST18077-001 PHASE 1 HABITAT SURVEY RESULTS3.DWG

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APPENDIX E

COTC

Continuing Competence Certificate

This certificate confirms that

Helen Milligan

Has met the relevant requirements of the Continuing Competence scheme for the following award(s) which will remain current for two years from 23/10/2020

TSH	Transfer - Hazardous Waste
TMH	Treatment - Hazardous Waste

Expiry Date: 23/10/2022

Verification date: 09/10/2020

Authorised:

Director of Qualifications and Standards

Learner ID: 115884

Certificate No.: 5170610

Date of Issue: 23/10/2020

CIWM Chief Executive Officer

The Chartered Institution of Wastes Management

00151977

APPENDIX F

BAT ASSESSMENTS

Waste Treatment BREF BAT reference:	Description from BREF document	Adherence to BAT	Comments
Section 1.1 – General BAT Conclusions			
BAT 1	In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS)	Yes	EMS adopted as part of ISO:14001 accreditation
BAT 2	In order to improve the overall environmental performance of the plant, BAT is to use waste pre-acceptance, acceptance, tracking, segregation and compatibility procedures	Yes	No proposed changes to current site-wide procedures
BAT 3	In order to facilitate the reduction of emissions to water and air, BAT is to establish and to maintain an inventory of waste water and waste gas streams, as part of the environmental management system (see BAT 1)	Yes	No proposed changes to current site-wide procedures
BAT 4	In order to reduce the environmental risk associated with the storage of waste, BAT is to use all of the techniques set out in the guidance such as storage optimisation, capacity and safety.	Yes	No proposed changes to current site-wide procedures
BAT 5	In order to reduce the environmental risk associated with the handling and transfer of waste, BAT is to set up and implement handling and transfer procedures.	Yes	No proposed changes to current site-wide procedures
BAT 6	For relevant emissions to water as identified by the inventory of waste water streams (see BAT 3), BAT is to monitor key process parameters (e.g. waste water flow, pH, temperature, conductivity, BOD) at key locations (e.g. at the inlet and/or outlet of the pre-treatment, at the inlet to the final treatment, at the point where the emission leaves the installation).	Yes	Key parameters are measured prior to discharge. No proposed changes to current site-wide procedures
BAT 7	BAT is to monitor emissions to water with at least the frequency set out in the guidance and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.	Yes	No proposed changes to current site-wide procedures.

BAT 8	BAT is to monitor channelled emissions to air with at least the frequency given below, and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.	Yes	No proposed changes to current site-wide procedures. Emissions monitored in accordance with permit requirements
BAT 9	BAT is to monitor diffuse emissions of organic compounds to air from the regeneration of spent solvents, the decontamination of equipment containing POPs with solvents, and the physico-chemical treatment of solvents for the recovery of their calorific value, at least once per year using one or a combination of the techniques given below.	Yes	Off loading – back venting. PVR valves on tanks to scrubber. Safety features
BAT 10	BAT is to periodically monitor odour emissions.	Yes	No proposed changes to current site-wide procedures
BAT 11	BAT is to monitor the annual consumption of water, energy and raw materials as well as the annual generation of residues and waste water, with a frequency of at least once per year.	Yes	No proposed changes to current site-wide procedures
BAT 12	In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:	Yes	No proposed changes to current site-wide procedures. Odour control measures are appropriate for this operation, given the negligible risks from odour
BAT 13	In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to use one or a combination of the techniques given in the guidance.	n/a	No additional treatment required. Odour control measures are appropriate for this operation, given the negligible risks from odour Residues dropped to IBCs, new process enclosed No compatibility issues which would otherwise generate odour
BAT 14	In order to prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of dust, organic compounds and odour, BAT is to use an appropriate combination of the techniques given in the guidance	Yes	No proposed changes to current site-wide procedures Product test ROE prior to burning

BAT 15	BAT is to use flaring only for safety reasons or for non-routine operating conditions (e.g. start-ups, shutdowns) by using both of the techniques given in the guidance.	n/a	n/a
BAT 16	In order to reduce emissions to air from flares when flaring is unavoidable, BAT is to use both of the techniques given in the guidance.	n/a	n/a
BAT 17	In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to set up, implement and regularly review a noise and vibration management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements: I. a protocol containing appropriate actions and timelines; II. a protocol for conducting noise and vibration monitoring; III. a protocol for response to identified noise and vibration events, e.g. complaints; IV. a noise and vibration reduction programme designed to identify the source(s), to measure/estimate noise and vibration exposure, to characterise the contributions of the sources and to implement prevention and/or reduction measures.	Yes	Noise control measures are appropriate for this operation, given the negligible risks from noise Boilers enclosed in a building. Deadening enclosures Building orienteered towards middle of site Insulation used
BAT 18	In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to use one or a combination of techniques given in the guidance	Yes	No proposed changes to current site-wide procedures
BAT 19	In order to optimise water consumption, to reduce the volume of waste water generated and to prevent or, where that is not practicable, to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques given in the guidance.	Yes	Steam generation – 95%+ reuse (condensate returned to hot well which is capped) and cooling towers – adjusted by load to reduce water consumption Segregation of drainage
BAT 20	In order to reduce emissions to water, BAT is to treat waste water using an appropriate combination of the techniques given in the guidance.	Yes	No proposed changes to current site-wide procedures

Table 6.1 or 6.2	BAT-associated emission levels (BAT-AELs) for Direct or Indirect discharges to a receiving water body	Yes	Review historic data and compare after segregation measures employed
BAT 21	In order to prevent or limit the environmental consequences of accidents and Incidents, BAT is to use all of the techniques given in the guidance, as part of the accident management plan (see BAT 1).	Yes	No proposed changes to current site-wide procedures
BAT 22	In order to use materials efficiently, BAT is to substitute materials with waste.	Yes	EoW application for use of distillate product in new boilers included with this application
BAT 23	In order to use energy efficiently, BAT is to use both of the techniques given In the guidance	Yes	Energy usage is monitored and reported on an annual basis in accordance with permit conditions. New equipment load-dependant, Boilers turndown ratio Air supply fans variable speed control
BAT 24	In order to reduce the quantity of waste sent for disposal, BAT is to maximise the reuse of packaging, as part of the residues management plan (see BAT 1).	Yes	Increasing material sent up waste hierarchy. R2
Section 4.4 – BAT Conclusions for the regeneration of spent solvents			
BAT 46	In order to improve the overall environmental performance of the regeneration of spent solvents, BAT is to use one or both of the techniques given in the guidance.	Yes	New operation includes the use of processed solvents as a fuel A – energy demand less than manufacturing virgin solvent. Co2 generation B – material to SLF

BAT 47	In order to reduce emissions of organic compounds to air, BAT is to apply BAT 14d and to use a combination of the techniques given in the guidance	Yes	No proposed changes to current site-wide procedures Techniques b,d and e are employed

Chemical Waste Appropriate Measures	Description	Adherence to BAT	Deviation from BAT
Section 2 – General Management Appropriate Measures			
Section 2..1 – Management System			
Item 1	You must have and follow an up-to-date, written management system that incorporates the following environmental performance features: You have: ● management commitment, including from senior managers ● an environmental policy that is approved by senior managers and includes the continuous improvement of the facility's environmental performance You plan and establish the resources, procedures, objectives and targets needed for environmental performance alongside your financial planning and investment. You implement your environmental performance procedures, paying particular attention to: ● staff structure and relevant responsibilities ● staff recruitment, training, awareness and competence ● communication (for example, of performance measures and targets) ● employee involvement ● documentation ● effective process control ● maintenance programmes ● managing change	Yes, there is no change to current procedures and practices	n/a

	• emergency preparedness and response • making sure you comply with environmental legislation You check environmental performance and take corrective or preventative action, paying particular attention to: • monitoring and measurement • learning from incidents, near misses and mistakes, including those of other organisations • records maintenance • independent (where practicable) internal or external auditing of the management system to confirm it has been properly implemented and maintained Senior managers review the management system to check it is still suitable, adequate and effective. You review the development of cleaner technologies and their applicability to site operations. When designing new plant, you make sure you assess the environmental impacts from the plant's operating life and eventual decommissioning. You consider the risks a changing climate poses to your operations. You have appropriate plans in place to assess and manage future risks. You compare your site's performance against relevant sector guidance and standards on a regular basis, known as sectoral benchmarking. You have and maintain the following documentation: • inventory of emissions to air and water • residues management plan • accident management plan • site infrastructure plan • site condition report		

	● odour management plan, if required ● noise and vibration management plan, if required ● dust management plan, if required ● pest management plan, if required ● fire prevention plan, if required ● climate change risk assessment, if required Your management system can also include, for example, product or service quality, operational efficiency and health and safety in the workplace.		
Section 2.2 – Staff Competence			
item 1	Your site must be operated at all times by an adequate number of staff with appropriate qualifications and competence.	Yes, there is no change to current procedures and practices	n/a
item 2	The design, installation and maintenance of infrastructure, plant and equipment must be carried out by competent people.	Yes	n/a
item 3	You must have appropriately qualified managers for your waste activity who are members of a government-approved technical competency scheme.	Yes, TCM in place	n/a
item 4	The person carrying out the technical appraisal of a waste's suitability for receipt at pre acceptance must have the minimum of a Higher National Certificate (HNC) in chemistry (or equivalent qualification). For the following wastes, technical appraisals must be carried out by a person who has had enough training to determine the suitability of the waste for the site: ● asbestos ● contaminated clothing and rags ● 'articles', for example waste electronic equipment or batteries ● contaminated wood ● solid non-hazardous waste other than 'mirror entries' (where waste may be allocated to a hazardous entry or to a non-hazardous entry according to the European List of Waste)	Yes	n/a
item 5	If you need to sample, check (other than visually), or test a hazardous waste when you accept it, acceptance must be supervised by someone with the minimum of an HNC in chemistry (or equivalent qualification). At sites where the waste needs only a visual check, the person who	Yes	n/a

	receives the waste must have had enough training to be able to identify and manage any non-conformances in the load received.		
item 6	You must make sure that any required sample is representative of the waste and has been taken by someone technically competent to do so.	Yes	n/a
item 7	Any required analysis must be done by someone with the minimum of an HNC in chemistry (or equivalent qualification).	Yes	n/a
item 8	Non-supervisory staff must be reliable and technically skilled. Their skills may be based on experience and relevant training.	Yes	n/a
Section 2.3 – Accident Management Plan			
item 1	As part of your written management system you must have a plan for dealing with any incidents or accidents that could result in pollution.	Yes, the site is covered by COMAH	n/a
item 2	The accident management plan must identify and assess the risks the facility poses to human health and the environment.	Yes	n/a
item 3	Particular areas to consider may include: ● waste types ● vessels overfilling ● failure of plant and equipment (for example over-pressure of vessels and pipework, blocked drains) ● failure of containment (for example, bund failure, or drainage sumps overfilling) ● failure to contain firefighting water ● making the wrong connections in drains or other systems ● preventing incompatible substances coming into contact with each other ● unwanted reactions and runaway reactions ● checking the composition of an effluent before emission ● vandalism and arson ● extreme weather conditions, such as flooding or very high winds	Yes	n/a

item 4	You must assess the risk of accidents and their consequences. Risk is the combination of the likelihood that a hazard will occur, and the severity of the impact resulting from that hazard. Having identified the hazards, you can assess the risks by addressing 6 questions: ● how likely is it that the accident will happen? ● what may be emitted and how much? ● where will the emission go – what are the pathways and receptors? ● what are the consequences? ● what is the overall significance of the risk? ● what can you do to prevent or reduce the risk?	Yes	n/a
item 5	In particular, you must identify any fire risks, for example from: ● arson or vandalism ● self-combustion, for example due to chemical oxidation ● plant or equipment failure and electrical faults ● naked lights and discarded smoking materials ● hot works (for example welding or cutting), industrial heaters and hot exhausts ● reactions between incompatible materials ● neighbouring site activities ● sparks from loading buckets ● hot loads deposited at the site	Yes	n/a
item 6	The depth and type of accident risk assessment you do will depend on the characteristics of the plant and its location. The main factors to take into account are the: ● scale and nature of the accident hazard presented by the plant and its activities ● risks to areas of population and the environment (the receptors) ● nature of the plant and complexity of the activities, and how difficult it is to decide and justify adequate risk control techniques	Yes	n/a

item 7	Through your accident management plan, you must also identify the roles and responsibilities of the staff involved in managing accidents. You must give them clear guidance on how to manage each accident scenario, for example, whether to use containment or dispersion to extinguish fires, or let them burn.	Yes	n/a
item 8	You must appoint one facility employee as an emergency co-ordinator who will take lead responsibility for implementing the plan. You must train your employees so they can perform their duties effectively and safely and know how to respond to an emergency.	Yes	n/a
Item 9	You must also: ● establish how you will communicate with relevant authorities, emergency services and neighbours (as appropriate) both before, during and after an accident ● have appropriate emergency procedures, including for safe plant shutdown and site evacuation ● have post-accident procedures that include making an assessment of the harm that may have been caused by an accident and the remediation actions you will take ● test the plan by carrying out emergency drills and exercises	Yes	n/a
Section 2.4 – Accident Prevention Measures			
Segregating waste			
Item 1	You must keep apart incompatible or segregated wastes and substances by their hazardous properties.	Yes, there is no change to current procedures and practices	n/a
Item 2	You must segregate incompatible waste types into bays or store them in dedicated buildings. The minimum requirement is to use a kerbed perimeter and separate drainage collection. You must also have measures in place to prevent containers falling over into other storage areas.	Yes	n/a
Preventing accidental emissions			

Item 3	You must make sure you contain the following (where appropriate) and route to the effluent system (where necessary): ● process waters ● site drainage waters ● emergency firefighting water ● chemically contaminated waters ● spillages of chemicals	Yes, there is no change to current procedures and practices	n/a
Item 4	You must be able to contain surges and storm water flows. You must provide enough buffer storage capacity to make sure you can achieve this. You can define this capacity using a risk-based approach, for example, by taking into account the: ● nature of the pollutants ● effects of downstream waste water treatment ● sensitivity of the receiving environment	Yes	n/a
Item 5	You can only discharge waste water from this buffer storage after you have taken appropriate measures, for example, to control, treat or reuse the water.	Yes	n/a
Item 6	You must have spill contingency procedures to minimise the risk of an accidental emission of raw materials, products and waste materials, and to prevent their entry into water.	Yes, Klargester tank, all site surface water drainage leads to this tank, the level is monitored daily & the contents is regularly transferred to the white tanks on site T53 - T58. These tanks are sampled & tested prior to river discharge under W3.	n/a

Item 7	Your emergency firefighting water collection system must take account of additional firefighting water flows or firefighting foams. You may need emergency storage lagoons to prevent contaminated firefighting water reaching a receiving water body.	Yes, Existing storage capacity is appropriate. Business Continuity Plan (BCP) in place	n/a
Item 8	You must consider and, if appropriate, plan for the possibility that you need to contain or abate accidental emissions from: ● overflows ● vents ● safety relief valves ● bursting discs If this is not advisable on safety grounds, you must focus on reducing the probability of the emission.	Yes	n/a
Security measures			
Item 9	You must have security measures (and staff) in place to prevent: ● entry by intruders ● damage to equipment ● theft ● fly-tipping ● arson	Yes, there is no change to current procedures and practices	n/a
Item 10	Facilities must use an appropriate combination of the following measures: ● security guards	Yes	n/a

	• total enclosure (usually with fences) • controlled entry points • adequate lighting • warning signs • 24-hour surveillance, such as CCTV		
Fire prevention			
Item 11	There are 3 fire prevention objectives. You must: • minimise the likelihood of a fire happening • aim for a fire to be extinguished within 4 hours • minimise the spread of fire within the site and to neighbouring sites	Yes, new firewater tanks and automated fire suppression systems are being installed as part of this expansion. Refer to details set out in Appendix B.	n/a
Item 12	You must have appropriate systems for fire prevention, detection and suppression or extinction.	Yes, site is lower tier COMAH	n/a
Item 13	You must have suitable procedures and provisions (such as fire resistant stores, automatic alarms and sprinklers) to store certain types of hazardous waste.	yes	n/a
Item 14	Your facility must have enough water supplies to extinguish fires. You must have an alternative type of fire protection system if you store or treat any water-reactive waste, for example dry powder extinguishers	Yes, new firewater tanks are being installed	n/a
Item 15	You must isolate drainage systems from flammable waste storage areas to prevent fire spreading along the drainage system by solvents or other flammable hydrocarbons.	Yes, all flammable waste storage areas are bunded. Any spillage would be contained in this bund.	n/a

Item 16	You must regularly inspect and clean your site to prevent the build-up of loose combustible material (including waste and dust), particularly around treatment plant, equipment and other potential sources of ignition.	Yes, although limited potential for litter given the waste types accepted	n/a
Item 17	You should share and communicate accident management and fire prevention plans with your local fire and rescue service.	Yes, annual inspections by the Fire Service	n/a
Other accident prevention measures			
Item 18	You must assess areas of the site where explosive atmospheres could occur and, where appropriate, classify them into hazardous zones in accordance with the Dangerous Substances and Explosive Atmospheres Regulations. Plant and equipment used in these zones must be ATEX compliant.	Yes, 2020 DSEAR assessments completed, zones identified & labelled, equipment used in these areas is ATEX compliant with the zone	n/a
Item 19	You must maintain plant control in an emergency – use one or a combination of the following measures: ● alarms ● process trips and interlocks ● automatic systems based on microprocessor control and valve control ● tank level readings such as ultrasonic gauges, high level warnings, process interlocks and process parameters	Yes, High level pump shut offs, alarms, level gauges etc all in place	n/a
Item 20	You must:	Yes	n/a

	● make sure all the measurement and control devices you would need in an emergency are easy to access and will operate in an emergency ● maintain the plant so it is in a good state through a preventive maintenance programme and a control and testing programme ● use techniques such as suitable barriers to prevent moving vehicles damaging equipment ● have procedures in place to avoid incidents due to poor communication between operating staff during shift changes and after maintenance or other engineering work		
Record keeping and procedures			
Item 21	You must: ● keep an up-to-date record of all accidents, incidents, near misses, changes to procedures, abnormal events, and the findings of maintenance inspections ● investigate accidents, incidents, near misses and abnormal events and record the steps you take to stop them reoccurring ● maintain an inventory of substances, which are present (or likely to be) and which could have environmental consequences if they escape – many apparently innocuous substances can damage the environment if they escape ● have procedures for checking raw materials and wastes to make sure they are compatible with other substances they may accidentally come into contact with	Yes, there is no change to current procedures and practices	n/a
Section 2.5 – Contingency Plan and Procedures			
Item 1	You must have and implement a contingency plan, which makes sure you: ● comply with all your permit conditions and operating procedures during maintenance or shutdown at your site, or elsewhere ● do not exceed storage limits in your permit and you continue to apply appropriate measures for storing and handling waste ● stop accepting waste unless you have a clearly defined method of recovery or disposal and enough permitted storage capacity	Yes, there is no change to current procedures and practices	n/a

Item 2	You should have contingency procedures to make sure that, as far as possible, you know in advance about any planned shutdowns at waste management facilities where you send waste.	Yes	n/a
Item 3	You must make your customers aware of your contingency plan, and of the circumstances in which you would stop accepting waste from them.	Yes	n/a
Item 4	You should consider whether the sites or companies you rely on in your contingency plan: ● can take the waste at short notice ● are authorised to do so in the quantities and types likely to be needed – in addition to carrying out their existing activities	Yes, set out in BCP	n/a
Item 5	You should not discount alternative disposal or recovery options on the basis of extra cost or geographical distance if doing so means you could exceed your permitted storage limits, or compromise your storage procedures.	Yes	n/a
Item 6	You must not include unauthorised capacity in your contingency plan. If your contingency plan includes using temporary storage for additional waste on your site, you must make sure your site is authorised for this storage and you have the appropriate infrastructure in place.	Yes	n/a
Item 7	**Treatment sites only** Your management procedures and contingency plan must: ● identify known or predictable malfunctions associated with your technology and the procedures, spare parts, tools and expertise needed to deal with them ● include a record of spare parts held, especially critical spares – or state where you can get them from and how long it would take ● have a defined procedure to identify, review and prioritise items of plant which need a preventative maintenance regime ● include all equipment or plant whose failure could directly or indirectly lead to an impact on the environment or human health	Yes	n/a

	● identify 'non-productive' or redundant items such as tanks, pipework, retaining walls, bunds, mobile plant, reusable waste containers (for example wheeled carts), ducts, filters and security systems ● make sure you have the spare parts, tools, and competent staff needed before you start maintenance		
Item 8	If you produce an end-of-waste material at your facility, your contingency planning must consider issues with storage capacity for end-of-waste products and materials that fail the end-of-waste specification.	Yes, out of specification material will be quarantined prior to removal off site	n/a
Item 9	Your management system must include procedures for auditing your performance against all of these contingency measures and for reporting the audit results to the site manager.	Yes	n/a
Section 2.6 – Plant Decommissioning			
Item 1	You must consider how you will decommission the plant at the design stage, and plan how you will minimise risks during decommissioning.	Yes	n/a
Item 2	For existing plants where potential risks are identified, you must have a programme of design improvements. These design improvements need to make sure you: ● avoid using underground tanks and pipework – if it is not economically possible to replace them, you must protect them by secondary containment or a suitable monitoring programme ● drain and clean out vessels and pipework before dismantling ● use insulation which you can dismantle easily without dust or hazard ● use recyclable materials, taking into account operational or other environmental objectives	Yes, only subsurface tanks are for storage of surface water runoff	n/a
Item 3	You must have and maintain a decommissioning plan to demonstrate that: ● plant will be decommissioned without causing pollution ● the site will be returned to a satisfactory condition	Yes, referred to a Site Closure Plan	n/a

