North West Regeneration Ltd ("the operator")

Permit number LA-IPPC / SWIP 1A

Introductory note

This introductory note does not form a part of the permit

Under the Environmental Permitting (England & Wales) Regulations 2016 (schedule 13) the following permit has been issued. It specifies the conditions and schedules that reflect the required compliance standard for environmental emissions based on the application dated 27.03.24, supporting material materials ref: SOL_23_P050_ETG, and documentation submitted by the applicant as a result of the issue of the Schedule 5(4) notice ref: (NWRSch5V1). All the conditions of the permit are subject to a right of appeal.

Description of process

Rockcliffe Industrial Estate is located approximately 6.4 kilometres northwest of Carlisle and is centred on National Grid Reference NY 36678 60826. The facility comprises three large and one small industrial building units situated within the industrial estate along with offices for the waste recycling facility.

Non-hazardous waste is treated at the facility to separate recyclable fractions and to produce solid recovered fuel (SRF) produced in the facility under Environment Agency permit ref: DP3393LV.

The SRF materials are separated from other refuse and processed on site or transported offsite for further treatment and manufacture into fuel pellets. These pellets are manufactured to a defined specification and do not require any further processing in advance of gasification or offsite use.

A portion of the SRF pellets manufactured are then introduced into the gasification process.

The SRF fuel pellets are located within a storage building located adjacent to the main plant (regulated by the Environment Agency permit and therefore outside the installation boundary for this permit). The pellets are loaded into articulated trailers within a building and then transferred to the loading station on the gasification plant. The entire process is fully enclosed.

This material is then fed into the EV9-DB Units, each modular EV9-DB Unit has a dedicated feed hopper and associated transfer sealed conveyor which is completely sealed.

The EV9-DB units use high temperatures >1000^{o}C to volatilise (gasify) the waste in a limited oxygen environment. The high temperature treatment chemically breaks the waste into component molecules to optimise the production of combustible 'clean' synthetic gases (syngas) comprising principally Hydrogen and Carbon Monoxide. The process inherently minimises waste.

As the syngas cools, some condensate is produced and is collected into sealed tanks for offsite disposal. The condensate is low volume (<180 litres/hr), clean and odour free and is stored in a tank for periodic removal from site in a road tanker to a suitable treatment facility.

The clean syngas is then combusted in one of three Jenbacher Combined Heat and Power (CHP) Engines, the exhaust gases pass to air via the 23m emission stack that is monitored using a Continuous Emissions Monitoring System (CEMS). The Thermal Oxidiser exhaust gas also passes to air through the stack.

Ash waste (impurities and residues that are not volatile or are thermally resilient) are automatically removed from the EV9-DB units either as vitrified ash 'stones' (85%+) with some smaller amounts of fly ash power (<15%).

Ash residues are stored in enclosed vessels for periodic removal to an appropriately licensed facility or reintroduced into the process for re-use. Vitrified ash stones are likewise stored for reuse in the construction industry as replacement for traditional aggregates.

The process generates electrical energy that is used to power the adjacent waste recycling site with the excess energy exported to the National Grid. Heat from the process will be used to dry wastes at the adjacent waste recycling site as well as provide heat for sustaining the gasification process.

The status log of a permit sets out the permitting history, including any changes to the permit reference number.

Detail	Date
Schedule 13 application date	27.03.24
Duly Made	2.05.2024
Schedule 5(4) notice issued	9.09.2024
Additional information received	5.11.2024
Permit issued	Insert dates

End of introductory note

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Cumberland Council in exercise of its powers under Schedule 13 of the Environmental Permitting (England and Wales) Regulations 2016 issues

Permit number: SWIP 1

Issued to: North West Regeneration Limited ("the operator") whose registered office is:

Unit A, Kingmoor Park
Rockcliffe Industrial Estate
Rockcliffe
Carlisle
Cumbria
CA6 4RW

Company registration number: 14978911

to operate regulated facilities at

Rockcliffe Industrial Estate
Rockcliffe
Carlisle
Cumbria
CA6 4RW

to the extent set out in the permit and conditions therein below.

The permit shall take effect from [date] unless specific conditions provide for other implementation dates.

Signature: Date

Authorised on behalf of the regulator:

Environmental Health
Public Health and Protection Services
Cumberland Council
Civic Centre
Carlisle
CA3 8QG

Contents

Conditions

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and

b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.1.4 The operator shall comply with the requirements of one of the approved technical competence schemes:

- Chartered Institution of Wastes Management (CIWM) and Waste Management Industry Training and Advisory Board (WAMITAB) scheme; or,
- Environmental Services Association (ESA) and Energy and Utility Skills (EU Skills) scheme

1.2 Energy efficiency

1.2.1 The operator shall:

a) take appropriate measures to ensure that energy is used efficiently in the activities;

b) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and

c) take any further appropriate measures identified by a review.

1.3 Efficient use of raw materials

1.3.1 The operator shall:

a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;

b) maintain records of raw materials and water used in the activities;

c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and

d) take any further appropriate measures identified by a review.

1.4 Avoidance, recovery and disposal of wastes produced by the activities

1.4.1 The operator shall take appropriate measures to ensure that:

a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and

b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and
c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.

1.4.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

2 Operations

2.1 Permitted activities

2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 Table S1.1 (the "activities").

2.1.2 For the activities referenced in schedule 1, Table S1.1 waste authorised by this permit shall be clearly distinguished from any other waste on the site.

2.1.3 For the avoidance of doubt, only raw materials (or wastes) specified in Table S2.1 shall be processed.

2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in red on the site plan at schedule 7 to this permit.

