CALDER VALLEY SKIP HIRE ENVIRONMENTAL MANAGMENT SYSTEM FOR THE SMALL WASTE INCINERATION PLANT

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1 INTRODUCTION

1.1.1 Calder Valley Skip Hire (CVSH) have an established Environmental Management System (EMS) which covers the operation of its permitted Waste Transfer Station (WTS) at their site in Sowerby Bridge, West Yorkshire. This document provides supplementary procedures that are specific to the Small Waste Incineration Plant (SWIP) and where applicable cross references procedures for the WTS[1] that apply directly to the SWIP. By incorporating parts of the existing EMS applicable to the WTS by cross references into this EMS for the SWIP, to avoid unnecessary duplication, it is not intended in any manner or to any extent to alter the regulatory position that the WTS and the SWIP are separate regulated facilities.

1.1.2 The SWIP is regulated by the local authority (LA) under a Schedule 13 SWIP permit. The SWIP processes 1-2 tonnes per hour (tph) of refuse derived fuel (RDF) produced from the residual, non-recyclable fraction of the treated wastes handled at the WTS operated by CVSH located on what in regulatory terms is the adjacent site. The SWIP produces approximately 1.5 MW per tonne of RDF of energy comprising both heat and electrical energy, 180 - 200 kW electrical energy, part of which is be utilised at the WTS with the balance exported to the Grid.

1.1.3 Circa 1.28 MW of heat produced by the SWIP is used within the drying plant that forms part of the WTS activities.

1.1.4 This EMS supplement incorporates the requirements of the DEFRA guidance for the operation of small waste incineration plants (SWIPs)[2].

1.1.5 The scope of this EMS supplement is structured as follows:

1. Cleaning and maintenance
2. Training and plant operation
3. Waste acceptance criteria
4. Bottom ash storage and disposal
5. Emission monitoring
6. Plant failures, including the management of waste during plant down time
7. Record keeping

[1] Calder Valley Skip Hire, Management System, Accident and Emergency Plan Version 8.0 December 2021

[2] Environmental permitting technical guidance PG13/1(21), Reference document for the operation of small waste incineration plants (SWIPs), Pre-publication final draft, DEFRA

2 MANAGEMENT

2.1 Overview

2.1.1 The EMS for the WTS contains an environmental policy in Appendix CV06 that outlines the company's commitments with regards to environmental performance. The requirements of this environmental policy apply also to the operation and management of the SWIP.

2.2 Organisation and Responsibilities

2.2.1 Section 1 of the EMS for the WTS details the management at the WTS and document CV10 shows the management structure of the company.

2.2.2 Key responsibilities at the SWIP are as follows: SWIP operators, on-site operation staff, compliance manager (Joe Sawrij).

2.2.3 The CVSH Site Manager undertakes routine daily inspections of the SWIP which includes visual monitoring for dust and litter within the SWIP building and implement corrective measures should any be identified.

2.2.4 The Site Manager also completes a daily inspection form (SWIP Form 1). This form is completed as a hard copy.

2.3 Training and Competence

2.3.1 Section 1 of the WTS EMS details training records that CVSH maintain. These procedures apply to the SWIP operation. A copy of the recording template for training is included in document CV03 within the WTS EMS. Training records are prepared for all operational staff and training needs are reviewed on a regular basis. Copies of all training records are kept at the CVSH site and are available for inspection upon request.

2.3.2 Joe Sawrij is the Technically Competent Person (TCP) at the SWIP.

2.3.3 CVSH ensure that all personnel employed to operate the SWIP have the appropriate skills and technical capabilities to understand the operation of the process, and their obligations under the terms and conditions of the Permit. Only trained personnel are permitted to operate the SWIP.

2.3.4 Training will include normal operation as well as routine interventions, response to alarm conditions, and start-up and shut down procedures. Any new operational staff are trained under the supervision of experienced operational staff.

2.3.5 Initial training in the operation of the SWIP will be provided by a suitably qualified and experienced external 3rd party incineration specialist. Subsequent induction and training of new staff is undertaken by qualified and experienced CVSH SWIP operators.

2.3.6 All front-loader drivers transferring material to the SWIP are trained, and this training includes clear instruction on ensuring front-loaders are not overloaded and the need to adhere to the site speed limit of 5 mph.