Item 4	Your decommissioning plan should include details on: ● whether you will remove or flush out pipelines and vessels (where appropriate) and how you will empty them of any potentially harmful contents ● site plans showing the location of all underground pipes and vessels ● the method and resources needed to clear any on-site lagoons ● the method for closing any on-site landfills ● how asbestos or other potentially harmful materials will be removed, unless we have agreed it is reasonable to leave such liabilities to future owners ● methods for dismantling buildings and other structures, and for protecting surface water and groundwater during construction or demolition at your site ● any soil testing needed to check for pollution caused by site activities, and information on any remediation needed to return the site to a satisfactory state when you stop activities, as defined by the initial site condition report ● the measures proposed, once activities have definitely stopped, to avoid any pollution risk and to return the site of operation to a satisfactory state (including, where appropriate, measures relating to the design and construction of the plant) ● the clearing of deposited residues, waste and any contamination resulting from the waste treatment activities	Yes	n/a
Item 5	You should make sure that equipment taken out of use is decontaminated and removed from the site.	Yes	n/a
Section 3 - Waste Pre-acceptance, Acceptance and Tracking Appropriate Measures			
Section 3.1 – Waste Pre-acceptance			
Item 1	You must implement waste pre-acceptance procedures so that you know enough about a waste (including its composition) before it arrives at your facility. You need to do this to assess and confirm the waste is technically and legally suitable for your facility. Your procedures must follow a risk-based approach, considering: ● the source and nature of the waste	Yes, there is no change to current procedures and practices	n/a

	● its hazardous properties ● potential risks to process safety, occupational safety and the environment (for example, from odour and other emissions) ● knowledge about the previous waste holder		
Item 2	When you receive a customer query, and before the waste arrives at your facility, you must obtain the following in writing or in an electronic form: ● details of the waste producer including their organisation name, address and contact details ● the source of the waste (the producer's business and the specific process that has created the waste) ● where the holder of the waste is not the producer, details of the waste holder including their organisation name, address and contact details ● information on the nature and variability of the waste production process and the waste You must also obtain (in writing or electronic form) details about the waste including: ● a description ● the List of Waste code (European Waste Classification (EWC) code) ● its physical form ● its composition (based on safety data sheets, where appropriate, or representative samples and robust laboratory analysis) ● any hazardous properties ● any persistent organic pollutants (POPs) present ● the potential for self-heating, self-reactivity or reactivity to moisture or air ● any odour ● its age, that is when it first became waste ● the type of packaging ● an estimate of the quantity you expect to receive in each load and in a year	Yes, there is no change to current procedures and practices	n/a

	You must also obtain confirmation that the waste does not contain a radioactive source. If there is a risk of radioactive contamination you must obtain confirmation that the waste is not radioactive, unless your facility is permitted to accept such waste.		
Item 3	You must consider whether specific wastes, from among those you are permitted to receive, have properties that can pose unacceptable risks to the site or process, for example due to: ● a risk of explosion (for example, if ammunition or aerosol canisters are present, or mixing processes that could lead to explosion) ● corrosion caused by strong acids ● a risk of uncontrolled reactions (for example, if peroxides or strong oxidants are present, or polymerising components such as certain isocyanates) ● a risk of the evolution of gases (for example if cyanides, sulphides or dissolved gas are present)	Yes, there is no change to current procedures and practices	n/a
Item 4	You can verify the pre-acceptance information by contacting or visiting the producer. Dealing with staff directly involved in waste production will help to fully characterise a waste.	Yes, there is no change to current procedures and practices	n/a
Item 5	You must obtain and analyse a representative sample of a waste if: ● the chemical composition or variability of the waste is unclear from the information supplied by the customer ● there are doubts about whether the sample analysed is representative of the waste ● you will treat the waste at your facility (this allows you to carry out tests to determine if the planned treatment will be safe and effective) Where you rely on a customer sample you must record that you have done this and the reason why the customer sample is acceptable.	Yes, there is no change to current procedures and practices	n/a

Item 6	You may not need a representative sample where, for example, the waste is: ● asbestos ● a pure product chemical or aerosol where the chemical composition and hazardous properties are available in a REACH compliant safety data sheet ● packaged cosmetics and pharmaceuticals ● contaminated clothing, packaging or rags ● an 'article', for example batteries, lighting tubes, waste electrical or electronic equipment, end-of-life vehicles or parts of vehicles, metal waste and scrap metal ● solid non-hazardous waste (except for mirror entries when the waste composition is unknown) ● contaminated wood and roofing material ● produced in an emergency – you must not treat or offload such wastes until you have completed a full characterisation 6.1 You also may not need a representative sample if the waste is laboratory smalls in containers of less than 5 litres. Laboratory smalls generally contain pure chemical elements and compounds from laboratories or arise when laboratory stores are cleared. When drums are used for laboratory smalls, a list of the contents must be stored within the drum below the lid, or attached to the drum. Similarly for other types of packages containing laboratory smalls, a list of contents is appropriately stored within (or attached to) the packaging. Each packed drum (or other package) is then labelled with the hazard for carriage, for example under the International Carriage of Dangerous Goods by Road (ADR) treaty. You should provide packaging guidance to your customer or their intermediary if the person packing the laboratory smalls does not work for you. 6.2 You also may not need a representative sample of waste oil for treatment. Pre acceptance sampling is not critical for a waste oil treatment plant, but it would be required if the waste will be treated at a mineral oil refinery. Typically waste oil comes from a large number of small volume sources, such as garages, but its composition is essentially fixed. Waste oil is any mineral-based	Yes, there is no change to current procedures and practices	n/a

	or synthetic lubrication, or industrial oil which has become unfit for its original use. Waste oil includes: ● used combustion engine oils ● gearbox oils ● mineral lubricating oils ● oils for turbines ● hydraulic oils Waste oil contaminated with more than 50 ppm of polychlorinated biphenyls (PCBs) is not included as a waste oil. 6.3 You should obtain a representative sample of the following types of waste oil, from: ● industrial sites that do not normally produce waste oil ● other sources where chemicals and potential contaminants may be handled, for example from chemical manufacturing You should advise your customers that they must avoid contaminating waste oil. This is because during treatment low flashpoint solvents or petrol will cause handling difficulties, increase volatile organic compound (VOC) emissions and increase the risk of accidents. Contamination with PCBs can transfer those PCBs either to the: ● product (which may cause dioxin formation if used in a subsequent combustion process) ● tank bottom oil sludges ● effluent If you suspect that waste oil has become contaminated, for example by solvents, petrol or PCBs, you must identify the contamination. 6.4 If you do not take a pre-acceptance sample of any hazardous waste you must record the reason.		

	6.5 If the customer has a number of containers holding the same waste, you can apply 'the square root of (N) + 1' rule to sampling those containers. Producing a composite sample of this waste may be appropriate. If the waste is variable you will need a sample from each container.		
Item 7	After fully characterising a waste, you must technically assess the waste's suitability for treatment or storage to make sure you can meet permit conditions. You must also do this to meet any Control of Major Accident Hazards (COMAH) requirements, because wastes, raw materials and end-of-waste materials all contribute to COMAH limits. You must make sure that the waste complies with the site's treatment capabilities. In the case of water based liquid waste, you may perform laboratory scale tests to predict the treatment's performance, for example on breaking of emulsion or biodegradability.	Yes, there is no change to current procedures and practices	n/a
Item 8	You can use material flow analysis to help identify the flow and fate of the components in the waste. This analysis can be helpful in choosing the most appropriate forms of treatment for the waste, either directly at the site or at any subsequent treatment site.	Yes, there is no change to current procedures and practices	n/a
Item 9	You must keep pre-acceptance records for at least 3 years (in a computerised waste tracking system) following receipt of the waste. If an enquiry from a waste producer does not lead to the receipt of waste, you do not need to keep records.	Yes, there is no change to current procedures and practices	n/a
Item 10	You must reassess the information required at pre-acceptance if the: ● waste changes ● process giving rise to the waste changes ● waste received does not conform to the pre-acceptance information In all cases, you must reassess the information required at pre-acceptance on an annual basis.	Yes, there is no change to current procedures and practices	n/a
Item 11	You must apply odour criteria to decide whether to accept wastes that are already releasing, or have the potential to release: ● mercaptans or other VOCs	Yes, there is no change to current procedures and practices	n/a

	• low molecular weight amines • acrylates • other similarly highly odorous materials These substances are only suitable for acceptance under special handling requirements.		
Item 12	You must keep the roles and responsibilities of sales staff and technical staff separate. If sales staff are involved in waste enquiries then technical staff must do a final technical check before approval. You must keep this final technical check independent of commercial considerations, to make sure you: • only accept wastes that are suitable for the site • avoid accumulating waste • have enough storage and treatment capacity	Yes, Sales staff provide representative samples & receive a quote from site but are not involved in acceptance	n/a
Item 13	Fully characterising the waste's composition is an essential step in the pre-acceptance procedure because hazardous wastes can be very complex. You must be sure you know what is in the waste so that you can safely handle or treat it. You must select analytical tests based on knowing the process that generates the waste. You must characterise the waste's composition at the pre-acceptance stage. You need to do this to make sure you comply with regulatory requirements and to work out the most appropriate waste storage, transfer or treatment route.	Yes - sample is accompanied by a completed wsd & data sheet if available, sample is analysed inline with this. If there are any differences or additional contaminants found this would be fed back to the customer & re-assessed prior to the stream being approved	n/a
Item 14	For liquid waste, any or all of the following may be appropriate:	Yes, there is no change to current procedures and practices	n/a

	• measure the density of the sample • measure the water content • measure the ash content after calcination at 550°C • test whether the stream might inhibit biological treatment • test for cyanide, and if present determine the free and complexed cyanide levels • test for POPs • check the content of volatile and semi volatile substances • check the mass balance of liquid waste You can also measure the pH, redox potential and electrical conductivity of liquid wastes. For pastes and oils, perform these measurements on a water extract of crude sample using a ratio of 10 l/kg of dry matter. You should mix the water with the sample in a closed container to limit exchanges with the atmosphere. You can also test for the 12 heavy metals (As, Ba, Cd, Cr, Cu, Hg, Mo, Ni, Pb, Sb, Se, Zn) and determine their levels individually and quantitatively. You may use any specific classical method of (partial) extraction of these metals. Where it is present, check specifically for chromium (VI). If the waste is saline (conductivity > 0.15 S/m), measure the chlorides and preferably all the halogens that are soluble in water to make sure you correctly speciate the metals. You can also test for other metal content and other elements (for example silicon, sulphur and phosphorous).		
Item 15	If you suspect the analysis methods applied to a liquid sample will not extract and quantify the compounds present in any solid particles or in any separate phases, separate the sample into 2 fractions by a suitable method. For example, this could be by filtration, centrifugation or decantation. Then you can determine the mass of each fraction, and perform a comprehensive analysis of the separated liquid fraction and solid fraction, or of each phase.	Yes, Thermal stability would be carried out on the stream including any solids. ROE is analysed on all streams & this would determine the mass of any solids. For SRU streams a distillation would be completed prior to acceptance & all	n/a

		waste & product streams analysed, mass balance etc completed	
Item 16	For solid waste, any or all of the following may be appropriate: ● measure the bulk density of the sample, without pre-treatment of the sample ● measure the water content ● measure the ash content after calcination at 550°C ● test for cyanide, and if present determine the free and complexed cyanide levels ● test for POPs ● check the content of volatile and semi volatile substances ● check the mass balance of solid waste You can also measure the pH, redox potential and electrical conductivity on a water extract of crude sample using a ratio of 10 l/kg of dry matter. You can also test for the 12 heavy metals (As, Ba, Cd, Cr, Cu, Hg, Mo, Ni, Pb, Sb, Se, Zn) and determine their levels individually and quantitatively. You may use any specific classical method of (partial) extraction of these metals. Where it is present, check specifically for chromium (VI). If the waste is saline (conductivity > 0.15 S/m), measure the chlorides and preferably all the halogens to make sure you correctly speciate the metals. You can also test for other metal content and other elements (for example silicon, sulphur and phosphorous).	n/a	n/a
Item 17	When multiple immiscible phases or fractions are present in a waste, you can perform the analysis on each phase and combine them to provide the final result.	Yes, there is no change to current procedures and practices	n/a

Item 18	Analyses must be carried out by laboratories that have robust quality assurance procedures and use recognised test methods. The EN ISO 17025 accreditation represents best practice.	Yes, for external testing	n/a
Item 19	When you agree that you will accept waste from a customer, you should decide and record what parameters you will check at the acceptance stage. The checks could be visual (for example colour, phase, fuming), physical (for example pumpability, form), chemical (for example pH range, maximum acceptable metals content) or odour based parameters. You should define the acceptable tolerance for each acceptance test result and record which of these criteria could lead to further testing, non-conformance or rejection. The person checking the waste for acceptance can also decide on their own additional parameters.	Yes, incoming streams are set up on the lab log with min & max thresholds & fields that must be populated. If the analysis is outside of these parameters then a non conformance email notification is sent out to the technical manager.	n/a
Section 3.2 – Waste Acceptance			
Item 1	You must follow waste acceptance procedures to check that the characteristics of the waste you receive match your pre-acceptance information. This is to confirm that the waste is as expected and you can accept it. If it is not, you must confirm that you can accept it as a non-conforming waste, or you must reject it.	Yes, there is no change to current procedures and practices	n/a
Item 2	Your procedures should follow a risk-based approach, considering: ● the source, nature and age of the waste ● the waste's hazardous properties ● potential risks to process safety, occupational safety and the environment (for example, from odour and other emissions) ● potential for self-heating, self-reactivity or reactivity to moisture or air ● knowledge about the previous waste holder(s)	Yes, there is no change to current procedures and practices	n/a

Item 3	Other than in an emergency (for example, taking waste from an emergency incident clean-up), you must only receive pre-booked wastes onto site that have been adequately pre-accepted and are consistent with the pre-acceptance information.	Yes, there is no change to current procedures and practices	n/a
Item 4	All relevant storage areas (quarantine, reception and general) and treatment processes in your facility must have physical capacity for the waste you receive. You must not receive waste if this capacity is not available. The amount of waste you receive must also comply with storage limits in your permit and the limits set under COMAH.	Yes, there is no change to current procedures and practices	n/a
Item 5	You must visually check wastes or their packaging and verify them against pre-acceptance information and transfer documentation before you accept them on site. The extent of the initial visual check is determined by the waste type and how it is packaged.	Yes, there is no change to current procedures and practices	n/a
Item 6	You must check and validate all transfer documentation and resolve discrepancies before you accept the waste. If you believe the incoming waste classification and description is incorrect or incomplete, then you must address this with the customer during waste acceptance. You must record any non-conformances. If you have assessed the waste as acceptable for on-site storage or treatment, you must document this.	Yes, there is no change to current procedures and practices	n/a
Item 7	You must have clear criteria for non-conforming wastes including rejection of such waste. You must also have a written procedure for recording, reporting and tracking non-conforming wastes, including notifying the relevant customer or waste producer, and the regulator.	Yes, there is no change to current procedures and practices	n/a
Item 8	You must weigh each load of waste on arrival to confirm the quantities against the accompanying paperwork, unless alternative reliable systems are available (for example, based upon density and volume). You must record the weight in the computerised waste tracking system.	Yes, there is no change to current procedures and practices	n/a
Item 9	The person carrying out waste acceptance checks must be trained to effectively identify and manage any non-conformances in the loads received, complying with this guidance and your permit conditions.	Yes, there is no change to current procedures and practices	n/a
Item 10	If there is a known risk of radioactive contamination, you must check the waste to determine that it does not include radioactive material, unless you are permitted to accept these materials.	n/a	n/a

Item 11	You must minimise the manual handling of waste. You should use mechanical unloading technologies where it is possible, safe and practicable to do so.	Yes, there is no change to current procedures and practices	n/a
Item 12	Offloading, sampling, general storage, reception and quarantine areas must have an impermeable surface with self-contained drainage, to prevent any spillage entering the storage systems or escaping off site.	Yes, there is no change to current procedures and practices	n/a
Item 13	The designated sampling point or reception area must be close to the laboratory or checking area and needs to be visible.	Yes, there is no change to current procedures and practices	n/a
Acceptance of containerised waste			
Item 14	After you have completed the initial visual inspection and confirmatory checks, you must offload waste containers into a dedicated reception area to await detailed checks or sampling. Wastes that do not require further checking can go directly into the appropriate storage area. You must not unload wastes if you do not have enough space.	Yes, there is no change to current procedures and practices	n/a
Item 15	All waste containers must be fit for purpose, and, where appropriate, be: ● in sound condition ● undamaged ● not corroded, if metal ● have well-fitting lids ● suitable for the contents ● with caps, valves and bungs in place and secure You must risk assess containers, particularly those made of plastic, if they have exceeded the manufacturer's use by date.	Yes, there is no change to current procedures and practices	n/a

	You must quarantine non-conforming containers and deal with them immediately and appropriately. You must record all non-conformances.		
Item 16	You must check, and where appropriate sample and analyse, the contents of all containers in the reception area within one working day of receipt. You must then transfer compliant containers to the relevant appropriate storage area on site.	Yes, All drums / IBC's are samples & a composite sample submitted to the laboratory.	n/a
Item 17	You must move non-compliant containers to a dedicated quarantine area unless you can safely store the waste in a general storage area with other compatible wastes whilst you investigate the non-conformance. You must label non-compliant containers to identify that they are quarantined. You must record the non-conformance and where the waste is stored. If you use a dedicated quarantine area, you must segregate or isolate incompatible wastes. You must contain and abate wastes which are quarantined due to odour	Yes, there is no change to current procedures and practices	n/a
Item 18	Quarantine storage must be for a maximum of 5 working days. You must have written procedures for dealing with wastes you hold in quarantine, and a maximum storage volume. For some limited and specific cases (for example the detection of radioactivity), you can extend quarantine storage time if the Environment Agency agrees.	No	Quarantined waste may be held for longer but would be assessed & segregated straight away pending transfer to a suitable outlet. Impossible to set a limit but generally have low quarantined stocks
Item 19	Where containers hold laboratory smalls, you must open each container held in reception within one working day of receipt to check that the contents remain undamaged and that the inventory is as expected. All of the contents in each drum must be compatible. Once checked the container can be moved to the appropriate storage area. Laboratory smalls that need to be sorted must be moved to a dedicated repackaging area and repackaged immediately.	n/a	n/a

Item 20	You must make sure that all waste packages you receive are marked or labelled with: ● a description of the waste that also gives its chemical identity and composition ● a unique tracking system reference ● the date of arrival on site ● a hazard code or codes (using a product or transport symbol) The unique reference must allow you to track the waste and easily identify the producer of the waste.	Yes, there is no change to current procedures and practices	n/a
Item 21	If waste containers are received shrink-wrapped on pallets, or you shrink-wrap containers, you can label the shrink wrap with all the relevant information. If a shrink wrapped load is split, you must make sure you mark or label each individual container with all the relevant information.	Yes, there is no change to current procedures and practices	n/a
Item 22	Where bar code systems are used for labelling, the hazardous property of the waste and the date of receipt of the container must be directly visible.	Yes, there is no change to current procedures and practices	n/a
Item 23	You should, wherever possible, keep wastes segregated in reception, to minimise the risk of incompatible materials reacting together.	Yes, there is no change to current procedures and practices	n/a
Acceptance of bulk wastes			
Item 24	Bulk loads (liquid or solid) can only be offloaded after they have been fully verified as compliant. You must not accept a non-compliant bulk load for interim storage except in an emergency. Verification testing should include: ● checking consistency with the pre-acceptance information ● compatibility with the receiving vessel contents	Yes, there is no change to current procedures and practices	n/a

	● where appropriate, checking treatability by using laboratory scale simulation		
Item 25	Deliveries in a tanker must be accompanied by a 'wash out' certificate or a declaration of the previous load so that contamination by this route can be checked.	Yes, a last load note or washout certificate would be requested.	n/a
Item 26	Samples from tankers should wherever possible be taken representatively by taking a core sample from the top hatch and from a suitable gantry. You must sample from each compartment where the tanker is divided into multiple compartments. If you have to take a sample from the back valve, you must take precautions to avoid spillages.	Yes, there is no change to current procedures and practices	n/a
Acceptance sampling			
Item 27	You must representatively sample all wastes, bulk or containerised (including from every container) at the acceptance stage, and carry out verification and compliance testing. You must not just rely on the written information supplied. The requirement to sample does not apply to some wastes, for example: ● pure product chemicals ● asbestos ● contaminated clothing, packaging or rags ● 'articles' ● laboratory smalls ● packaged cosmetics and pharmaceuticals ● solid non-hazardous waste (except for mirror entries when the waste composition is unknown) ● contaminated wood and roofing material ● waste received directly from a householder ● green wastes and food wastes	Yes, there is no change to current procedures and practices	n/a

	Where a sample is not required, you must still visually check the waste is as expected and that no contrary materials are present. You must record the reason why you did not sample the waste in your computerised waste tracking system. You must empty and repack containers of contaminated clothing, packaging or rags to check for items that should not be there. You must obtain a representative sample and analyse waste oil, from: ● industrial sites that do not normally produce waste oil ● other sources where chemicals and potential contaminants may be handled, for example from chemical manufacturing For other waste oil you must obtain a representative sample of the waste but you do not have to analyse it unless a problem is found at the treatment plant.		
Item 28	A representative sample is one that takes account of the full variation and any partitioning of the load so you can account for worst case scenarios.	Yes, Tankers are core & bottom sampled. If a tanker contained compartments each one would be sample core & bottom	n/a
Item 29	You must take a sample from every container. You can make a composite sample if each of the containers making up the composite holds the same waste and the waste is known not to be variable. You must obtain a representative sample by taking a core sample down to the base of the container. You must make sure you replace lids, bungs and valves immediately after sampling.	Yes - as per procedure & drum sampling sheet completed	n/a
Item 30	On-site sampling must take place under the supervision of the site's qualified staff. Where a driver arrives at the site with a sample taken elsewhere, the sample:	Yes, This sample would be ignored & representative	n/a