2.3 Operating techniques

2.3.1 For the activities referenced in schedule 1, table S1.1 the activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Regulator.

2.3.2 If notified by the Regulator that the activities are giving rise to pollution, the operator shall submit to the Regulator for approval within the period specified, a revision of any plan or other documentation ("plan") specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan , and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Regulator.

2.3.3 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.

2.3.4 Waste shall only be accepted if:

(a) it is of a type and quantity listed in schedule 2 table S2.1; and
(b) it conforms to the description in the documentation supplied by the producer and holder.

2.3.5 The operator shall ensure that where waste or residues produced by the activities in schedule S2.2 is sent to a suitably licensed site, that operation is provided with the following information, prior to the receipt of the waste:

a) the nature of the process producing the waste;
b) the composition of the waste;
c) the handling requirements of the waste;
d) the hazardous property associated with the waste, if applicable; and
e) the waste code of the waste.

2.3.6 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.

2.4 Improvement programme

2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Regulator.

2.4.2 Except in the case of an improvement which consists only of a submission to the Regulator, the operator shall notify the Regulator within 14 days of completion of each improvement.

3 Emissions and monitoring

3.1 Emissions to water, air or land

3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1 (emissions to air).

3.1.2 The limits given in schedule 3 shall not be exceeded.

3.1.3 Where a substance is specified in schedule 3 section S3.2 but no limit is set for it, the concentration of such substance in emissions to water from the relevant emission point shall be no greater than the background concentration.

3.1.4 Monitoring and periodic sampling shall be carried out at in accordance with the requirements set out in Schedule 3 Tables S3.1 and S3.6.

3.1.5 The operator shall
a) maximise the availability and performance of equipment critical to the protection of the environment;
b) record all periods of other than normal operation, their cause and duration and where possible their effect on emissions.

3.2 Emissions of substances not controlled by emission limits

3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.2.2 The operator shall:
a) if notified by the Regulator that the activities are giving rise to pollution, submit to the Regulator for approval within the period specified, an emissions management

plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;

b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by the Regulator.

3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Monitoring

3.3.1 The operator shall, unless otherwise agreed in writing by the Regulator, undertake the monitoring specified in the following tables in schedule 3 to this permit:

a) point source emissions specified in tables S3.1;
b) process monitoring specified in table S3.6;

3.3.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.3.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.3.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by the Regulator.

3.3.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 table S3.1 unless otherwise agreed in writing by the Regulator.

3.4 Odour

3.4.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Regulator, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.

It shall not be a breach of the condition in a particular case if the operator can show that all reasonable steps have been taken and has exercised all due diligence to prevent the release of offensive odour.

3.4.2 The operator shall:

a) if notified by the Regulator that the activities are giving rise to pollution outside the site due to odour, submit to the Regulator for approval within the period specified, a revised odour management plan which identifies and minimises the risks of pollution from odour;
b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by the Regulator.

3.5 Noise and vibration

3.5.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Regulator, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.

3.5.2 The operator shall:
a) if notified by the Regulator that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Regulator for approval within the period specified, a revised noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;
b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Regulator.

4 Information

4.1 Records

4.1.1 All records required to be made by this permit shall:
a) be legible;
b) be made as soon as reasonably practicable;
c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and
d) be retained, unless otherwise agreed in writing by the Regulator, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:
   i. off-site environmental effects; and
   ii. matters which affect the condition of the land and groundwater.

4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Regulator.

4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by the permit to the Regulator using the contact details supplied in writing by the Regulator.

4.2.2 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Regulator, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:
a) in respect of the parameters and emission points specified in schedule 4 table S4.1;
b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4 ; and
c) giving the information from such results and assessments as may be required by the forms specified in those tables.

4.2.3 A report or reports on the performance of the activities over the previous year shall be submitted to the Regulator by 31 January (or other date agreed in writing by the Regulator) each year. The report(s) shall include as a minimum:

a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;
b) the annual production/treatment data set out in schedule 4 table S4.2; and
c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.

4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to the Regulator, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.3 Notifications

4.3.1 In the event that:

a) the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately—
   i. inform the Regulator,
   ii. take the measures necessary to limit the environmental consequences of such an incident or accident, and
   iii. take the measures necessary to prevent further possible incidents or accidents as soon as practicable;
b) a breach of any permit condition occurs, the operator must record the event (and if necessary)—
   i. inform the Regulator, and
   ii. take the measures necessary to ensure that compliance is restored within the shortest possible time;
c) a breach of permit condition occurs which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.

4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.

4.3.3 Where the Regulator has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Regulator when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Regulator at least 14 days before the date the monitoring is to be undertaken.

4.3.4 The Regulator shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

Where the operator is a registered company:

a) any change in the operator's trading name, registered name or registered office address; and
b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

a) the Regulator shall be notified at least 14 days before making the change; and
b) the notification shall contain a description of the proposed change in operation.

4.3.6 The Regulator shall be given at least 14 days' notice before implementation of any part of the site closure plan.

4.3.7 Where the operator has entered into a climate change agreement with the Government, the Regulator shall be notified within one month of:

a) a decision by the Secretary of State not to re-certify the agreement;
b) a decision by either the operator or the Secretary of State to terminate the agreement; and
c) any subsequent decision by the Secretary of State to re-certify such an agreement.

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "immediately" in which case it may be provided by telephone.

