EPR BESPOKE INSTALLATION PERMIT APPLICATION

Circular Waste Solutions Limited

Liquid Waste Treatment Facility
Waunarlwydd, Swansea

Prepared by:

Sol Environment Ltd

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NON-TECHNICAL SUMMARY

Circular Waste Solutions Limited (the '*Applicant*', referred to as '*CWS*' hereafter) is making a Bespoke Installation Permit Application for the proposed operation of a hazardous liquid waste treatment facility at their site in Waunarlwydd, Swansea.

The Site is located at Circular Waste Solutions, Titanium Road, Westfield Industrial Park, Waunarlwydd, Swansea, SA5 4SF (Grid Reference: SS 60515 96118). The site is in an established industrial area as part of the former Alcoa aluminium manufacturing works and is not in close proximity to any human receptors. There are no major ecological receptors in close proximity, and only fugitive emissions from the facility. The site setting is therefore not considered to be in an area sensitive to nuisance impacts such as noise or odour.

The hazardous liquid waste treatment facility will accept, temporarily store, and treat approximately 32,000 tonnes per annum of both hazardous and non-hazardous liquid wastes, such as waste oils, interceptor wastes, and other hazardous liquids. The site will accept bulk transfers of liquids waste and/or packaged waste from several contracted third parties, prior to treatment and transfer of filter cake and other residues offsite to other licensed waste management facilities for further processing or disposal, and effluent discharged to sewer.

The site comprises a reception office, six storage areas for IBCs and package storage, three concrete tanks for final effluent and fire water, and a bunded tank farm area containing dedicated treatment tanks, oil/water separator, aqueous treatment plant, effluent treatment plant, and covered storage for filter cake, as well as bunded good quality hard standing across the site. All storage of waste is external, apart from a covered storage area for oxidising and quarantined waste.

The oil and water treatment plant will utilise particle separation and filtration to remove solids, and gravity, weiring, and a lamella separator to remove hydrocarbons. Oil removed will then be further settled and dewatered prior to dispatch to a specialist oil recycling facility. If appropriate, solids will be utilised beneficially at a soil treatment facility, as whilst contaminated they will generally have a relatively low hydrocarbon content. The resulting effluent is non-hazardous and will be processed and discharged via the effluent treatment plant.

The aqueous treatment plant will process waste aqueous chemicals in reactor vessels to treat the material in order to produce a non-hazardous slurry, which will be dewatered through a filter press. The resultant non-hazardous (or hazardous) filter cake will be recovered for onward disposal at an appropriate third-party site, and the non-hazardous effluent will be processed and discharged via effluent treatment plant.

The 'effluent treatment plant' refers to various equipment consisting of settling tanks in the oil/water area to blend and settle non-hazardous effluents to increase the removal of solids. The settled effluents are tested and then pumped to a pair of final effluent tanks for further settling and blending and testing

prior to discharge. The final effluent phase will be discharged to the Dŵr Cymru Welsh Water (DCWW) foul effluent network and be subject to sampling and analysis in line with the CWS discharge procedure.

All storage is in accordance with the Environment Agency Oil Storage Regulations (2020), Water Resources (Control of Pollution) (Oil Storage) (Wales) Regulations (2016), the Environment Agency Guidance: *Chemical waste: appropriate measures for permitted facilities*, and Sector Guidance Note S5.06: *recovery and disposal of hazardous and non-hazardous waste.*

The primary treatment activities at the hazardous liquid waste treatment facility meet the definition of an installation as defined in the Environmental Permitting Regulations by virtue of Schedule 1:

- Section 5.3 'Disposal or recovery of hazardous waste' Part A(1)(a) *Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving one or more of the following activities-*
  (ii) physico-chemical treatment.

In addition, the storage activities will meet the definition of an installation as defined by:

- Section 5.6 'Temporary or underground storage of hazardous waste' Part A(1)(a) *Temporary storage of hazardous wastes with a total capacity exceeding 50 tonnes pending any of the activities listed in Sections 5.1, 5.2, 5.3 and paragraph (b) of this section.*

And finally, the effluent treatment plant and tanks are included as a Directly Associated Activity (DAA) to the primary activity at the site, as it does not meet the threshold to be a standalone hazardous or non-hazardous listed activity.

The facility will be permitted by Natural Resources Wales as a Section 5.3 Part A(1)(a)(ii) and Section 5.6 Part A(1)(a) Installation and will be operated in accordance with the Environmental Permitting Regulations 2016 (as amended), Hazardous Waste (England and Wales) Regulations (2005), Chemical waste: *appropriate measures for permitted facilities*, Sector Guidance Note S5.06: *recovery and disposal of hazardous and non-hazardous waste*, and Waste Treatment BREF (C/2018/5070).

Emissions to Air

The only point source emissions to air from the proposed Installation relate to fugitive emissions from the storage tank vent points and aqueous treatment plant scrubber stack. The site has a number of control measures in place to mitigate this risk.

Emissions to Controlled Water

There are no process emissions to controlled water from the proposed development and no surface water drainage on site to surface water sewer or watercourse. Accordingly, there is no pollution linkage or pathway to controlled waters from any of the activities at site.

Emissions to Sewer

All effluents and site drainage are contained on site and discharged under a trade effluent consent to foul sewer.

All treated final effluent is discharged to foul sewer under a trade effluent consent from DCWW and in accordance with the Waste Treatment BREF at discharge point S1.

Surface water run-off from the yard areas is collected in the storm water sump before discharge to foul sewer at discharge points S1 in accordance with the trade effluent consent from DCWW.

Run off from tank washdown is treated through the treatment plant and discharged to foul sewer as above.

Emissions to Land

There will be no emissions to land arising from the site.

Emissions of Noise

The site is located within an existing industrial estate context with neighbouring 24/7 activities.

Site operations and vehicle movements will be between 06:00 – 18:00 Monday to Saturday, however in unusual circumstances minor work may be undertaken in evenings or Sundays.

Site operations, namely the delivery and collection of wastes, onsite movement of mobile plant (i.e., forklifts) and pumps are the potential noise causes on site.

Noise emissions from pumps are mitigated through periodic and intermittent use (i.e., 20 minutes 5 times a day). The pumps are designed to operate at 70 Db(A), which is below the threshold for employees requirements for hearing protection and equivalent to the average vacuum cleaner. There are no BAT AELs in the Waste Treatment BREF for noise, but these levels are deemed acceptable with the control measures in place.

The proposed facility does not have the potential to create noise nuisance to the local surroundings or receptors due to the control measures in place and the industrial context. A noise risk assessment was completed by Sol Environment in 2022 concluding the risk of noise emissions from the site are very low.

Emission of Odour

The site will accept waste oils, acids and caustics and other aqueous wastes. As such there is little potential for odour emissions to arise from the delivery of waste and treatment activities. To further minimise odour risks, the site has control measures in place. These include (but are not limited to):

- Enclosed sealed systems for transferal of liquid wastes;
- Enclosed storage either within sealed drums, IBCs, or tanks; and
- Robust pre-acceptance and acceptance procedures to ensure no malodorous wastes are brought on to site.

Control measures above are in place instead of an Odour Management Plan, which is deemed unnecessary. An Odour Impact Assessment has been completed and confirms there is no requirement for an Odour Management Plan.

Impact

Under normal operating conditions, there are no significant adverse offsite impacts associated with this proposed facility.

1 INTRODUCTION

Circular Waste Solutions Limited (the 'Applicant', referred to as 'CWS' hereafter) is making a Bespoke Installation Permit Application for the proposed operation of a hazardous liquid waste treatment facility at their site in Waunarlwydd, Swansea.

The Site is located at Circular Waste Solutions, Titanium Road, Westfield Industrial Park, Waunarlwydd, Swansea, SA5 4SF (Grid Reference: SS 60515 96118). The site is in an established industrial area as part of the former Alcoa aluminium manufacturing works and is not in close proximity to any human receptors. There are no major ecological receptors in close proximity, and only fugitive emissions from the facility. The site setting is therefore not considered to be in an area sensitive to nuisance impacts such as noise or odour.

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The site comprises a reception office, six storage areas for IBCs and package storage, three concrete tanks for final effluent and fire water, and a bunded tank farm area containing dedicated treatment tanks, oil/water separator, aqueous treatment plant, effluent treatment plant, and covered storage for filter cake, as well as bunded good quality hard standing across the site. All storage of waste is external, apart from a covered storage area for oxidising and quarantined waste.

The oil and water treatment plant (OWP) will utilise particle separation and filtration to remove solids, and gravity, weiring, and a lamella separator to remove hydrocarbons. Oil removed will then be further settled and dewatered prior to dispatch to a specialist oil recycling facility. If appropriate, solids will be utilised beneficially at a soil treatment facility, as whilst contaminated they will generally have a relatively low hydrocarbon content. The resulting effluent is non-hazardous and will be processed and discharged via the effluent treatment plant.

The aqueous treatment plant (ATP) will process waste aqueous chemicals in a reactor vessel to treat the material in order to produce a non-hazardous slurry, which will be dewatered through a filter press. The resultant non-hazardous (or hazardous) filter cake will be recovered for onward disposal at an appropriate third-party site, and the non-hazardous effluent will be processed and discharged via effluent treatment plant.

The 'effluent treatment plant' refers to various equipment consisting of settling tanks in the oil/water area to blend and settle non-hazardous effluents to increase the removal of solids. The settled effluents are tested and then pumped to a pair of final effluent tanks for further settling and blending and testing

prior to discharge. The final effluent phase will be discharged to the Dŵr Cymru Welsh Water (DCWW) foul effluent network and be subject to sampling and analysis in line with the CWS discharge procedure.

All storage is in accordance with the Environment Agency Oil Storage Regulations (2020), Water Resources (Control of Pollution) (Oil Storage) (Wales) Regulations (2016), the Environment Agency Guidance: *Chemical waste: appropriate measures for permitted facilities*, and Sector Guidance Note S5.06: *recovery and disposal of hazardous and non-hazardous waste*.

The primary treatment activities at the hazardous liquid waste treatment facility meet the definition of an installation as defined in the Environmental Permitting Regulations by virtue of Schedule 1:

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  (ii) physico-chemical treatment.

In addition, the storage activities will meet the definition of an installation as defined by:

- Section 5.6 'Temporary or underground storage of hazardous waste' Part A(1)(a) *Temporary storage of hazardous wastes with a total capacity exceeding 50 tonnes pending any of the activities listed in Sections 5.1, 5.2, 5.3 and paragraph (b) of this section.*

And finally, the effluent treatment plant is included as a Directly Associated Activity (DAA) to the primary activity at the site, as it does not meet the threshold to be a standalone hazardous or non-hazardous listed activity.

The facility will be permitted by Natural Resources Wales as a Section 5.3 Part A(1)(a)(ii) and Section 5.6 Part A(1)(a) Installation and will be operated in accordance with the Environmental Permitting Regulations 2016 (as amended), Hazardous Waste (England and Wales) Regulations (2005), Chemical waste: *appropriate measures for permitted facilities*, Sector Guidance Note S5.06: *recovery and disposal of hazardous and non-hazardous waste*, and Waste Treatment BREF (C/2018/5070).

The site will be operated in line with the above regulations and other legal requirements, such as HSG71: *Chemical warehousing: The storage of packaged dangerous substances*. Although a standalone Fire Prevention Plan (FPP) is not required for a hazardous waste site, an FPP document has been written to support the permit application and account for non-hazardous wastes and waste oil storage and processing, as well any wastes that may present a fire risk such as oxidisers.

The remainder of this application support document is structured accordingly:

- *Section 2*: Provides specific nature of the proposed operations associated with the New Bespoke Installation Permit Application;
- *Section 3*: Provides specific nature and detailed description of the emissions to air and water

associated with the site;

- *Section 4*: Provides details of all environmental monitoring associated with the site;
- *Section 5*: Provides a BAT assessment of the site's activities;
- *Section 6*: Provides an Environmental Impact and Assessment of the site; and
- *Section 7*: Provides a Climate Change Risk Assessment of the site.

All technical appendices associated with the site comprise the following:

- *Annex A*: Site Plans
- *Annex B*: Drainage Plan
- *Annex C*: EMS Summary
- *Annex D*: Site Condition Report
- *Annex E*: Environmental Risk Assessment
- *Annex F*: Noise Risk Assessment
- *Annex G*: Odour Impact Assessment
- *Annex H*: Trade Effluent Consent
- *Annex I*: Operator Competence
- *Annex J*: Fire Prevention Plan

The site location is provided in Figure 1.1 and the layout and boundary of the installation is provided in Figure 1.2.