	● must be verified as representative, reliable and obtained by a person technically competent to take it ● is only acceptable if it was taken for specific health or safety purposes	samples taken on site	
Item 31	Sampling must not increase the risk of incompatible substances coming into contact with one another, for example within a sump serving the sampling point, or due to contaminated sampling equipment.	Yes, there is no change to current procedures and practices	n/a
Item 32	You must have suitable absorbents and spill kit material available to deal with any spills.	Yes - spill kits available	n/a
Item 33	You must keep a record of the sampling regime, process and justification in your computerised waste tracking system.	Yes, there is no change to current procedures and practices	n/a
Item 34	You should keep acceptance samples on site for at least 2 working days after you have: ● treated a waste and removed its treatment residues from the facility ● transferred a waste from your site Where you are transferring waste oil from your site you must keep acceptance samples for at least 2 working days after the waste has been treated off site. You must analyse the waste oil sample if a problem is found at the off-site treatment plant. You only need to keep samples that you did not analyse at acceptance.	Yes, all samples held for 3 months	n/a
Item 35	You must have a sampling and analysis procedure. You must design it based on the risk factors for the waste, for example: ● the type of waste (for example hazardous or non-hazardous) ● knowledge of the customer (for example waste producer) ● the impact of potential mixing or blending and the possibilities for subsequent treatment	Yes, there is no change to current procedures and practices	n/a

Item 36	You must check any relevant physico-chemical parameters using, for example, viscometry, infrared, chromatography and mass spectrometry.	Yes, there is no change to current procedures and practices	n/a
Item 37	Sampling procedures must be customised for: • bulk liquid • bulk solids • large and small containers or vessels (the number of samples increases with the number of containers or vessels and the variability of the waste) • laboratory smalls	Yes, there is no change to current procedures and practices	n/a
Item 38	You must determine and record the following information: • the sampling regime for each load, together with your justification for selecting each option • where and how the sample was taken • the capacity of the sampled vessel (for samples from drums, an additional parameter would be the total number of drums) • the number of samples and degree of consolidation • the operating conditions at the time of sampling	Yes, there is no change to current procedures and practices	n/a
Item 39	Wherever possible you should sample waste in accordance with: • EN 14899 Characterization of waste. Sampling of waste materials. Framework for the preparation and application of a sampling plan • CEN/TR 15310-1 Characterization of waste. Sampling of waste materials. Guidance on the selection and application of criteria for sampling under various conditions • CEN/TR 15310-2 Characterization of waste. Sampling of waste materials. Guidance on sampling techniques • CEN/TR 15310-3 Characterization of waste. Sampling of waste materials. Guidance on procedures for sub-sampling in the field	Yes, there is no change to current procedures and practices	n/a

	• CEN/TR 15310-4 Characterization of waste. Sampling of waste materials. Guidance on procedures for sample packaging, storage, preservation, transport and delivery • CEN/TR 15310-5 Characterization of waste. Sampling of waste materials. Guidance on the process of defining the sampling plan For more information see guidance on the classification and assessment of waste WM3.		
Testing and analysis			
Item 40	You must test each waste for acceptance according to the parameters decided at pre-acceptance, plus any appropriate additional checks. You should record the results of the tests in the computerised waste tracking system. You should note and investigate any discrepancies.	Yes, there is no change to current procedures and practices	n/a
Item 41	Analysis of waste must be carried out by a laboratory with suitably recognised test methods. Where the waste received is hazardous, the laboratory should be on site, or routinely available at another site capable of providing test results within one working day of receipt of the waste at your site.	Yes, there is no change to current procedures and practices	n/a
Section 3.3 – Waste Tracking			
Item 1	You must use a computerised tracking system to hold up-to-date information about the available capacity of the waste quarantine, reception, general and bulk storage areas of your facility, including treatment residues and end-of-waste product materials.	Yes, there is no change to current procedures and practices. Hazmat system is in place.	n/a
Item 2	Your waste tracking system must hold all the information generated during: • pre-acceptance • acceptance • non-conformance or rejection • storage • repackaging	Yes, there is no change to current procedures and practices	n/a

	• treatment • removal off site This information must be easily accessible.		
Item 3	You must create records and update them to reflect deliveries, on-site treatment and despatches. Your tracking system will also operate as a waste inventory and stock control system. It must include this information as a minimum: • the date the waste arrived on site • the original producer's details • the previous holder • a unique reference number • waste pre-acceptance and acceptance information • any analysis results • the package type and size • the intended treatment or transfer route • accurate records of the nature and quantity of wastes held on site, including all hazards – and identifying the primary hazards • where the waste is located on site • where the waste is in the designated treatment or transfer route • the names of staff who have taken any decisions about accepting or rejecting waste streams and who have decided on recovery or disposal options • details that link each container accepted to its consignment or transfer note • details of any non-conformances and rejections	Yes, there is no change to current procedures and practices	n/a
Item 4	The tracking system must be able to report: • the total quantity of waste present on site at any one time • a breakdown by type of the waste quantities you are storing pending treatment or transfer	Yes, there is no change to current procedures and practices	n/a

	• a breakdown of the waste quantities by hazardous property • an indication of where a batch or consignment of waste is located on a site plan • the quantity of waste on site compared with the limits authorised by your permit • the length of time the waste has been on site • the quantity of end-of-waste product materials on site at any one time, where applicable		
Item 5	You must store back-up copies of computer records off site. Records must be easily accessible in an emergency.	Yes, there is no change to current procedures and practices	n/a
Item 6	You must hold acceptance records for a minimum of 2 years after you have treated the waste or removed it off site. You may have to keep some records for longer if they are required for other purposes, for example, hazardous waste consignment notes.	Yes, there is no change to current procedures and practices	n/a
Section 4 – Waste Storage, Segregation and Handling Appropriate Measures			
Item 1	You must store waste in locations that minimise the handling of waste. Waste handling must be carried out by competent staff using appropriate equipment.	Yes, there is no change to current procedures and practices	n/a
Item 2	Where possible, you should locate storage areas away from watercourses and sensitive perimeters (for example, those close to public rights of way, housing or schools). You must store all waste within the secure area of your facility to prevent unauthorised access and vandalism.	Yes, there is no change to current procedures and practices	n/a
Item 3	Where relevant, you must conform to HSE standards and in particular to: • HSG51 Storage of flammable liquids in containers • HSG71 Chemical warehousing: storage of packaged dangerous substances • HSG76 Warehousing and storage: a guide to health and safety • HSG140 Safe use and handling of flammable liquids • HSG176 Storage of flammable liquids in tanks • CS21 Storage and handling of organic peroxides	Yes, there is no change to current procedures and practices	n/a
Item 4	You must clearly document the maximum storage capacity of your site and the designated storage areas. You must not exceed these maximum capacities. You should define capacity in	Yes, there is no change to current	n/a

	terms of, for example, maximum tank or vessel capacities, tonnage and numbers of skips, pallets or containers. You must regularly monitor the quantity of stored waste on site and designated areas and check against the allowed maximum capacities.	procedures and practices	
Item 5	You must clearly mark hazardous waste storage areas and provide signs showing the maximum quantity and hazardous properties of wastes that can be stored there	Yes, there is no change to current procedures and practices	n/a
Item 6	. Storage area drainage infrastructure must: ● contain all possible contaminated run-off ● prevent incompatible wastes coming into contact with each other ● make sure that fire cannot spread	Yes, there is no change to current procedures and practices	n/a
Item 7	Secondary and tertiary containment systems must conform to CIRIA guidance C736 Containment systems for the prevention of pollution.	Yes, there is no change to current procedures and practices	n/a
Item 8	You must store containerised wastes that are sensitive to air, light, heat, moisture or extreme ambient temperatures under cover protected from such ambient conditions. Covered areas must have good ventilation. This applies to any such container: ● held in general storage, reception storage (pending acceptance) or quarantine ● being emptied, repackaged or otherwise managed For example, waste held in fibre or cardboard primary or secondary packaging should be stored under cover in a dry area and not exposed to rain or moisture. It must be kept off floors to prevent damage by damp.	Yes, well ventilated covered areas are available for on site storage if required	n/a
Item 9	You must store wastes in sealed metal containers under cover if they have the potential for self-heating or self-reactivity. You must monitor the containers for heat build-up. Such wastes include rags and filter materials contaminated with metal swarf, low boiling point oils or low flash point solvents	Yes, well ventilated covered areas are	n/a

		available for on site storage if required	
Item 10	Wherever practicable you should store all other wastes under cover. Covered areas must have good ventilation. This applies to any such container: ● held in general storage, reception storage (pending acceptance) or quarantine ● being emptied, repackaged or otherwise managed Under cover storage provides better protection for containers than open air storage and minimises the generation of contaminated water. Covered storage also: ● lowers temperature fluctuations that can cause pressure build up in containers ● reduces the degradation of containers through weathering	Yes, well ventilated covered areas are available for on site storage if required	Not possible in all areas, TFE storage etc outside, uncovered.
Item 11	You must not store hazardous waste in open-topped containers. Empty open-topped containers should be kept in a building or undercover to prevent rainwater ingress.	Yes, there is no change to current procedures and practices	n/a
Item 12	You must not store or hold wastes on site in vehicles or vehicle trailers unless you are receiving them or preparing them for imminent transfer (meaning that you will remove them from site within 24 hours, or 72 hours if over a weekend).	Yes, only incoming waste or outgoing waste would be stored but not over the specified limits	n/a
Item 13	You should pay particular attention to avoid the build-up of static electricity when you are storing or handling flammable wastes and materials. You should use leak detection systems and alarms (for example VOC alarms) and automatic fire suppression equipment based on a recorded risk assessment.	No	Leak monitoring is completed as part of daily checks & tank inspections. Both the SRU & TFE plants have abatement systems & VOC

			levels are checked daily. All tanks & columns are earthed & mobile earring units are available for non bulks also. Fire suppression system being installed as part of the site expansion project
Item 14	You must provide adequate bunding of all storage areas, and containment and treatment of any water run-off.	Yes, there is no change to current procedures and practices	n/a
Item 15	You must not accumulate waste. You must treat wastes, or remove them from the site, as soon as possible. Generally you should do this within one month of receipt but all wastes must be removed within 6 months of receipt. This applies even when the waste might be used as a reactant. Where a shorter time period is given in a permit condition you must comply with the permit for that waste. Where a waste is stored for longer than allowed you must inform the Environment Agency.	Yes, there is no change to current procedures and practices	n/a
Item 16	All stored containers must keep the labelling they had at acceptance. If the label is damaged or no longer legible you should replace the label with that same information.	Yes, there is no change to current procedures and practices	n/a
Item 17	You must handle and store containers so that the label is easily visible and continues to be legible.	Yes, there is no change to current procedures and practices	n/a
Item 18	You should keep solid waste dry and avoid the dilution of hazardous waste.	n/a	n/a

Item 19	You must keep clean rainwater and clean cooling water separate from wastes and waste waters.	Yes, there is no change to current procedures and practices	n/a
Item 20	You must keep incompatible wastes segregated so that they cannot come into contact with one another. You must store flammable wastes apart from other wastes to prevent fire spreading between them and other materials. You must use sealed drainage systems to prevent leaks and spillages contaminating other wastes.	Yes, there is no change to current procedures and practices	n/a
Item 21	There must be pedestrian and vehicular access (for example, forklift) at all times to the whole storage area so that you can retrieve containers without removing others that may be blocking access – other than removing those in the same row.	Yes, there is no change to current procedures and practices	n/a
Item 22	You must store all waste containers in a way that allows easy inspection. You must maintain safe access, with a gap of at least 0.7m between rows of bulk containers or palletised wastes.	Yes	n/a
Item 23	You must move drums and other mobile containers between different locations (or loaded for removal off site) following written procedures. You must then amend your waste tracking system to record these changes.	Yes, there is no change to current procedures and practices	n/a
Item 24	You must stack bags and boxes of waste no more than 1m high on a pallet. You must not stack pallets more than 2 high.	Yes, there is no change to current procedures and practices	n/a
Item 25	You must stack containers specifically designed for stacking, and no more than 2.2m high on a pallet.	Yes, there is no change to current procedures and practices	n/a
Item 26	You must store all other containers on pallets. You must not stack these pallets more than 2 high, except for empty containers which can be stacked 3 high.	Yes, there is no change to current procedures and practices	n/a
Item 27	Stacked bags, boxes and containers must be stable. They must be secured with, for example, banding or shrink-wrap, if required. The packages must not extend beyond (over-hang) the sides of the pallet. Any shrink-wrap used must be clear or transparent so that you can identify waste	Yes, there is no change to current	n/a

	types, damaged containers, leaks or spillages and incorrectly stacked containers. You must be careful not to damage any packages during stacking.	procedures and practices	
Item 28	All waste containers must remain fit for purpose. You must check any containers (and pallets they may be stored on) daily and record non-conformances. Non-compliant containers and pallets must be made safe. You must immediately and appropriately manage any unsound, poorly labelled or unlabelled containers (for example, by relabelling, over drumming and transferring the container's contents). You must risk assess, approve and record the use of containers, tanks and vessels: ● beyond their specified design life ● where you use them for a purpose, or substances, other than the ones they were designed for	Yes, there is no change to current procedures and practices	n/a
Item 29	You must not handle waste or its packaging in a way that might damage its integrity, unless it is appropriate to destroy a waste or its packaging, for example by shredding. You must not, for example, walk on or throw waste or waste packages.	Yes, there is no change to current procedures and practices	n/a
Item 30	You should, where applicable and based on a recorded risk assessment, make inert the atmosphere of tanks containing organic liquid waste with a flashpoint less than 21°C. This can be done, for example, by using nitrogen gas.	Yes	n/a
Item 31	You must store asbestos waste double bagged or wrapped, in sealed, closed and locked containers. You must not store asbestos waste loose. You must not put asbestos wastes into bays or transfer it between different skips or containers. You must not use mechanical equipment, for example loading shovels, chutes and conveyors to move asbestos waste.	n/a	n/a
Item 32	You must not stack wheeled containers on top of one another. Do not stack empty wheeled containers into one another more than 2.2m high.	n/a	n/a
Item 33	All containers that need them should have a lid or bung, and the lid or bung must be closed except when the container is being sampled, having waste added into it or having waste removed from it.	Yes, there is no change to current procedures and practices	n/a
Item 34	You must not stack skips containing waste. Skips containing hazardous waste must be enclosed when not being loaded or unloaded. You should store loose bulk hazardous wastes under cover.	n/a	n/a

Item 35	You can use racking systems to store waste but you must consider segregation, ability to inspect, separation and fire suppression measures. Racking systems must be designed and constructed in accordance with HSG76 Warehousing and storage.	n/a	n/a
Item 36	You must: ● contain wash waters within an impermeable area and either discharge them to foul sewer or dispose of them appropriately off site. ● prevent run-off into external areas or to surface water drains	Yes, there is no change to current procedures and practices	n/a
Item 37	You must manage waste in a way that prevents pests or vermin. You must have specific measures and procedures in place to deal with wastes that are identified as causing pests or vermin.	Yes, there is no change to current procedures and practices	n/a
Item 38	You must inspect storage areas, containers and infrastructure daily. You must deal with any issues immediately. You must keep written records of the inspections. You must rectify and log any spillages of waste.	Yes, there is no change to current procedures and practices	n/a
Item 39	You must train forklift drivers in the handling of palletised goods, to minimise forklift truck damage to the integrity of containers and infrastructure.	Yes, there is no change to current procedures and practices	n/a
Item 40	You must not carry out activities that represent a clear fire risk within any storage area. Examples include: ● grinding ● welding or brazing of metalwork ● smoking ● parking normal road vehicles, except while unloading or loading ● recharging batteries	Yes, there is no change to current procedures and practices	n/a
Bulk storage			

Item 41	Where relevant, bulk storage systems must conform to CIRIA guidance, and in particular to: ● C535 Above ground proprietary prefabricated oil storage tank systems ● C598 Chemical storage tank systems - good practice ● C736 Containment systems for the prevention of pollution	Yes, there is no change to current procedures and practices	n/a
Item 42	You must use tanks and associated equipment that are suitably designed, constructed and maintained. You must do a risk assessment to validate the design and operation of bulk storage systems. Before you use new tanks and equipment you must check they are working correctly. You must periodically examine and test that your tanks meet the standards set out in EEMUA Publication 231: The mechanical integrity of plant containing hazardous substances.	Yes, all existing and new tanks	n/a
Item 43	You should vent bulk storage tanks and silos through suitable abatement.	Yes, all existing and new tanks	n/a
Item 44	You must locate bulk storage vessels on an impermeable surface which is resistant to the material being stored. The surface must have self-contained drainage to prevent any spillage entering the storage systems or escaping off site. Impermeable surfaces must have sealed construction joints.	Yes, all existing and new tanks	n/a
Item 45	You must provide bunds for all tanks containing liquids (whether waste or otherwise) which could be harmful to the environment if spilled. Bunds must meet the CIRIA C535 or C736 standard and: ● be impermeable, stable and resistant to the stored materials ● have no outlet (that is, no drains or taps), and drain to a blind collection point ● have pipework routed within bunded areas with no penetration of contained surfaces ● be designed to catch leaks from tanks or fittings ● have a capacity calculated following the relevant CIRIA guidance ● have regular visual inspections – you must pump out or remove any contents under manual control after you have checked for contamination ● be fitted with a high level probe and an alarm (as appropriate) if not frequently inspected ● have tanker connection points within the bund where possible – if not possible you must provide adequate containment for spillages or leakage ● have programmed engineering inspections (extending to water testing if structural integrity is in doubt) ● be emptied of rainwater regularly to maintain the containment capacity	Yes, all existing and new tanks	n/a

Item 46	You must control sludge build up and foam in tanks, for example by regularly sucking out the sludge and using anti foaming agents.	No	Tanks are regularly inspected. If deemed necessary external contractors would be brought in to clean a tank out.
Item 47	You should equip storage and treatment tanks with an automatic level monitoring system and an associated alarm or trip system. These systems must be sufficiently robust (for example, be able to work if sludge and foam are present) and regularly maintained. You must fit tanks with suitable overfill protection.	Yes, all existing and new tanks	n/a
Item 48	You must be able to close all connections to vessels, tanks and secondary containment via suitable valves. You must fit a valve close to the tank if you have bottom outlets, and have at least 2 isolation points in case of valve failure.	Yes, all existing and new tanks	n/a
Item 49	You must direct overflow pipes to a contained drainage system (for example the relevant secondary containment) or to another vessel where suitable control measures are in place	Yes, all existing and new tanks	n/a
Item 50	Tanks, pipework and fittings must be examined by a competent person, following a written scheme. The scope and frequency of examination must also be determined by a competent person. You must work out how often to carry out these internal examinations using a risk assessment approach. This should be based on: ● tank service ● maintenance history ● known and potential damage mechanisms and their rates of attack You should also do intermediate external examinations. You must act on the results of the examinations and do any necessary repairs to ensure the tanks remain fit for service. You must keep the results of examinations and repairs.	Yes, all existing and new tanks	n/a

Item 51	You must have systems in place to make sure that loading, unloading and storage are safe, considering any associated risks. This can include: ● having piping and instrumentation diagrams ● using ticketing systems ● using key locked coupling systems ● having colour coded points, fittings and hoses ● using specific coupling or hose sizes for certain waste transfers	Yes, all existing and new tanks	n/a
Item 52	As a general rule, you must not use open topped tanks, containers, vessels or pits to store or treat hazardous or liquid wastes.	Yes	n/a
Transfer of waste into and from tankers			
Item 53	All pipes, hoses, connections, couplings and transfer lines must be fit for purpose and resistant to the wastes being stored. You must use a suitable pipework coding system (for example, RAL European standard colour coding).	Yes, there is no change to current procedures and practices	n/a
Item 54	Site staff must supervise loading and unloading activities, either directly or via CCTV.	Yes, there is no change to current procedures and practices	n/a
Item 55	You must make sure that transfers into and from tankers only take place after you have completed any relevant verification and compatibility testing, and then only with the approval of an appropriate chemist or manager. The approver must specify: ● which batch or load of material is to be transferred ● the receiving storage vessel ● the equipment required, including spillage control and recovery equipment ● any special provisions relevant to that batch or load including minimising odour and other fugitive emissions	Yes, there is no change to current procedures and practices	n/a

Item 56	You must have in place systems to prevent ‘tanker drive off’ (a vehicle pulling away whilst still coupled).	Yes, there is no change to current procedures and practices	n/a
Item 57	You must make sure that the transfer of waste from tankers is only carried out by competent staff. You must give them enough time, so they are not under pressure to work more quickly than is deemed acceptable.	Yes, there is no change to current procedures and practices	n/a
Item 58	You must have measures in place to make sure that couplings are a correct fit. This will prevent couplings from loosening or becoming detached. You should provide, maintain and clean your own couplings and hoses to guarantee their integrity and fitness. You should also: ● make sure you take special care so that a coupling is able to withstand the maximum shut valve pressure of the transfer pump ● maintain a sound coupling at each end of the transfer hose, even when a gravity feed system is in place, and protect the transfer hose ● control potential leaks from coupling devices by using simple systems such as drip trays	Yes, there is no change to current procedures and practices	n/a
Item 59	You must make sure that transfers into and from tankers only take place in bunded areas designed to contain a worst case spillage. You must have emergency storage for leaking vehicles to minimise any acute incidents caused by a seal on a tanker failing.	Yes, there is no change to current procedures and practices	n/a
Item 60	You should have systems and procedures in place to make sure that wastes due to be transferred comply with the carriage of dangerous goods when they are packaged and transported.	Yes, there is no change to current procedures and practices	n/a
Item 61	You must make sure that the transfer of waste from a tanker to a drum or vice versa is done in a dedicated area. A minimum of 2 trained and competent staff, working to formal written instructions, must perform the transfer. They must check any pipes and valves before and during the transfer. You must fit dip pipes with a shut-off valve to control the dispensing into containers and prevent overfilling.	Yes, there is no change to current procedures and practices	n/a
Item 62	You must make a record of any spillages. You must retain spillages within the bunded areas and collect them promptly using, for example, pumps or absorbents.	Yes, there is no change to current	n/a

		procedures and practices	
Item 63	You must make sure that tankers are not used as blending or reaction vessels as this is not their designed purpose.	Yes, there is no change to current procedures and practices	n/a
Item 64	You must take operational and design precautions when mixing or blending wastes, depending on the composition and consistency of the wastes (for example when vacuuming dusty or powdery wastes).	Yes, there is no change to current procedures and practices	n/a
Item 65	Where you use rotary-type pumps, they must be equipped with a pressure control system and safety valve.	Yes	n/a
Item 66	You must pump sludges. Do not pour them	Yes	n/a
Item 67	When loading and offloading odorous, flammable or volatile liquids between bulk storage tanks and tankers, you must use vapour balance lines to transfer the displaced vapours from the receiving vessel to the vessel you are pumping from.	Yes, there is no change to current procedures and practices	n/a
Item 68	You must follow safe operating procedures designed to reduce the risk of explosion and fugitive emissions when you transfer waste from powder tankers into silos. You must use trained and competent personnel.	n/a	n/a
Item 69	You must carry out routine maintenance to prevent failure of the plant or equipment. This may include the failure of a pump seal or the blockage of a filter pot commonly used at transfer points.	Yes, there is no change to current procedures and practices	n/a
Item 70	You must continue using the waste tracking system that began at the pre-acceptance stage for the whole time waste is kept at the site.	Yes, there is no change to current procedures and practices	n/a
Aerosol storage			