Schedule 1 – Operations

Table S1.1 activities

Table S1.1 activities		
Activity listed in Schedule 1 of the EP Regulations	**Description of specified activity and WFD Annex I and II operations**	**Limits of specified activity and waste types**
Schedule 13A Waste Incineration	R1 - Use principally as a fuel or other means to generate energy Disposal or recovery of waste in waste incineration plants or in waste co-incineration plants: (a) for non-hazardous waste with a capacity less than 3 tonnes per hour;	Gasification of SRF and subsequent combustion of syngas in CHP plant
Directly Associated Activities		
Storage and handling of wastes or raw material inputs	Storage of and handling of SRF Storage of and handling of other raw materials	Receipt and storage of raw materials to transfer to process areas
Storage, handling and dispatch of products and waste & other materials	storage and handling of fly ash, and fly ash contaminating materials, storage and handling of vitrified fly ash, storage and handling of condensate	Internal & external storage of process generated wastes, and products, Storage of wastes in designated areas. Loading of wastes for transit off site.
Control & abatement systems for emissions to air	Abatement of releases to air	Extraction and collection of waste gases and treatment in condensers, recovery units, carbon beds and thermal oxidisers. Collection of solid wastes and storage and handling as noted above.

Table S1.2 Operating techniques

Table S1.2 Operating techniques and controls		
Description	**Parts**	**Date Produced**
Review of Environmental Management System	Identify all relevant sections of the review, in particular EMS, but also Environmental Performance, Other Than Normal Operating conditions (OTNOC) and water use minimisation/wastewater minimisation.	Within 6 months of commissioning
	Management plan for the prevention and control of leaks and spillages in relation to raw material use and techniques	Within 6 months of commissioning
Compliance Reviews	Process plant optimisation	Within 6 months of commissioning

Table S1.2 Operating techniques and controls		
Description	**Parts**	**Date Produced**
	Energy	Within 6 months of commissioning
	2 second residence time confirmation (or alternate – see IP2 below)	Within 6 months of commissioning
	Emissions to air, water	Within 6 months of commissioning
Energy Efficiency	Energy Efficiency Plan	Within 6 months of commissioning
Odour management	Odour management plan	Within 6 months of commissioning
Dust management	Dust management plan	Within 6 months of commissioning
Noise management	Noise management plan	Within 6 months of commissioning
Process control	Continuous Oxygen sensors in accordance with process HAZOP. EN 14181	Within 6 months of commissioning
Process control	Continuous Temperature sensors in accordance with process HAZOP. EN 14181	Within 6 months of commissioning
Process control	Continuous Moisture sensors in accordance with process HAZOP. EN 14181	Within 6 months of commissioning
Process control	Continuous Pressure sensors in accordance with process HAZOP. EN 14181	Within 6 months of commissioning

Table S1.3 Improvement programme requirements

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IP1	The operator shall review their Environmental Management System (EMS) against the requirements of Article 44 IED pursuant to Schedule 13(3) EPR2016 and *within 6 months of issue of the permit*. The operator will produce and implement an action plan to address any improvements required as a result of the review in order to ensure that the process is operated and controlled in line with the article requirements.	6 months from the date of commissioning
IP2	The operator shall submit details of the evidence to support an alternate compliance to that stated in Article 50(2) IED (residence time of 2 seconds). The submitted details shall include: • stated operating conditions to be at varying capacities low, typical and maximum capacity (operating modes) as per the controls set out in the SCADA control programme. • Results of MCERTs accredited periodic monitoring of emissions to air shall be sampled for each operating mode and provide sufficient evidence that emission limit values are compliant. • Results of continuous monitoring of emissions for a period of 7 days (to include the periodic monitoring above) shall be submitted to verify that emissions are consistently compliance. • An indication of typical residence time based on measurement, calculation or estimation (as required) shall be submitted.	6 months from the date of commissioning
IP3	The operator shall carry out a review of energy efficiency (as described in condition 1.2.1 (b)). The operator shall set targets for energy consumption, energy generation, and energy loss, and measure performance against benchmarks compared to energy/tonne of good product, or per MW of energy generated or other metric as required. This data shall be used to update table S4.2 below	6 months from the date of commissioning
IP4	The operator shall carry out a review of the avoidance, recovery and disposal of wastes (as described in condition 1.4.1), taking account of the principles of Articles 3 and 4 of the Waste Framework Directive. The operator shall set targets for waste and measure performance using benchmarks compared to waste/tonne of good product or another metric as required. This data shall be used to update Table S4.2 below.	6 months from the date of commissioning
IP5	The operator shall carry out a review of its operating techniques for minimising direct and indirect emissions to the environment in light of the outcome of the commissioning process. Any changes to plant, operational, control or management systems shall be used to update the Environmental Management System (EMS) required by condition 1.1	6 months from the date of commissioning
IP6	The operator shall carry out a review of the fire prevention plan for the site. The plan shall also include the provisions for drainage and the containment of any water that may be needed for extinguishing fires on the site. The plan is expected to be an addendum of (or integrated into) the existing wider site plan for fire prevention held by Northwest Recycling.	Prior to commencement of commissioning.