2.4 Risk Management

2.4.1 Section 1.2 (Methodology for Risk Assessment) of the WTS EMS details the methodology for identifying environmental hazards associated with the WTS and assessing their risk. A risk assessment specific to the SWIP operation using the same methodology referenced above is presented in Table 1 below.

Table 1 SWIP Risk Assessment

	Hazard	Likelihood Score	Consequence	Overall risk score	Acceptability of risk	Justification for acceptability (description of risk management measures)
1.1	Incorrect waste into the SWIP unit resulting in adverse reaction or environmental harm	Somewhat unlikely 4	Minor 1	4	Acceptable	The SWIP only processes RDF that is produced from the residual, non-recyclable fraction of the wastes treated at the adjacent WTS (of note these wastes have also been subject to waste pre-acceptance and waste acceptance checks as detailed in the WTS EMS). No other waste is accepted at the SWIP. All waste transferred to the SWIP is subject to an annual waste transfer note although not legally required. Front-end loader drivers visually inspect the material during loading and unloading. Should contraries be identified they are removed from the load and returned to the WTS where it would either be quarantined or if suitable for recovery placed with other segregated wastes for removal from the WTS. As the production of RDF to be used as feedstock for the SWIP will be managed by CVSH in the adjacent WTS it is not anticipated that there will be non-conforming materials within the RDF. However, in the event of there being any non-conforming materials within the RDF, details of any such non-conforming materials are recorded in the SWIP diary and will be reviewed to identify the need for improvements.
1.2	Incorrect storage of waste resulting in adverse reaction or environmental harm	Somewhat unlikely 4	Minor 1	4	Acceptable	The SWIP includes a waste reception and storage area (RDF Bunker) both of which are housed within the thermal treatment building. No wastes associated with the SWIP are stored externally. At any one time no more than 20 tonnes of RDF is stored within the storage bunker or within the feed hopper. The thermal treatment building has a concrete floor the integrity of which will be maintained to minimise the potential pathway to land and groundwater in the case of a spillage.
1.3	Incorrect transfer of RDF to the SWIP from the WTS.	Fairly probable 5	Minor 1	4	Acceptable	Spillage of RDF upon entering the thermal treatment building is only fairly probable as the vehicle operator transferring material to that building will adhere to the site speed limit (5mph) which will minimise the potential for accidental spillages. This will be made clear during site inductions/ training and enforced by the site manager. All front loader drivers will be trained, and this training will include clear instruction on ensuring front loaders are not overloaded. Any RDF that is spilled will be cleared as soon as possible
1.4	Transfer of substances - incorrect filling or emptying of tanks resulting in a major spillage.	Somewhat unlikely 4	Minor 1	5	Acceptable	All material transfer and storage operations associated with the SWIP take place within the thermal treatment building. Urea will be delivered in bunded drums and transferred into the bunded storage tank. The tank bund is sized to contain 110% of the tank contents. Hydrated lime and activated carbon are both solids and will be delivered and stored in 25kg bags. Any damaged bags are double bagged and split material cleaned up using dry techniques. The filing of the diesel tank within the SWIP will be carried out by a fully trained external contractor. The tank will be manually filled under human supervision. The tank will be double bunded and on a sealed drainage. All bottom ash and APC residue handling will take place within the thermal treatment building. Bottom ash will be manually raked by trained staff directly into containers which will be sealed within the building once full. APC residue will be handled separately from bottom ash and will be loaded into fully enclosed skips using a vacuum which is then loaded onto collection vehicles within the building.
1.5	Over filling of vessels resulting in a major spillage	Somewhat unlikely 4	Minor 1	4	Acceptable	The filling of the diesel tank will be carried out by a fully trained external contractor. The tank is manually filled under human supervision. The tank is double bunded on the thermal treatment building has sealed drainage. Before filling the level of vessels is checked to determine how much diesel for example needs to be filled into the vessel, to prevent overfilling
1.6	Emissions from plant and equipment causing an environmental impact	Somewhat unlikely 4	Minor 1	4	Acceptable	Flue gases from the SWIP are abated using the injection of a hydrated lime and activated carbon combined with dust filtration. Selective non-catalytic reduction (SNCR) with urea is used to control NOx emissions. Continuous monitoring of emissions to air confirm that emissions remain within IED emission limits. Where continuous monitoring is not proposed periodic monitoring is undertaken. In the event that emissions are exceeded and cannot be rectified within 4 hours the plant would shut down. The SWIP is automatically controlled with daily visual site inspections by trained operators. All plant with the potential to effect emissions are subject to routine maintenance. Routine maintenance is also be carried out on plant with the potential to generate noise to ensure it remains in good working order (see item 14for further detail on noise). The final releases to air are from a suitably designed stack which is of sufficient height to give effective dispersion. The roller door of the SWIP will remain shut at all times other than for access which will minimise the potential for odour or dust emissions (see items 13 & 14 below for further detail on odour and dust management).
1.7	Failure of containment	Unlikely 3	Minor 1	3	Acceptable	The diesel tank will be certified (oil regulations compliant) and will be double bunded and sized to contain 110% of the tank. Routine inspections of all tanks and containment systems are carried out and any signs of deterioration of defects would be reported and suitable repairs made as necessary. Spill kits are provided, and inventories routinely checked and maintained.
1.8	Failure to contain fire water	Unlikely 3	Minor 1	3	Acceptable	In the event of a fire, contaminated fire water from firefighting will be contained within the thermal treatment building. Polybooms (or similar) are stored on site and will be used to seal off access doorways. Any firewater contained following a fire event will be disposed of to a suitable off-site facility.
1.9	Wrong connections made in sewer or other system resulting in a major spillage					Not applicable ï no discharges to sewer. Wrong connection made to the diesel and urea tank are unlikely to be made as the filling of the diesel tank will be carried out by a fully trained external contractor. The tank is manually filled under human supervision.
1.10	Incompatible substances allowed to come into contact causing a reaction	Unlikely 3	Minor 1	3	Acceptable	The only waste that is accepted at the SWIP is RDF which will not react with itself. The diesel tank is manually filled by a fully trained external contractor, therefore, the likelihood of it coming into contact with any other substances is unlikely. Urea, activated carbon, hydrated lime, bottom ash and APC residues are all stored separately from one another and are not incompatible with one another.