Item 71	You must store aerosol canisters under cover in secure, well-ventilated containers, and within caged storage areas. You must also store them in a well-vented place that is not subject to extreme temperatures or direct sunlight. You must not store canisters in open containers to prevent the risk of them spreading fires by ‘missiling’ or ‘ejection’.	n/a	n/a
Item 72	You must segregate aerosol canisters from other flammable wastes and potential sources of ignition. Preferably put them in a separate building, or use a fire resistant enclosure or fire wall. You must not hold any combustible material within the storage area, other than the canister’s packaging, containers and the pallets on which they stand.	n/a	n/a
Item 73	You must provide suitable containment measures (for example drip trays) for aerosol canisters held in containers which cannot collect and hold free liquids released from the canisters. Or you should transfer them to secure containers that are able to hold free liquid	n/a	n/a
Item 74	During storage, lids on containers holding aerosol canisters must remain securely closed at all times when not being filled, emptied or internally inspected. When not in use, the doors or hatches of cages must remain closed and locked.	n/a	n/a
Item 75	You must not overfill containers used to store canisters. Overfilling can result in canisters being actuated and discharging their contents, either: ● under the weight of the canisters above them ● when the container lid is closed ● when containers are stacked	n/a	n/a
Item 76	Cages used to store aerosol canister containers must be robust, fire resistant and of an appropriate mesh size (based upon the size of the canisters being stored). This is to constrain the canisters and prevent any ejection. Where the cage is not constructed with a mesh roof, the mesh wall panels must extend into the roof space of the storage area to make sure that the structure is completely enclosed.	n/a	n/a
Item 77	You should store aluminium canisters separately from steel canisters (especially rusting canisters). This will: ● prevent thermite sparks during storage, handling and treatment	n/a	n/a

	● allow the different metals to be more easily recovered		
Sorting, repackaging and bulking			
Item 78	Sorting is the placing together of containers with other waste containers of the same type, without emptying the contents from the container. You must have a permit that specifically allows you to carry out storage activities (coded D15 or R13).	Yes, there is no change to current procedures and practices	n/a
Item 79	Repackaging is the removal of waste from a container, or into a container. This may involve bulking it with other wastes of the same type from other containers. You must have a permit that specifically allows you to carry out repackaging activities (coded D14 or R12).	Repacking consisting of bulking materials only	n/a
Item 80	Bulking of waste that is not regarded as repackaging includes: ● discharging from a tanker to bulk storage of wastes of the same type ● tank to tank transfer where both tanks contain wastes of the same type These activities are storage (coded D15 or R13).	Yes, there is no change to current procedures and practices	n/a
Item 81	You must only bulk or repackage wastes together if they are materially the same. They must not react when they are bulked and they must not change the waste's composition.	Yes, there is no change to current procedures and practices	n/a
Item 82	If a waste is mixed with other similar wastes, where the resulting mixture does not have significantly different characteristics from the mixed wastes (for example blending compatible combustible or flammable wastes as a fuel), this activity is mixing or blending (coded D13 or R12). Any other mixing that changes a waste is treatment.	n/a	n/a
Item 83	You must have a permit that specifically allows you to mix hazardous waste with any: ● non-hazardous waste ● hazardous waste in a different category ● non-waste	n/a	n/a

Item 84	You must not mix, bulk or repackage: ● wastes which could be recovered with other wastes if this means that the waste must now be sent for disposal or a lower form of recovery ● liquid wastes or infectious wastes with other wastes for the purpose of landfilling ● oils where this could affect their regeneration or recycling ● wastes containing Persistent Organic Pollutants (POPs) with another material solely to generate a mixture below the defined low POPs content ● waste to deliberately dilute it	n/a	n/a
Item 85	You must transfer wastes from containers into other storage vessels using a dip pipe, not by pouring.	Yes	n/a
Item 86	Repackaging or mixing must only take place in a dedicated area or store which has the plant and equipment needed to deal with the specific risks of that process. For example, this could include abatement or local exhaust ventilation.	Yes, Bulking is only completed into the L tanks on the TFE, an abatement system is present & procedures in place	n/a
Item 87	Except for small packages with a volume less than 5 litres, or damaged containers, you must move containers using mechanical means. For example, use a forklift truck with a rotating drum handling fitting, or using pumps for liquids.	Yes, FLT's in use on site & material pumped to tanks from drums / IBC's	n/a
Item 88	You must label containers of repackaged or mixed wastes so that you can identify their contents and origin through the tracking system. After repackaging, you must move the bulked materials and emptied containers to an appropriate segregated storage area.	n/a	n/a
Item 89	You must have a risk assessment and carry out appropriate compatibility testing to make sure that bulked wastes will not react with each other, or with the container into which they are being placed.	Yes, Company compatibility procedure, desktop compatibility only	n/a

		currently completed. Risk assessment	
Laboratory smalls			
Item 90	Where possible, you should sort and segregate laboratory smalls at source so that you do not need to reopen or re-sort containers.	n/a	n/a
Item 91	If you sort laboratory smalls for compatibility reasons you must carry this out in a dedicated area of a building, with self-contained drainage.	n/a	n/a
Item 92	You must write and follow procedures for the segregation, sorting and repackaging of laboratory smalls.	n/a	n/a
Section 5 – Waste Treatment Appropriate Measures			
Section 5.1 – General Waste Treatment			
Item 1	Waste treatment must have a clear and defined benefit. You must fully understand, monitor and optimise the waste treatment process to make sure that you treat waste effectively and efficiently. You must not treat waste to deliberately dilute it. The treated output material must meet your expectations and be suitable for its intended disposal or recovery route. You must identify and characterise emissions from the process, and take appropriate measures to control them at source.	Yes, there is no change to current procedures and practices	n/a
Item 2	You must have up-to-date written details of your treatment activities, and the abatement and control equipment you are using. This should include information about the characteristics of the waste you will treat and the waste treatment processes, including: ● simplified process flowsheets that show the origin of any emissions ● details of emission control and abatement techniques for emissions to air and water, including details of their performance ● diagrams of the main plant items where they have environmental relevance, for example, storage, tanks, treatment and abatement plant design ● details of chemical reactions and their reaction kinetics and energy balance	Yes, there is no change to current procedures and practices	n/a

	● details of physical treatment processes for example thermal desorption, distillation, phase separation, shredding, filtration, compaction, centrifuging, heating, cooling or washing ● details of biological treatment processes ● details of any effluent treatment ● a description of any flocculants or coagulants used ● an equipment inventory, detailing plant type and design parameters, for example, time, temperature, pressure ● waste types to be subjected to the process ● the control system philosophy and how the control system incorporates environmental monitoring information ● process flow diagrams (schematics) ● venting and emergency relief provisions ● a summary of operating and maintenance procedures ● process instrumentation diagrams ● monitoring points and monitoring schedules		
Item 3	You must have up-to-date written details of the measures you will take during abnormal operating conditions to make sure you continue to comply with your permit. Abnormal operating conditions include: ● unexpected releases ● start-up ● momentary stoppages ● shut-down	Yes, there is no change to current procedures and practices	n/a
Item 4	You should use material flow analysis for relevant contaminants in the waste to help identify their flow and fate. You should use the analysis to determine the appropriate treatment for the waste either directly at the site or at any subsequent treatment site. Material flow analysis considers the contaminant quantity in the: ● waste input	Yes, there is no change to current procedures and practices	n/a

	● different waste treatment outputs ● waste treatment emissions You should use the analysis and your knowledge of the fate of the contaminants to make sure you correctly treat and either destroy or remove them. The use of material flow analysis is risk-based, considering: ● the hazardous properties of the waste ● the risks posed by the waste in terms of process safety ● occupational safety and environmental impact ● knowledge of the previous waste holder(s) A treatment process may destroy certain substances in the waste. It could also put substances into the air, water or ground, or have residues which are sent for disposal. The weight of these outputs should be minimised. The treatment may produce residues for recovery or reuse and the weight of these substances should be maximised.		
Item 5	You must not proceed with the treatment if your risk assessment or material flow analysis indicates that losses from a process will cause: ● the breach of an environmental quality standard ● the breach of a benchmark ● a significant environmental impact	Yes, there is no change to current procedures and practices	n/a
Item 6	You must clearly define the objectives and reaction (chemical, physical or biological) processes for each treatment process. You must define the end point to the process so that you can monitor and control the reaction. You must define the suitable inputs to the process, and the design must take into account the likely variables expected within the waste stream. You must sample and analyse the waste to check that an adequate end point has been reached.	Yes, there is no change to current procedures and practices	n/a

Item 7	For each new reaction, you must assess the proposed mixes of wastes and reagents before treatment by carrying out a scale laboratory test mix of the wastes and reagents to be used. You must predetermine a batch 'recipe' for all reactions and mixes of wastes. You must also take into account the potential scale up effects, for example, the increased: ● heat of reaction with increased reaction mass relative to the reactor volume ● residence time within the reactor and modified reaction properties Your treatment must comply with HSG143 Designing and operating safe chemical reaction processes.	n/a	n/a
Item 8	The reactor vessel and plant must be specifically designed, commissioned and operated to be fit for purpose. The designs need to consider chemical process hazards and a hazard assessment of the chemical reactions. They also need to consider prevention and protective measures and process management, such as: ● working instructions ● staff training ● appropriate process control measures ● monitoring systems, alarms and interlocks ● plant maintenance ● checks ● audits ● emergency procedures	n/a	n/a
Item 9	To track and control the process of change, you must have a written procedure for proposing, considering and approving changes to technical developments or procedural or quality changes.	Yes, there is no change to current procedures and practices	n/a
Item 10	Where an emission is expected, all treatment or reactor vessels must be enclosed. Only vent them to the atmosphere via an appropriate scrubbing and abatement system (subject to explosion relief).	Yes, there is no change to current procedures and practices	n/a

Item 11	You must monitor the reaction to make sure it is under control and proceeding towards the anticipated result. Vessels used for treatment must be equipped appropriately, for example with high level, pH and temperature monitors. These monitors must be automatic and continuous, linked to a clear display in the control room or laboratory, and have an audible alarm. Your risk assessment may require you to link process monitors to cut-off devices.	Yes, Distillation columns are monitored by via visual graphs & sampling process. Temperatures are monitored throughout the distillation as different points on the column. Temperature monitors & high level monitors are in place, with audible alarms	n/a
Section 5.2 - Aerosol Canister Treatment			
Item 1	Any aerosol treatment process must be fit for purpose. It must be specifically designed to: ● treat canisters and recover their materials and residues ● manage potentially flammable substances ● prevent explosive atmospheres	n/a	n/a
Item 2	You must design and operate the treatment process (for example, the waste feed rate, duration of treatment cycle and gas or liquid extraction) so that the canisters' residual contents are fully discharged and removed safely and efficiently.	n/a	n/a
Item 3	You must locate the treatment plant in a designated covered area or ventilated building. This must: ● have impermeable surfaces and sealed drainage ● be located away from stored combustible materials, other sources of ignition and sensitive receptors	n/a	n/a

	You must design the treatment area to avoid the potential build-up of flammable gases that are heavier than air, for example in sumps or similar sunken areas.		
Item 4	The treatment process must be: ● designed by a competent person ● carried out in an enclosed and sealed system, fitted with an appropriate gas extraction system ● provided with a means to contain or control an explosion ● strong enough to contain an explosion (typically up to 10 bar over-pressure), or have explosion relief directed to a safe space or explosion suppression fitted. Design, operation and explosion relief provisions must satisfy the requirements of relevant health and safety legislation. The gas extraction system must be interlocked with plant operation, so that the plant cannot operate unless the system is working.	n/a	n/a
Item 5	You must carry out the aerosol treatment process, including tipping and loading, within a controlled inert atmosphere. For example, you could use gas extraction and nitrogen gas injection to displace air from the plant and purge it before and after a treatment cycle. If the inerting system fails or high oxygen levels are detected, the treatment should stop automatically. Similarly, if you use ventilation to prevent an explosive atmosphere forming, the equipment should automatically stop operating when the lower explosion limit is approached.	n/a	n/a
Item 6	You must make sure you have checked and sorted all canisters before feeding them into the treatment process. This makes sure you exclude incompatible or untreatable wastes (for example, expanding foams).	n/a	n/a

Item 7	You should process batches of aluminium and steel cans separately to make it easier to recycle the metals recovered from the treatment process and prevent thermite reactions.	n/a	n/a
Item 8	You must keep waste sorting and storage distinct and separate from the treatment process.	n/a	n/a
Item 9	For safety, and to prevent wastes accumulating on site, you must make sure you identify available and reliable recovery or disposal routes. You should have contracts in place to take: ● the residues or materials recovered from the treatment process ● any canisters you have accepted but cannot treat on site	n/a	n/a
Item 10	You must make sure that as a minimum, all LPG piping systems comply with UKLPG Code of Practice 22. They must be securely sealed and tested and have a procedure in place for regular inspection.	n/a	n/a
Item 11	Containers and tanks holding liquids collected from the treatment process should be: ● compatible with the materials held ● fully earthed ● UN tested ● integrally sound ● designed and constructed to prevent the release of fugitive emissions to air (including odour) and ground, whilst allowing for emergency venting where necessary	n/a	n/a
Item 12	You should store containers that cannot be enclosed (for example skips containing recovered metal which are open to allow ventilation and drying) in well-ventilated, covered storage areas. This will prevent: ● rainwater collecting (and becoming contaminated)	n/a	n/a

	● the materials held corroding or deteriorating		
Item 13	You should not collect or hold flammable liquids in plastic drums or non-conductive plastic IBCs. Containers used to collect and hold flammable liquids from the treatment process should preferably be constructed from steel, or at least anti-static plastic. They should be designed so that they can be sealed for handling and storing. You must only use anti-static plastic containers to collect and hold flammable liquids if you are holding them separate from other wastes, within a self-contained bund.	n/a	n/a
Item 14	You must collect, and allow to dry, any residues that remain on the recovered metals before they are stored or sent for recycling.	n/a	n/a
Section 5.3 - Record keeping for all treatment residues			
Item 1	You must record in the computerised waste tracking system: ● that a waste has been treated ● what the treatment residues are and their weight ● what end-of-waste products have been made and their weight	Yes, there is no change to current procedures and practices	n/a
Section 6 – Emissions Control Appropriate Measures			
Section 6.1 – Point source emissions to air			
Item 1	You must contain storage tanks, silos and waste treatment plant (including shredders) to make sure you collect, extract and direct all process emissions to an appropriate abatement system for treatment before release.	Yes, there is no change to current procedures and practices	n/a
Item 2	You must identify the main chemical constituents of the site's point source emissions as part of the site's inventory of emissions to air.	Yes, there is no change to current procedures and practices	n/a

Item 3	You must assess the fate and impact of the substances emitted to air, following the Environment Agency's risk assessment methodology.	Yes, there is no change to current procedures and practices	n/a
Item 4	To reduce point source emissions to air (for example, dust, volatile organic compounds and odour) from the treatment of waste, you must use an appropriate combination of abatement techniques, including one or more of the following systems: ● adsorption (for example, activated carbon) ● biofiltration ● wet scrubbing ● fabric filters ● high efficiency particulate (HEPA) filtration ● condensation and cryogenic condensation ● cyclonic separation ● electrostatic precipitation ● thermal oxidation	Yes, there is no change to current procedures and practices	n/a
Item 5	You must assess and design vent and stack locations and heights to make sure dispersion capability is adequate. Where monitoring is required, including for odour, you must install suitable monitoring points.	Yes, refer to air quality modelling work included within this application	n/a
Item 6	Your procedures must make sure you correctly install, operate, monitor and maintain abatement equipment. For example, this includes monitoring and maintaining: ● appropriate flow and chemical concentration of scrubber liquor ● the handling and disposal or regeneration of spent scrubber or filter medium	Yes, there is no change to current procedures and practices	n/a
Item 7	You should design and operate abatement systems to minimise water vapour plumes.	Yes, there is no change to current	n/a

		procedures and practices	
Section 6.2 - Fugitive emissions to air (including odour)			
Item 1	You must use appropriate measures to prevent emissions of dust, mud and litter and odour.	Yes, there is no change to current procedures and practices	n/a
Item 2	You must design, operate and maintain storage and treatment plant in a way that prevents fugitive emissions to air, including dust, organic compounds and odour. Where that is not possible, you must minimise these emissions. Storage and treatment plant includes associated equipment and infrastructure such as: ● shredders ● conveyors ● skips or containers ● building fabric, including doors and windows ● pipework and ducting	Yes, there is no change to current procedures and practices The nature of the operation will have very little potential to create dust and odour	n/a
Item 3	To make sure fugitive emissions are collected and directed to appropriate abatement, your treatment plant must use high integrity components (for example, seals or gaskets). Your treatment plant must be fully enclosed, with air extraction systems located close to emission sources where possible.	Yes, enclosed treatment equipment used	n/a
Item 4	You must use your waste pre-acceptance, waste acceptance and site inspection checks and procedures to identify and manage wastes that could cause, or are causing, fugitive emissions to air. When you identify any of these wastes you must: ● take appropriate, risk assessed measures to prevent and control emissions ● prioritise their treatment or transfer	Yes, there is no change to current procedures and practices	n/a

Item 5	Where necessary, to prevent fugitive emissions to air from the storage and handling of wastes, you should use a combination of the following measures: ● store and handle such wastes within a building or enclosed equipment ● keep buildings and equipment under adequate negative pressure with an appropriate abated air circulation or extraction system ● where possible, locate air extraction points close to potential emissions sources ● use fully enclosed material transfer and storage systems and equipment, for example, conveyors, hoppers, containers, tanks and skips ● use fast-acting or 'airlock' doors that default closed ● keep building doors and windows shut to provide containment, other than when access is required ● minimising drop height ● use misting systems and wind barriers to prevent dust	n/a	Extraction system is in place when bulking on the TFE but when sampling this is generally completed outdoors. A risk assessment has been completed & in order to manage the risk of fugitive emissions & a possible flammable atmosphere, only drum / IBC is opened at a time. Tanker sampling also takes place outside but again is managed by an SOP & RA.
Item 6	You must set up a leak detection and repair programme and use it to promptly identify and mitigate any fugitive emissions from treatment plant and associated infrastructure (for example, pipework, conveyors, tanks).	Yes	n/a
Item 7	You must regularly inspect and clean all waste storage and treatment areas, equipment (including conveyor belts) and containers. You must have an appropriate regular maintenance programme covering all buildings, plant and equipment. This must also include protective equipment such as air ventilation and extraction systems, curtains and fast-action doors used to prevent and contain fugitive releases.	Yes	n/a

Item 8	Your inspection, maintenance and cleaning schedules must make sure that tanks and plant are regularly cleaned to avoid large-scale decontamination activities.	Yes, Regular checks & tank clean out programme in place, annual shutdown allows for regular tank inspections & plant inspections are completed daily with any defects / housekeeping issues raised immediately.	n/a
Item 9	You must take measures to prevent the corrosion of plant and equipment (for example, conveyors or pipes). This includes selecting and using appropriate construction materials, lining or coating equipment with corrosion inhibitors and regularly inspecting and maintaining plant.	Yes	n/a
Item 10	If you wash containers or tanks, you must design and operate the washing process and associated equipment in a way that prevents fugitive emissions to air. For example, you could do this activity in a contained or enclosed system.	Yes, Tank & column washing procedures. Scrubber system in place for SRU & TFE	n/a
Item 11	You must fully enclose and contain pre- and post-treatment shredder plant to prevent emissions. You must design and operate the shredder plant using appropriate process interlocks. The plant should not operate unless it is enclosed and contained, for example, only working when the loading door on the hopper has been closed or sealed. Dust and microbial emissions from the shredder plant must be contained and extracted to an appropriate abatement system, for example HEPA air filtration.	n/a	n/a
Item 12	Where a dust management plan is required, you must develop and implement it following our guidance	n/a	n/a

Item 13	You must have procedures to minimise the amount of time odorous wastes spend in your storage and handling systems (for example, pipes, conveyors, hoppers, tanks). In particular, you must have provisions to manage waste during periods of peak volume.	Yes, there is no change to current procedures and practices	n/a
Item 14	You must have measures to contain, collect and treat odorous emissions, including using contained buildings and plant or equipment with appropriate air extraction and abatement. We do not consider masking agents to be appropriate measures for the treatment of odorous emissions.	Yes, there is no change to current procedures and practices	n/a
Item 15	You must monitor and maintain odour abatement systems to ensure optimum performance. For example, you should make sure that scrubber liquors are maintained at the correct pH and replenished or replaced at an appropriate frequency.	Yes, pH is monitored daily on the plant scrubber & adjusted as required. On both the SRU & TFE scrubber systems daily monitoring ensures that carbon / aqueous scrubber changes are completed regularly preventing any exceeding of VOC emissions.	n/a
Item 16	You must store contaminated waters that have potential for odours in covered or enclosed tanks or containers vented through suitable abatement.	n/a	n/a
Item 17	Where odour pollution at sensitive receptors is expected, or has been substantiated, you must periodically monitor odour emissions using European (EN) standards, for example either: ● dynamic olfactometry according to EN 13725 to determine the odour concentration ● EN 16841-1 or -2 to determine the odour exposure	n/a	n/a