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Waste Types, Raw Materials and Fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
SRF derived from Waste (waste code see Table S2.2) 19 12 10	Typical parameters as follows: Net Calorific Value = ~19MJ/kg Total Moisture = ~10% Total Ash (w/w) = ~15% Particle Size (diameter) = <25mm

Table S2.2 Waste Types and Residues

Table S2.2 Wastes	
Waste description	**EWC Code(s)**
SRF (non-conforming)	19 12 04 (to be verified) 19 12 10 (to be verified) 19 12 12 (to be verified)
Gas cleaning residues – solid wastes from gas treatment	19 01 14 (to be verified)
Spent activated carbon	19 01 10 (to be verified)
Process condensate	19 01 06* (needs verification) 19 01 18 (needs verification)
Bottom ash/vitrified stones	19 01 14 (fly ash) (to be verified) 19 04 01 (stones) (to be verified) 19 01 12 (stones) (to be verified)

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements

Table S3.1 Point source emissions to air – emission limits and monitoring requirements										
Emission point ref. & location	**Source**	**Parameter**	**Daily Average (mg/m^3)**	**Half Hour Average 97% (mg/m^3)**	**Half Hourly Average 100% (mg/m^3)**	**Average 30 Mins - 8 Hours (mg/m^3)**	**Average 6 - 8 Hours (mg/m^3)**	**Continuous Monitoring requirements (CEM)**	**Periodic Monitoring frequency**	**Periodic Monitoring standard or method(1)**
All emission points	All	No visible emissions (other than steam or water vapour)	-	-	-	-	-	No	At least 1/day	Observation
A1 [Point A1 on site plan in Schedule 7]	CHP1, CHP2, CHP3, Thermal Oxidiser	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	200	200	400	-	-	Yes EN 14181 30min and daily average	Within 3 months of commissioning	BS EN 14792
A1 [Point A1 on site plan in Schedule 7]	CHP1, CHP2, CHP3, Thermal Oxidiser	Sulphur dioxide (SO_2)	50	50	200			Yes EN 14181 daily average	Within 3 months of commissioning	EN 14791
A1 [Point A1 on site plan in Schedule 7]	CHP1, CHP2, CHP3, Thermal Oxidiser	Carbon monoxide	50	-	100	-	-	Yes EN 14181 30min and daily average	Within 3 months of commissioning	BS EN 15058

Table S3.1 Point source emissions to air – emission limits and monitoring requirements										
Emission point ref. & location	**Source**	**Parameter**	**Daily Average (mg/m^3)**	**Half Hour Average 97% (mg/m^3)**	**Half Hourly Average 100% (mg/m^3)**	**Average 30 Mins - 8 Hours (mg/m^3)**	**Average 6 - 8 Hours (mg/m^3)**	**Continuous Monitoring requirements (CEM)**	**Periodic Monitoring frequency**	**Periodic Monitoring standard or method[(1)]**
Point A1 on site plan in Schedule 7	CHP1, CHP2, CHP3, Thermal Oxidiser	Gaseous and vaporous organic substances, expressed as total organic carbon (TOC)	10	10	20			Yes EN 14181 30min and daily average	Within 3 months of commissioning	EN 12619.
Point A1 on site plan in Schedule 7	CHP1, CHP2, CHP3, Thermal Oxidiser	Hydrogen Chloride (HCl)	10	10	60			Yes EN 14181 30min and daily average	Within 3 months of commissioning	EN 1911 or EN 16429.
Point A1 on site plan in Schedule 7	CHP1, CHP2, CHP3, Thermal Oxidiser	Hydrogen Fluoride (HF)	1	2	4			No	Within 3 months of commissioning then minimum of once per year	CEN TS 17340
Point A1 on site plan in Schedule 7	CHP1, CHP2, CHP3, Thermal Oxidiser	Total Dust	10	10	30	-	-	Yes EN 14181 30min and daily average	Within 3 months of commissioning	EN 13284-1

Table S3.1 Point source emissions to air – emission limits and monitoring requirements										
Emission point ref. & location	**Source**	**Parameter**	**Daily Average (mg/m^3)**	**Half Hour Average 97% (mg/m^3)**	**Half Hourly Average 100% (mg/m^3)**	**Average 30 Mins - 8 Hours (mg/m^3)**	**Average 6 - 8 Hours (mg/m^3)**	**Continuous Monitoring requirements (CEM)**	**Periodic Monitoring frequency**	**Periodic Monitoring standard or method[(1)]**
Metals										
Point A1 on site plan in Schedule 7	CHP1, CHP2, CHP3, Thermal Oxidiser	Mercury (and its compounds) (Hg)	-	-	-	0.05	-	No	Every 3month for 1st year Then Biannually	EN 13211
Point A1 on site plan in Schedule 7	CHP1, CHP2, CHP3, Thermal Oxidiser	Grp 1 Metals (Cadmium, Thallium and their compounds (total)) (Cd)(Th)	-	-	-	0.05	-	No	Every 3month for 1st year Then Biannually	EN 14385 and MID for EN 14385

Table S3.1 Point source emissions to air – emission limits and monitoring requirements										
Emission point ref. & location	**Source**	**Parameter**	**Daily Average (mg/m^3)**	**Half Hour Average 97% (mg/m^3)**	**Half Hourly Average 100% (mg/m^3)**	**Average 30 Mins - 8 Hours (mg/m^3)**	**Average 6 - 8 Hours (mg/m^3)**	**Continuous Monitoring requirements (CEM)**	**Periodic Monitoring frequency**	**Periodic Monitoring standard or method[(1)]**
Point A1 on site plan in Schedule 7	CHP1, CHP2, CHP3, Thermal Oxidiser	Group 3 Metals antimony, arsenic, lead, chromium, cobalt, copper, manganese, nickel, vanadium)	-	-	-	0.5	-	No	Every 3month for 1st year Then Biannually	EN 14385 and MID for EN 14385
Dioxins										
Point A1 on site plan in Schedule 7	CHP1, CHP2, CHP3, Thermal Oxidiser	Polychlorinated dibenzo-dioxins and polychlorinated dibenzo furans (Dioxins and furans)	-	-	-	-	0.1 ng/m^3 TEQ[5]	No	Every 3month for 1st year Then Biannually	EN 1948-4

Note 1: Monitoring techniques shall be carried out in accordance with MCERTs. Monitoring standards shall be carried out in accordance with the latest standard of the Monitoring stack emissions: techniques and standards for periodic monitoring [link] currently 17.11.22.