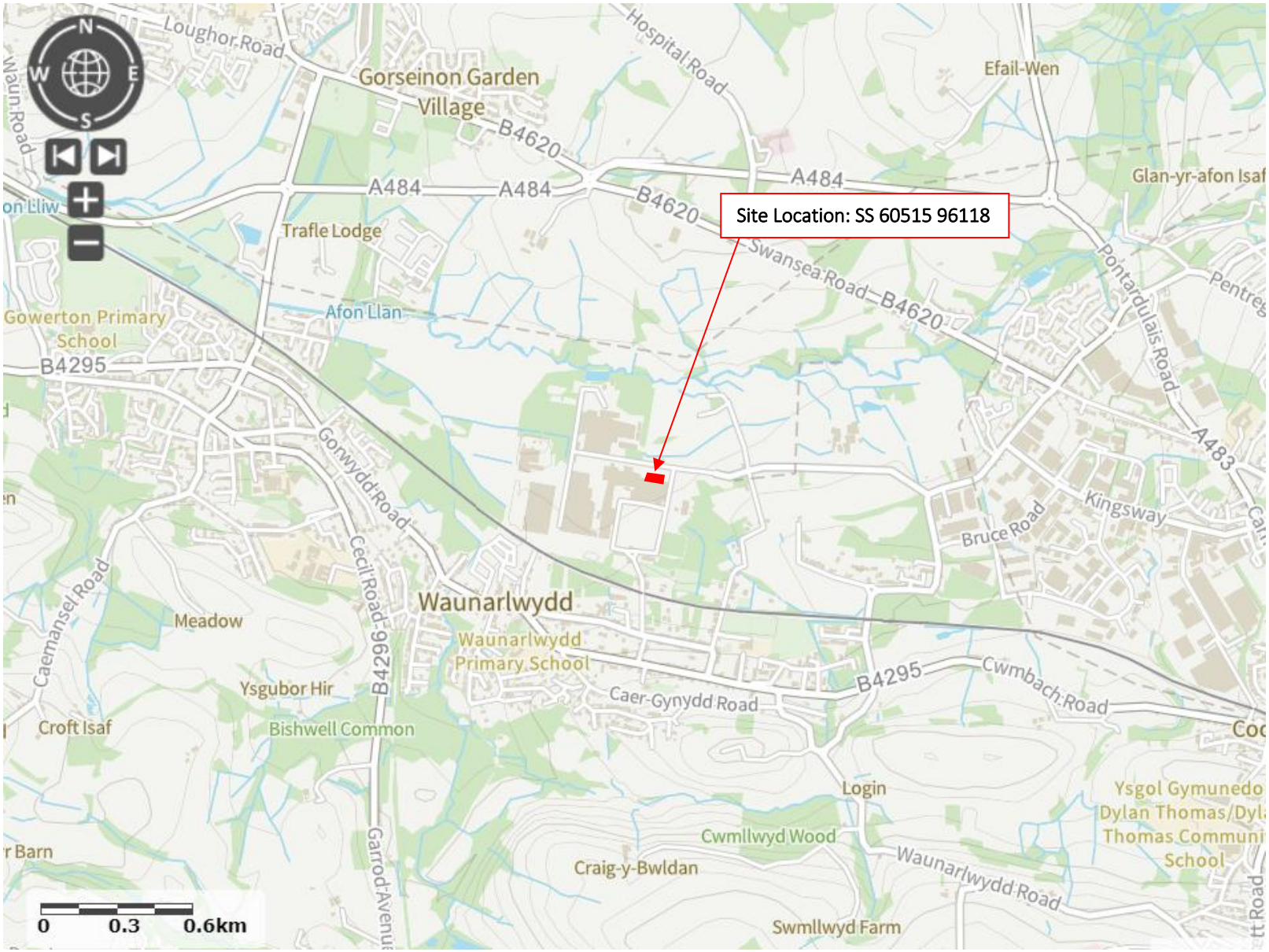

Figure 1.1: Site Location

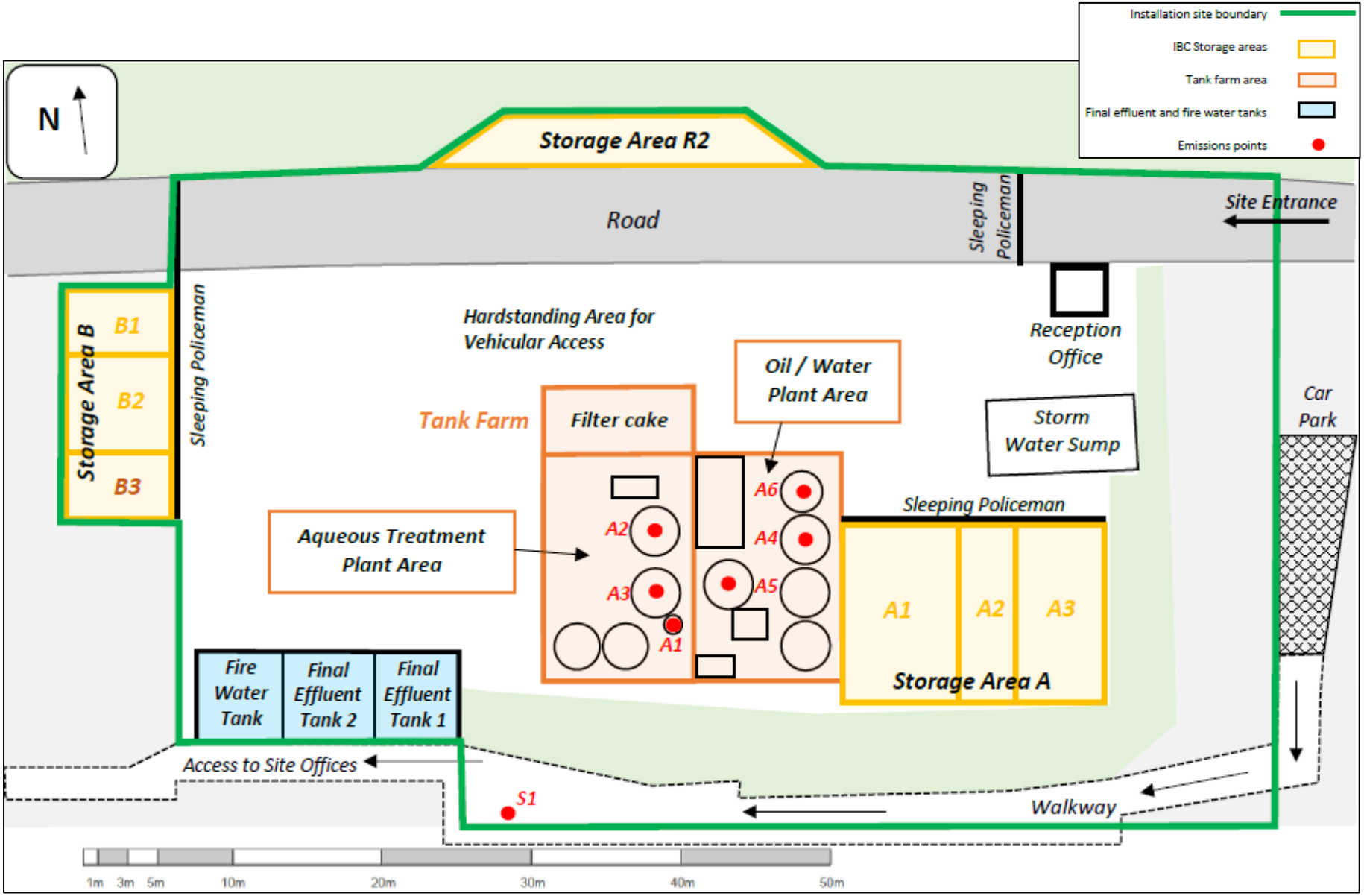

Figure 1.2: Installation Boundary & Site Layout

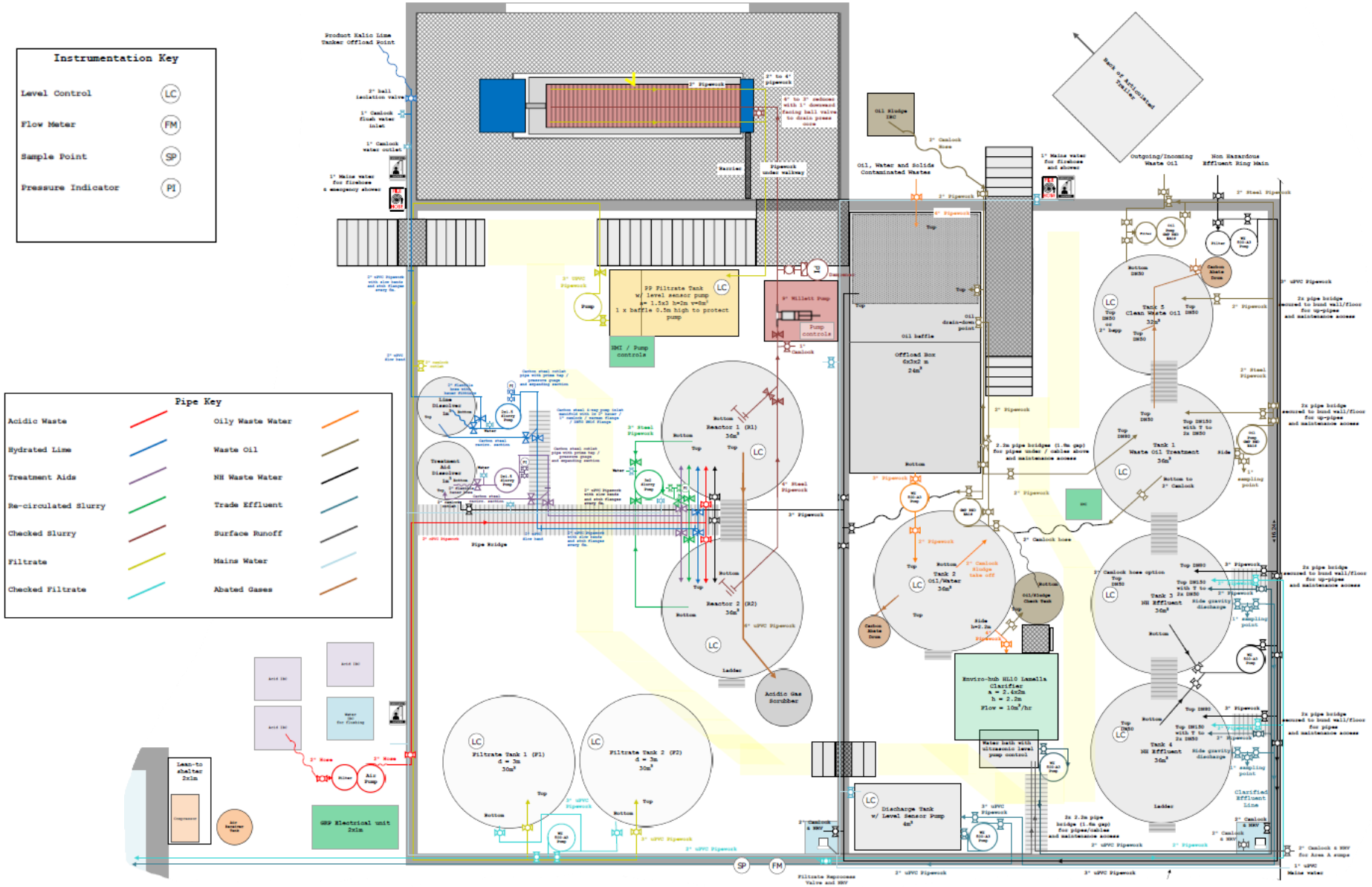

Figure 1.3: Tank Farm Layout

2 PROPOSED ACTIVITIES

2.1 Type of Permit

CWS is making a Bespoke Installation Permit Application for the proposed operation of a hazardous liquid waste treatment facility at their site in Waunarlwydd, Swansea.

The site will accept approximately 32,000 tonnes per annum of hazardous and non-hazardous liquid waste, namely non-hazardous effluents, waste oils, interceptor wastes, and other hazardous liquids such as acid, caustics, and paints.

The site operations will consist of receiving, bulking, treatment and storage of liquid waste materials prior to transfer of residues offsite to other licensed waste management facilities for further processing or disposal, and effluent discharged to sewer. It is anticipated that over 10 tonnes per day will be accepted at the site which has a maximum capacity to store 250 tonnes in IBCs, approximately 588 tonnes within static tanks (of which 240 tonnes is final effluent), and 50 tonnes of processed filter cake at any one time.

The site will process approximately 105 tonnes per day through the treatment plant (32,000 tonnes per annum, treated 6 days per week excluding bank holidays).

All waste arriving at the facility will be accepted in accordance with stringent waste pre-acceptance and acceptance procedures, and subject to verification testing and sample analysis.

All waste accepted by the facility will be treated via the appropriate treatment route with resultant residues exported off site for treatment, recovery, or recycling, and treated effluent discharged to sewer.

The facility will be regulated as an Installation under the Environmental Permitting Regulations 2016 (as amended).

The applicant is making an application to carry out the listed activities in table 2.1 overleaf.

The technical guidance notes used in the preparation of this application document are:

- EPR – How to Comply with your Environmental Permit (reference EPR 1.00);
- Environmental Permitting Regulations 2016 (as amended);
- IED 2010/75/EU – BREF/BAT Reference Document for Waste Treatment (IPPC);
- Hazardous Waste (England and Wales) Regulations (2005);
- Environment Agency Oil Storage Regulations (2020);
- Water Resources (Control of Pollution) (Oil Storage) (Wales) Regulations (2016);
- Environment Agency Guidance: Chemical waste: appropriate measures for permitted facilities; and
- Sector Guidance Note S5.06: recovery and disposal of hazardous and non-hazardous waste.

The main environmental issues identified within the guidance documents and the relevant Best Available

Techniques have been built into the site design and operation procedures that will form the management systems and operating procedures for the site.

Table 2.1 Permitted activities		
Activity listed in Schedule 1 of the EP Regulations 2016	Description of specified activity	Limits of specified activity
Disposal or recovery of hazardous waste – Section 5.3 Part A(1)(a)(ii) Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving one or more of the following activities - physico-chemical treatment	R3 - Recycling/reclamation of organic substances which are not used as solvents R9 - Oil re-refining or other reuses of oil R12 – exchange of wastes for submission to any of the operations numbered R1 to R11 R13 - Storage of wastes pending any of the operations numbered R1 to R12 D9 - Physico-chemical treatment resulting in final compounds or mixtures which are discarded by any of the operations numbered D1 to D12 D13 – blending or mixing prior to submission to any of the operations numbered D1 to D12 D14 – Repackaging prior to submission of any of the operations numbered D1 to D13	Waste types to be as specified in Tables 2.2 from receipt to dispatch
Temporary or underground storage of hazardous waste - Section 5.6 Part A(1)(a) Temporary storage of hazardous waste in a facility with a total capacity exceeding 50 tonnes pending any of the activities listed in Sections 5.1, 5.2, 5.3 and paragraph (b) of this section.	R13 – storage of wastes pending any of the operations numbered R1 to R12 D15 - Storage pending any of the operations numbered D1 to D14	Waste types to be as specified in Table 2.2 from receipt to dispatch, and treated filter cake pending dispatch
Directly Associated Activity		
Effluent Treatment Plant	Treatment of non-hazardous effluents via filtering and blending before discharge to sewer	Non-hazardous wastes in table 2.2 from receipt to dispatch, and OWP and ATP effluent

2.2 Details of the Site

2.2.1 Site Location and Setting

The location of the subject Site is shown in Section 1, Figure 1.1 and centred at approximate National Grid Reference SS 60515 96118. The proposed site layout is shown in Section 1, Figures 1.2 and 1.3.

2.2.2 Installation Boundary

All proposed operations will be contained within the Installation boundary denoted in Section 1, Figure 1.2.

A Site Condition Report that provides a detailed site setting and baseline conceptual model for the site has been completed and included within *Annex D*.

The previous site uses and contamination history have been fully described and detailed within the Site Condition Report as required by the Regulatory Guidance.

It is concluded that although the site handles potentially contaminative materials, due to the control measures and infrastructure in place, the site does not present a significant contamination or pollution risk to the environment.

All aspects of the site have been designed in accordance with the relevant waste storage regulations, HSE regulations, and CIRIA 736 engineering guidance.

2.2.3 Infrastructure and Design

Infrastructure

The existing site infrastructure has been upgraded and added to with some newly built and installed. Pre-existing infrastructure from previous site use, such as concrete hardstanding, sump, underground drainage, and 3 large concrete tanks, has been examined and refurbished where necessary by appropriately certified independent engineers and consultants. New equipment and infrastructure has also been signed off as fit for purpose by the same independent engineers and consultants.

The infrastructure and layout on site comprises of:

- Hardstanding concrete across all storage and processing areas;
- Through road for deliveries and access to neighbouring areas;
- Reception office;
- Storm water sump;
- Three IBC storage areas;
    - Storage area A;
        - A1 – acids
        - A2 – oils and water
        - A3 – Caustics
    - Covered storage area B;
        - B1 – washed empty containers
        - B2 – oxidisers
        - B3 – quarantine
    - Storage area R2 – temporary storage for incoming IBCs;

- Bunded treatment plant area with three processing areas;
    - Oil/water plant;
        - Offload tank
        - 4 stainless steel treatment tanks
        - 1 steel oil storage tank
        - Enviro-hub HL20 Lamella Clarifier
        - Discharge tank
        - Various associated filters and pumps with additive tanks
    - Aqueous treatment plant;
        - 2 stainless steel reactor vessel tanks
        - Acid gas scrubber
        - 2 HDPE filtrate tanks
        - 2 stainless steel dissolvers (for treatment aids and lime)
        - Filtrate bath
        - Various associated filters, pumps, and additive tanks
    - Enclosed filter cake press with storage capacity of 50t underneath with one open side for loading;
- Three concrete tanks;
    - 2 final effluent tanks;
    - 1 fire water run-off tank (kept empty for emergency use).

The main concrete pad storage and processing area is separated from an upper public footpath by a steep grass verge.