	If you are using alternative methods for which no EN standards are available (for example, estimating odour impact), you should use ISO, national or other international standards to make sure you use data of an equivalent scientific quality. You must set out the monitoring frequency in the odour management plan.		
Item 18	Where odour pollution at sensitive receptors is expected, or has been substantiated, you must also set up, implement and regularly review an odour management plan. It must be part of your management system and include all of the following elements: ● actions and timelines to address any issues identified ● a procedure for odour monitoring ● a procedure for responding to odour incidents, for example, complaints ● an odour prevention and reduction programme designed to identify the source(s), characterise the contributions of the sources and prevent and reduce them	n/a	n/a
Item 19	Where an odour management plan is required, you must develop and implement it following our guidance.	n/a	n/a
Section 6.3 – Emissions of Noise and Vibration			
Item 1	You should design the facility so that potential sources of noise (including building exits and entrances) are away from sensitive receptors and boundaries. You should locate buildings, walls, and embankments so they act as noise screens.	Yes, new plant and equipment will be fitted with noise abatement measures, where applicable	n/a
Item 2	You must employ appropriate measures to control noise, for example, including: ● adequately maintaining plant or equipment parts which may become more noisy as they deteriorate – for example, bearings, air handling plant, building fabric, and specific noise attenuation kit associated with plant or machinery	Yes	n/a

	● closing doors and windows of enclosed areas and buildings ● avoiding noisy activities at night or early in the morning ● minimising drop heights and the movement of waste and containers ● using broadband (white noise) reversing alarms and enforcing the on-site speed limit ● using low-noise equipment, for example, drive motors, fans, compressors and pumps ● adequately training and supervising staff ● where possible, providing additional noise and vibration control equipment for specific sources of noise – for example, noise reducers or attenuators, insulation, or sound-proof enclosures		
Item 3	Where noise or vibration pollution at sensitive receptors is expected, or has been substantiated, you must create, use and regularly review a noise and vibration management plan. This must be part of the environmental management system, and must include: ● actions and timelines to address any issues identified ● a procedure for noise and vibration monitoring ● a procedure for responding to identified noise and vibration events, for example, complaints	n/a	n/a
Item 4	Your noise and vibration management plan should also include a noise and vibration reduction programme designed to: ● identify the sources of noise and vibration ● measure or estimate noise and vibration exposure ● characterise the contributions of the sources ● implement prevention and reduction measures	n/a	n/a
Item 5	Where a noise and vibration management plan is required, you must develop and implement it following our guidance.	n/a	n/a
Section 6.4 – Point Source Emissions to Water and Sewer			

Item 1	You must identify the main chemical constituents of the site's point source emissions to water and sewer as part of the site's inventory of emissions.	Yes, there is no change to current procedures and practices	n/a
Item 2	You must assess the fate and impact of the substances emitted to water and sewer, following the Environment Agency's risk assessment guidance.	Yes, refer to H1 assessment work included within this application	n/a
Item 3	Discharges to water or sewer must comply with the conditions of an environmental permit or trade effluent consent. Relevant sources of waste water include: ● water or condensate collected from treatment processes ● waste compactor run-off ● vehicle washing ● vehicle oil and fuel leaks ● washing of containers ● spills and leaks in waste storage areas ● loading and unloading areas	Yes, there is no change to current procedures and practices	n/a
Item 4	To reduce emissions to water and sewer, if you need to treat waste water before discharge or disposal, you must use an appropriate combination of treatment techniques, including one or more of the following: ● preliminary or primary treatment – for example, equalisation, neutralisation or physical separation ● physico-chemical treatment – for example, adsorption, distillation or rectification, precipitation, chemical oxidation or reduction, evaporation, ion exchange, or stripping ● biological treatment – for example, activated sludge process or membrane bioreactor ● nitrogen removal – for example, nitrification and denitrification	Yes, there is no change to current procedures and practices	n/a

	• solids removal – for example, coagulation and flocculation, sedimentation, filtration or flotation		
Item 5	You must direct wash waters from cleaning containers to a foul sewer or sealed drainage system for on-site re-use or off-site disposal. You may need to pre-treat the waters to meet any limits on the effluent discharge consent. Discharges of wash waters to surface water or storm drains are not acceptable.	n/a	n/a
Section 6.5 – Fugitive Emissions to Land and Water			
Item 1	You must use appropriate measures to control potential fugitive emissions and make sure that they do not cause pollution. See the guidance on emissions to water and leaks from containers.	Yes, there is no change to current procedures and practices	n/a
Item 2	You must have these in all operational areas of the facility: • an impermeable surface • spill containment kerbs • sealed construction joints • a sealed drainage system	Yes, there is no change to current procedures and practices	n/a
Item 3	You must have measures in place to prevent overflows and failures from tanks and vessels, including where relevant: • overflow detectors and alarms • directing over-flow pipes to a contained drainage system • locating tanks and packaged liquids in suitable secondary containment (bunds) • providing isolation mechanisms (for example, closing valves) for tanks, vessels and secondary containment	Yes, for all existing and new tanks	n/a
Item 4	You must collect and treat separately each water stream generated at the facility, for example, surface run-off water or process water. Separation must be based on pollutant	Yes, there is no change to current	n/a

	content and treatment required. In particular you must make sure you segregate uncontaminated water streams from those that require treatment.	procedures and practices	
Item 5	You must use suitable drainage infrastructure to collect surface drainage from areas of the facility where you store, handle and treat waste. You must also collect wash waters and occasional spillages. Depending on the pollutant content, you must either recirculate what you have collected or send it for further treatment.	Yes, there is no change to current procedures and practices	n/a
Item 6	You must have design and maintenance provisions in place to detect and repair leaks. These must include regularly monitoring, inspecting and repairing equipment and minimising underground equipment and infrastructure.	No	Maintenance provisions & regular monitoring in progress. Underground pipework is minimised, any new plant design takes leak prevention / repair into account.
Item 7	You should provide appropriate buffer storage capacity at your facility to store waste waters, taking into account: ● potential abnormal operating scenarios and incidents ● the nature of any polluting substances and their impact on the downstream waste water treatment plant and receiving environment	Yes, there is no change to current procedures and practices	n/a
Item 8	You must have appropriate measures in place to monitor, treat and reuse water held in the buffer storage before discharging.	Yes, there is no change to current procedures and practices	n/a
Item 9	You must take measures to prevent emissions from washing and cleaning activities, including:	Yes, no tanker washing occurs on site, all column &	n/a

	● directing liquid effluent and wash waters to foul sewer or collecting them in a sealed system for off-site disposal – you must not discharge them to surface or storm drains ● where possible, using biodegradable and non-corrosive washing and cleaning products ● storing all detergents, emulsifiers and other cleaning agents in suitable bunded or containment facilities, within a locked storage area, or in a building away from any surface water drains ● preparing cleaning solutions in contained areas of the site and never in areas that drain to the surface water system	tank washing is contained & pumped out to a dedicated tank. All water on site is contained & analysed prior to being discharged to the river or forwarded to a disposal facility.	
Item 10	Where relevant, you must have measures to prevent pollution from the on-site storage, handling and use of oils and fuels.	Yes, the diesel tank is bunded, other oils handled in IBC's / drums. Spill kits readily available & all drains lead to the klargester tank which is analysed prior to discharge.	n/a
Item 11	You must produce and implement a spillage response plan and train staff to follow and test it.	Yes, there is no change to current procedures and practices	n/a
Item 12	Your procedures and associated training must make sure you deal with spillages immediately.	Yes, there is no change to current procedures and practices	n/a
Item 13	You must keep spill kits at locations close to areas where a spillage could occur and make sure relevant staff know how to use them. Make sure kits are replenished after use.	Yes, there is no change to current procedures and practices	n/a
Item 14	You must stop spillages from entering drains, channels, gullies, watercourses and unmade ground. You must make proprietary sorbent materials, sand or drain mats available.	Yes, there is no change to current	n/a

		procedures and practices	
Item 15	You must make sure your spillage response plan includes information about how to recover, handle and correctly dispose of waste produced from a spillage.	Yes, there is no change to current procedures and practices	n/a
Item 16	Container washing equipment must be contained and located in a designated area of the facility that has self-contained drainage. The equipment must be designed to collect and contain all wash waters, including any spray. Trained staff must operate, inspect and maintain it regularly.	n/a	n/a
Item 17	For sub-surface structures, you must: ● establish and record the routing of all site drains and sub-surface pipework ● identify all sub-surface sumps and storage vessels ● engineer systems to minimise leakages from pipes and make sure they are detected quickly if they do occur, particularly where hazardous substances are involved ● provide secondary containment or leakage detection for sub-surface pipework, sumps and storage vessels ● establish an inspection and maintenance programme for all sub-surface structures, for example, pressure tests, leak tests, material thickness checks or CCTV	Yes, only subsurface tanks are for storage of surface water runoff	n/a
Item 18	For surfacing, you must design appropriate surfacing and containment or drainage facilities for all operational areas, taking into account: ● collection capacities ● surface thicknesses ● strength and reinforcement ● falls ● materials of construction ● permeability ● resistance to chemical attack	Yes, there is no change to current procedures and practices	n/a

	• inspection and maintenance procedures		
Item 19	You must have an inspection and maintenance programme for impermeable surfaces and containment facilities.	Yes, there is no change to current procedures and practices	n/a
Section 7 - Emissions Monitoring and Limits Appropriate Measures			
Section 7.1 – Emissions to Air			
Item 1	Your facility's emissions inventory must include information about the relevant characteristics of point source emissions to air, such as the: • average values and variability of flow and temperature • average concentration and load values of relevant substances and their variability • flammability, lower and higher explosive limits and reactivity • presence of other substances that may affect the waste gas treatment system or plant safety – for example, oxygen, nitrogen, water vapour, dust	Yes, there is no change to current procedures and practices	n/a
Section 7.2 – Emissions to Water or Sewer			
Item 1	Your facility's emissions inventory must include information about the relevant characteristics of point source emissions to water or sewer, such as: • average values and variability of flow, pH, temperature, and conductivity • average concentration and load values of relevant substances and their variability – for example, COD (chemical oxygen demand) and TOC (total organic carbon), nitrogen species, phosphorus, metals, priority substances or micropollutants • data on bio-eliminability – for example, BOD (biochemical oxygen demand), BOD to COD ratio, Zahn-Wellens test, biological inhibition potential, for example, inhibition of activated sludge	Yes, there is no change to current procedures and practices	n/a

Item 2	For relevant emissions to water or sewer identified by the emissions inventory, you must monitor key process parameters (for example, waste water flow, pH, temperature, conductivity, or BOD) at key locations. For example, these could either be at the: ● inlet or outlet (or both) of the pre-treatment ● inlet to the final treatment ● point where the emission leaves the facility boundary	Yes, there is no change to current procedures and practices	n/a
Section 8 - Process Efficiency Appropriate Measures			
Section 8.1. Energy Efficiency (installations only)			
Item 1	You must create and implement an energy efficiency plan at your facility. This must: ● define and calculate the specific energy consumption of the activity (or activities) you do and waste stream(s) you treat ● set annual key performance indicators – for example, specific energy consumption (expressed in kWh/tonne of waste processed) ● plan periodic improvement targets and related actions	Yes, A new transformer will be installed on site with equipment able to provide electricity much closer to unity than current equipment that will provide a much better power correction factor, thus reducing the amount of current required. The supplies will be sub-metered to allow for accurate determination of energy usage.A new transformer will be installed on site with	n/a

		equipment able to provide electricity much closer to unity than current equipment that will provide a much better power correction factor, thus reducing the amount of current required. The supplies will be sub-metered to allow for accurate determination of energy usage.	
Item 2	You must regularly review and update your energy efficiency plan as part of your facility's management system.	Yes	n/a
Item 3	You must have and maintain an energy balance record for your facility. This must provide a breakdown of your energy consumption and generation (including any energy or heat exported) by the type of source (electricity, gas, conventional liquid fuels, conventional solid fuels and waste). You should provide Sankey diagrams or energy balances to show how energy is used in your waste treatment processes.	No	Energy consumption is monitored & separated into plant & office usage.
Item 4	You must regularly review and update your energy balance record as part of your facility's management system, alongside the energy efficiency plan.	Yes	n/a
Item 5	You must have operating, maintenance and housekeeping measures in place in relevant areas, for example for: ● air conditioning, process refrigeration and cooling systems (leaks, seals, temperature control, evaporator or condenser maintenance) ● the operation of motors and drives	Yes	n/a

	● compressed gas systems (leaks, procedures for use) ● steam distribution systems (leaks, traps, insulation) ● space heating and hot water systems ● lubrication to avoid high friction losses ● boiler operation and maintenance, for example, optimising excess air ● other maintenance relevant to the activities within the facility		
Item 6	You must have measures in place to avoid gross energy inefficiencies. These should include, for example: ● insulation ● containment methods (such as seals and self-closing doors) ● avoiding unnecessary discharge of heated water or air (for example, by fitting timers and sensors)	Yes	n/a
Item 7	You should implement additional energy efficiency measures at the facility as appropriate, following our guidance.	Yes	n/a
Section 8.2. - Raw Materials (installations only)			
Item 1	You must maintain a list of the raw materials used at your facility and their properties. This includes auxiliary materials and other substances that could have an environmental impact.	Yes, there is no change to current procedures and practices	n/a
Item 2	You must regularly review the availability of alternative raw materials and use any suitable ones that are less hazardous or polluting. This should include, where possible, substituting raw materials with waste or waste-derived products.	Yes	n/a
Item 3	You must justify the continued use of any substance for which there is a less hazardous alternative.	n/a	n/a
Item 4	You must have quality assurance procedures in place to control the content of raw materials.	Yes	n/a

Section 8.3. – Water Use (installations only)			
Item 1	You must make sure you optimise water consumption to: ● reduce the volume of waste water you generate ● prevent or, where that is not practicable, reduce emissions to soil and water	Yes	n/a
Item 2	Measures you must take include: ● implementing a water saving plan (involving establishing water efficiency objectives, flow diagrams and water mass balances) ● optimising the use of wash waters (for example, dry cleaning instead of hosing down and using trigger controls on all washing equipment) ● recirculating and reusing water streams within the plant or facility, if necessary after treatment ● reducing the use of water for vacuum generation (for example, using liquid ring pumps with high boiling point liquids), where relevant	Yes	n/a
Item 3	You must review water use (a water efficiency audit) at least every 4 years.	Yes	n/a
Item 4	You must also: ● produce flow diagrams and water mass balances for your activities ● establish water efficiency objectives and identify constraints on reducing water use beyond a certain level (usually this will be site specific) ● identify the opportunities for maximising reuse and minimising use of water ● have a timetabled improvement plan for implementing additional water reduction measures	Yes	n/a
Item 5	To reduce water use and associated emissions to water, you should apply these general principles in sequence: ● use water efficient techniques at source where possible	Yes	n/a

	● reuse water within the process, by treating it first if necessary – if not practicable, use it in another part of the process or facility that has a lower water quality requirement ● if you cannot use uncontaminated roof and surface water in the process, you should keep it separate from other discharge streams – at least until after you have treated the contaminated streams in an effluent treatment system and have carried out final monitoring		
Item 6	You should establish the water quality requirements associated with each activity and identify whether you can substitute water from recycled sources. Where you can, include it in your improvement plan.	Yes	n/a
Item 7	Where there is scope for reuse (possibly after some form of treatment) you should keep less contaminated water streams, such as cooling waters, separate from more contaminated streams.	Yes	n/a
Item 8	You must minimise the volume of water you use for cleaning and washing down by: ● vacuuming, scraping or mopping in preference to hosing down ● reusing wash water (or recycled water) where practicable ● using trigger controls on all hoses, hand lances and washing equipment	n/a	n/a
Item 9	You must directly measure fresh water consumption and record it regularly at every significant usage point, ideally on a daily basis.	Yes	n/a
Section 8.4. – Waste Minimisation, Recovery and Disposal			
Item 1	You must have and implement a residues management plan that: ● minimises the generation of residues from waste treatment ● optimises the reuse, regeneration, recycling or energy recovery of residues, including packaging ● makes sure you properly dispose of residues where recovery is technically or economically impractical	Yes	n/a
Item 2	Where you must dispose of waste, you must do a detailed assessment to identify the best environmental options for waste disposal.	Yes	n/a

Item 3	You must regularly review options for recovering and disposing of waste produced at the facility. You must do this as part of your management system to make sure you are using the best environmental options and promoting the recovery of waste where technically and economically viable.	Yes	n/a

Fuel use justification assessment

The proposed boilers will be able to use light oil (low sulphur gas oil or solvent derived fuel) or natural gas. They are designed to fire one fuel at a time. The use of solvent derived fuel 'distillate fuel' is considered below, and compared to the use of natural gas or gas oil, taking into account the scope of the assessment specified by the EA in their enhanced pre-application advice which requested consideration of the associated emissions to air including an assessment of air quality, the impact on fossil fuel usage and global warming potential as well as the associated monetary costs. As requested by the EA the emissions assessment has been carried out using the fuel specific limits prescribed in the Medium Combustion Plant Directive (MCPD).

This distillate fuel will only be used to fire the boilers when it achieves End-of-Waste (EoW). A report presenting the case for EoW status is provided in Appendix J. The report concludes that gas oil is the most appropriate comparator for the distillate fuel based on its characteristic properties; however natural gas emissions are included for reference.

Emissions to air

Emissions to air resulting from the combustion of three fuels (natural gas, gas oil and distillate fuel) are considered in the Air Quality Assessment (AQA) provided in Appendix H.

The relevant pollutants and associated emission limit values (ELV) prescribed in the MCPD were considered in the AQA. These depend on the type of fuel to be combusted. For boilers fired on natural gas or gas oil, the MCPD prescribes ELV for oxides of nitrogen (NO_x) only. For boilers fired on liquid fuels other than gas oil (such as the distillate fuel), the MCPD prescribes ELV for NO_x, sulphur dioxide (SO_2) and particulate matter.

Based on the assessment of the expected input to the fractional distillation process, the quantity of sulphur in the distillate fuel is expected to be no more than in low-sulphur gas oil (i.e. <0.1% by weight) meaning SO_2 emissions will be negligible and therefore did not require detailed modelling. The NO_x ELV applicable to emissions to air from boilers burning fuel falling into the 'other liquid fuel' MCPD category (such as distillate fuel) is the highest of the equivalent limits for gas oil and natural gas.

The modelled emissions from the boilers firing the distillate fuel are therefore higher than equivalent operation on gas oil and natural gas when using the fuel specific MCPD limits as the basis for assessment. When accounting for air dispersion, when emitted from the proposed 16m stack, the result is higher process contributions at the point of maximum impact, but this effect is very localised and confined to areas of non-relevant exposure.

However, based on the predicted composition of the distillate (refer to EoW report), the emissions resulting from its combustion are expected to be minimal and comparable to equivalent emissions from the combustion of fossil fuels within the same apparatus with no

necessary modifications. This conclusion will be demonstrated once the plant is commissioned and therefore it is proposed to integrate an assurance review trial stage into the authorisation to confirm emissions conform to expected performance.

Impacts on air quality

A conservative assessment of the significance of stack emissions from the combustion of all three fuels has been carried out using detailed air dispersion modelling (Appendix H). The conclusions drawn from the modelling are as follows based on operation of the boilers using distillate fuel applying the MCPD emission limits for 'other liquid fuels' which are higher than for natural gas and gas oil. The same conclusions are applicable to operation of the plant on both gas oil and natural gas.

- The operation of the boilers is not predicted to cause exceedance of any AQAL in an area of relevant exposure;
- The overall impact of all long-term process emissions from the operation of the boilers is 'not significant' at all receptor locations and areas of relevant exposure;
- The overall impact of short-term process emissions from the operation of the boilers is 'insignificant' at all areas of relevant exposure;
- In relation to the impact at identified sensitive ecological sites, the impact of airborne emissions from the boilers will have no likely significant effect on the integrity of the sites, and the effect of nutrient nitrogen and acid deposition can be screened out as 'insignificant'.

In relation to the assessment of human health, only long term NO_x emissions did not screen out as 'insignificant' at the first stage of assessment at human health receptor locations. However, once background concentration is taken into account, the emissions screen out as 'not significant' for all fuels. Translated into a measure of the differential impact between fuels, a comparison of NOx emissions between gas oil and the proposed distillate equivalent, taking into account emission characteristics and atmospheric dispersion, shows at all representative human health receptors that as a percentage of the air quality assessment level 'AQAL' there is less than a 1% difference in predicted environmental concentration 'PEC' (see appendix H).

In summary, the assessment of the boilers operating on distillate fuel has shown that emissions would not have a significant impact on local air quality, the general population or the local community even when applying the MCPD emission limits for 'other liquid fuels' which are higher than for natural gas and gas oil.

It is expected that the combustion of the distillate fuel will result in emissions which are lower than when applying the MCPD limits for 'other liquid fuels' and will be consistent with those from the combustion of fossil fuels within the new boilers and will result in environmental impacts which are not worse than the combustion of fossil fuels.

Fossil fuel usage

The use of the distillate fuel will displace the need to rely on virgin natural gas or gas oil based fossil fuel for operation of the distillation process.

Continuous operation of the boiler with distillate fuel, at 75% load, during the year, would displace the use of either up to approximately 5,400 tonnes of gas oil per boiler or 4,900 tonnes of natural gas per boiler for the same energy output based on their respective net calorific value.

Global warming impact

The combustion of virgin fossil fuel such as gas oil or natural gas instead of distillate fuel would result in direct emissions of NO_x and carbon dioxide (CO_2) which both present a global warming potential, oxides of nitrogen potential being five times higher than that of carbon dioxide.

The combustion of distillate fuel would also result in emissions of NO_x and CO_2 which are ultimately of a fossil origin, though the primary purpose of the extracted fossil product was for solvent production rather than for fuel production.

The use of distillate fuel to substitute non-renewable fossil fuel would also avoid the indirect emissions and carbon load associated with its extraction, manufacturing and supply to the site. The production and use of the distillate fuel on the same site also avoids the emissions associated with transportation off site.

The use of the distillate as a fuel would divert it from the other uses which are currently available for distillate of similar nature themselves having associated global warming impacts. Material may be re-processed to produce paint thinners or transferred to a suitable licensed facility for processing into secondary liquid fuel used in the cement industry. The use of paint thinners would result in ground level release of VOC whilst the use of the secondary liquid fuel would result in emission of products of combustion to the atmosphere in addition with the emissions associated with its transport and blending process. The paint manufacturing industry is moving towards low solvent and water-based paints, therefore the future market for paint thinners is understood to be limited and recovery of the material as an alternative to non-renewable fuel is considered appropriate.