	Hazard	Likelihood Score	Consequence	Overall risk score	Acceptability of risk	Justification for acceptability (description of risk management measures)
1.11	Cross contamination with chemicals giving a runaway reaction	Unlikely 3	Minor 1	3	Acceptable	The nature of the chemicals used at the SWIP are unlikely to cause a runaway reaction.
1.12	Failing of services resulting in environmental harm (power, water etc)	Unlikely 3	Minor 1	3	Acceptable	Under normal operation the SWIP provides its own power. Only during start-up and shutdown would power need to be imported from the grid. In the event of a power failure at start-up then start up would not commence. If there is a power cut that impacts the SWIP during a shutdown the emergency relief valve would be used.
1.13	Operator error resulting in environmental harm	Unlikely 3	Noticeable 2	6	Acceptable	On-site operational staff will be trained for normal operation as well as routine interventions, response to alarm conditions, and start-up and shut down procedures. Training records of the personnel involved will be recorded and copies kept on site. Only trained personnel will be permitted to operate the plant. Following commissioning of the plant any new operational staff will be trained under the supervision of experienced operational staff
1.14	Vandalism	Unlikely 3	Noticeable 2	6	Acceptable	The SWIP sits immediately adjacent to the WTS site which has controlled access. The roller shutter access doors for the thermal treatment building are rapid-closing heavy duty polyethylene roller shutter doors which remain shut and only open to permit access to or from the building during weekday daytime operational hours. The roller shutter doors will remain shut altogether at all other times. The SWIP has 24-hour security via a CCTV system. All plant raw materials and waste/residues associated with the SWIP are stored securely inside the thermal treatment building.
1.15	Odour from SWIP activities	Unlikely 3	Noticeable 2	6	Acceptable	The RDF accepted at the SWIP is not generally processed from putrescible waste and should not, therefore, have a high potential for the emission of odours. Other raw materials and residues are also not considered highly odorous. All activities relating to the SWIP are carried out within the thermal treatment building and doors will be kept shut other than for access. The thermal treatment building is an existing building that has a purpose-designed interior and will be operated under slight negative pressure with air from within the building being supplied as combustion air to the SWIP. Any potential odours would be destroyed by high temperature combustion.
1.16	Collision of plant / vehicles that results in environmental harm	Somewhat unlikely 4	Minor 1	4	Acceptable	The SWIP will only accept non-liquid wastes. A minor collision of vehicles on site will not result in environmental harm. Delivery of diesel presents an increased environmental risk. The area around the delivery vehicle will be conned off to reduce the potential of a vehicle impact while it is un-loading. Vehicle movements associated with RDF transfers within the SWIP are away from the tanks. The site has a speed limit of 5mph which is enforced.
1.17	Pollution to river Calder (adjacent to the site)	Unlikely 3	Noticeable 2	6	Acceptable	All raw materials, waste and residues are stored within the thermal treatment building. RDF is stored within the RDF bunker. The dimensions of the RDF bunker are approximately 3.0 m high, 6.7 m wide and 5.5 m long. Diesel is stored within a bunded tank, bund is sized to contain 110% of tank contents Urea is stored within 25l drums which are bunded. Activated carbon is stored within 25kg bags. Hydrated lime is stored within 35kg bags. Bottom ash is stored within sealed containers. APC residues is stored within fully enclosed skips. Any spillage is expected to be contained within the thermal treatment building. Any spillages will be cleaned using site spill kits that are stored within the thermal treatment building.
1.18	Pests and Vermin	Fairly probable 5	Minor 1	5	Acceptable	RDF delivered to the SWIP does not contain food wastes or a high degree of putrescible waste that attract vermin. Storage of RDF within the SWIP is limited to 20 tonnes and storage of waste for more than one day is not expected. The RDF burnt at the SWIP has been pre-treated within the adjacent WTS. The RDF has been shredded. Therefore, fly eggs transportation to the SWIP will be minimised. Should flies be detected then the area of detection would be sprayed with insecticide and monitoring continued. Pest control measures are applied within the SWIP via independent contractor.
1.20	Noise from SWIP activities	Fairly probable 5	Minor 1	5	Acceptable if reduced as much as reasonably practical	A Noise Management Plan (NMP) is in place (Belmont Industrial Estate, Calder Valley Skip Hire, Noise Management Plan, July 2020) and applies both to the SWIP and the drying plant that serves the adjacent WTS. This NMP implements a mitigation strategy to ensure that noise emissions are, so far as is practicable, reduced, supressed and contained.
1.21	Dust from SWIP activities	-	-	-	-	A separate assessment of risks from dust and associated management measures is contained within the Dust Management Plan (DMP) which has been produced (Dust Management Plan V2 r1 1 May 2020). This applies both to the SWIP and to the drying plant at the adjacent WTS. The interior of the thermal treatment building has been purpose-designed and will be operated under slight negative pressure in order to mitigate potential dust emissions. These measures will be effective, so far as is practicable to prevent dust emissions.
1.22	Flooding	Fairly probable 5	Minor 1	5	Acceptable (with incorporated mitigation)	The flood risk assessment (FRA) that supported the planning application indicated that the SWIP building is located within EA Flood zones, 1,2&3. Waste storage will be a minimum of 300 mmm above the internal floor level (note: the FRA indicated using conservative flood predictions that a flood level could reach approximately 150 mm above existing floor levels). The site will monitor weather forecasts/flood warnings so they are aware of a potential flood event and allow preventive action to be taken. Floodgates will be in place across access doorways to the SWIP building in the even of a flood.