The hardstanding is made up of both existing 200mm and 300mm concrete slabs and areas of compacted hardcore, with some old concrete basis within. CWS engaged a third-party civil engineering organisation who have surveyed the site, and identified any areas that needed repairs or reinforcements. Work on this will be completed imminently and prior to commencement of operations.

The concrete slabs are heavy duty and reinforced, and were constructed specifically for the former Alcoa effluent treatment plant, and are specified for large bulk tank storage.

Areas where there was no hardstanding have been concreted to the same specification as the existing slabs, as required, and bund walls, ramps and sumps installed as required. Joins between pre-existing hard standing have been prepared appropriately and any jointing treated to ensure impermeability.

The road is all complete undamaged concrete slab.

The site car park is adjacent to the permit boundary, and site offices and onsite laboratory are separate from the permit boundary.

All aspects of the site are impermeable and constructed with fully sealed drainage systems that connect to foul sewer at point S1.

Site Drainage Arrangements

Please see *Annex B – Drainage Plan* for a complete detailed report on the site drainage arrangement.

The drainage scheme is based on a closed system which contains and controls all surface water run-off and process spills within the site boundary. All contained liquids are inspected by operators to ensure no contamination enters the down stream drainage infrastructure.

The pre-existing offsite discharges to adopted sewers have been disconnected, with all flows now diverted to a single licenced discharge point (S1) with consent to discharge up to 518m^3/day.

Drainage consists of a mix of pre-existing and new gravity and pumped drainage systems. All pumps are manually operated, with water being inspected by operators to confirm no contamination prior to pumping.

For the bunded area, this report demonstrates compliance with industry standards for, in particular CIRIA C736 - Containment systems for the prevention of pollution.

There is no site connection to surface water sewers, with surface water run-off reviewed in line with a conservative loading basis to the new drainage system. The report shows, that with even a conservative loading, the proposed systems can accommodate the flows and have an allowance for firewater run-off.

Tanks and Bunds

All storage tanks have bunding for secondary containment, with roadway providing tertiary containment, and designed to comply with the following standards and guidance requirements;

- Oil storage regulations for businesses, Environment Agency, 2015;
- Oil Storage Regulations Guidance, Environment Agency, and Defra 2016;
- CIRIA C598: Chemical Storage Tank Systems – Good Practice; and
- CIRIA 736: Design of Containment Systems for the Prevention of Pollution.

All storage tanks associated with the site are detailed within Section 2.3.4.

Drainage design is to utilise bunded areas and kerbed hardstanding to contain and control any spills. Bund containment volume capacity will be in line with CIRIA 736.

Containment requirements have been calculated with a summary of the output presented in *Annex B*.

All bunded areas will contain and control any spills, with the additional safety of one of the large concrete tanks on site being kept empty at all times in case of emergency.

Rainfall events considered for bunded areas are for 3 days rainfall prior to an event.

Sleeping policemen are constructed along the front of each IBC storage areas to contain any spills or fire water.

Plant & Equipment

The mobile plant on site consists of 1 electric forklift truck (FLT). Therefore there are no fuel tanks on site. The FLT is charged off site. All deliveries are brought in by third-party contractors or clients on articulated trailers.

The majority of plant on site is stationary for treatment and either in or adjacent to the tank farm area (see figure 1.3 and Annex A2 for the equipment layout). However, there is equipment kept in the reception office for taking samples of incoming waste deliveries in line with the site procedures. All samples are then transferred to the CWS laboratory (outside of the permitted boundary).

The treatment plant on site is listed below, split into the different treatment plant areas. The dimensions are all included in figure 1.3 and *Annex A2*.

1. Oil/water plant
    - Delivery offload box for incoming oil sludges and interceptor wastes (24m^3);
    - Stainless steel oil/water tank with connected carbon abatement drum and oil/sludge check tank (tank 2) (36m^3);
    - Enviro-hub HL20 Lamella Clarifier with water bath and ultrasonic level pump control;
    - Stainless steel waste oil treatment tank (tank 1) (36m^3);
    - Steel clean waste oil tank (tank 5) (32m^3);
    - 2 x stainless steel treated effluent tanks (tanks 3 and 4) (36m^3); and
    - Discharge tank with level sensor pump (4m^3).
2. Aqueous treatment plant
    - 2 x stainless steel reactor vessel tanks (36m^3);
    - Chem-resist Group 200l T/min scrubber stack connected to reactor vessel 2 (7.863m high) (see *Annex A3* for specification);
    - 2 x HDPE filtrate tanks (30m^3);
    - 2 x dissolvers (treatment aids and lime) (1m^3); and
    - Filtrate bath for filtrate separated by the filter press (8m^3).

All stainless-steel tanks are 6m tall cylindrical tanks.

There are also concrete final effluent tanks for blending and settling before final discharge to sewer.

Other equipment for the treatment plant includes associated pumps, pipework, valves, and filters.

Other associated equipment includes an air compressor and receiver tank, GRP electrical units, 2 fire hose points around the tank farm, and 2 emergency shower points.

2.2.4 Site Design and Layout

The layout of the site is provided in Figures 1.2 and 1.3, and *Annex A*.

2.2.5 Roadways and External Areas

There is a through road for site access for deliveries and access to neighbouring areas. A one-way internal system around the hardstanding areas and various offload areas has been designed to give safe access to the storage tanks / areas during deliveries and collections.

The car park is adjacent to the permitted area with a segregated pedestrian walkway to the site offices along the southern boundary of the permitted area to allow for safe access and egress of all personnel at site.

The layout is provided in Figure 1.2.

2.3 Description of the Process

A simplified process flow showing a summary of the site operations and processes is provided in Figure 2.1 overleaf.

2.3.1 Accepted Wastes

The site will be permitted to accept a maximum of 32,000 tonnes of waste per year.

Prior to arrival, all wastes accepted on site are subjected to stringent waste acceptance criteria in accordance with the site's Environmental Management System and associated procedures. Waste Pre-Acceptance, Waste Acceptance, and Waste Rejection procedures are discussed in more detail in section 2.3.3.

The predominant waste type accepted at site shall be hazardous and non-hazardous liquid wastes, oils, and interceptor wastes. A detailed list of European Waste Catalogue (EWC) codes of wastes that will be accepted by the site is provided in Table 2.2.

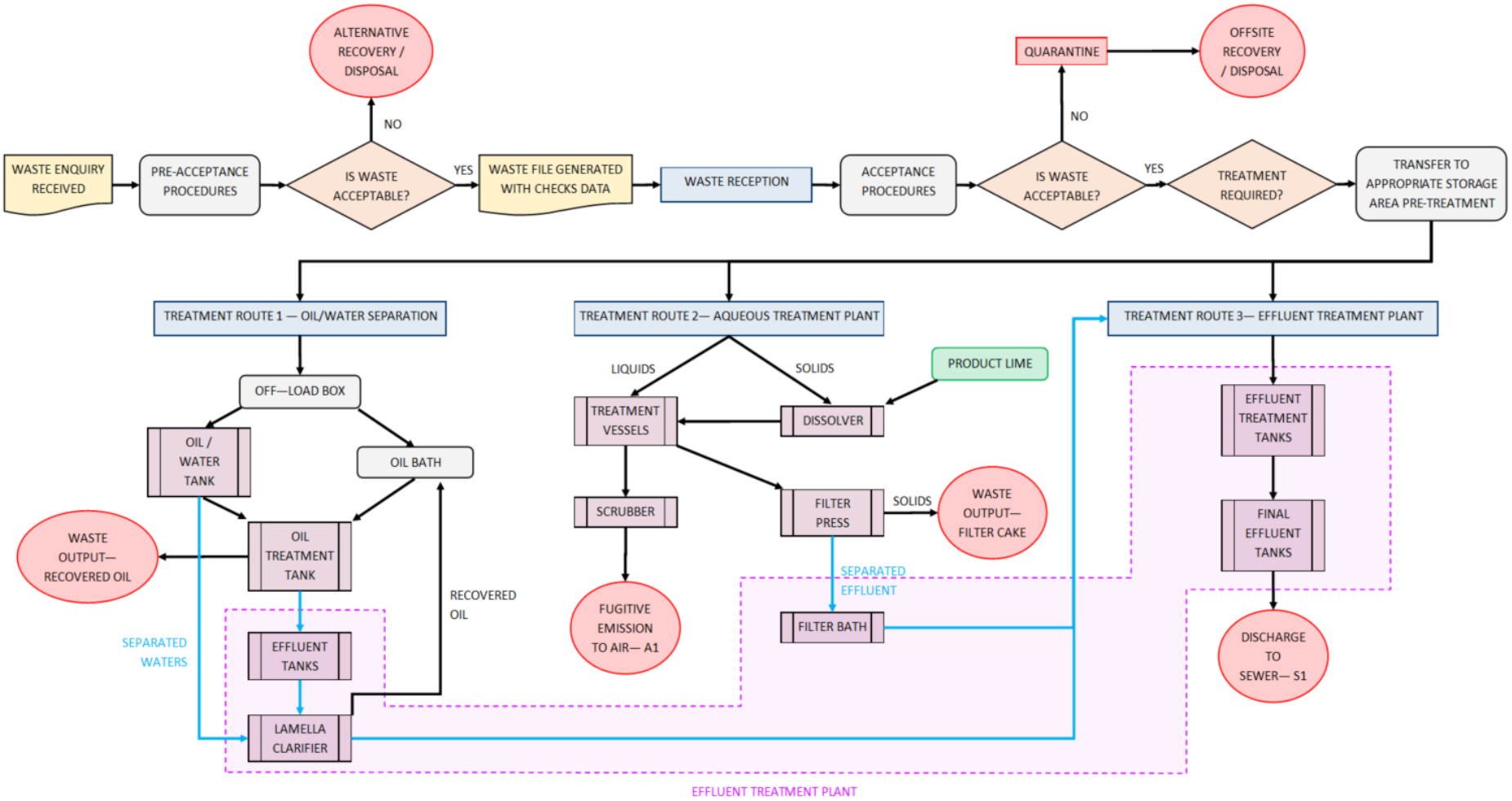

Figure 2.1: Simplified Process Schematic

Table 2.2: Proposed EWC Codes and Types		
Waste Codes	Description	Treatment Route*
05	**WASTES FROM PETROLEUM / GAS PRODUCTION**	
05 01	**wastes from petroleum refining**	
05 01 05*	oil spills	1
05 01 09*	sludges from on-site effluent treatment containing hazardous substances	2
05 01 11*	wastes from cleaning of fuels with bases	2
05 01 12*	oil containing acids	2
05 01 14	wastes from cooling columns	2
05 01 16	sulphur-containing wastes from petroleum desulphurisation	2
06	**WASTES FROM INORGANIC CHEMICAL PROCESSING**	
06 01	**wastes from the manufacture, formulation, supply, and use (MFSU) of acids**	
06 01 01*	sulphuric acid and sulphurous acid	2
06 01 02*	hydrochloric acid	2
06 01 03*	hydrofluoric acid	2
06 01 04*	phosphoric and phosphorus acid	2
06 01 05*	nitric and nitrous acid	2
06 01 06*	other acids	2
06 02	**wastes from the MFSU of bases**	
06 02 01*	calcium hydroxide	2
06 02 04*	sodium and potassium hydroxide	2
06 02 05*	other bases	2
06 03	**wastes from the MFSU of salts and their solutions and metallic oxides**	
06 03 13*	solid salts and solutions containing heavy metals	2
06 03 14	solid salts and solutions other than those mentioned in 06 03 11 and 06 03 13	2
06 03 16	metallic oxides other than those mentioned in 06 03 15	2
06 05	**sludges from on-site effluent treatment**	
06 05 03	sludges from on-site effluent treatment other than those mentioned in 06 05 02	2
07	**WASTES FROM ORGANIC CHEMICAL PROCESSING**	
07 01	**wastes from the MFSU of basic organic chemicals**	
07 01 01*	aqueous washing liquids and mother liquors	2
07 01 11*	sludges from on-site effluent treatment containing hazardous substances	2
07 01 12	sludges from on-site effluent treatment other than those mentioned in 07 01 11	2
07 02	**wastes from the MFSU of plastics, synthetic rubber, and man-made fibres**	
07 02 12	sludges from on-site effluent treatment other than those mentioned in 07 02 11	2
07 02 15	wastes from additives other than those mentioned in 07 02 14	2
07 02 17	wastes containing silicones other than those mentioned in 07 02 16	2
07 03	**wastes from the MFSU of organic dyes and pigments**	
07 03 12	sludges from on-site effluent treatment other than those mentioned in 07 03 11	2
07 04	**wastes from the MFSU of organic plant protection products, wood preserving agents and other biocides**	
07 04 12	sludges from on-site effluent treatment other than those mentioned in 07 04 11	2
07 05	**wastes from the MFSU of pharmaceuticals**	
07 05 12	sludges from on-site effluent treatment other than those mentioned in 07 05 11	2
07 05 14	solid wastes other than those mentioned in 07 05 13	2
07 06	**wastes from the MFSU of fats, grease, soaps, detergents, disinfectants, and cosmetics**	
07 06 01*	aqueous washing liquids and mother liquors	2
07 06 11*	sludges from on-site effluent treatment containing hazardous substances	2
07 06 12	sludges from on-site effluent treatment other than those mentioned in 07 06 11	2

07 07	**wastes from the MFSU of fine chemicals and chemical products not otherwise specified**	
07 07 01*	aqueous washing liquids and mother liquors	2
07 07 11*	sludges from on-site effluent treatment containing hazardous substances	2
07 07 12	sludges from on-site effluent treatment other than those mentioned in 07 07 11	2
08	**WASTES FROM MFSU OF COATINGS / ADHESIVES / INKS**	
08 01	**wastes from the manufacture, formulation, supply, and use and removal of paint and varnish**	
08 01 16	aqueous sludges containing paint or varnish other than those mentioned in 08 01 15	2
08 02	**wastes from MFSU of other coatings (including ceramic materials)**	
08 02 02	aqueous sludges containing ceramic materials	2
08 02 03	aqueous suspensions containing ceramic materials	2
08 03	**wastes from MFSU of printing inks**	
08 03 07	aqueous sludges containing ink	2
08 03 08	aqueous liquid waste containing ink	2
08 03 13	waste ink other than those mentioned in 08 03 12	2
08 03 15	ink sludges other than those mentioned in 08 03 14	2
08 03 18	waste printing toner other than those mentioned in 08 03 17	2
08 04	**wastes from MFSU of adhesives and sealants (including waterproofing products)**	
08 04 12	adhesive and sealant sludges other than those mentioned in 08 04 11	2
08 04 14	aqueous sludges containing adhesives or sealants other than those mentioned in 08 04 13	2
08 04 16	aqueous liquid waste containing adhesives or sealants other than those mentioned in 08 04 15	2
11	**WASTES FROM CHEMICAL SURFACE TREATMENT OF METALS / PLASTICS**	
11 01	**wastes from chemical surface treatment and coating of metals and other materials**	
11 01 05*	pickling acids	2
11 01 06*	acids not otherwise specified	2
11 01 07*	pickling bases	2
11 01 09*	sludges and filter cakes containing hazardous substances	2
11 01 10	sludges and filter cakes other than those mentioned in 11 01 09	2
11 01 11*	aqueous rinsing liquids containing hazardous substances	2
11 01 12	aqueous rinsing liquids other than those mentioned in 11 01 11	2
11 01 14	degreasing wastes other than those mentioned in 11 01 13	2
11 01 98*	other wastes containing hazardous substances	2
11 02	**wastes from non-ferrous hydrometallurgical processes**	
11 02 02*	sludges from zinc hydrometallurgy (including jarosite, goethite)	2
11 02 05*	wastes from copper hydrometallurgical processes containing hazardous substances	2
11 02 06	wastes from copper hydrometallurgical processes other than those mentioned in 11 02 05	2
11 02 07*	other wastes containing hazardous substances	2
11 03	**waste sludges and solids from tempering processes**	
11 03 01*	waste containing cyanide	2
11 05	**wastes from hot galvanising processes**	
11 05 03*	solid wastes from gas treatment	2
12	**WASTES FROM SHAPING / PHYSICAL TREATMENT OF METALS / PLASTICS**	
12 03	**wastes from water and steam degreasing processes**	
12 03 01*	aqueous washing liquids	2
13	**WASTES FROM OIL AND LIQUID FUELS**	
13 01	**waste hydraulic oils**	
13 01 05*	non chlorinated emulsions	1