Associated costs

The cost of supply of gas oil to the site would be approximately 1.6 pence per MJ (based on a price of 60 pence per litre https://ahdb.org.uk/fuel-prices and assuming an energy content of 36.9 MJ per litre), whilst the cost of supply of natural gas would be approximately 0.4 pence per MJ (based on 1.3 pence per KWh as per current gas bill), excluding costs associated with the addition of a new supply to the site.

The costs associated with producing the distillate fuel from the process residual waste on site is estimated to be around 0.25 pence per MJ taking into account the energy and disposal costs (based on £58 per tonne for energy production assuming natural gas is used and £70-90 per tonne for disposal at the kilns). In reality some distillate fuel would be used to provide the energy necessary to produce the fuel hence reducing this cost further.

APPENDIX G

FLOOD RISK ASSESSMENT

Weetwood

Development • Planning • Environment

KING STREET, GARSTON, LIVERPOOL

FLOOD RISK ASSESSMENT

Final Report v1.1

March 2019

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Report Title	**King Street, Garston, Liverpool** Flood Risk Assessment Final Report v1.1
Client	Veolia ES (UK) Ltd
Date of issue	6 March 2019

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This document has been prepared solely as a Flood Risk Assessment for Veolia ES (UK) Ltd. This report is confidential to Veolia ES (UK) Ltd and Weetwood Services Ltd accepts no responsibility or liability for any use that is made of this document other than by Veolia ES (UK) Ltd for the purposes for which it was originally commissioned and prepared.

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1 INTRODUCTION

1.1 PURPOSE OF REPORT

Weetwood Services Ltd ('Weetwood') has been instructed by Veolia ES (UK) Limited (Veolia) to prepare a retrospective Flood Risk Assessment (FRA) report for the existing Veolia facility on land off King Street, Garston, Liverpool.

The assessment has been undertaken in accordance with the requirements of the National Planning Policy Framework (NPPF) and National Planning Practice Guidance (NPPG). It is based on information provided by Veolia and other documents in the public domain but no site visit has been undertaken.

1.2 STRUCTURE OF THE REPORT

The report is structured as follows:

Section 1 Introduction and report structure
Section 2 Presents national and local flood risk and drainage planning policy
Section 3 Provides background information relating to the site
Section 4 Assesses the potential sources of flooding to the site
Section 5 Presents flood risk mitigation measures based on the findings of the assessment
Section 6 Presents a summary of key findings
Section 7 Presents the recommendations

2 PLANNING POLICY AND GUIDANCE

2.1 NATIONAL PLANNING POLICY AND GUIDANCE

2.1.1 National Planning Policy Framework

The aim of the NPPF is to ensure that flood risk is taken into account at all stages in the planning process and is appropriately addressed.

2.1.1.1 Sequential Test

Paragraph 155 of the NPPF states that "*inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere"*.

This policy is implemented through the application of the sequential test (NPPF paragraph 158).

2.1.1.2 Exception Test

Paragraph 159-161 of the NPPF states:

"If it is not possible for the development to be located in zones with a lower risk of flooding (taking into account wider sustainable development objectives)the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in the national planning guidance" (Paragraph 159).

"The application of the exception test should be informed by a strategic or site-specific FRA, depending on whether it is being applied during plan production or at the application stage. For the exception test to be passed it should be demonstrated that: a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall" Paragraph 160.

"Both elements of the exception test should be satisfied for development to be allocated or permitted" (Paragraph 161).

2.2 LOCAL PLANNING POLICY AND GUIDANCE

2.2.1 Local Plan 2013-2033 (Pre-submission draft January 2018)

Liverpool City Council's (LCC) Local Plan 2013-2033 sets out the vision for the Borough and the Council's approach to development between 2013 and 2033. Following public consultation, the Local Plan was due for submission to the Secretary of State for Local Government in March 2018 for independent examination.

The following policies are relevant in respect of flood risk and drainage:

Policy STP2: Sustainable Growth Principles and Managing Environmental Impacts

1. New development should seek to avoid negative impacts on the environment through adoption of best practice. Where a negative effect is identified this should be mitigated by appropriate measures. Specifically, to ensure the sustainable growth of the City, new development should:

    k. Avoid areas at risk of flooding and demonstrate it will not exacerbate potential sources of flood risk;
    l. Improve and protect water and groundwater quality, including the River Mersey, Leeds & Liverpool Canal, and other inland rivers and watercourses, and where appropriate and feasible the opening up of watercourses to assist in flood risk management;

Policy R3: Flood Risk and Water Management

Development proposals should protect and enhance water quality, reduce flood risk and include water efficiency measures. Specifically:

1. All proposals for development must follow the sequential approach to determining the suitability of land for development, directing new development to areas at the lowest risk of flooding and where necessary apply the exception test, as outlined in national planning policy.

2. Developers will be required to demonstrate, where necessary, through an appropriate Flood Risk Assessment (FRA) at the planning application stage, that development proposals will not increase flood risk on site or elsewhere, and should seek to reduce the risk of flooding. New development will be required to include or contribute to flood mitigation, compensation and/or protection measures, where necessary, to manage flood risk associated with or caused by the development. Unless appropriate alleviation or mitigation measures are carried out, planning permission will not be granted for development which would:

    a. be at direct unacceptable risk from flooding from all sources, including flooding due to, or exacerbated by, rising groundwater;
    b. be likely to increase the risk of flooding;
    c. cause loss of access to watercourses for future maintenance;
    d. result in an adverse impact on the water environment due to additional surface water run-off; or
    e. have adverse effects upon the integrity of tidal and fluvial defences.

3. Development proposals should comply with the Water Framework Directive by contributing to the North West River Basin Management Plan and Mersey Estuary Management Plan objectives, by not adversely affecting water quality and should, where possible, seek to improve water quality unless it can be demonstrated that this would not be technically feasible.

4. Where reasonably practicable development proposals should incorporate Sustainable Drainage Systems (SUDs) to manage surface water run-off. SUDs should be designed to provide effective drainage; to take account of the likely impacts of climate change and the likely changes in impermeable area; to ensure pollution is controlled; and to enhance water quality and existing habitats and create new habitats where practicable. Proposals for major developments should assess the incorporation of a sustainable drainage scheme into the development at the earliest site-planning stage.

5. Proposals should demonstrate that there is adequate wastewater infrastructure and water supply capacity to serve the development. Where it is likely to create a specific shortfall or exacerbate existing deficiencies, developers will be required to adequately mitigate or compensate for those deficiencies, in line with Policies STP4 and STP5.

Policy R3: Coastal Protection

2. Proposals which protect or enhance informal recreation, provide for new coastal flood defences, flood risk management measures, and essential landfall facilities for offshore installations will be supported, subject to other Plan policies.

2.3 CONSENTS

An Environmental Permit for Flood Risk Activities may be required from the Environment Agency (EA) for work:

- In, under, over or near a main river (including where the river is in a culvert)
- On or near a flood defence on a main river
- In the flood plain of a main river
- On or near a sea defence

Further information can be found at https://www.gov.uk/guidance/flood-risk-activities-environmental-permits.

Land drainage consent may be required from the Lead Local Flood Authority or Internal Drainage Board for work to an Ordinary Watercourse. Undertaking activities controlled by local byelaws (made under the Water Resources Act 1991) also requires the relevant consent.

2.4 RELEVANT DOCUMENTS

The FRA has been informed by the following documents:

- Strategic Flood Risk Assessment (SFRA), LCC, January 2008
- Preliminary Flood Risk Assessment (PFRA), LCC, June 2011
- Interim SFRA, LCC, January 2018

3 SITE DETAILS AND PROPOSED DEVELOPMENT

3.1 SITE LOCATION

The approximately 2.6 hectare (ha) site is located on land off King Street at Ordnance Survey National Grid Reference SJ 400 836, as shown in **Figure 1**.

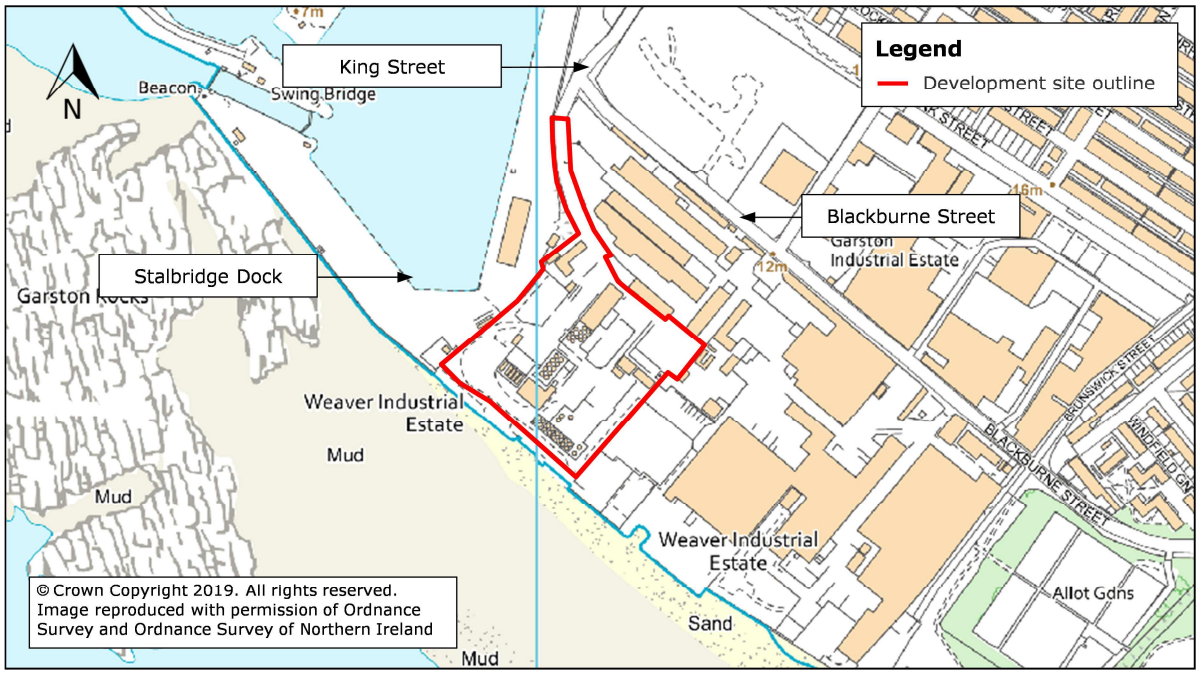


Figure 1: Site Location

3.2 EXISTING DEVELOPMENT

The site currently comprises a facility for the treatment, management and disposal of chemical waste products (**Appendix A**).

The NPPG classifies sites used for waste management facilities for hazardous waste development as more vulnerable land use.

3.3 WATERBODIES IN THE VICINITY OF THE SITE

The locations of waterbodies within the vicinity of the site are shown in **Figure 1**.

The River Mersey is located immediately south of the site and flows in a north westerly direction.

Stalbridge Dock is located approximately 30 metres (m) west of the site.

The River Mersey is classified as a main river.

3.4 GROUND CONDITIONS

National Soils Research Institute mapping[1] classifies soil conditions at the site and within the surrounding area as 'Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils'.

British Geological Survey (BGS) borehole records[2] located in the south-east corner of the site indicates ground conditions to be comprised of 'made ground' between 0.0 – 5.0 m below ground level (bgl), 'very sandy, silty clay' between 5.0 - 6.0 m bgl and 'soft to firm laminated black and grey silty clay' between 6.0 – 11.20 m bgl. The aforementioned layers are subsequently underlain by a thick band of 'week, red/brown fine to medium, porous sandstone'.

BGS Surface Geology mapping[3] indicates the underlying bedrock formation comprises 'Chester Formation - Sandstone, Pebbly (gravelly)', which is overlain by 'Tidal Flat Deposits - Clay, Silt And Sand' superficial deposits.

The site is not shown to be located within a designated Groundwater Source Protection Zone.

3.5 SITE LEVELS

A topographic survey of the site has been undertaken and is provided in **Appendix B**.

Site levels are shown to be in the region of 7.0 - 12.5 metres Above Ordnance Datum (m AOD), with levels generally failing towards the westernmost corner of the site. The areas at or around 7.0 m AOD are very localised in the western most corner.

3.6 ACCESS AND EGRESS

Access and egress to the site is provided via King Street to the north of the site.

Ground levels along King Street are shown to be in the region of 11.6 to 12.4 m AOD, with levels typically falling from north to south.

[1] www.landis.org.uk/soilscapes/

[2] www.bgs.ac.uk/data/boreholescans/home.html, Ref: SJ48SW26

[3] http://mapapps.bgs.ac.uk/geologyofbritain/home.html

4 REVIEW OF FLOOD RISK

4.1 FLOOD ZONE DESIGNATION

Flood zones refer to the probability of river and sea flooding. The NPPG defines flood zones as follows:

- Flood Zone 1: Low Probability. Land having a less than 1:1,000 annual probability of river or sea flooding.
- Flood Zone 2: Medium Probability. Land having between a 1:100 and 1:1,000 annual probability of river flooding; or Land having between a 1:200 and 1:1,000 annual probability of sea flooding.
- Flood Zone 3a: High Probability. Land having a 1:100 or greater annual probability of river flooding; or Land having a 1:200 or greater annual probability of sea flooding.
- Flood Zone 3b: Functional Floodplain. Land where water has to flow or be stored in times of flood.

The flood zones are shown on the Flood Map for Planning. The zones do not account for possible future changes in flooding due to the impact of climate change or the presence of flood defences (although areas benefitting from flood defences may be indicated).

According to the Flood Map for Planning (**Figure 2**) the site is located in Flood Zone 1.

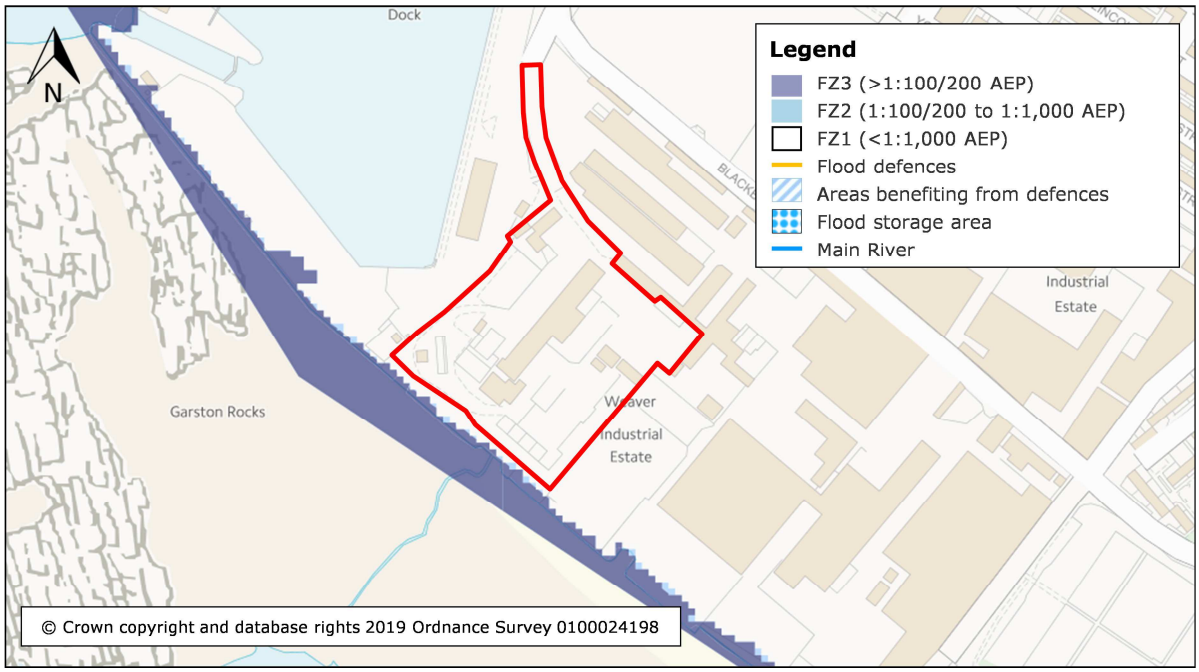


Figure 2: Flood Map for Planning
(Source: gov.uk website)

4.2 HISTORICAL RECORDS OF FLOODING

According the EA Historical Flood Map, there are no recorded incidents of flooding at or within the vicinity of the site.

Figure 4.2.2 of the PFRA shows historic flooding locations. According to this map the site has not been affected by historic flood events.

4.3 TIDAL / COASTAL FLOOD RISK – RIVER MERSEY

As discussed **Section 3.3**, the River Mersey is located immediately south of the site and flows in a north westerly direction.

4.3.1 Flood Defences

The EA have confirmed[4] that there are no flood defences within the vicinity of the site.

4.3.2 Tidal Levels

The EA has provided the following modelled design peak still tidal levels[5], including 46 years of climate change (+CC) allowance:

- 1:200 annual probability 7.03 m AOD
- 1:200 +CC (2065) annual probability 7.33 m AOD
- 1:1,000 annual probability 7.25 m AOD

The NPPF requires an allowance for climate change to be made. Using the contingency allowances set out in the EA guidance[6] and a development lifetime of 50 years, this allowance has been calculated as 40 mm (**Table 1**). The 1:200 +CC (2069) annual probability is therefore taken as 7.37 m AOD.

Table 1: Climate Change Allowance

Period	Net Sea Level Rise (mm/yr)	No. of years	Total Sea Level Rise
2065 - 2069	10	4	40

As discussed in **Section 3.5**, ground levels at the site are between 7.3 to 12.3 m AOD. This indicates that some flooding of limited parts of the site could occur during the 1:200 (2069) annual probability event with flood depths in the region of 0.07 m.

However, interrogation of the LiDAR data has shown that raised land surrounds the site to a height of around 8.0 m AOD, offering an approximate 0.63 m freeboard over the 1:200 (2069) annual probability event flood level. Noting this, the lower lying areas of the site in the centre of the development are expected to remain flood free during the aforementioned event, supporting the Flood Zone 1 designation.

Ground levels along King Street are in the region of 11.6 to 12.4 m AOD (refer to **Section 3.6**). This indicates, that access and egress to the site is expected to remain dry in up to the 1:200 (2069) annual probability event.

Based on the above the risk of flooding from tidal sources is considered to be low.

[4] Email from EA to Weetwood dated 17 January 2018

[5] Mersey Estuary, 2016 (JBA) node MEST_16750

[6] Flood Risk Assessments: climate change allowances (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances)

4.4 FLOOD RISK FROM SURFACE WATER

The Flood Risk from Surface Water map (**Figure 3**) indicates most of the site is at very low risk of surface water flooding. The only areas that are shown to be at risk of flooding from surface water coincide with depressions in the local topography.

Potential depths and velocities for the low, medium and high risk surface water flooding events are provided in **Figure 4** and **Figure 5**.

These indicate that during a low risk event flood depths and velocities are mostly shown to be between 300 and 900 mm and less than 0.25 m/s respectively. Small areas may experience depths and velocities over 900 mm and more than 0.25 m/s respectively. During a medium to high risk event flood depths and velocities are shown to range between less than 300 and up to 900 mm, in all cases being less than 0.25 m/s respectively.

However, the EA's Flood Risk from Surface Water map is unlikely to account for existing on-site surface water drainage systems in place. Therefore, it is expected that flood depths would be less than those indicated above.