Accident and Emergency Management

2.4.2 The WTS EMS contains an Accident Management Plan (AMP) in section 1.2. This AMP shall apply also to the SWIP as supplemented by this EMS. All incidents, accidents and emergencies on site will be dealt with as per procedure CV02 (emergency action plan). This plan has defined an emergency as the following:

- Uncontrolled fire
- Explosion
- Un-contained spillage or leakage
- Major injury or dangerous occurrence

2.4.3 Additional possible incidents, accidents and emergencies that could impact the environment are identified in Table 1 above along with proposed management measures.

2.4.4 Any accident or emergency will be investigated and reviewed to identify the need for further measures to prevent a re-occurrence or improve mitigation measures. Records of investigations will be kept and will include the following information as a minimum.

- Date and time of the incident and duration
- Details of those persons/bodies contacted
- Details of the incident and any associated environmental impact
- Weather conditions during the incident (where relevant)
- Details of actions taken and by who
- A description of any follow-up actions with responsibilities and timelines for closing out

Fire Prevention

2.4.5 A Fire Prevention Plan[3] (FPP) is in place for the WTS. This FPP shall apply also to the SWIP as supplemented by this EMS. Fire prevention plan requirements apply to the storage and handling of combustible wastes. The only combustible waste stored and handled within the SWIP is RDF. Both bottom ash and APC residues have been subject to high temperature combustion and are therefore not considered combustible.