13 01 10*	mineral-based non-chlorinated hydraulic oils	1
13 01 11*	synthetic hydraulic oils	1
13 01 12*	readily biodegradable hydraulic oils	1
13 01 13*	other hydraulic oils	1
13 02	**waste engine, gear, and lubricating oils**	
13 02 05*	mineral-based non-chlorinated engine, gear, and lubricating oils	1
13 02 06*	synthetic engine, gear, and lubricating oils	1
13 02 07*	readily biodegradable engine, gear, and lubricating oils	1
13 02 08*	other engine, gear, and lubricating oils	1
13 03	**waste insulating and heat transmission oils**	
13 03 07*	mineral-based non-chlorinated insulating and heat transmission oils	1
13 03 08*	synthetic insulating and heat transmission oils	1
13 03 09*	readily biodegradable insulating and heat transmission oils	1
13 03 10*	other insulating and heat transmission oils	1
13 04	**waste bilge oils**	
13 04 01*	bilge oils from inland navigation	1
13 04 02*	bilge oils from jetty sewers	1
13 04 03*	bilge oils from other navigation	1
13 05	**wastes from oil/water separators**	
13 05 01*	solids from grit chambers and oil/water separators	1
13 05 02*	sludges from oil/water separators	1
13 05 03*	interceptor sludges	1
13 05 06*	oil from oil/water separators	1
13 05 07*	oily water from oil/water separators	1
13 05 08*	mixtures of wastes from grit chambers and oil/water separators	1
13 07	**wastes of liquid fuels**	
13 07 01*	fuel oil and diesel	1
13 07 03*	other fuels (including mixtures)	1
13 08	**oil wastes not otherwise specified**	
13 08 01*	desalter sludges or emulsions	1
13 08 02*	other emulsions	1
16	**OTHER WASTES FROM INDUSTRIAL PROCESSES**	
16 01	**End-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance**	
16 01 14*	antifreeze fluids containing hazardous substances	1
16 01 15	antifreeze fluids other than those mentioned in 16 01 14	3
16 03	**wastes from off-specification batches and unused products**	
16 03 03*	inorganic wastes containing hazardous substances	2
16 03 05*	organic wastes containing hazardous substances	2
16 06	**wastes from batteries and accumulators**	
16 06 06*	separately collected electrolyte from batteries and accumulators	2
16 07	**wastes from transport tank, storage tank and barrel cleaning**	
16 07 08*	wastes containing oil	1,2
16 07 09*	wastes containing other hazardous substances	2
16 09	**oxidising substances**	
16 09 04*	oxidising substances, not otherwise specified	2
16 10	**aqueous liquid wastes destined for off-site treatment**	
16 10 01*	aqueous liquid wastes containing hazardous substances	2
16 10 02	aqueous liquid wastes other than those mentioned in 16 10 01	2,3
16 10 03*	aqueous concentrates containing hazardous substances	2

16 10 04	aqueous concentrates other than those mentioned in 16 10 03	2
19	**WASTE MATERIALS FROM WASTE AND WATER TREATMENT**	
19 01	**wastes from incineration or pyrolysis of waste**	
19 01 06*	aqueous liquid wastes from gas treatment and other aqueous liquid wastes	2
19 02	**physico/chemical treatments of waste**	
19 02 04*	premixed wastes composed of at least one hazardous waste	2
19 07	**landfill leachate**	
19 07 02*	landfill leachate	2
19 07 03	landfill leachate other than those mentioned in 19 07 02	2,3
19 08	**wastes from wastewater treatment plants not otherwise specified**	
19 08 09	grease and oil mixture from oil/water separation containing edible oil and fats	3
19 08 10*	grease and oil mixture from oil/water separation other than those mentioned in 19 08 09	1
19 08 11*	sludges containing hazardous substances from biological treatment of industrial waste water	1
19 08 13*	sludges containing hazardous substances from other treatment of industrial waste water	1
19 09	**wastes from preparation of water intended for human consumption or water for industrial use**	
19 09 02	sludges from water clarification	1
19 13	**wastes from soil and groundwater remediation**	
19 13 03*	sludges from soil remediation containing hazardous substances	2
19 13 05*	sludges from groundwater remediation containing hazardous substances	2
19 13 07*	aqueous liquid wastes and aqueous concentrates from groundwater remediation containing hazardous substances	1,2
19 13 08	aqueous liquid wastes and aqueous concentrates from groundwater remediation other than those mentioned in 19 13 07	2
20	**MUNICIPAL WASTE AND SIMILAR MATERIALS FROM COMMERCE AND INDUSTRY**	
20 01	**separately collected fractions**	
20 01 14*	acids	2
20 01 15*	alkalines	2
20 01 28	paint, inks, adhesives, and resins other than those mentioned in 20 01 27	2
20 01 30	detergents other than those mentioned in 20 01 29	2
20 03	**other municipal wastes**	
20 03 03	street cleaning residues	3
Total	**Aggregate Quantity of all wastes listed above will be less than 32,000 tonnes per annum**	

* Treatment routes are as follows; 1- OWP, 2- ATP, 3- ETP. Where two numbers are listed, this signifies that either treatment route may be used or a combination of both depending on the specific waste and the testing results. All wastes will go through effluent treatment (treatment route 3) before discharge.

Notwithstanding the EWC's codes stipulated in Table 2.2 above, waste shall not be accepted at the site which is; excessively malodorous, showing evidence of charring, elevated temperatures, or fire damage, or explosive.

2.3.2 Raw Materials

There are two ways in which raw materials may be used on site, firstly in the actual treatment of wastes, and secondly in the general operation of the facility.

There are no requirements for additional raw materials into the Oil Treatment Plant process.

In the Aqueous Treatment Plant process, where possible, it is anticipated that wastes on site can also be utilised as treatment additives to treat and neutralise each other by mixing (see section 2.3.5 below, and *Annex C – EMS Procedures Pack*). However, the treatment processes listed below may require additional raw material input:

- Neutralisation;
- Precipitation;
- Chemical oxidation and chemical reduction (Redox); and
- Coagulation/flocculation.

The only raw material regularly used in the treatment of wastes will be product Lime (Calcium Hydroxide), which is dissolved and added as kalic lime to the reactor, of which approximately 240 tonnes per year will be utilised.

Where volumes of appropriate wastes on site are not sufficient, other small amounts of input raw materials may be required such as; sulphuric acid or hydrofluoric acid for precipitation, oxidising agents such as nitrites, reducing agents such as ferrous sulphate or sodium metabisulphite, and coagulants such as ferrous sulphate again or aluminium sulphate.

Raw materials used in the general operation of the facility are negligible with most equipment being electrical, as well as grease and other lubricants used in maintenance activities. No fuels, greases, or lubricants, will be stored on the permitted site.

All raw material usage will be tracked and audited, and sourced from approved suppliers.

Water consumption will be metered and kept to a minimum, wherever possible treated final effluent and grey water will be utilised for process water.

The key process consumables are listed in Table 2.3 below, none of which are stored onsite:

Table 2.3: Raw Materials Summary

Material	Approximate Quantity	Tank Inventory and Storage	Fate
Lime (calcium hydroxide)	240t per annum	Product offload directly into 1m^3 lime dissolver within the ATP area	100% used within the treatment process
Precipitation aids such as sulphuric acid or hydrochloric acid	100t per annum	Bought in packages ready to use. No bulk storage	100% used within the treatment process
Oxidising agents such as sodium hypochlorite	< 50t per annum	Bought in packages ready to use. No bulk storage	100% used within the treatment process

Reducing agents such as ferrous sulphate or sodium metabisulphite	< 50t per annum	Bought in packages ready to use. No bulk storage	100% used within the treatment process
Coagulants such as product non-hazardous polymers	< 50t per annum	Bought in packages ready to use. No bulk storage	100% used within the treatment process
Lubrication & Hydraulic Oils	< 10m^3 per annum	Small volumes kept within appropriate containers offsite	Consumed within plant
Water	< 5 m^3 per day	Mains fed	100% to drain or used within treatment process and discharged to sewer

2.3.3 Waste Reception

Prior to arrival, all wastes accepted on site are subjected to stringent waste acceptance criteria in accordance with the site's Environmental Management System and associated Waste Pre-Acceptance and Acceptance procedures.

Pre-acceptance

Following an enquiry, pre-acceptance must be carried out on potential contracts. The first phase of pre-acceptance is to gather information from the waste producer (SDS, COSHH, analysis, *etc.*). A waste declaration form must also be filled out and signed by the producer, prior to technical assessments.

Technical assessments are the responsibility of a technical assessor. This is a qualified and experienced individual, with minimum of a degree in chemistry (or equivalent), who can make an informed decision on whether the site can accept the waste.

Technical assessments consist of initial screening, determination of whether a treatment or transfer process could be viable for the waste stream, and sampling, which will be requested through sales for all bulk waste. Package loads will require a sample at the discretion of the assessor. The assessor may also request any further information from the enquirer.

If accepted, the assessor will initiate a new file on the system using the sales Enquiry Number and populate it with any hazardous properties, PPE requirements, the possible treatment or transfer routes, and initiate a waste tracking process.

Sample reception and analysis are a laboratory function which will be conducted by a trained chemist following laboratory standard operating procedures.

All samples should be labelled with the CWS Enquiry Number, a waste description, date, and any hazardous properties, and submitted directly to the site laboratory.

Following the technical advice, the chemist will select the treatment analysis worksheet template on the system for the specified route:

1.	Oil/water separation	→	Oil and water separation plant
2.	Acid treatment	→	Aqueous treatment plant
3.	Alkali treatment	→	Aqueous treatment plant
4.	Redox	→	Aqueous treatment plant
5.	Neutral (balancing) treatment	→	Aqueous treatment plant
6.	Non-hazardous treatment	→	Discharge via effluent treatment plant
7.	Basic characterisation for transfer	→	Storage and transfer facility

The templates help ensure sufficient testing for a technical assessment of the waste.

The laboratory analysis combined with the waste declaration and supplied materials will allow the assessor to decide the composition of the waste. This allows for the assigning of hazard statements using the EC Classification, Labelling and Packaging Regulations (CLP), or European Chemical Agency (ECHA). Hazardous Properties can then be assigned using Waste Classification WM3. The assessor is further responsible for assigning transportation, labelling, and packaging requirements under ADR Classification of Dangerous Goods regulations.

Where the waste is declined, sales will inform the enquirer that the site is unable to accept the waste at this time. CWS may reconsider a waste stream subject to the enquirer providing a new pre-acceptance sample in instances where the waste stream varies.

Acceptance

Acceptance starts with load arrival at the reception office, where drivers are required to park in the waiting area and sign in and complete checks.

Paperwork and PPE checks, including Consignment Notes and Duty of Care notes, will be checked to ensure they have been filled out correctly and conform to the expected waste material. The European Waste Catalogue (EWC) codes used will be checked against the sites permitted EWC codes.

Tanker drivers will be asked about previous loads and washouts as this may alert staff to potential debris which could cause problems on site. Where a load is not booked in or there is a paperwork issue a non-conformance will be raised and a manager will be contacted to resolve the problem.

Drivers are assigned a CWS induction card. CWS will operate a robust site induction process, any driver without an induction card will undergo a site induction. The induction will be completed by a trained senior member of staff and will explain site operations and hazards as well as site rules, PPE requirements, and the emergency procedure.

Minimum site PPE will require the use of a hard hat, safety glasses, hi-vis overalls, gloves, and protective

footwear. Failure to wear the correct site PPE will not be tolerated and repeat non-conformance will result in the driver being banned from site at the discretion of site management.

Upon completion of compliance checks, drivers will be directed to the correct offloading area. Once in the correct area, the load will undergo the following 7 steps as detailed in the Waste Acceptance Procedure;

- Visual Inspection;
- Sampling;
- Verification Testing;
- Offloading;
- Completion of Paperwork;
- Compliance Testing; and
- Labelling and Tracking.

Rejection

When an initial contract with clients is agreed, it will be submitted with caveats which help manage conformity to the pre-acceptance sample. Caveats are used to reject a waste or surcharge a customer where a waste is non-compliant. An example caveat is 'subject to less than 2% suspended solids as per testing analysis'. Where waste is delivered with a higher than 2% suspended solids content it can incur a surcharge to cover the higher treatment and recycling cost.

A manager will be informed and a non-conformance will be raised in the following situations:

- The waste item was not expected or booked in;
- A package is found or damaged, corroded or otherwise inappropriate;
- A material cannot be clearly identified due to the loss of a label; or
- Testing shows the waste is not as described.

It is then up to a manager to decide if the waste will be routed to the quarantine area while the customer is contacted for the issue to be resolved. Wastes located in quarantine will clearly display '*Area Q*' and '*HOLD*' on the label. Items in quarantine will only be removed with the permission of site management.

2.3.4 Waste Storage

All packages are labelled with a weatherproof label identifying the nature of the waste, date of arrival, producer, hazardous components, hazard status, and storage location. The locations of each storage area have been chosen to ensure segregation of incompatible materials and simple ease of use.

Where practicable, waste feedstocks will be rotated on a first in first out basis to ensure no waste is stored on site for long periods, and package storage areas are small, and as such materials will be processed in a timely fashion ensuring no stock build up on site.

In line with SGN 5.06 and other best practice, no materials will be retained on site for longer than 6 months.

A web-based stock management system will be utilised which can be used to find packages, remove them when processed, and download an accurate 'live' stock inventory. The stock inventory will also track stock as it ages, and track COMAH qualifying materials that may be received on site but will not be received at or above COMAH thresholds. This system enables staff taking bookings to check stock levels quickly and easily before taking bookings, and management to check the age and hazard profile of materials on site. This also serves an important function In both emergency management, but also compliance management and auditing.

There are no concerns with stockpiles on site, as each area has a limited quantity and waste is stored in separate IBC containers, and materials must be stored in designated areas specific to their hazard.

The only material not stored in tanks or packages will be the output filter cake which is stored in an enclosed area beneath the filter press building. Filter cake is collected and removed off site as soon as there is enough to constitute a vehicle load.

Wastes shall be stored in segregated areas of site dependent on their composition. All storage is upon impermeable concrete hardstanding.

Bulk Wastes

Bulk liquid waste will be directly deposited into the offload bath or reactor vessels, depending on which is the appropriate treatment route. There is no bulk storage on site for incoming wastes outside of treatment tanks and vessels.