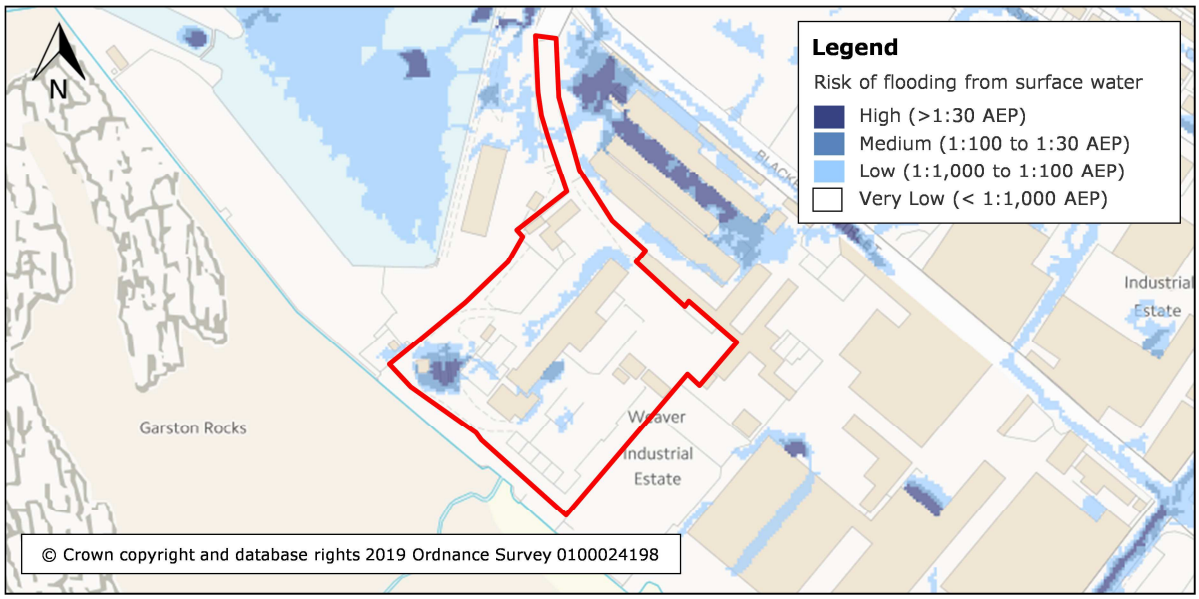


Figure 3: Flood Risk from Surface Water
(Source: gov.uk website)

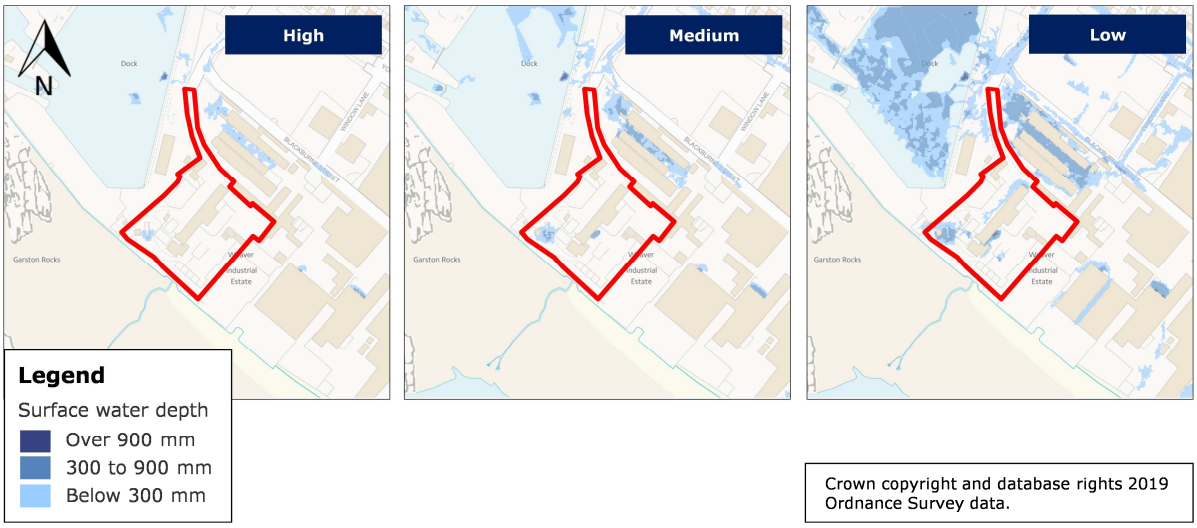


Figure 4: Flood Risk from Surface Water - Depth
(Source: gov.uk website)

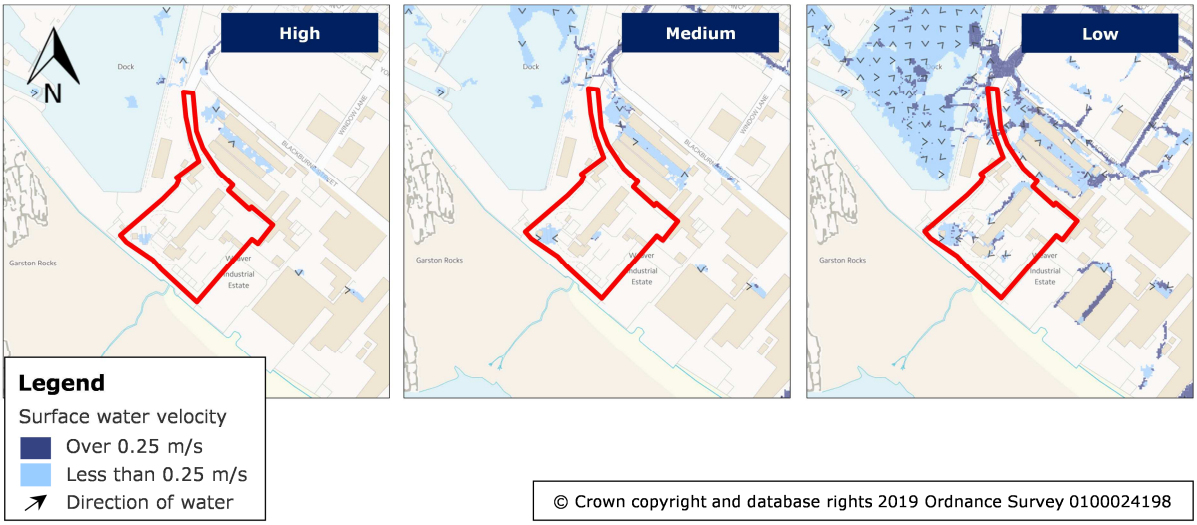


Figure 5: Flood Risk from Surface Water - Velocity
(Source: gov.uk website)

United Utilities (UU) has been consulted to ascertain whether it holds any records of sewer flooding at or within the vicinity of the site. UU has advised[7] that their records indicate that there are no recorded instances of historical sewer flooding events at the site.

LCC has been consulted[8] to ascertain whether it holds any records of highways flooding at or within the vicinity of the site. At the time of writing a response is awaited.

Irrespective, it is expected that any residual risk of flooding from these source could be mitigated through the implementation of measures proposed in **Section 5** of this report.

[7] Email from DCWW to Weetwood dated 15 January 2019

[8] Email from Weetwood to LCC dated 14 January 2019

4.5 FLOOD RISK FROM RESERVOIRS, CANALS AND OTHER ARTIFICIAL SOURCES

Reservoir or canal flooding may occur as a result of the facility being overwhelmed and/or as a result of dam or bank failure.

Stalbridge Dock is connected to the River Mersey by a lock. At times of extreme high tide the lock gates would likely be overtopped. Peak water levels in the dock would then correspond to those in the River Mersey. As the site has shown to be free from flooding in the 1:200 (2069) annual probability event then Stalbridge Dock may be discounted as a source of flood risk to the site.

There are no other canals or other artificial waterbodies located within the vicinity of the site.

The EA Risk of Flooding from Reservoirs map indicates that the site is not at risk of flooding from such sources.

Based on the above the risk of flooding from reservoirs, canals and other artificial water bodies is considered to be low.

4.6 FLOOD RISK FROM GROUNDWATER

As detailed in **Section 3.4** ground conditions at the site and within the surrounding area are described as 'clayey'. The permeability of the underlying soil conditions and the subsequent propensity for groundwater flooding may therefore be assessed to be low.

According to the BGS Groundwater Flooding Hazard map (**Figure 6**) the susceptibility to groundwater flooding is low.

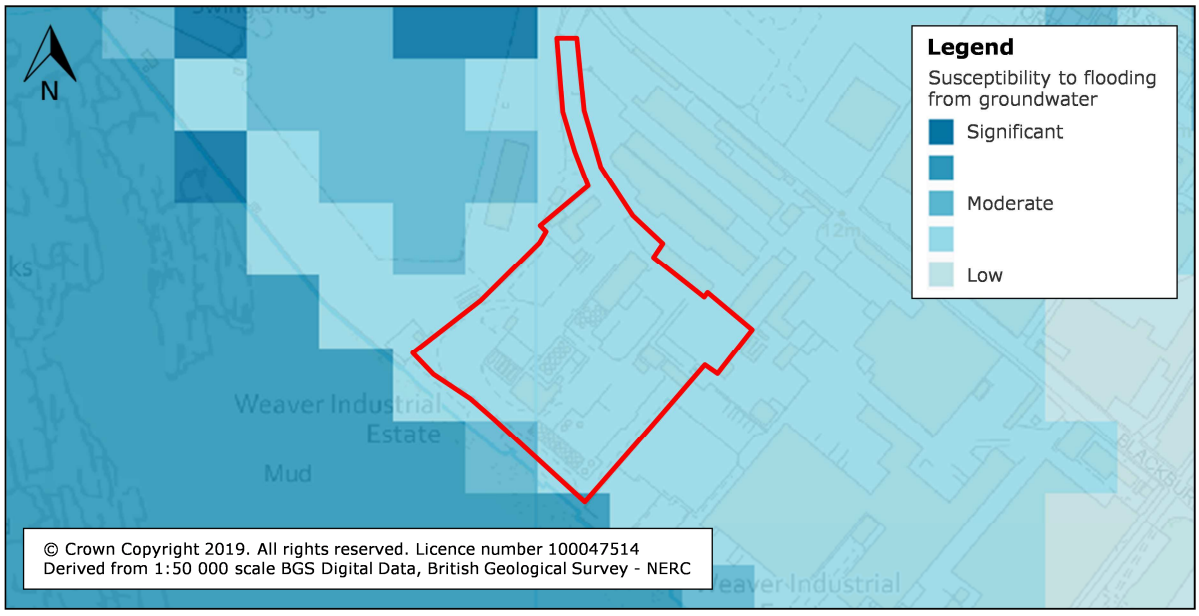


Figure 6: Groundwater Flooding Hazard Map
(Source: Findmaps)

Based on the above, the risk of groundwater flooding is assessed to be low.

5 FLOOD RISK MITIGATION MEASURES

5.1 FLOOD RESILIENCE MEASURES

There is, potentially, a residual risk of flooding from surface water at the site. Implementation of the measures proposed within the following section of this report will help to minimise but not eliminate the risk.

5.1.1 Minimum Infrastructure Levels

There is the possibility of some surface water flooding at the site, albeit mainly in the lower parts. As discussed in **Section 4.4**, the EA's Flood Risk from Surface Water map is unlikely to account for the existing on-site surface water drainage systems in place. If an adequate on-site surface water drainage system is in place and operating satisfactorily, it would be reasonable to assume that surface water flooding is unlikely to reach more than 300mm except in the lowest parts of the site.

To address surface water flood risk it is recommended that any newly proposed infrastructure be set at a minimum of 300mm above adjacent ground levels and that the lowest parts of the site are avoided for such new infrastructure. Protecting existing infrastructure is unlikely to be practicable but may be considered.

5.2 ACCESS AND EGRESS

Dry access is provided from the site entrance to the north of the site along King Street in up to a 1:200 +CC (2069) annual probability event for the River Mersey.

5.2.1 Flood Warning Notice

The site is not considered to be at flood risk from the River Mersey or any significant risk from groundwater, canals, reservoirs and other artificial sources and surface water. However, a Flood Warning Notice (**Appendix C**) has been produced detailing an emergency access/egress route for the site, which can be displayed at site entrances and within the car parking areas to ensure site users are aware of local flood risk and advise them on the recommended egress route.

6 SUMMARY

This report has been prepared on behalf of Veolia to provide a retrospective Flood Risk Assessment (FRA) report for the existing Veolia facility at King Street, Garston.

According to the EA Flood Map for Planning (Rivers and Sea) the site is located outside of the 1 in 1,000 annual probability flood outline and is therefore defined by the NPPF as being situated within Flood Zone 1.

The EA Risk of Flooding from Reservoirs Map indicates that the site is not assessed to be at risk of flooding from reservoirs. The susceptibility to groundwater flooding at the site is assessed to be low.

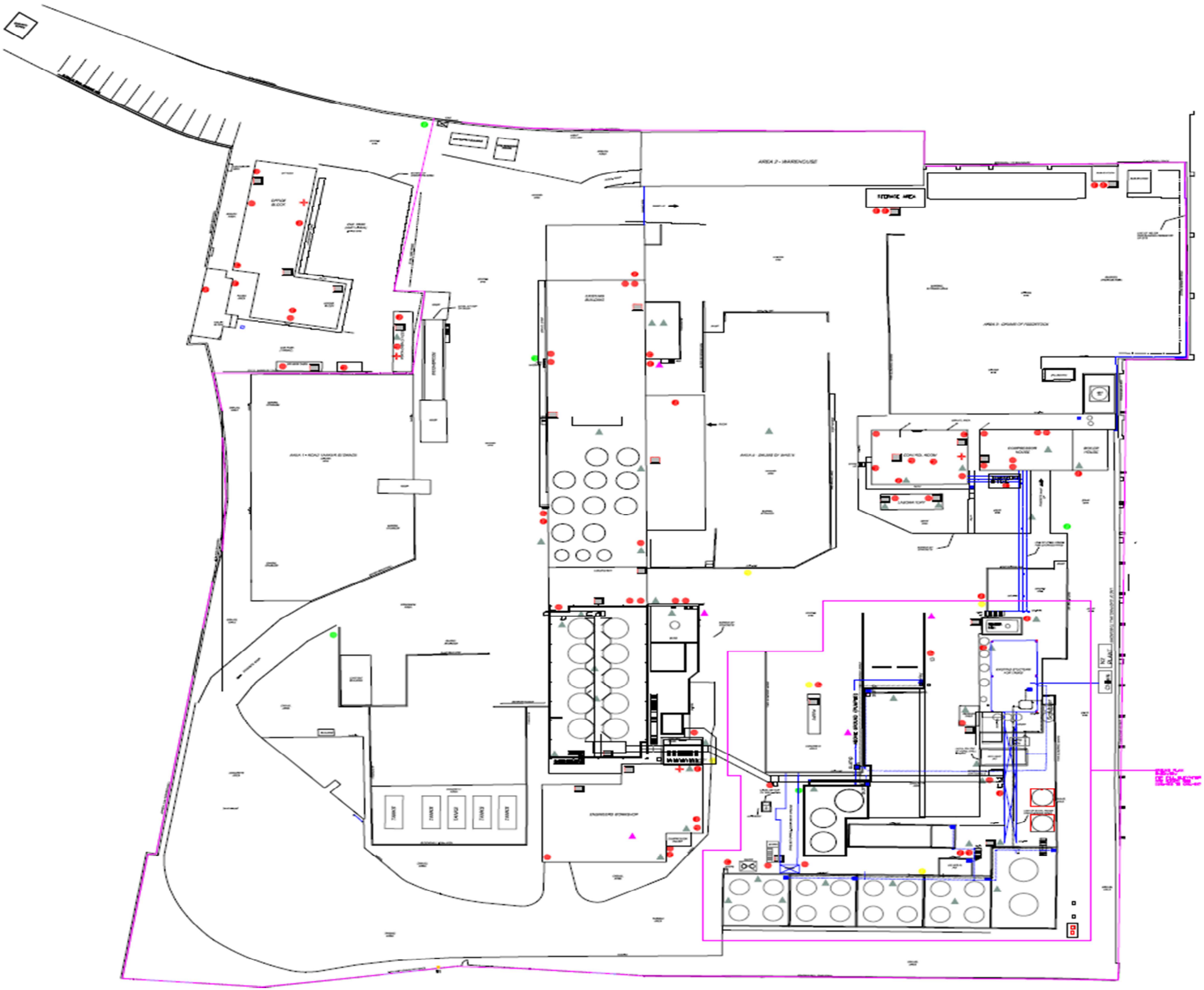
The Flood Risk from Surface Water map indicates that the majority of the site is at very low risk of surface water flooding. There are small intermittent areas that are shown to be at risk of flooding which coincide with depressions in local topography. However, the EA's Flood Risk from Surface Water map is unlikely to account for existing on-site surface water drainage systems in place. Assuming that such is in place and operating satisfactorily flooding from surface water should not pose a significant risk. Nevertheless, it would be prudent to ensure that any newly proposed infrastructure avoids the lowest parts of the site and is raised 300 mm above adjacent ground levels to address any residual risk from surface water flooding.

7 RECOMMENDATIONS

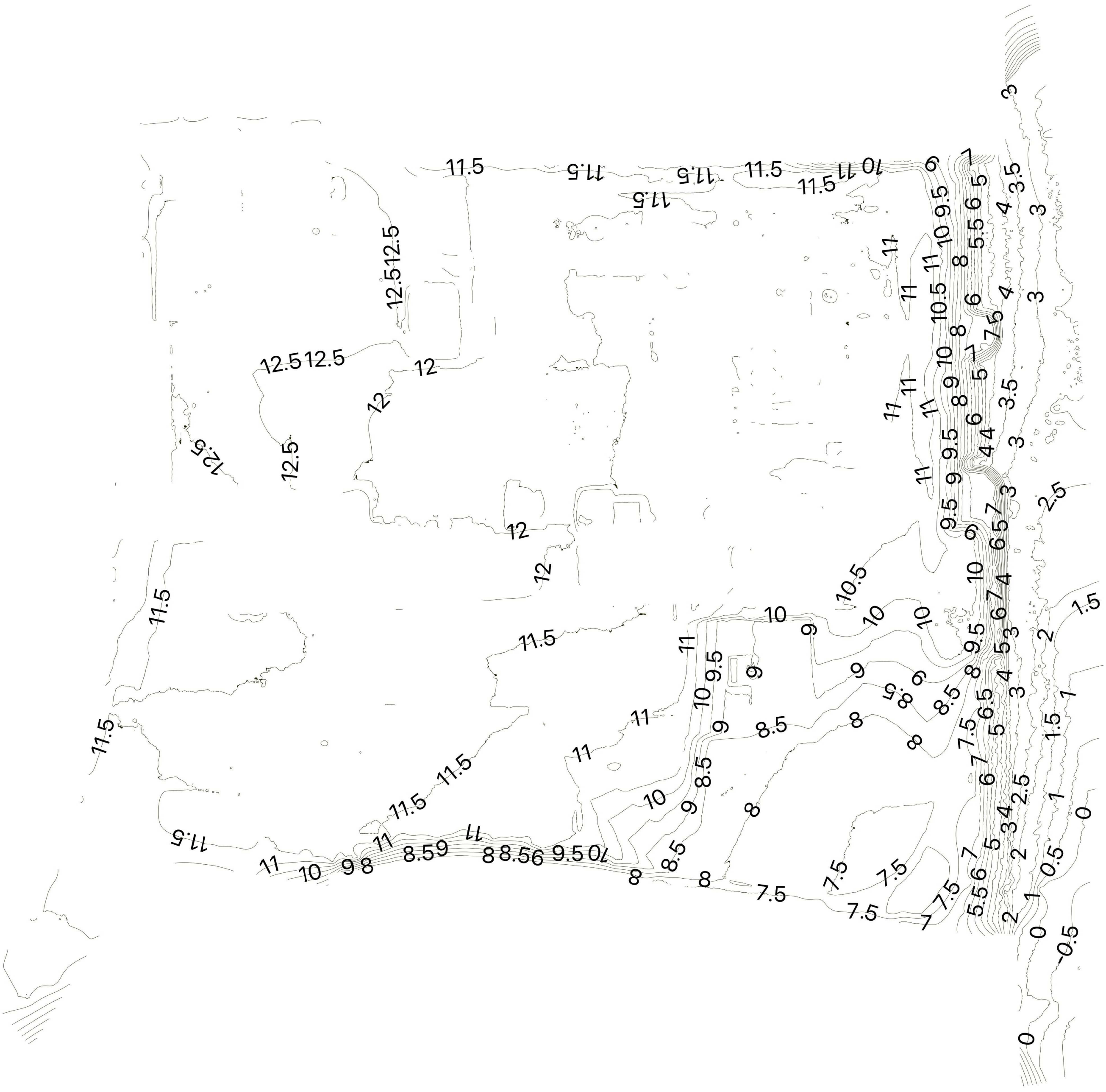
7.1 SURFACE WATER FLOOD RISK

To mitigate surface water flood risk at the site it is recommended that any newly proposed infrastructure be set at a minimum of 300mm above adjacent ground levels and that the lowest parts of the site are avoided for such new infrastructure.

APPENDIX A:	Site Plan



APPENDIX B:	Topographic Survey



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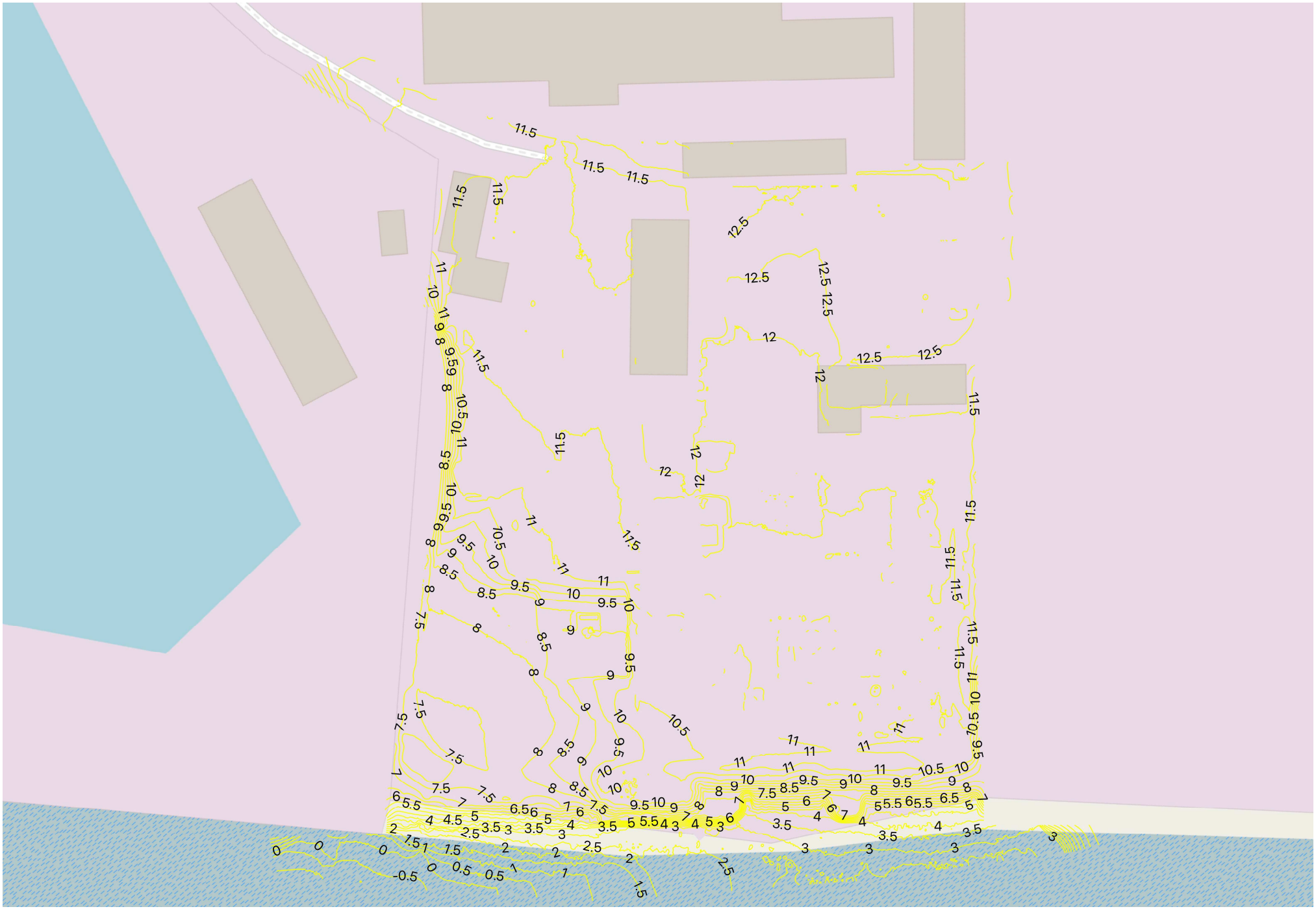
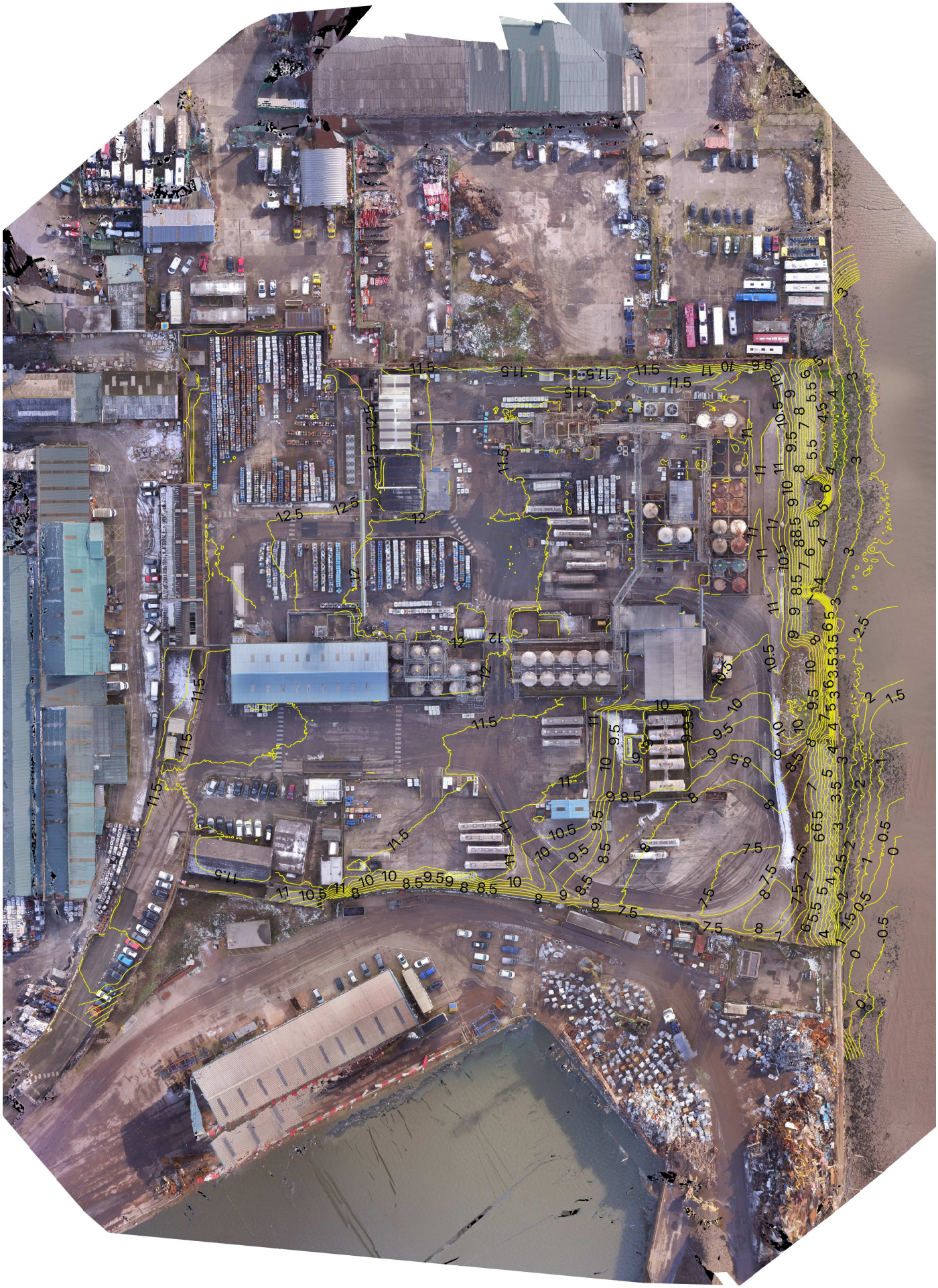