Note 2: In accordance with Article 46(6) of the IED no continuous monitoring emission shall continue to process waste where the emission limit is exceeded for more than 4 hours.

Note 3: In accordance with Article 46(6) of the IED non-compliant emissions shall not cumulatively exceed 60 hours in any 12 month period.

Note 4: Certification to the MCERTS performance standards indicates compliance with BS EN 15267-3

Note 5: For the determination of the total concentration of dioxins and furans, the mass concentrations of the following dibenzo-p-dioxins and dibenzofurans shall be multiplied by the following equivalence factors before summing as per the table in Part 2 of Annex VI IED.

Note 6: The 300 kW Generator shall not exceed 60 hours in any 12 month period without prior approval.

Table S3.2 Point source Emissions to water– emission limits and monitoring requirements

The site has no *process discharges* to surface water. There is no existing discharge consent.

Surface water and roof run-off is directed to a surface water system connected to a contained surface water system with over 30m^3 capacity. Overflow from the system is protected by a penstock valve.

Spillage containment and control of raw material/waste storage techniques identified in accordance with improvement programmes shall be implemented (see Table S1.3 above) shall be reviewed and implemented as part of demonstration of prevention of pollution of controlled waters.

Table S3.3 Point source Emissions to Sewer – emission limits and monitoring requirements

There are no *process discharges* to sewer.

Table S3.4 Annual limits for total and fugitive emissions

There are no annual emission or mass release emission limits appropriate to this installation.

Table S3.5 Groundwater Monitoring Requirements

Groundwater monitoring is not required by a Schedule 13 SWIP permit.
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Table S3.6 Process Monitoring Requirements

Table S3.6 Process monitoring requirements				
Pellet dosing				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
The dosing vessels are located in the gasifier unit. The dosing vessels provide a method of dosing feedstock into the heating vessels without hot gases reverse flowing. There is a sequence which is carried out approximately every hour that doses feed into a vessel, this is then transferred to a second vessel. The feed is	Feedstock.	Continuous.	Low weight/level warning to operators.	Screw conveyors are designed to run dry. Limited to screw conveyor max speed.
	Dosing vessel pressure.	Continuous.	System is pressurised with air blower and sequence does not proceed if	On shutdown (i.e. fan stop, low air pressure) both auto valves

then transferred to the reactor by screw conveyor.			pressure is not reached. Each sequence has a leak test between valves. Position feedback on auto valves, high temperature detection and shutdown on reactor inlet conveyor. Gas detection around area.	close. NRV on air system. Fan type does not allow reverse flow. Pressure checks on air system (to check for leaks) when plant shutdown.
	Flow of material in screw conveyor.	Continuous.	Choke on each conveyor to detect high level and shutdown drive. High motor amps leads to shut down. Equipment is designed to withstand 5barg. Air blower is limited to 500 mbarg max outlet pressure.	High level shutoff. High weight trip.
Heating Vessels				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Feedstock is fed continuously to the heating vessels using an accurately monitored feed auger. The feedstock is transformed to syngas in the	Continuous feed.	Continuous.	Low weight/level.	
	Primary and secondary air	Continuous.	Flow monitoring of air supply	

gasification heating vessel. The vessel temperature results in molecular disassembly and the creation of permanent fuel molecules.	feed to the reactor.		from air blowers. Low pressure monitoring. Rotation sensors on fans (motor and shaft) – discrepancy alarm. Multi-point temperature monitoring.	
Syngas cooling				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
As the syngas exits downstream of the heating vessel it is cooled in a series of heat exchangers. This first stage gas-air heat exchanger provides initial cooling to the syngas and also preheats gasification air to the heating vessel. Subsequent gas-water heat exchangers provide second stage cooling to the syngas to enable further filtration.	High temperature / water flow / air flow.	Continuous.	Multi-point monitoring. High temperature alarm & trip.	Oxygen monitoring on syngas header downstream to alarm & trip. Gas detection around area.
Syngas filtration				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
A bag-house filter is used to continuously extract the char from the syngas flow. This removes all particulates thereby polishing the syngas to gas engine quality.	Pressure drop monitoring.	Continuous.	Multi-point monitoring, alarms & trips.	Gas detection around area.

Syngas cooling pre. gas polishing				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
As the syngas exits downstream of the filter it is further cooled in water/gas heat exchangers to reach a temperature of approx. 50ºC prior to final gas polishing.	High temperature.	Continuous.	Multi-point temperature monitoring, alarm & trip.	Gas detection around area.
Syngas Polishing				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
The syngas is passed through final gas polishing. The final heat exchanger cools the gas to reduce moisture levels. The syngas is then reheated to optimise its condition for final delivery to the gas engines.	Gas flow monitoring. Temperature alarm/trip.	Continuous.	Multi-point monitoring, alarms & trips.	Gas detection around area.
Services				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
This includes compressed air supply, gasification air supply, pump room, electrical room & dry-coolers.	Multiple safeguards i.e. low air flow, low air pressure, high gas temps.	Continuous.	Multi-point monitoring, alarms & trips.	

CHP System				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Engines are specified as four-stroke, air/gas mixture turbocharged, after cooled, with high performance ignition system and electronically controlled air/gas mixture system. The generator consists of the main generator (built as rotating field machine), the exciter machine (built as rotating armature machine) and the voltage regulator with cos. phi-regulator, which is powered by a permanent magnet pilot exciter. The generating set (genset) is built as a compact package. The engine and generator are connected through a coupling and are mounted to the base frame. To provide the best possible isolation from the transmission of vibrations the engine is mounted to the frame by means of anti-vibrational mounts.	Fire detection, CO detection, low oil pressure, excessive temperature (engine and enclosure) low gas pressure.	Continuous.	Multi-point monitoring, alarms & trips.	