Contained Waste

Waste within IBC's is stored in one of three storage areas on site, A, B or R2. Storage area R2 is for incoming wastes awaiting approval. Storage areas A and B are further divided into smaller areas for storage of different waste types. IBCs in storage area R2 are single stacked while areas A and B are double stacked, in rows no higher than 2 high with sufficient space between rows for access via forklift. Storage areas A and R2 are open, while area B will be covered to ensure oxidising waste, quarantined waste, and any potentially damaged or poorly packaged containers are protected from external conditions, but with an open wall to the yard providing sufficient ventilation and meeting the requirements of HSG71.

Table 2.4 overleaf details the types of wastes to be stored in each area and the capacities of each.

Table 2.4: Storage areas and capacities			
Area ID	Capacity (t)	Waste types	Treatment route
A1	80	Acids	2
A2	40	Oils and water	1
A3	60	Caustics	2
B1	28	Non-hazardous waste	3
B2	42	Oxidisers	2
B3	28	Quarantine	N/A – removed from site
R2	24	Any awaiting approval and overflow	Any

All containers will be clearly labelled with the following:

- Date of arrival;
- Content description;
- Relevant hazard codes;
- Chemical composition; and
- Unique Reference Code (relevant to pre-acceptance and acceptance paperwork).

Treatment Plant

The treatment plant consists of those listed in the 'Plant & Equipment' section of section 2.2.3 of this document. The capacities of each treatment area are as follows;

- OWP area – static tanks with a total capacity of 210t;
- ATP area – static tanks with a total capacity of 138t; and
- Filter cake – covered storage of 50t.

The concrete final effluent treatment tanks have a capacity of 120t each.

All areas of the site, including storage areas, bunds, individual containers, sleeping policeman, sump, and hardstanding will be inspected during the daily site walkover, in accordance with Waste Reception and Storage procedures.

2.3.5 Waste Treatment

Oil and Water Treatment Process

This process will treat bulk deliveries and IBCs of hazardous oil contaminated effluents, through a series of tanks and filters, with each stage reducing the solids and hydrocarbon content.

Post waste reception, samples will be tested to verify suitability for the process. Each load will be given a unique reference and a sample retained.

Once accepted, waste will be transferred directly into the offload tank or from the storage areas. The

offload tank has an 8mm filter, which will remove large items which could block the pump. Heavy sandy and gritty particles will also settle in this tank.

Oil is floated off by gravity, to minimise energy demand, into a drain down tank where it is pumped to the waste oil tank. The water phase after settlement will be pumped to a 36m^3 oil and water tank where further solids will settle, and oil again floated to the surface prior to processing through the lamella separator.

Settled and filtered solids from the offload tank and drain down tank will be collected and disposed of offsite by a third-party contractor.

The lamella clarifier represents the Best Available Technique (BAT) for oil and water separation, and utilises a series of inclined plates in close succession to each other within a tank. This offers a very large surface area over which separation can occur within a relatively modest footprint. This large surface area along with intercepting baffles, enables the clarifier to remove particulate solids, oils, and other light non-aqueous phase liquids (LNAPLs) from the effluent.

The design of the reception end of the clarifier facilitates turbulence, which increases separation efficiency over the inclined plates. Lamella clarifiers remove 90-95% of particulates and oils. Since 99% of oil will be removed in the initial oil and water tank, this represents a subsequent 90-95% removal after the initial 99%, ensuring very clean effluent.

The model of lamella clarifier is a Envirohub HL20, which is purpose-built with adjustable oil skimmer weirs, twin sludge hoppers to allow for sludge storage and drain down, and an oil reservoir and drain port so that the recovered oil can be manually drained off as required. Specifications for the clarifier are included in *Annex A4*.

The Envirohub HL20 units remove LNAPLs/DNAPLs as well as settleable solids. The Envirohub HL20 works at an optimum rate of 20m^3/hr and contain a hopper bottom to allow solids to settle. By manually opening the valve these settled solids can be discharged into a collection tank before collection and disposal off site via a third-party site and contractor. The frequency of de-sludging will depend upon the amount and behaviour of the solids within the unit.

The unit is fitted with a vertical side ladder to facilitate visual checks, and comprehensive access via a side-mounted walkway is also available.

As with the oil drain down tank, this equipment is gravity driven with no moving parts to minimise energy demand.

The resultant processed effluent is non-hazardous and will be pumped to effluent treatment tanks 3 and 4 for further settling and blending, before where the effluent is pumped to the final effluent tanks where it will be batch tested as per the company discharge procedure.

Discharge testing will demonstrate compliance with the trade effluent discharge, with testing taking place for common ions, heavy metals, chemical oxygen demand, and suspended solids. Flow monitoring and sampling will be MCerts certified and periodically calibrated as required.

As well as batch testing prior to discharge, a flow proportional composite sample will also be tested the following morning to verify compliance.

See table 2.5 overleaf which demonstrates the matrix for each EWC processed through the OTP treatment route. Refer to table 2.2 for the EWC codes included in this treatment route (treatment route 1). The matrix below details:

- Principal hazards;
- Targeted components for treatment;
- Treatment type; and
- Components removed.

All process techniques are in accordance with BAT 2, 5, 40, 42, and 52 of the Waste Treatment BREF. See section 5 for more details.

For process controls refer to the Procedures Pack in *Annex C – EMS*.

Table 2.5: Hazards and Risk Controls Treatment Matrix - OTP				
EWC Codes	Principal Hazards	Key & Targeted Components	Treatment Types	Component Removal
05 01 - wastes from petroleum refining				
05 01 05*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 01 - waste hydraulic oils				
13 01 05*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 01 10*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 01 11*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 01 12*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 01 13*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 02 - waste engine, gear, and lubricating oils				
13 02 05*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 02 06*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 02 07*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 02 08*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 03 - waste insulating and heat transmission oils				
13 03 07*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 03 08*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 03 09*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 03 10*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 04 - waste bilge oils				
13 04 01*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 04 02*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 04 03*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 05 - wastes from oil/water separators				
13 05 01*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 05 02*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 05 03*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 05 06*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 05 07*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 05 08*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 07 - wastes of liquid fuels				
13 07 01*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 07 03*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 08 - oil wastes not otherwise specified				
13 08 01*	Ecotoxic	Oil	Phase separation, Blending	Oil
13 08 02*	Ecotoxic	Oil	Phase separation, Blending	Oil
16 01 - End-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance				
16 01 14*	Ecotoxic	Oil	Phase separation, Blending	Oil
16 07 - wastes from transport tank, storage tank and barrel cleaning				
16 07 08*	Ecotoxic	Oil	Phase separation, Blending	Oil
19 08 - wastes from wastewater treatment plants not otherwise specified				
19 08 10*	Ecotoxic	Oil	Phase separation, Blending	Oil
19 08 11*	Ecotoxic	Oil	Phase separation, Blending	Oil
19 08 13*	Ecotoxic	Oil	Phase separation, Blending	Oil
19 13 - wastes from soil and groundwater remediation				
19 13 07*	Ecotoxic	Oil	Phase separation, Blending	Oil

Aqueous Treatment Plant Process

This process involves the treatment of both hazardous and non-hazardous aqueous wastes in an SGN 5.06 compliant reactor vessel, to produce a non-hazardous slurry. The slurry will be dewatered through a filter press to produce a non-hazardous or hazardous filter cake and a non-hazardous effluent for further processing.

All wastes will be modelled and recorded by a competent chemist, to ensure there are no compatibility issues or unexpected reactions. Packaging will be emptied and decontaminated on site prior to despatch to a specialist packing recycling company for recovery.

Reaction types will predominantly be neutralisation and redox reactions, whereby different waste types (or purchased product) are used to beneficially treat each other. These reactions do not generate any pressure or positive release of gas or fumes, with displaced air vented from the process tank through a chemical scrubber to prevent any releases of substances to air.

This venting is considered a fugitive emission but is included in this application as A1 as a single source point. This scrubbing system will be maintained in line with the site preventative maintenance system, including testing of the scrubber liquor weekly to monitor and ensure its efficiency. Specifications for the scrubber stack are included in *Annex A3*.

CWS have optimised their aqueous treatment processes though years of laboratory modelling, trials, and in-vessel processing. This knowledge is key to successful and safe operation of the Aqueous Treatment Plant. All techniques applied are recognised in the Waste Treatment BREF/BAT.

Once the material is on site a new model and compatibility test will be conducted, this will replicate the exact process which is to be conducted on site. When the chemist is satisfied of sufficient treatment a batch recipe sheet will be issued so the treatment process can be reproduced on site. Each load will be given a unique reference and a sample retained.

The aqueous treatment process is conducted as follows:

1. Lime powder (calcium hydroxide) is dissolved and added as kalic lime to the reactor.
2. Any weak caustic and non-acidic or aqueous liquids with solids are added.
3. The level of the reactor must be such that it is mixing sufficiently.
4. Quantities of different acids are then slowly added to bring the pH down to pH10.

   These acids may or may not contain metals.

   In the reduction of Chromium VI scenario, the process would involve first involve adding chromic acid then adding ferrous sulphate which converts the toxic Chromium VI species to non-hazardous chromium III hydroxide.

5. In certain recipes at pH 10, approximately 50l of 10% sodium hydroxide with 1000mg/l sodium sulphide reducing agent can be added to raise the pH to 10.5. This step enables a greater removal of metals than is possible with hydroxide alone (see figure 2.2 below).

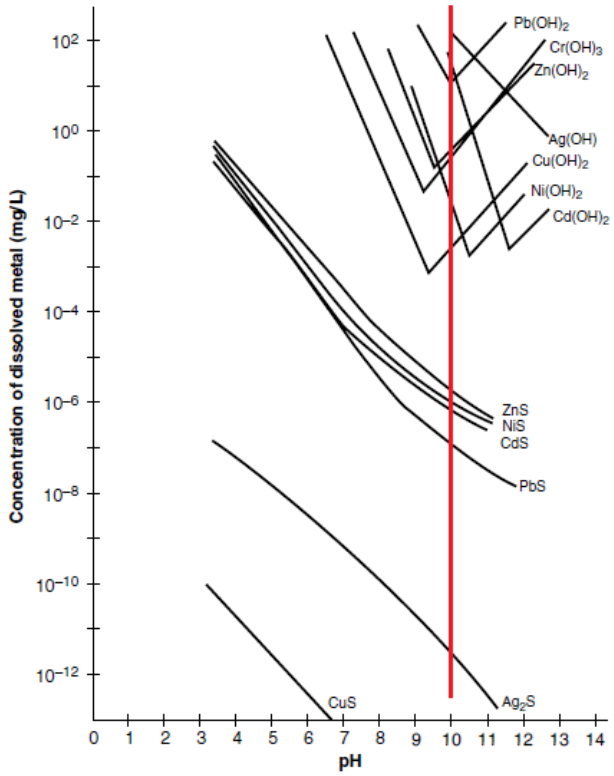

Figure 2.2: Solubility of metals as hydroxides and sulphides.

Use of sulphide compounds to increase metal removal is recognised in the Waste Treatment BREF.

6. The blend is mixed and then tested in the laboratory.

   The laboratory will use analytical techniques able to accurately check concentrations of metals and anions in the filtrate to 0.01mg/l.

7. After a treatment confirmation has been given by the laboratory the mixture is pumped to the filter press to separate the solid fraction (filter cake) from the liquid (filtrate).
8. The filter cake is stored underneath the press prior to offsite removal for disposal or recovery.
9. The filtrate is pumped to the filtrate tanks where it undergoes settling and blending, before effluent is pumped to the final effluent tanks where it will be batch tested as described previously before discharge to sewer under the Trade Effluent Consent.

The various steps of the ATP process all meet BAT requirements as discussed in section 5 of this document.

The treatment methods used in the reactor vessels of the ATP include but are not limited to:

- Neutralisation - Neutralisation will be conducted within the well mixed and abated reactors - first a lime solution will be added and then acid pumped which will be neutralised on contact with the lime. Targets are acids and alkalis;
- Precipitation - Within a reactor, metals can be targeted at an optimum pH where precipitation is greatest. Certain acid such as sulphuric acid and hydrofluoric acid can also be precipitated on reaction with lime. Targets are precipitable dissolved non-biodegradable or inhibitory pollutants, e.g. metals, phosphorous;
- Chemical oxidation - Within a reactor, oxidising agents can be used to oxidise chemicals such as nitrites. These reactions are conducted at a high pH which prevents gases being abated and absorbed by the scrubber liquid. Targets are oxidisable dissolved non-biodegradable or inhibitory pollutants, e.g. nitrite and cyanide;
- Chemical reduction - Within a reactor, reducing agents such as ferrous sulphate and sodium metabisulphite can be used to reduce hexavalent chromium (Cr(VI)) e.g., chromic acid to non-hazardous insoluble chrome (III) compounds. Targets are reducible dissolved non-biodegradable or inhibitory pollutants, e.g., hexavalent chromium (Cr(VI));
- Solids removal by coagulation and flocculation - Within a reactor, coagulants such as ferrous sulphate and aluminium sulphate are added to help the slurry thicken and increase positive charge density. On mixing these cause flocculation, where dense flocs are formed – this process helps precipitation of other more soluble constituents such as metals and aids in the production of a clean filtrate. Targets are suspended solids and particulate-bound metals; and
- Solids removal by filtration - After treatment of all hazardous components in the reactor, the slurry will be pumped into a filter press under pressure which allows for microfiltration and the separation of the liquid filtrate from the solids. When the filter press is full it is able to be opened to drop the 'filter cake'. Targets suspended solids and particulate-bound metals.

See table 2.6 overleaf which demonstrates the matrix for each EWC processed through the ATP treatment route. Refer to table 2.2 for the EWC codes included in this treatment route (treatment route 2). The matrix below details:

- Principal hazards;
- Targeted components for treatment;
- Treatment type;
- Components removed; and
- Mechanisms and removal efficiency.

All process techniques are in accordance with BAT 2, 5, 40, 42, and 52 of the Waste Treatment BREF. See section 5 for more details.

For process controls refer to the Procedures Pack in *Annex C – EMS*.