APPENDIX C:	Flood Warning Notice

FLOOD WARNING NOTICE

Veolia ES (UK) Limited – King Street, Garston, Liverpool

The Flood Warning Notice should be reviewed and updated accordingly, on an annual basis if possible, ensuring that all information contained within the plan is current, and in-line with best practice.

This site lies within an area at risk of flooding. The site's **Flood Plan Coordinator / Flood Wardens** will advise on how to proceed in the event of flooding at the site. Listen for announcements and obey instructions.

Site Contact

Flood Plan Coordinator

Name:

Telephone:

Site Contact

Flood Warden

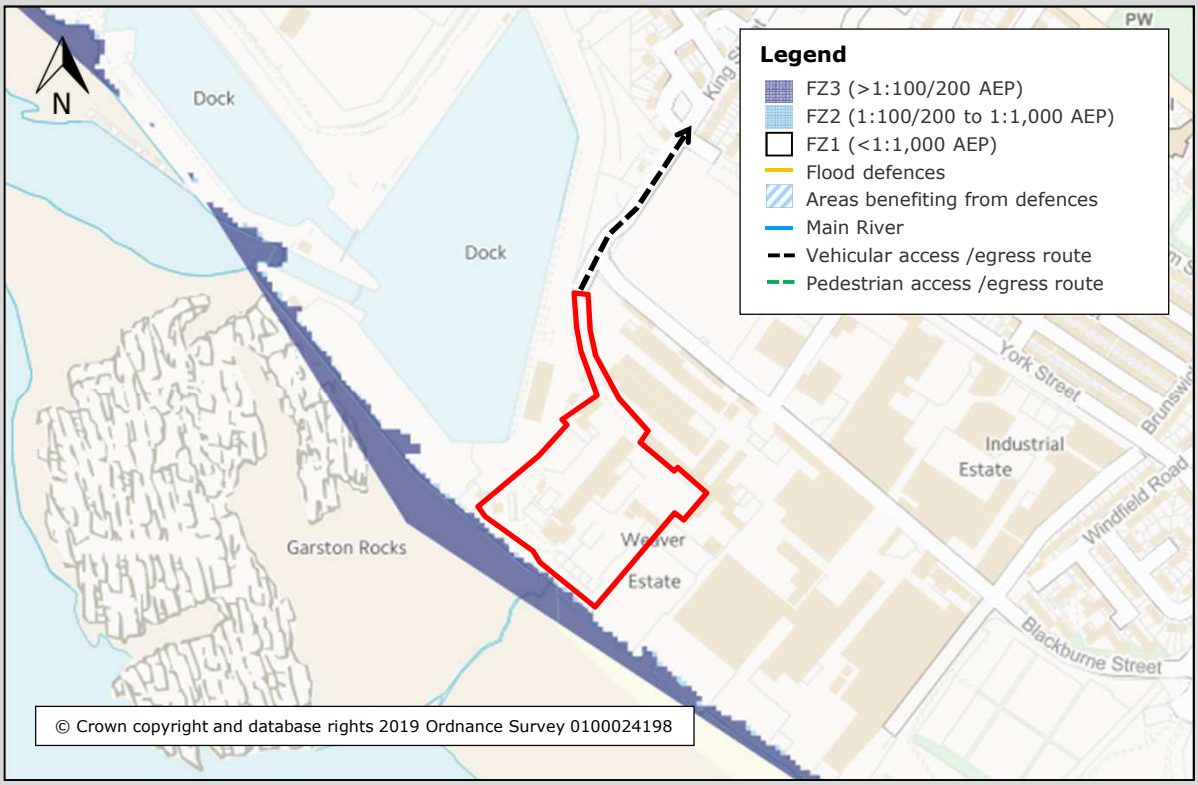
Name:

Telephone:

Avoid contact with floodwater

Always follow the advice of the Emergency Services

Evacuation Route(s)



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APPENDIX H

EMISSIONS: H1, AQA and Habitats Assessments (model files to be submitted separately)

FICHTNER
Consulting Engineers Limited

Veolia

Garston Solvent Recovery Facility Expansion

H1 Assessment – Technical Note

1 Emissions to water – H1 methodology

The current permit for the site allows for a discharge point 'W1' of process effluents to the Mersey Estuary. These effluents comprise boiler blowdown water, cooling water and small amounts of uncontaminated surface water. As a result of the proposed expansion, the volume of wastewater discharged from emissions point W1 is expected to increase.

An H1 assessment has been completed for the discharge of process effluent from the site, using both the substances/limits stated within the permit and monitoring data provided by Veolia for the site.

Currently, emissions point W1 allows for discharges to the River Mersey at a rate of up to 35 m^3 within a 7-day period. As a result of the proposed expansion, Veolia is applying for the permitted wastewater discharge volume for discharge point W1 to increase to 100 m^3 within a 7-day period (however the composition of the effluent will remain the same). This has been used to determine the mean flow rate used within the H1 assessment.

There may be periods where the effluent is discharged in batches over a shorter period of time. Veolia expects that the effluent will be discharged in 27 m^3 batches, which will take a minimum of 2 hours to discharge. Therefore, to determine the maximum flow rate within the H1 assessment, it has been assumed that in these scenarios the full 27 m^3 volume of the tank can be discharged within 2 hours.

Taking the above into consideration, the following flow rates were applied within the H1 assessment:

- Mean flow rate = 100 m^3/7 days = 0.000165 m^3/s; and
- Max flow rate = 27 m^3/2 hours = 0.00375 m^3/s.

A number of the pollutants stated both within the permit and also within the monitoring data provided do not have associated Environmental Quality Standards (EQS) in the H1 tool; therefore, these were excluded from the scope of the assessment. The remaining substances were assessed assuming releases at the maximum permitted concentrations. One substance (hexachlorobutadiene) is a Priority Hazardous Substance (PHS) and therefore had a Significant Load of 1 kg/year applied.

Test 1 of the assessment determines whether the pollutant concentrations are <100% of the relevant EQS. The results of Test 1 are presented below, with a copy of the H1 tool provided within Appendix A.

Table 1: H1 assessment results – Test 1

Substance	Annual average EQS			Short-term (MAC) EQS		
	Release conc. (µg/l)	EQS (µg/l)	Release <100%	Release conc. (µg/l)	EQS (µg/l)	Release <100%
Ammonia (un-ionised)[1]	0.05	20	Pass	0.05	-	N/A
Dichloromethane	0.01	20	Pass	0.01	-	N/A
Trichloromethane	0.001	2.5	Pass	0.001	-	N/A
1,2 Dichloroethane	0.001	10	Pass	0.001	-	N/A
Benzene	0.001	8	Pass	0.001	50	Pass
Carbon tetrachloride	0.001	12	Pass	0.001	-	N/A
Toluene	0.001	74	Pass	0.001	370	Pass
1,1,2-Trichloroethane	0.001	300	Pass	0.001	-	N/A
Styrene	0.001	50	Pass	0.001	500	Pass
Naphthalene	0.001	2	Pass	0.001	130	Pass
Hexachlorobutadiene	0.001	-	N/A	0.001	0.6	Pass

[1]: The permit limits total ammonia, which includes for ionised and un-ionised ammonia. An EQS was not available for ionised ammonia, therefore it has been assumed that all ammonia is released as un-ionised ammonia. This is a conservative assumption, as un-ionised ammonia is the more toxic form.

As can be seen from Table 1 above, all pollutant concentrations are <100% of the relevant EQS. In accordance with the H1 guidance, this means that all pollutants screen out at the first test. As the pollutants screened out at the first test, it can be concluded that the changes to the discharge at emissions point W1 will have an insignificant impact in accordance with the H1 guidance.

Appendices

A H1 Tool

APPENDIX I

NOISE ASSESSMENT

Wardell Armstrong LLP
76 King Street, Manchester, M2 4NH United Kingdom
Telephone: +44 (0)161 817 5038 www.wardell-armstrong.com

Our ref: RP/MD/GM11233/L001 *Date*: 28th July 2020
Your ref:

Jon Woodhall
Veolia
Kingswood House
Kingswood Crescent
Cannock
WS11 8JP

Dear Jon

King Street, Garston – Noise Assessment of Proposed Increase in Processing Capacity

Wardell Armstrong LLP has been commissioned to undertake an appraisal of the proposed increase in processing capacity at the solvent recovery waste site. The proposed plant has the potential to cause an adverse noise impact at the nearest existing receptors. This assessment provides an indication of the likely noise impact at the existing sensitive receptors due to the proposed increase in capacity.

Site Description

The site is located in an industrial area in Garston, Liverpool. To the north of the development lies Stalbridge Dock with further industrial and commercial premises bounding this site to the north east. Existing sensitive receptors have been identified to the north, approximately 300m from the site boundary. It is understood that to increase the processing capacity of the site the following plant will be installed:

- up to 20 tanks;
- an electrical station;
- control room;
- boiler house;
- water tanks;
- cooling towers; and
- processing plant.

The proposed site layout is shown on drawing number VES_DTO_GAR_200_000 attached.

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ENERGY AND CLIMATE CHANGE
ENVIRONMENT AND SUSTAINABILITY
INFRASTRUCTURE AND UTILITIES
LAND AND PROPERTY
MINING AND MINERAL PROCESSING
MINERAL ESTATES
WASTE RESOURCE MANAGEMENT

Noise Assessment

This assessment considers the combined A-weighted sound power levels ($L_{W(A)}$) of the proposed machinery, and predictions have been made of the resulting sound pressure level ($L_{p(A)}$) at the existing sensitive receptor (ESR) on Vulcan Close approximately 300m to the north. The resulting sound pressure level at the ESR has then been assessed with reference to relevant guidance.

Relevant Assessment Criteria

The potential impacts of the proposed sources of noise on the proposed residential receptor have been assessed with reference to;

- National Planning Policy Framework, 2019 (NPPF);
- Noise Policy Statement for England, 2010 (NPSE);
- Planning Practice Guidance – Noise, 2019 (PPG-Noise)
- British Standard 8233: 2014 Guidance on sound insulation and noise reduction for buildings (BS8233); and
- British Standard 4142: 2014+A1 2019 – Method for Rating and Assessing Industrial and Commercial Sound.

Proposed Machinery and Plant

Data of proposed equipment which emit noise have been provided by the client. The details of the proposed machinery and plant to be installed on site are shown in Table 1.

Table 1: Noise Source Details and Noise Levels

Area	*Measured Sound Pressure Levels dB(A)*	*Mitigation provided*	*Noise Reduction Provided by Mitigation*	*Distance from ESR at closest point*	*Point Source Distance Correction*	*Barrier correction*	*Resulting noise level at ESR*
Tank Farm	78.6 @1m	Housed within corrugated steel structure	-26dB	330m	-50dB	-10dB	0dB
Loading Bays	75.1 @1m	-	-	330m	-50dB	-10dB	15.1dB
Water Tanks	78.6 @1m	Housed within corrugated steel structure	-26dB	365	-51dB	-10dB	0dB
Processing Plant	79.7 @5m	Housed within corrugated steel structure	-26dB	330	-36dB	-10dB	7.7dB
Cooling Towers	78.6 @1m	Housed within corrugated	-26dB	430	-53dB	-10dB	0dB

		steel structure					
Boiler House	86.4 @1m	Housed within corrugated steel structure	-26dB	310	-50dB	-10dB	0.4dB
					Overall Noise Level	**16.4dB**	
• Ref BS8233:2014 Table E.1A							

Assumptions

For the purpose of this assessment the following assumptions have been made;

- Source data assumes free field conditions;
- The existing residential dwelling has standard thermal double glazed windows and requires windows to be open for ventilation;
- Noise attenuation of an open window is 15dB;
- Noise levels at receptors have been corrected for façade reflections(+3dB);
- Standard hard ground propagation for point source distance correction has been applied (-6dB per doubling of distance);
- Industrial buildings located between the proposed development and the ESRs will provide at least 10dB noise reduction; and
- Topography is flat.

Results

Table 2 shows the predicted noise levels in sensitive areas of the ESR.

Table 2: Predicted noise levels in sensitive areas of the ESR		
Time Period	***Assessment Location***	***Predicted Noise Level (dB)(A)***
Day	Living Room (windows open)	4.4
	Garden Area	16.4
Night	Bedrooms (windows open)	4.4

The predicted noise levels from the proposed development show that with no additional mitigation in place, noise guideline levels noted within BS8233 will be achieved. In addition to this, due to the very low predicted noise levels, it has not been considered necessary to carry out monitoring at the ESRs to determine background noise levels to undertake a full BS4142 assessment. The predicted noise levels show that even if background noise levels were to be as low as 25dB $L_{A90,}$ noise from the proposed development would still be significantly below this, and would therefore have a low impact, which is the lowest category of impact stated in the standard.

Conclusions

Wardell Armstrong LLP has been commissioned to undertake an appraisal of the proposed increase in processing capacity at the solvent recovery waste site on Kingston Street, Garston.

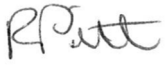
The predicted noise levels have been assessed against the guideline levels suggested by BS8233 and reference made to BS4142 guidance.

The predicted noise levels at the existing residential dwelling are less than guideline noise levels and are expected to have no more than a low impact on the dwellings. It is therefore considered that no further mitigation would be required to reduce noise levels from the proposed development.

We trust the above information is clear, however please do not hesitate to contact us should you require anything further.

Yours sincerely

for Wardell Armstrong LLP



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Technical Director
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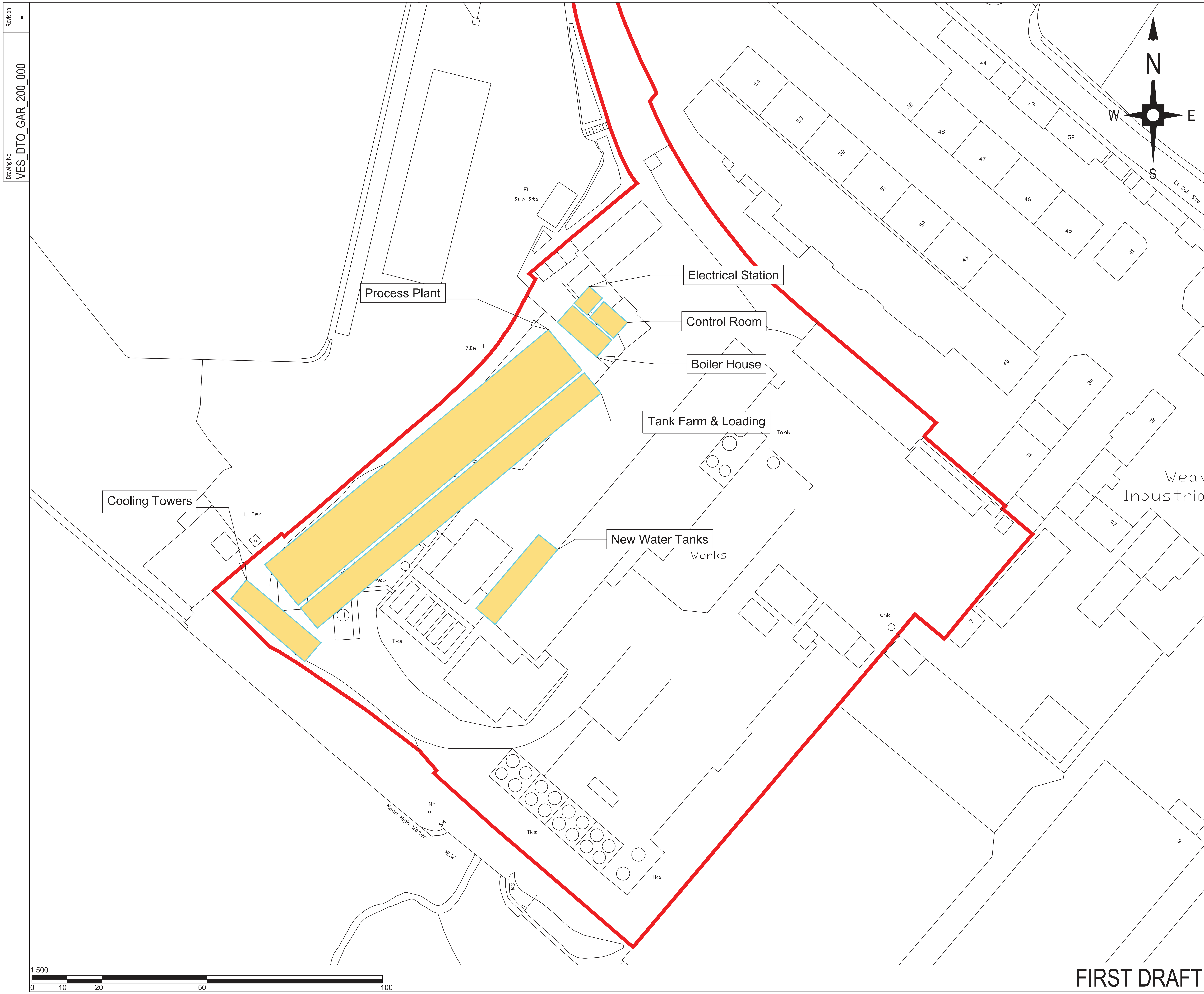
Encl.



FIRST DRAFT

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3. THIS IS A CONCEPTUAL DRAWING SUBJECT TO DETAILED DESIGN BY A DESIGN & BUILD CONTRACTOR.

4. IN CASE OF ANY DISCREPANCY BETWEEN THE DRAWING AND THE WORKS INFORMATION, THE WORKS INFORMATION WILL TAKE PRECEDENCE AND THE CONTRACTOR WILL BE DEEMED TO HAVE INTENDED TO COMPLY WITH THE WORKS INFORMATION AND SHALL DO SO.

5. ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO PREPARING ANY WORKING DRAWINGS OR COMMENCING ON SITE.

6.PLEASE ENSURE DRAWING LICENCE DATE IS STILL VALID. ALL LICENCES ARE 12 MONTH UNLESS OTHERWISE STATED.

SITE LOCATION PLAN

SITE BOUNDARY

Rev	Description of revision	Drawn	Chkd	App	Date

VEOLIA

Technical Direction,
8th Floor, 210 Pentonville Road, London. N1 9JY
Tel: 0207 812 5185

Project
GARSTON SITE REVIEW

Title
KING STREET
LIVERPOOL
L19 8EG

	Initials	Date	Scale	Sheet size
Drawn	RB	26.09.19	1:500@A3	A1
Checked				
Approved			© Copyright Reserved	

Job No. HAZ/GAR/0003

Drawing No. VES_DTO_GAR_200_000

Revision -

APPENDIX J

END OF WASTE ASSESSMENT