Thermal Oxidiser/300 kW Generator				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Thermal destruction of syngas during start-up/ramp-down.	Combustion air.	Continuous.	High temperature alarm/trip. Low temperature alarm.	850ºC residence time for 2 seconds
	Gas mass flow.	Continuous.	Pressure control and monitoring.	

Note 1: The 300 kW Generator is a standby diesel device operational only where primary power is not available or is disrupted.

Table S3.7 Land monitoring requirements

There are no land monitoring requirements for Schedule 13A permits.

However, storage of waste should be contained within designated areas which are impervious and capable of fully containing the waste deposited within the area. Waste shall be processed and handled in accordance with condition 2.3.5.

All wastes deposited outside the designated areas may be considered a pollution incident (see condition 4.3.1) and considered spillages and managed according to spillage containment and clean up procedures.

Schedule 4 – Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Table S4.1 Reporting of monitoring data

Table S4.1 Reporting of monitoring data			
Parameter	**Emission or monitoring point/reference**	**Reporting period**	**Period begins**
Emissions to air Parameters as required by condition 3.5.1. 1 monitoring point	A1	Every 12 months	1 January

Table S4.2: Annual production/treatment

Table S4.2: Annual production/treatment	
Parameter	**Units**
Quantity of waste pellets treated	Tonnes / annum
Quantity of syngas produced	Tonnes / annum
Quantity of other fuels used	Tonnes / annum
Energy generated	MW / annum

Table S4.2 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Specific water consumption	Annually	Volume / unit of production
Waste process water (including any treated wastewater) (condensate)	Annually	Volume / unit of production
Specific energy consumption	Annually	MWh or kWh / unit of production
Specific waste sent offsite	Annually	Tonnes / unit of production
Energy generated	Annually	MW / unit of production
Energy generation efficiency	Annually	%age
Solid waste (Fly ash)	Annually	Tonnes / unit of production
Solid waste (vitrified pebbles)	Annually	Tonnes / unit of production

*Unit of production refers to the mass of input waste for the period under consideration.

Table S4.3 Reporting forms

Table S4.3 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Air	Form air 1 or other form as agreed in writing by the Regulator	Version 1, 08/03/2021
Water	Form water 1 or other form as agreed in writing by the Regulator	Version 1, 08/03/2021
Sewer	Form sewer 1 or other form as agreed in writing by the Regulator	Version 1, 08/03/2021
Performance parameters	Form performance 1 or other form as agreed in writing by the Regulator	Version 1, 08/03/2021

Table S4.4 Standard Reporting forms

Table S4.4 Standard Reporting forms		
Parameter	**Reporting form**	**Form version number and date**
Point source emissions to air	Emissions to Air Reporting Form, or other form as agreed in writing by the Regulator	Version 1, 08/03/2021
Point source emissions to water (other than sewer)	Emissions to Water Reporting Form, or other form as agreed in writing by the Regulator	Version 1, 08/03/2021
Point source emissions to sewer	Emissions to Sewer Reporting Form, or other form as agreed in writing by the Regulator	Version 1, 08/03/2021
Surface water and/or groundwater monitoring	Surface Water and/or Groundwater Monitoring Form, or other form as agreed in writing by the Regulator	Version 1, 08/03/2021
Ambient air monitoring	Ambient Air Monitoring Form, or other form as agreed in writing by the Regulator	Version 1, 08/03/2021
Process monitoring	Process Monitoring Form, or other form as agreed in writing by the Regulator	Version 1, 08/03/2021
Water usage	Water Usage Reporting Form, or other form as agreed in writing by the Regulator	Version 1, 08/03/2021
Energy usage	Energy Usage Reporting Form, or other form as agreed in writing by the Regulator	Version 1, 08/03/2021
Other performance parameters	Other Performance Parameters Reporting Form, or other form as agreed in writing by the Regulator	Version 1, 08/03/2021

Where no limits are stipulated, please provide ‘Nil Return’

Schedule 5 – Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A Notification of abnormal operational conditions

Permit Number	
Name of operator	
Location of Facility	
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	**Notification period**

(c) Notification requirements for the breach of permit conditions not related to limits	
To be notified within 24 hours of detection	
Condition breached	
Date, time and duration of breach	
Details of the permit breach i.e. what happened including impacts observed.	
Measures taken, or intended to be taken, to restore permit compliance.	

(d) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B – to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	
The dates of any unauthorised emissions from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