Table 2.6: Hazards and Risk Controls Treatment Matrix – ATP					
EWC Codes	Principal Hazards	Key & Targeted Components	Treatment Types	Component Removal	Mechanisms & Efficiency
Hazardous					
05 01 - wastes from petroleum refining					
05 01 09*	Corrosive	Heavy metals	Neutralisation, Redox, Filtration	Heavy metals	Precipitation & 90 - 95%
05 01 11*	Corrosive	Caustic bases	Neutralisation, Filtration	n/a	Neutralisation & 100%
05 01 12*	Corrosive, Ecotoxic	Oils, Acids	Neutralisation, Filtration	Oil	Neutralisation & 99%
06 01 - wastes from the manufacture, formulation, supply, and use (MFSU) of acids					
06 01 01*	Corrosive	Sulphuric acid	Neutralisation	n/a	Neutralisation & 100%
06 01 02*	Corrosive	Hydrochloric acid	Neutralisation	n/a	Neutralisation & 100%
06 01 03*	Corrosive, Ecotoxic	Hydrofluoric acid	Neutralisation	n/a	Neutralisation & 100%
06 01 04*	Corrosive	Phosphoric acid	Neutralisation	n/a	Neutralisation & 100%
06 01 05*	Corrosive	Nitric acid	Neutralisation	n/a	Neutralisation & 100%
06 01 06*	Corrosive	Acids other than those mentioned above	Neutralisation	n/a	Neutralisation & 100%
06 02 - wastes from MFSU of bases					
06 02 01*	Corrosive	Sodium & Potassium hydroxide	Neutralisation	n/a	Neutralisation & 100%
06 02 04*	Corrosive	Calcium hydroxide	Neutralisation	n/a	Neutralisation & 100%
06 02 05*	Corrosive	Bases other than those mentioned above	Neutralisation	n/a	Neutralisation & 100%
07 01 - wastes from the MFSU of basic organic chemicals					
07 01 01*	Corrosive	n/a	Neutralisation	n/a	Neutralisation & 100%
07 01 11*	Corrosive	n/a	Neutralisation	n/a	Neutralisation & 100%
07 06 - wastes from the MFSU of fats, grease, soaps, detergents, disinfectants, and cosmetics					
07 06 01*	Corrosive	n/a	Neutralisation	n/a	Neutralisation & 100%
07 06 11*	Corrosive	n/a	Neutralisation	n/a	Neutralisation & 100%
07 07 - wastes from the MFSU of fine chemicals and chemical products not otherwise specified					
07 07 01*	Corrosive	n/a	Neutralisation	n/a	Neutralisation & 100%
07 07 11*	Corrosive	n/a	Neutralisation, Filtration	n/a	Neutralisation & 100%
11 01 - wastes from chemical surface treatment and coating of metals and other materials					
11 01 05*	Corrosive	Heavy metals	Neutralisation, Redox, Filtration	Heavy metals	Precipitation & 90 - 95%
11 01 06*	Corrosive	Heavy metals	Neutralisation, Redox, Filtration	Heavy metals	Precipitation & 90 - 95%
11 01 07*	Corrosive	Heavy metals	Neutralisation, Redox, Filtration	Heavy metals	Precipitation & 90 - 95%
11 01 09*	Corrosive	Heavy metals	Neutralisation, Redox, Filtration	Heavy metals	Precipitation & 90 - 95%
11 01 11*	Corrosive	Heavy metals	Neutralisation, Redox, Filtration	Heavy metals	Precipitation & 90 - 95%

11 01 98*	Corrosive	Heavy metals	Neutralisation, Redox, Filtration	Heavy metals	Precipitation & 90 - 95%
11 02 - wastes from non-ferrous hydrometallurgical processes					
11 02 02*	Corrosive	Heavy metals	Neutralisation, Redox, Filtration	Heavy metals	Precipitation & 90 - 95%
11 02 05*	Corrosive	Heavy metals	Neutralisation, Redox, Filtration	Heavy metals	Precipitation & 90 - 95%
11 02 06	Corrosive	Heavy metals	Neutralisation, Redox, Filtration	Heavy metals	Precipitation & 90 - 95%
11 02 07*	Corrosive	Heavy metals	Neutralisation, Redox, Filtration	Heavy metals	Precipitation & 90 - 95%
11 03 - waste sludges and solids from tempering processes					
11 03 01*	Toxic	Cyanide	Neutralisation, Redox, Filtration	n/a	Oxidation & 100%
11 05 - waste from hot galvanising processes					
11 05 03*	Corrosive	Heavy metals	Neutralisation, Redox, Filtration	Heavy metals	Precipitation & 90 - 95%
12 03 - wastes from water and steam degreasing processes					
12 03 01*	Corrosive	n/a	Neutralisation, Filtration	n/a	Neutralisation & 100%
16 03 - wastes from off-specification batches and unused products					
16 03 03*	Corrosive	n/a	Neutralisation, Filtration	n/a	Neutralisation & 100%
16 03 05*	Corrosive	n/a	Neutralisation, Filtration	n/a	Neutralisation & 100%
16 06 - wastes from batteries and accumulators					
16 06 06*	Corrosive	Heavy metals	Neutralisation, Redox, Filtration	Heavy metals	Precipitation & 90 - 95%
16 07 - wastes from transport tank, storage tank and barrel cleaning					
16 07 08	Ecotoxic	Oil	Phase separation, Neutralisation	Oil	Neutralisation & 99%
16 07 09*	Corrosive	n/a	Neutralisation, Redox, Filtration	n/a	Neutralisation & 99%
16 10 - aqueous liquid wastes destined for off-site treatment					
16 10 01*	Corrosive	Heavy metals	Neutralisation, Redox, Filtration	Heavy metals	Precipitation & 90 - 95%
16 10 03*	Corrosive	Heavy metals	Neutralisation, Redox, Filtration	Heavy metals	Precipitation & 90 - 95%
19 01 - wastes from incineration or pyrolysis of waste					
19 01 06*	Corrosive	Heavy metals	Neutralisation, Redox, Filtration	Heavy metals	Precipitation & 90 - 95%
19 07 - landfill leachate					
19 07 02*	Ecotoxic	Trace metals	Neutralisation, Redox, Filtration	Heavy metals, COD	Settlement & 100%
19 13 - wastes from soil and groundwater remediation					
19 13 03*	Ecotoxic	Trace metals	Neutralisation, Redox, Filtration	Heavy metals, COD	Settlement & 100%
19 13 05*	Ecotoxic	Trace metals	Neutralisation, Redox, Filtration	Heavy metals, COD	Settlement & 100%
19 13 07*	Ecotoxic	Trace metals	Neutralisation, Redox, Filtration	Heavy metals, COD	Settlement & 100%
20 01 - separately collected fractions					
20 01 14*	Corrosive	n/a	Neutralisation, Filtration	n/a	Neutralisation & 100%

20 01 15*	Corrosive	n/a	Neutralisation, Filtration	n/a	Neutralisation & 100%
Non-Hazardous					
05 01 - wastes from petroleum refining					
05 01 14	n/a	n/a	Blending, Filtration	n/a	n/a
05 01 16	n/a	n/a	Blending, Filtration	n/a	n/a
06 03 - wastes from the MFSU of salts and their solutions and metallic oxides					
06 03 14	n/a	n/a	Blending, Filtration	n/a	n/a
06 03 16	n/a	n/a	Blending, Filtration	n/a	n/a
07 01 - wastes from the MFSU of basic organic chemicals					
07 01 12	n/a	n/a	Blending, Filtration	n/a	n/a
07 02 - wastes from the MFSU of plastics, synthetic rubber, and man-made fibres					
07 02 12	n/a	n/a	Blending, Filtration	n/a	n/a
07 02 15	n/a	n/a	Blending, Filtration	n/a	n/a
07 02 17	n/a	n/a	Blending, Filtration	n/a	n/a
07 03 - wastes from the MFSU of organic dyes and pigments					
07 03 12	n/a	n/a	Blending, Filtration	n/a	n/a
07 04 - wastes from the MFSU of organic plant protection products, wood preserving agents and other biocides					
07 04 12	n/a	n/a	Blending, Filtration	n/a	n/a
07 05 - wastes from the MFSU of pharmaceuticals					
07 05 12	n/a	n/a	Blending, Filtration	n/a	n/a
07 05 14	n/a	n/a	Blending, Filtration	n/a	n/a
07 06 - wastes from the MFSU of fats, grease, soaps, detergents, disinfectants, and cosmetics					
07 06 12	n/a	n/a	Blending, Filtration	n/a	n/a
07 07 - wastes from the MFSU of fine chemicals and chemical products not otherwise specified					
07 07 12	n/a	n/a	Blending, Filtration	n/a	n/a
08 02 - wastes from MFSU of other coatings					
08 02 02	n/a	n/a	Blending, Filtration	n/a	n/a
08 02 03	n/a	n/a	Blending, Filtration	n/a	n/a
08 03 - wastes from MFSU of printing inks					
08 03 07	n/a	n/a	Blending, Filtration	n/a	n/a
08 03 08	n/a	n/a	Blending, Filtration	n/a	n/a
08 03 13	n/a	n/a	Blending, Filtration	n/a	n/a
08 03 15	n/a	n/a	Blending, Filtration	n/a	n/a
08 03 18	n/a	n/a	Blending, Filtration	n/a	n/a

08 04 - wastes from MFSU of adhesives and sealants					
08 04 12	n/a	n/a	Blending, Filtration	n/a	n/a
08 04 14	n/a	n/a	Blending, Filtration	n/a	n/a
08 04 16	n/a	n/a	Blending, Filtration	n/a	n/a
11 01 - wastes from chemical surface treatment and coating of metals and other materials					
11 01 10	n/a	n/a	Blending, Filtration	n/a	n/a
11 01 12	n/a	n/a	Blending, Filtration	n/a	n/a
11 01 14	n/a	n/a	Blending, Filtration	n/a	n/a
16 10 - aqueous liquid wastes destined for off-site treatment					
16 10 02	n/a	n/a	Blending, Filtration	n/a	n/a
16 10 04	n/a	n/a	Blending, Filtration	n/a	n/a
19 07 - landfill leachate					
19 07 03	n/a	n/a	Blending, Filtration	n/a	n/a
19 13 - wastes from soil and groundwater remediation					
19 13 08	n/a	n/a	Blending, Filtration	n/a	n/a
20 01 - separately collected fractions					
20 01 28	n/a	n/a	Blending, Filtration	n/a	n/a
20 01 30	n/a	n/a	Blending, Filtration	n/a	n/a

Effluent Treatment Plant

As well as the treated effluents resulting from the OWP and ATP treatment routes, some wastes are directly treated by the effluent treatment plant before discharge to sewer.

See table 2.7 below which demonstrates the matrix for each EWC processed through the ETP treatment route. Refer to table 2.2 for the EWC codes included in this treatment route (treatment route 3). The matrix below details:

- Principal hazards; and
- Treatment type.

All process techniques are in accordance with BAT 2, 5, 40, 42, and 52 of the Waste Treatment BREF. See section 5 for more details.

For process controls refer to the Procedures Pack in *Annex C – EMS*.

Table 2.7: Hazards and Risk Controls Treatment Matrix - ETP

EWC Codes	Principal Hazards	Treatment Types
16 01 - End-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance		
16 01 15	Ecotoxic	Blending, Settlement, Filtration
16 10 - aqueous liquid wastes destined for off-site treatment		
16 10 02	Ecotoxic	Blending, Settlement, Filtration
19 07 – landfill leachate		
19 07 03	Ecotoxic	Blending, Settlement, Filtration
19 08 - wastes from wastewater treatment plants not otherwise specified		
19 08 09	Ecotoxic	Blending, Settlement, Filtration
20 03 - other municipal wastes		
20 03 03	Ecotoxic	Blending, Settlement, Filtration

2.3.6 Waste Export

The following residues are generated from the OWP and ATP treatment processes:

- Waste effluent, discharged to release point S1;
- Waste oil sent to a third-party oil processing facility (Recovery);
- TPH contaminated silts and solids sent off for bioremediation (Recovery); and
- Filter cake from the aqueous treatment process sent for either recycling or disposal.

Process residues such as TPH contaminated solids and filter cake will be sampled in the CWS laboratory, and characterised and classified in line with WM3 Guidance. Trade effluent will also be tested in the CWS lab on a daily basis to ensure compliance with the trade effluent consent.

All of these outputs will be strictly managed as part of an externally certified management system which

regulates the quality control of these management controls. A high proportion of staff at the facility are degree qualified chemists (at a minimum), which adds substantial robustness to the quality management of these residues.

From all of the activities on site the following will also be generated:

- Scrap decontaminated packing from treatment and bulking process (cans, IBCs, and drums), sent for reconditioning; and
- Waste pallets and shrink wrap, also sent for recycling.

Wastes will be exported offsite for recovery or disposal. All potential sites to which waste will be exported will be audited by the company or a competent third-party assessor to ensure the correct management and controls are in place and they are appropriately authorised to accept the waste.

2.3.7 Environmental Management

CWS will operate the site in accordance with an Environmental Management System which is structured to meet the requirements of Environment Agency Guidance Develop a Management System: Environmental Permits and the Waste Treatment BREF BAT 1.

The management system has been reviewed and accredited as ISO 14001:2015 compliant (see *Annex C*).

The EMS is designed to ensure:

- The identification of all foreseeable environmental impacts and risk that CWS's activities pose to the environment.
- Prevention or minimisation of any identified risks to practical minimum.
- Legal Compliance assurance.
- Identification of risks of pollution including those arising from operations, maintenance, accidents, incidents, non-conformances, and complaints, and how these will be minimised.
- Activities at the site will be managed in accordance with the management system, which will be subject to continuous review, audit, and improvement. Specific detailed management system reviews will take place if there is a significant change to the activities, following an accident or if a non-compliance is found.
- The key aspects of the EMS for the site will include:
  - Preventative maintenance;
  - Operator requirements;
  - Training and Competence;
  - Emergency response and incident management; and
  - Monitoring, measurement, and reporting.

The Environmental Management System and procedures have been written to ensure that the environmental risk and impact of the normal running of the site activities are documented and minimised.

2.3.8 Site Maintenance

All maintenance activities on site will be carried out in accordance with the manufacturers' recommendations and are integrated within the company's Environmental Management System.

The key aspects of the maintenance management programme will include:

- A programme of Planned Preventative Maintenance (PPM) is undertaken, to ensure ongoing management and replacement of key plant and equipment rather than waiting for equipment to fail.
- The inspection and maintenance schedules that the manufacturer recommends are adhered to.
- Predictive maintenance is carried out to prevent any catastrophic breakdown.

The detailed Management System operated by the site will include procedures for ensuring that adequate maintenance is undertaken at the site.

The maintenance programme will ensure that all equipment or infrastructure that is deemed essential in the prevention of pollution to the environment (e.g., hard-standing, bunds, etc.) or the prevention of local nuisance impacts (e.g., noise) is maintained and kept in good operating condition.

2.3.9 Operator Competence

The site will be fully staffed during all operations, with two Technically Competent Managers (TCM) on site (see *Annex I*). The management team have over 50 years combined experience in hazardous waste treatment, and two have postgraduate chemistry degrees. The Managing Director (Pete Jones) is also a Fellow of CIWM (Chartered Institute of Waste Management) and a certified WAMITAB assessor.

The team involved fully understand and can comply with legal and other requirements, are competent operationally, and have a proven track record of strong environmental performance.

The primary role of site staff is to ensure and oversee waste delivery and unloading operations, material transfers, sampling and testing, and treatment process management.

Additional activities will include general site housekeeping and administration activities. Third party support will be provided by suitably qualified contractors for onsite work such as equipment maintenance. The site will maintain written operation instructions all for the plant and monitoring equipment present on site.

All personnel working at the facility will be trained in the necessary sections of the Environmental Management System and associated Procedures.

All operations on the site will be managed by the Site Manager, who will act as both the competent person at the facility and the main process supervisor.

2.3.10 Site security

Site security measures include:

- Secure fencing provided along site boundaries;
- Wider 24/7 site security provided by the industrial estate monitoring entry and exit;
- Site access via secure gates at the main site entrance which will be locked outside of operating hours; and
- Daily inspection of both the site fencing and gates will be undertaken and recorded.

2.3.11 Hours of Operation

The site will operate 06:00 – 18:00 Monday to Saturday.

2.3.12 Health & Safety

Management of health and safety is critical to the safe operation of a hazardous waste facility, and as such a third-party certified HS management system will be implemented to manage all aspects of health and safety.

Many of the permit application supporting documents consider H&S content, in particular those related to waste acceptance, PPE, and COSHH in detail, as well as training records, and checklists which have particular relevance.