Schedule 6 – Interpretation

Term	Meaning
"Abatement equipment"	means that equipment dedicated to the removal of polluting substances from releases from the installation to air or water media.
"accident"	means an accident that may result in pollution
"application"	means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.
"Authorised officer"	means any person authorised by the Regulator under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.
"Background concentration"	means such concentration of that substance as is present in: • for emissions to surface water, the surface water quality up-gradient of the site; or • for emissions to sewer, the surface water quality up-gradient of the sewage treatment works discharge.
"Calendar monthly mean"	means the value across a calendar month of all validated hourly means.
"CEM"	Continuous emission monitor
EP Regulations"	means The Environmental Permitting (England and Wales) Regulations SI 2016 No.1154 (or any superseding legislation), and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations
"Emissions of substances not controlled by emission limits"	means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission or background concentration limit.
"Emissions to land"	includes emissions to groundwater.
"groundwater"	means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.
"Groundwater protection zones 1 and 2"	have the meaning given in the document titled "Groundwater Protection: Policy and Practice" published by the Environment Agency in 2006 (or any superseding document).
"Hazardous Waste"	has the meaning given in the Hazardous Waste (England and Wales) Regulations 2005 No.894, the Hazardous Waste (Wales) Regulations 2005 No. 1806 (W.138), the List of Wastes (England) Regulations 2005 No.895 and the List of Wastes (Wales) Regulations 2005 No. 1820 (W.148) or any superseding legislation
"Industrial Emissions Directive"	means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions as read in accordance with Schedule 1A to the Environmental Permitting (England and Wales) Regulations 2016 (as amended).
"ISO" means	International Standards Organisation.
MCERTS"	means the Environment Agency's Monitoring Certification Scheme.
"Medium Combustion Plant" or" MCP"	means a combustion plant with a rated thermal input equal to or greater than 1 MW but less than 50 MW.
"Medium Combustion Plant Directive" or "MCPD"	means Directive 2015/2193/EU of the European Parliament and of the Council on the limitation of emissions of certain pollutants into the air from medium combustion plants, as read in accordance with Schedule 1A to the Environmental Permitting (England and Wales) Regulations 2016.

"Pollution"	shall have the same meaning as per section 2 of the EPR, in summary this means; harmful to human health, or quality of the environment, cause offence to mans senses, result in damage to material property or impair or interfere with amenities or other legitimate uses of the environment;
"Quarter"	means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.
"Regulator"	Reference to the regulator means Cumberland Council. Regulatory functions for the regulator are discharged by duly authorised officers of Cumberland Council.
"Quarterly"	for reporting/sampling means after/during each 3 month period, January to March; April to June; July to September and October to December and, when sampling, with at least 2 months between each sampling date.
"SI"	means site inspector.
"Organic Compound"	means any compound containing at least the element carbon and one or more of hydrogen, halogens, oxygen, sulphur, phosphorus, silicon or nitrogen, with the exception of carbon oxides and inorganic carbonates and bicarbonates.
"Solvent Emissions Directive"	means Directive 1999/13/EC (as amended by Directive 2004/42/EC) on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations.
"Volatile Organic Compound" (VOC)	means any organic compound means any organic compound as well as the fraction of creosote, having at 293.15 K, a vapour pressure of 0.01 kPa or more, or having a corresponding volatility under the particular conditions of use.
"Waste code"	means the six-digit code referable to a type of waste in accordance with the List of Wastes (England) Regulations 2005, or List of Wastes (Wales) Regulations 2005, as appropriate, and in relation to hazardous waste, includes the asterisk.
"Waste Framework Directive" or "WFD"	means Waste Framework Directive 2008/98/EC of the European Parliament and of the Council on waste.
"Waste Incineration Directive"	means Directive 2000/76/EC of The European Parliament and of The Council of 4 December 2000 on the incineration of waste
"Year"	means calendar year ending 31 December.

Where a minimum limit is set for any emission parameter, for example mg/m^3, reference to exceeding the limit shall mean that the parameter shall not exceed that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

a) in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273.15K, at a pressure of 101.3 kPa and with an oxygen content of 11% dry; and/or
b) in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content.