The Emergency Plan outlines emergency controls which will be taken on site, both in relation to management controls, and 'real' operational controls. It also includes a major accident hazard risk assessment, information on emergency equipment and training, and roles and responsibilities.

2.3.13 Accidents and Emergencies

Emergency Plan

As mentioned above, CWS have their own Emergency Plan as part of their EMS based around the specific risks associated with the site operations.

The key aspects of the site's Plan are:

- Reviewed by Site Management annually, and as soon as practicable after an accident.
- Considers hazards presented by:
  - actions in case of fire;
  - actions in case of emergencies;
  - contaminated firewater;
  - spillages and uncontrolled releases;
  - plant or equipment failure (e.g., over-pressure of vessels and pipework, blocked drains);

  - vandalism;
  - flooding.
- Identify events or failures that could damage the environment.
- Assesses the likelihood and the potential environmental consequences from accidents at the site.
- Proposes action to minimise the potential causes and consequences of accidents.

Incident Reporting

The reporting of incidents and non-conformities forms a key component of the EMS. Identified non-conformities under the system include, but are not limited to the following:

- Uncontrolled leaks and spillages of any materials with the potential to cause pollution to the environment (waste oils, laboratory chemicals);
- Unexpected deliveries;
- Damaged or otherwise inappropriate packaging;
- Incorrect labelling;
- Testing shows waste is not as described;
- Non-compliance to any permitted condition or consent limit (emissions excursions, missing of reporting deadlines, breach of any permitted consent limits);
- Internal Audit findings (legal non-compliances, EMS procedural breaches, system non-compliances);
- External and Internal Complaints; and
- Whenever a plant malfunction, breakdown or failure, or any near miss occurs.

The EMS requires that all identified incidents and non-conformities will be investigated and closed out.

Fire Risk

The site has commissioned a Fire Risk Appraisal and DSEAR screening assessment, undertaken by a third-party specialist fire risk consultant, to consider the relevance of the DSEAR (2002) regulations to the functions of the proposed facility, and the materials which will be stored.

The conclusion of the report is that while relevant, the site represents a low risk profile in terms of both dangerous substances, and potential for explosive atmospheres, as long as controls described in this application are adhered to. A DSEAR assessment, and Fire Risk Assessments will be carried out after construction, but prior to operation of the facility.

Although a standalone Fire Prevention Plan (FPP) is not required for a hazardous waste site, an FPP document has been written to support the permit application and account for non-hazardous wastes and waste oil storage and processing, as well any wastes that may present a fire risk such as oxidisers. The FPP has been included as *Annex J* to this application.

The entire site will be operated in accordance with EPR, Hazardous Waste Regulations, Chemical waste: *appropriate measures for permitted facilities*, SGN S5.06, Waste Treatment BREF, and other legal

requirements, such as HSG71: Chemical warehousing: *The storage of packaged dangerous substances*.

CWS have designed the site in accordance with all relevant health and safety legislation for the prevention of fires. They have incorporated several control measures into site operation and management for the prevention of fires onsite including (but not limited to):

- Smoking is prohibited anywhere onsite;
- All electrical equipment onsite is required to have up to date PAT testing;
- Fire extinguishers are located around the site in strategic locations; and
- Fire hoses with connection points to mains supply are located around the site.

To mitigate environmental consequences, one of the three large concrete tanks is a designated fire water run-off storage tank (120m^3). It will be kept empty for use in an emergency only.

3 EMISSIONS & ABATEMENT

3.1 Emissions to Air

There are no point source emissions to air from the site.

However, there is the potential for fugitive passive emissions of displaced air via abatement systems fitted to the treatment tanks and via the scrubber stack.

Whilst oily wastes will be processed, these are of low volatility and no heat is used in the process to increase volatility, and all oils are in sealed tanks. At ambient temperature, oils are stable and non-volatile in the proposed plant and equipment, and as there is no processing of the oil phase, there is no resultant waste gas stream despite there being a channelled emission point. The operator has previous experience operating similar facilities and has demonstrated that there are no fugitive emissions from vehicle offloading and tank breathing.

In order to ensure there are no significant releases of substances from passive emissions, the two potential sources (only if unabated) are the OWP waste oil tanks, and the ATP aqueous treatment plant reactor vessels. Therefore, abatement systems will be installed on the OWP waste oil tank which will have an activated carbon filter scrubbing system, and the ATP reactor vessels will a scrubber system with stack. The scrubber stack will be maintained in line with the asset management procedure and the scrubber liquors sampled, analysed, and monitored by the laboratory weekly.

These releases are not significant and have been screened out as a monitored emission point, and as such are recorded as channelled air emission points.

CWS have several measures in place to mitigate and monitor this potential emission, including the following:

- Compatibility testing prior to bulking activities to minimise potential for adverse reactions;
- Tank vents are fitted with pressure / vacuum valves to minimise breathing losses;
- Adsorption abatement (carbon filtration) is fitted to tank vents containing odorous, VOC or hydrocarbon containing liquids;
- All IBCs are lidded and sealed;
- All transfer systems (pipework and valves) for offloading / loading of liquid wastes are sealed; and
- Regular maintenance checks to ensure integrity of storage vessels and connections.

Although all emissions via vents and scrubbers are fugitive and passive, they will be included on the permit as point source due to them being emissions from single static points.

The list of air emissions points are included in table 3.1 overleaf.

Table 3.1: Air emissions points		
Emission ID	Description	Grid reference location
A1	Scrubber stack	SS 60505 96108
A2	Reactor vessel 1	SS 60504 96114
A3	Reactor vessel 2	SS 60505 96119
A4	Tank 1	SS 60510 96114
A5	Tank 2	SS 60515 96117
A6	Tank 5	SS 60515 96121

3.2 Emissions to Controlled Water

There are no emissions to controlled water from the site. All drainage on site is foul.

3.3 Emissions to Sewer

All liquid process emissions and surface water run-off on site are collected in the site drainage system and discharged via foul sewer at emission point S1 - SS 60495 96098.

All discharge effluent is tested prior to discharge to ensure parameters in the Trade Effluent Consent are met and the waste is no longer hazardous. The onsite laboratory will be staffed by graduate chemists and will contain wet chemistry equipment, a fume cupboard, and carry out atomic absorption spectroscopy and spectrophotometry, closed cup flash testing, and water content analysis.

All discharge to sewer is under a Trade Effluent Consent from Dŵr Cymru Welsh Water. The consent is included in *Annex H* with parameters listed in table 3.2 below. BAT-AELs for indirect emissions to water are also included in table 3.2. The lower limit for each parameter (in bold) will be the limit for the release.

Table 3.2: Discharge effluent parameters			
Parameter	Unit	TEC Limit(s)	BAT-AEL(s)
Volume	m^3 / day	**518**	-
Discharge rate	l/s	**6**	-
Temperature	°C	**43**	-
pH	pH	**6 - 11**	-
Free cyanide (CN^-)	mg/l	2	**0.1**
Hydrocarbon oil index (measured as TPH)	mg/l	100	**10**
Arsenic (As)	mg/l	**0.1**	0.1
Cadmium (Cd)	mg/l	**-**	**0.1**
Copper (Cu)	kg/day	**0.25**	0.26*
Nickel (Ni)	kg/day	**0.25**	0.52*

Lead (Pb)	kg/day	0.25	**0.16***
Zinc (Zn)	kg/day	**0.25**	1.04*
Iron (Fe)	mg/l	**50**	-
Chromium (Cr)	kg/day	0.25	**0.16***
Mercury (Hg)	µg/l	**10**	10
Sulphate (SO_4)	mg/l	**1,800**	-
Total suspended solids (TSS)	mg/l	**1,000**	-
Chemical Oxygen Demand (COD)	kg/day	**300**	-
Phenols	mg/l	**2**	-
Ammoniacal Nitrogen (N)	kg/day	**50**	-
Formaldehyde	mg/l	**10**	-
Chloride (Cl^-)	mg/l	**30,000**	-
Adsorbable organically bound halogens (AOX)	mg/l	-	**1**

*converted from mg/l

As well as the above, none of the below may be in the discharge:

- Uncontaminated condensing water;
- Calcium Carbide;
- Petroleum spirit;
- Explosive material;
- Substances likely to damage/block sewers;
- Potentially toxic or flammable; or
- Special Category Effluent within the meaning of Section 138 of the Water Industry Act 1991.

3.4 Emissions to Land

There will be no emissions to land arising from the site. All process areas and yards are covered in concrete hardstanding and bunded.

3.5 Odour

An odour impact assessment was completed by Sol Environment for the proposed activities in April 2022, which found that there was not likely to be any odour impact.

Where possible, no malodourous material will be accepted on site. This is ensured by the detailed waste acceptance criteria which ensures rejection of waste immediately if any excessive odour emissions are apparent from the incoming waste. In addition, all storage of wastes is enclosed (containers or tanks) and as such odour emissions are likely only during the transfer of wastes.

Odour shall be monitored daily during the perimeter walkover around the boundary of the site in accordance with site procedures and BAT 10 of the Waste Treatment BREF.

An overview of the odour management measures has been provided in table 3.3 overleaf.

Table 3.3: Odour Management Summary		
Tier	Reference	Description
1	Inventory Control	The Installation will accept a maximum of 32,000 tonnes of hazardous and non-hazardous wastes per annum. Few of the wastes accepted on site have the potential for odorous emissions. All wastes accepted on site will be required to be pre-declared and be deemed acceptable by a trained site operative prior to the transportation and delivery to site. All waste accepted on site will be inspected on arrival to ensure compliance with the agreed delivery and to not have any excessive malodourous properties. Waste Acceptance and inventory controls are covered within the site EMS Procedures for Pre-Acceptance, Waste Acceptance, etc.
2	Enclosed Storage	All storage of waste on site is within enclosed containers, namely IBCs, drums, or tanks. Treatment tanks are fitted with adsorption abatement thereby minimizing fugitive releases of VOCs and odorous compounds. Reactor vessels are fitted with a scrubber stack to abate air emissions.
3	Sealed Transfer Systems	All transfer systems including valves and pipework is sealed to prevent emissions during delivery and collection of liquid wastes. In addition, deliveries and collections are only permitted during normal operating hours to minimise local nuisance.
4	Management Control	The site has mitigations in place, as included in the Environmental Management and Monitoring procedure, that will be carried out on site in the unlikely event that odour is detected.

Due to the nature of wastes on site, it is expected there will be no claims of odour nuisance from the facility. Therefore it has been deemed implementing a full Odour Management Plan is not necessary, in line with BAT 12 of the Waste Treatment BREF. However, the measures described will reduce the risk of any odour nuisance arising from CWS's site.

3.6 Noise Impacts

The site is located within a wider industrial estate in the Waunarlwydd area and is therefore not considered to be situated in an area highly sensitive to noise.

Site operations, namely the delivery and collection of wastes, onsite movement of mobile plant (i.e., forklifts) and onsite pumps have the potential to cause noise.

Noise emissions from pumps are mitigated through periodic and intermittent use (i.e., 20 minutes 5 times a day). The pumps are designed to operate at 70 Db(A), which is below the threshold for

employees requirements for hearing protection and equivalent to the average vacuum cleaner.

A Noise Risk Assessment was completed by Sol Environment for the proposed use in May 2022, which concluded that risk from noise was very low. Nevertheless, the site has implemented the following measures to minimise any potential impacts:

- All new company vehicles will be fitted with white noise reversing signals rather than beepers;
- Deliveries to site only during operating hours;
- All vehicles will be operated by experienced staff;
- The pumps onsite won't be operational overnight and only used periodically and intermittently (i.e., 20 minutes 5 times a day);
- All plant and vehicles will be turned off when not in use; and
- The nearest residential receptors are protected from noise by the buildings of the industrial estate along the southern boundary of the site, forming an acoustic barrier.

There are no BAT AELs in the Waste Treatment BREF for noise, but these levels are deemed acceptable with the control measures in place and the site is not considered to be at risk of creating a significant adverse noise impact.

3.7 Fugitive Emissions

The proposed facility will not result in any fugitive releases of emissions of dust or litter.

However, as noted in Section 3.1 above, the site has the potential for the release of fugitive emissions from tanks. These will be minimised through the control measures outlined in that section.

3.8 Waste Generation and Management

3.8.1 Types and Amounts of Waste

As discussed in section 2.3.6, the site will generate certain waste streams from the treatment processes. Table 3.4 below shows a tabular summary of the estimated waste streams that will be generated and exported from site.

Table 3.4: Waste Summary

Waste	EWC Code	Source	R / D Code	Environmental Fate
Waste oil	19 02 07*	Waste treatment	R9 (offsite treatment)	Reclaimed and reused
Filter cake	19 02 05* 19 02 06	Waste treatment	R5 and D1 (offsite treatment or disposal)	Recovered where possible or hazardous landfill
TPH contaminated silts and solids	19 02 05*	Waste treatment	R3 (offsite treatment)	Bioremediation
Discharge effluent	Various	Waste treatment	D6 (offsite treatment)	Sewer discharge

Scrap decontaminated packaging	Various	Waste treatment	R4 and R11 (offsite treatment)	Recycled and reused
Waste pallets and shrink wrap	15 01 02 15 01 03	Waste treatment	R11 (offsite treatment)	Recycled and reused

As the site is not currently operational, it is unknown at this stage the quantities of waste that will be generated on site. Various tonnages of different waste streams will be treated via the different treatment routes, resulting in a large variance of expected wastes generated. For example, if a large proportion of wastes incoming to the site are oily and require treatment via the OWP, there will be minimal filter cake generated.

Process residues such as TPH contaminated solids and filter cake will be sampled in the CWS laboratory, and characterised and classified in line with WM3 Guidance. Trade effluent will also be tested in the CWS lab on a daily basis to ensure compliance with the trade effluent consent.

All of these outputs will be strictly managed as part of an externally certified management system which regulates the quality control of these management controls. A high proportion of staff at the facility are degree qualified chemists (at a minimum), which adds substantial robustness to the quality management of these residues.

Wastes will be exported offsite for recovery or disposal. All potential sites to which waste will be exported will be audited by the company or a competent third-party assessor to ensure the correct management and controls are in place and they are appropriately authorised to accept the waste.

3.8.2 Waste Storage

Wastes shall be stored in segregated areas of site dependent on their composition. Bulk liquid wastes are deposited directly into treatment plant, while containerised wastes are stored within the appropriate area marked on the site plan.

All storage is upon impermeable concrete hardstanding.

Table 3.5: BAT Justification for Storage on Site

Indicative BAT	Justification
Subsurface structures	There are no subsurface structures on the site. All tanks, pipework and drainage systems are above ground.
Appropriate surfacing and containment or drainage facilities for all storage areas, taking into consideration collection capacities, surface thicknesses, strength/reinforcement; falls, materials of construction, permeability, resistance to chemical attack, and inspection and maintenance procedures; • have an inspection and maintenance programme for impervious surfaces and containment facilities;	The site is covered by good quality re-enforced concrete hardstanding. All joints are sealed. All external yard areas are kerbed and fall to the site drainage system. The site will have an extensive maintenance programme in place which will include provision for the inspection of all appropriate plant and structures. The detailed inspection of the impervious concrete surfaces

• unless the risk is negligible, have improvement plans in place where operational areas have not been equipped with: – an impervious surface – spill containment kerbs – sealed construction joints – connection to a sealed drainage system	and containment will be in line with the construction engineer's recommendations. Routine inspections will be undertaken daily by site personnel as part of the daily site checks.
Above-ground tanks	Above ground bulk storage tanks containing liquids will be appropriately constructed to ensure they are impermeable. Supervised deliveries will ensure that the risk of contamination of surface water is negligible. All tanks and facilities will be installed with secondary containment and be designed to comply with the following standards and guidance requirements; • EA Oil storage regulations. • EA Guidance: Chemical waste: appropriate measures for permitted facilities. • CIRIA C598: Chemical Storage Tank Systems – Good Practice. • CIRIA C736: Design of Containment Systems for the Prevention of Pollution.
Storage areas (IBCs, etc.) Storage areas should be located away from watercourses and sensitive boundaries, (e.g., those with public access) and should be protected against vandalism. Storage areas should have appropriate signs and notices and be clearly marked out, and all containers and packages should be clearly labelled. Where spillage of any stored substance could be harmful to the environment, the area should be appropriately kerbed or bunded. The maximum storage capacity of storage areas should be stated and not exceeded, and the maximum storage period for containers should be specified and adhered to. Appropriate storage facilities should be provided for substances with special requirements (e.g., flammable, sensitive to heat or light) and formal arrangements should be in hand to keep separate packages containing incompatible substances (both "pure" and waste). Containers should be stored with lids, caps and valves secured and in place - and this also applies to emptied containers. All stocks of containers, drums and small packages should be regularly inspected (at least weekly). Procedures should be in place to deal with damaged or leaking containers.	All storage of liquid and hazardous materials carried out on site in both bulk and contained form will meet BAT requirements.

4 ENVIRONMENTAL MONITORING

4.1 Emissions to Air

There are no point source emissions to air, however, there are passive vents on tanks and the scrubber stack that technically would be classed as emissions points. As they are passive vents with unknown flow rates, concentrations, etc., it is not feasible to conduct an air quality assessment at this stage.

CWS do not envisage there being any risk to air quality from this type of emission, therefore a proposal was agreed with David Poole of NRW in pre-application discussions that a reasonable way forward would be to sample the emissions as improvement conditions during the initial stages of operating the permit, if granted. These initial assessments will identify to the operator and NRW any parameters or contaminants that require monitoring as part of the permit.

4.2 Emissions to Controlled Water

There are no process emissions to controlled water from the site, therefore no monitoring is required.

4.3 Emissions to Sewer

The final effluent discharged to sewer will be sampled and tested daily in accordance with BAT requirements and the Trade Effluent Consent.

4.4 Odour Monitoring

Odour is monitored and recorded daily during the site walkover.

5 BAT ASSESSMENT

The new liquid waste treatment facility has been designed to meet the applicable BAT Conclusions contained within the Waste Treatment BREF and justifications as to how BAT is applied at the facility are detailed within Table 5.1 overleaf.

It should be noted that the following BAT are applicable to the installation:

- BAT 1 – 24: general BAT conclusions for the sector;
- BAT 40 – 51: BAT conclusions for the physico-chemical treatment of waste; and
- BAT 52 – 53: BAT conclusions for the treatment of waste based liquid waste.

The following BAT are not applicable to the facility as they relate to processes not undertaken at the installation:

- BAT 25 – 39: BAT conclusions for mechanical treatment and biological treatment of waste.

The following BAT demonstration is based on the BREF documents for Waste Treatment (April 2018) and Emissions from Storage (July 2006) and the EA sector guidance: *Chemical waste: appropriate measures for permitted facilities.* The BAT demonstration is summarised in the following table.

Table 5.1: BAT Assessment – Waste Treatment BREF		
BAT Reference	BAT Conclusion	Justification
GENERAL BAT CONCLUSIONS		
Overall Environmental Performance		
BAT 1	In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS) that incorporates the features provided within the BREF document.	The operator has an ISO 14001:2015 compliant Environmental Management System in place that incorporates the relevant features outlined within the BREF document with the exception of: • noise management plan – the Noise Risk Assessment concludes that it is anticipated that the facility would have a low impact on residential receptors. • odour management plan – the Odour Impact Assessment concludes that it is anticipated that the facility would have a low impact on residential receptors. • inventory of waste water and waste gas streams – waste water and waste gas inventories will need to be finalised once the plant has been commissioned and data is available. The EMS certification and procedures pack is provided in *Annex C.*
BAT 2	In order to improve overall environmental performance of the plant, BAT is to use all of the techniques featured within the BREF document.	The operator has procedures in place that include all of the listed techniques with the exception of: • sorting incoming solid waste – most waste processed by the site is liquid. The only solid wastes accepted on site are small quantities of wastes to act as treatment aids (such as waste lime) that are processed through the dissolvers.
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), that incorporates all of the features listed within the BREF document.	The only waste water stream is the final discharge effluent from the treatment plant. This will be monitored and tested daily before discharge to sewer at S1 in accordance with the trade effluent consent parameters in table 3.2. The only waste gas streams are fugitive emissions from tank vents and scrubber. These are currently unknown but will be monitored and inventoried once the facility is operational. Monitoring data will be collected during commissioning and is not expected to contain contaminants at any appreciable level.
BAT 4	In order to reduce the environmental risk associated with the storage of waste, BAT is to use all of the techniques detailed in the BREF document.	The operator will monitor all incoming waste with labelling and tracking and stored with appropriate segregation for incompatible wastes. Wastes are stored in designated areas to avoid double handling, and only accepted on site if there is enough capacity when booking deliveries.

		Bulk waste is deposited directly into the treatment plant. Wastes sensitive to heat such as oxidisers are stored under cover in the appropriate storage area. Damaged or poorly packaged containers will be stored under cover, and transferred to undamaged containers if necessary. Waste containers are primarily for purpose IBCs and are only handled by FLT. There is a designated quarantine area for unacceptable wastes prior to offsite removal as soon as possible.
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.	All staff undergo competence training for their roles on site. Handling procedures have been established and are in the procedures pack as part of the EMS. All storage areas and process areas are within bunded areas to contain and mitigate any spills.
Monitoring		
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.	N/A - There are no emissions to water associated with this facility. All surface water run-off is captured by the site drainage system and the only discharge is to sewer in accordance with the trade effluent consent.
BAT 7	BAT is to monitor emissions to water with at least the frequency given below, and in accordance with EN standards.	N/A – As above.
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.	The only emissions to air from this facility are passive fugitive emissions from the venting of tanks and scrubber. The only relevant substances from the BREF table that could be applicable are HCl, NH_3, and TVOCs, from the scrubber stack, but this is to be confirmed following commissioning.
BAT 9	BAT is to monitor diffuse emissions of organic compounds to air from the regeneration of spent	N/A – The treatments listed do not apply to the facility.

	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.	
BAT 10	BAT is to periodically monitor odour emissions.	An odour impact assessment for the proposed activities found that there was not likely to be any odour impact and therefore an odour management plan is not necessary for this facility. Where possible, no malodourous material will be accepted on site. This is ensured by the detailed waste acceptance criteria. In addition, all storage of wastes is enclosed (containers or tanks) and as such odour emissions are likely only during the transfer of wastes. Odour shall be monitored daily during the perimeter walkover around the boundary of the site.
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.	Water, energy, and raw materials will be recorded and monitored via invoicing from suppliers. Waste residues and water will be recorded by waste duty of care notes generated for offsite removal, and continuous automated recording of levels in each discharge effluent tank.
Emissions to Air		
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 elements listed in the BREF document.	BAT 12 is only applicable to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated. As in BAT 10.
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 BREF document.	All waste stored on site is in sealed containers and operated as best as practicable on a first in first out policy to minimise residence times. Waste is only booked for delivery to site if there is adequate storage capacity.
BAT 14	In order to prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of	All storage containers and transferral pipe work is sealed with minimal potential for diffuse emissions.

	dust, organic compounds and odour, BAT is to use an appropriate combination of the techniques given in the BREF document.	All equipment, tanks, pipework, etc. has been chosen as for purpose to ensure there is minimal potential for corrosion. All emissions are abated by carbon adsorption filters and scrubber. All liquid waste with no potential for generating dust.
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 BREF document.	N/A – No flaring on site.
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 BREF document.	N/A – No flaring on site.
Noise and Vibration		
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 elements in the BREF document.	BAT 17 is only applicable to cases where a noise nuisance at sensitive receptors is expected and/or has been substantiated. A noise risk assessment for the proposed activities found that there was not likely to be any noise impact and therefore a noise management plan is not necessary for this facility. The only site operations with potential for noise impacts are; delivery and collection of wastes, onsite movement of mobile plant (i.e., forklifts), and onsite pumps. These are mitigated by the techniques for BAT 18 below.
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 the techniques given in the BREF document.	• All new company vehicles will be fitted with white noise reversing signals rather than beepers; • Deliveries to site only during operating hours; • All vehicles will be operated by experienced staff; • The pumps (70Db(A)) onsite won't be operational overnight and only used periodically and intermittently (i.e., 20 minutes 5 times a day); • All plant and vehicles will be turned off when not in use; and • The nearest residential receptors are protected from noise by the buildings of the industrial estate along the southern boundary of the site, forming an acoustic barrier.
Emissions to Water		

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 BREF document.	N/A – No emissions to water from this facility.
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 BREF document.	N/A – As above.
Emissions from Accidents and Incidents		
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 BREF document, as part of the accident management plan (see BAT 1).	Please refer to section 2.3.12 of this document which discusses the security of the site, fire risk, emergency, and mitigations from potential accidents and incidents.
Material Efficiency		
BAT 22	In order to use materials efficiently, BAT is to substitute materials with waste.	Wastes are used to treat each other in the reactor vessels in the ATP area instead of products where possible for pH balancing, redox reactions, etc. The only product assumed to be needed for treatment is kalic lime, but this can be substituted for waste when it is available.
Energy Efficiency		
BAT 23	In order to use energy efficiently, BAT is to use both of the techniques given in the BREF document.	Water, energy, and raw materials will be recorded and monitored via invoicing from suppliers. Waste residues and water will be recorded by waste duty of care notes generated for offsite removal, and continuous automated recording of levels in each discharge effluent tank. The information will be reviewed by management to update KPIs and set improvement targets annually or if notified to an opportunity sooner. An annual energy balance record will be kept for review and to aid in the above.
Reuse of Packaging		
BAT 24	In order to reduce the quantity of waste sent for disposal, BAT is to maximise the reuse of packaging,	Packaging is sent offsite for reconditioning or recycling. The site does not have the space or facilities for cleaning and repurposing containers on site. Empty and damaged containers are

	as part of the residues management plan (see BAT 1).	stored onsite prior to offsite transfer to avoid disposal. Pallets are reused on site and only removed offsite for recycling when damaged.
BAT CONCLUSIONS FOR OTHER PROCESSES		
BAT 25 - 39	Mechanical treatment and biological treatment of waste	N/A – These processes are not undertaken.
BAT CONCLUSIONS FOR PHYSICO-CHEMICAL TREATMENT OF WASTE		
BAT conclusions for the physico-chemical treatment of solid and/or pasty waste, re-refining of waste oil, treatment of waste with calorific value,		
BAT 40 - 51	BAT conclusions for the physico-chemical treatment of solid and/or pasty waste, re-refining of waste oil, treatment of waste with calorific value, regeneration of spent solvents, thermal treatment, washing excavated soil, and decontamination of PCB equipment	N/A – None of these wastes or treatment processes are accepted or carried out at this facility.
BAT conclusions for the treatment of water-based liquid waste		
BAT 52	In order to improve the overall environmental performance, BAT is to monitor the waste input as part of the waste pre-acceptance and acceptance procedures (see BAT 2).	As in BAT 2. Waste input is tested and sampled in accordance with pre-acceptance and acceptance procedures.
BAT conclusions for the physico-chemical		
BAT 53	In order to reduce emissions of HCl, NH_3 and organic compounds to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given in the BREF document.	Scrubbers and carbon adsorption filters are used on tanks and reactor vessels.

6 IMPACT TO THE ENVIRONMENT

6.1 Impacts to Air

Although there may be passive venting to air of fugitive emissions, there are considered to be no significant impacts to air relating to the proposed site operations.

6.2 Impacts to Land

There are no impacts to land relating to the proposed site.

6.3 Impacts to Controlled Waters

There are no impacts to controlled waters relating to the proposed site.

6.4 Impacts to Sewer

All discharges to sewer will be non-hazardous and in accordance with the site's Trade Effluent Consent, ensuring there are no significant impacts to sewer relating to the proposed site.

6.5 Odour Impacts

Due to the proposed control measures it is considered that there will be no significant impact to nearby sensitive receptors as a result of operation of the installation.

7 RESOURCE EFFICIENCY AND CLIMATE CHANGE

7.1 Basic Energy Efficiency Measures

The plant and ancillaries have been designed to operate with a high level of energy efficiency. Key energy efficiency measures that have been included within the design of the plant are as follows:

- All plant and equipment will be individually monitored and controlled using a site-wide SCADA monitoring system and PLC controls, optimised for efficiency of operation; and
- All plant energy data will be monitored, recorded, and targeted to ensure optimal plant performance.

7.2 Energy Efficiency Plan

The Operator will define the specific energy consumption of the facility and establish Key Performance Indicators (KPIs) when the site becomes operational. There is no fuel used on site with most equipment being electrical, and the raw material inputs to the treatment plant are minimal, and will not vary greatly over the operational life of the plant. Should any site equipment or technology be replaced, efforts will be made to replace the unit with one which is more energy efficient, if available.

The Operator will create KPIs based on monitoring data from how much energy is used to run the site and whether this can be reduced. Within a year of operating the operator will produce an Energy Efficiency Plan detailing the energy uses at the site, setting KPIs and identifying where energy use improvements, if any, can be made.

7.3 Basic Design Principles

The only treatment plant on site requiring fuel input is electricity for the filter press and automated levels gauges on the tanks. The plant is assisted by PLC and optimised to ensure maximum efficiency.

High efficiency low energy lighting utilising presence detection is used where possible and external lighting to be time-switched and photocell controlled. All site operations are outdoors, and operating hours are during normal daylight hours except during winter and adverse weather, therefore use of electrical lighting is limited.

Electrical distribution efficiency is improved by minimising losses in the system by installing the electrical unit as close to the treatment plant area as possible.

The plant will be maintained at steady capacity as best as possible to avoid fluctuations in energy usage.

7.4 Raw Material and Water Usage

The plant has been designed to ensure that as far as possible, all residues are reused or recycled, and

that collected rainwater, treated effluent and grey water is used instead of raw water.

Water will only be used for periodic cleaning of tanks and plant.

7.5 Energy Usage

The specific energy consumption for the new facility is unknown at this stage as the plant is not operational. The different treatment routes will have different energy requirements, and as the ratio between them is so variable it is difficult to accurately assume a figure at this stage. Energy usage will be reviewed at least annually by management to identify areas for improvement, or when notified of a potential improvement at earliest convenience. The energy usage will be confirmed once the plant is operational.

7.6 Electrical Efficiency

7.6.1 Electrical Distribution

Losses in the electrical distribution system are minimised by installing electrical units as close to the treatment plant area as possible.

7.6.2 Lighting

All operations are conducted outdoors, therefore extensive lighting is not required other than during darker times such as during winter or adverse weather.

Where operational or safety requirement are not compromised, presence detection shall be provided to lighting.

External lighting shall be time switch and photocell controlled.