Schedule 7 – Site plans

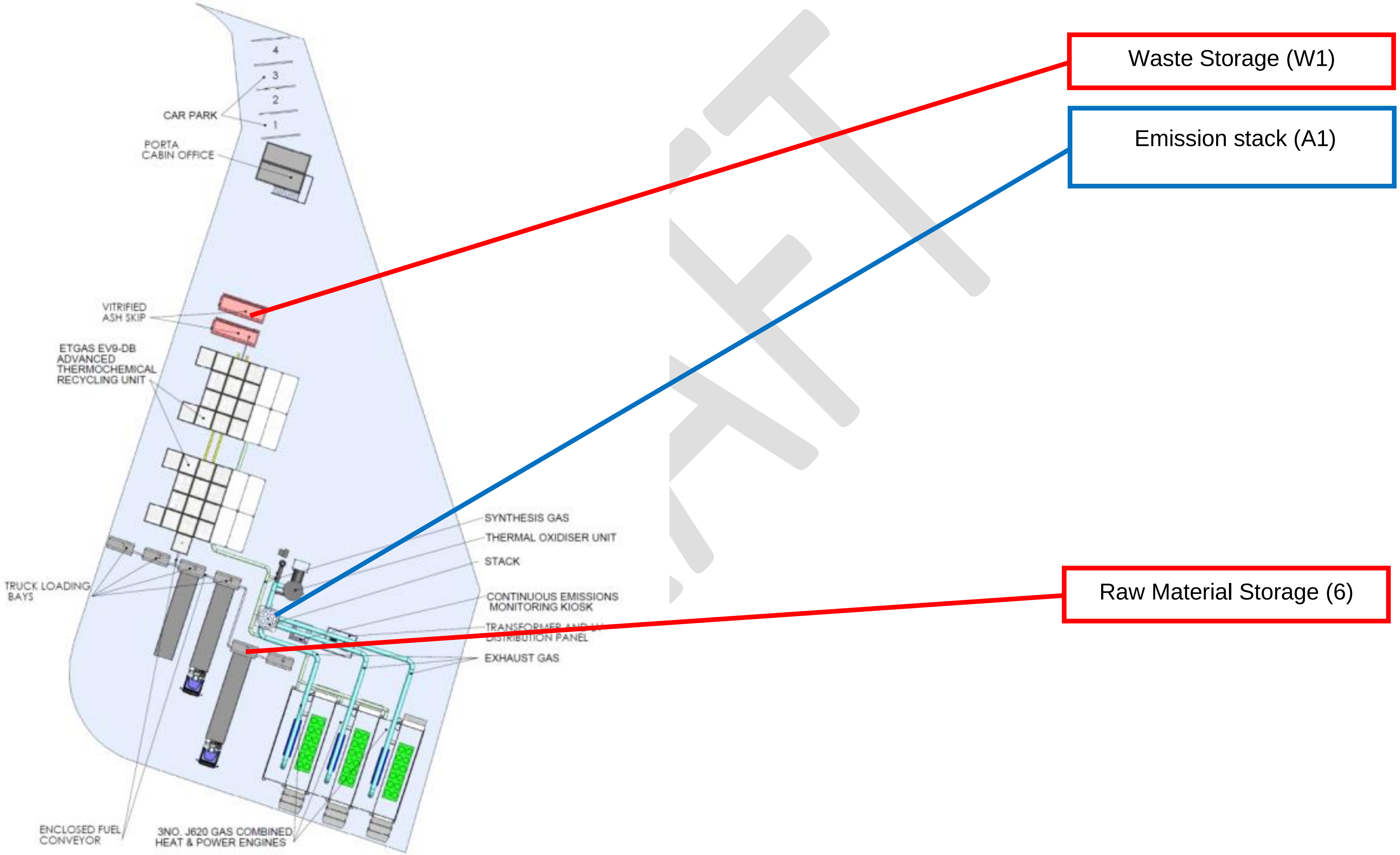
Installation Boundary

Plotted Scale - 1:5000. Paper Size – A4

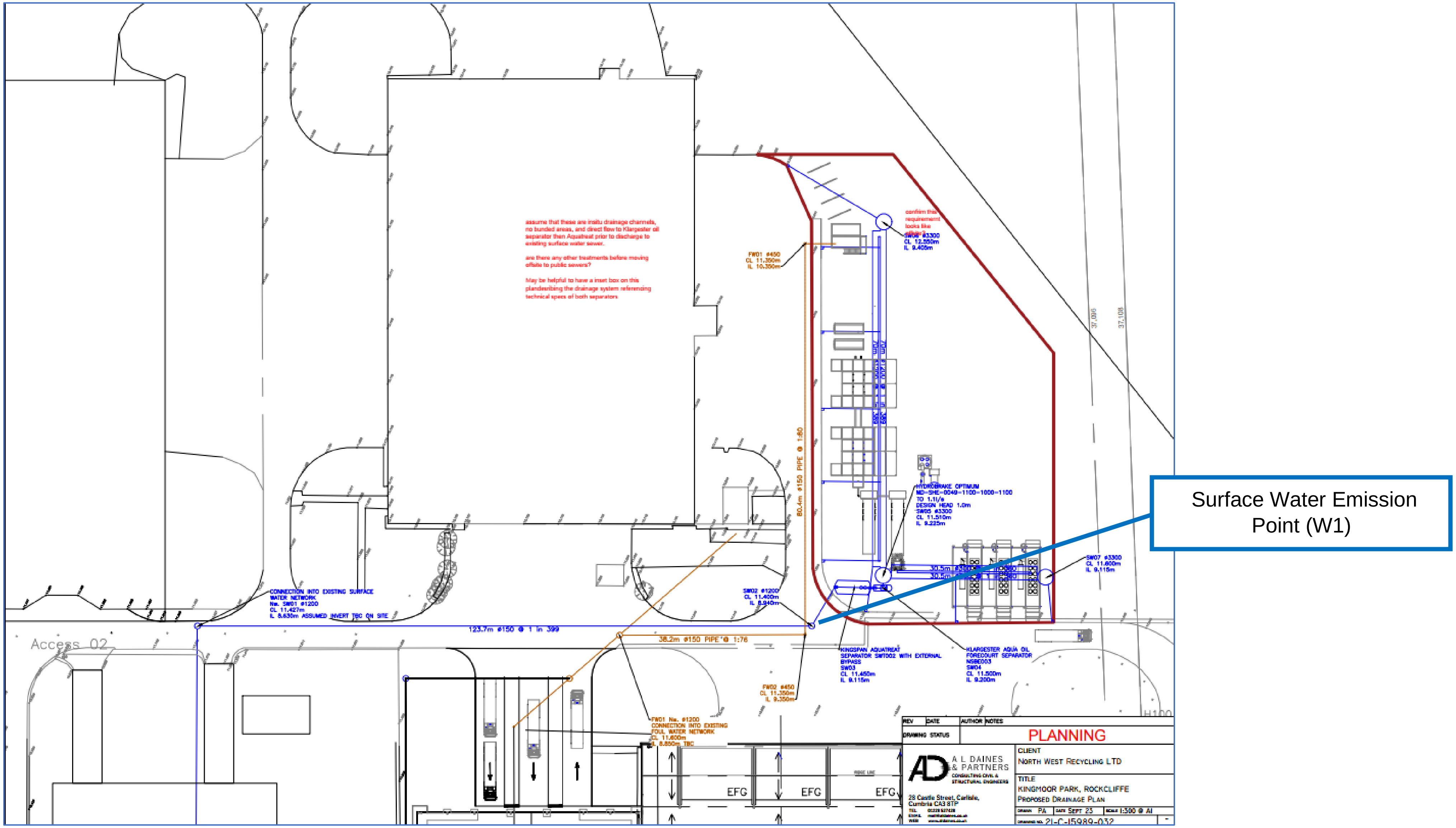
Proposed Site Boundary
Wider Site Ownership Boundary

Installation Boundary

Emission points to environment



Drainage systems (information only – surface water to sump and overflow to foul sewer)



END OF PERMIT