2.4.6 The following management measures are in place to reduce the risk from common causes of fire and are based on Guidance Fire prevention plans: environmental permits Published 29 July 2016.

- Arson - The SWIP sits within the thermal treatment building, which is located immediately adjacent to the WTS and can only be accessed through the WTS. The WTS has controlled access and security fencing around the boundary. The thermal treatment building is alarmed with CCTV and smoke and heat detection. A potential arsonist would have to travel, undetected, through the adjacent WTS and then break into the thermal treatment building to cause a fire at the SWIP.
- Plant and Equipment ï Maintenance of plant and equipment is carried out at the SWIP as per section 10.The static plant and equipment used is regularly maintained and undergoes regular inspection.
- Electrical Faults - Electrical equipment and installation are fully certified by a suitably qualified third-party electrician.

[3] Appendix C, Fire Prevention Plan, Calder Valley Skip Hire Ltd, 16.09.2020

- Discarded Smoking Materials ï Smoking is not permitted within the SWIP permit boundary. Smoking is only permitted in dedicated areas of the adjacent WTS (these are well distanced from the SWIP permit boundary and the SWIP building)
- Hot Works Safe Working Practices - Any hot works that take place at the SWIP are controlled by a permit system. A fire check is conducted after the hot works finish and at the end of the working day.
- Hot Exhausts and Engine Parts ï Mobile plant delivering RDF from the adjacent WTS to the thermal treatment building will only be present within that building for relatively short durations of time, as the mobile delivery plant will leave the building as soon as the RDF has been delivered. A single mobile loading plant will be based within the building in order to load RDF particularly from the storage bunker within the thermal treatment building into the SWIP hopper. The maximum use of that mobile loading plant will be during weekday night time operations when there are no deliveries of RDF from the adjacent WTS. During such weekday night time periods the maximum use of the mobile loading plant will be at 15 minute intervals. When the mobile plant is not in use its engine will be switched off. The mobile loading plant is equipped with an automatic mechanism which switches off the engine when not being used. Therefore, the engine of the mobile loading plant will not be left idling during periods of non-use.
- Ignition Sources - No space heaters or naked flames are used at the SWIP.
- Leaks and Spillages of Oils and Fuels ï All oils and fuels kept on site are stored within bunded containers. The handling of which is only undertaken by trained operatives and external contractors. Spill kits are located within the SWIP. CVSH mobile plant used to deliver RDF from the WTS to the SWIP is checked for signs of fuel leakage prior to closing the site each day.
- Build-Up of Loose Combustible Waste, Dust and Fluff - Daily site checks are carried out which include inspecting the site for build-up of loose combustible waste, dust and fluff and cleaning arranged if needed.
- Reactions Between Wastes ï The sole waste type accepted at the SWIP (RDF) will not react with itself.
- Deposited Hot loads ï RDF accepted at the SWIP has already been processed at the CVSH WTS. Therefore, loads will not contain hot material.

Management of Wastes Storage Piles

2.4.7 Up to 20 tonnes of RDF will be stored within the SWIP at any one time in the RDF bunker, albeit during normal operation it is expected that volumes of waste being stored will be well below the maximum and no waste will be stored within the SWIP during weekends or bank holidays. The dimensions of the RDF bunker are approximately 3.0 m high, 6.7 m wide and 5.5 m long. The maximum volume of the RDF bunker is circa 111m^3. This is well below the EA FPP Guidance[4] requirements in terms of dimensions (height 4m and length/width 20m) and maximum volume for RDF (450m^3).

Preventing Self Combustion and Fire Spreading

2.4.8 The maximum storage time for RDF in the SWIP is 1 day and the typical storage time for RDF is 1 day. The RDF bunker will be cleared at the end of the working week, so no waste is stockpiled within the thermal treatment building during the weekend or over a bank holiday. During the

[4] https://www.gov.uk/government/publications/fire-prevention-plans-environmental-permits

working week the thermal treatment building will be manned by trained personnel at all times, both during the daytime and at night.

Quarantine Area

2.4.9 A quarantine area is not required at the site as there is only one stockpile meaning there are no other piles where a fire could spread to. Furthermore, there will be no more than 20tonnes of RDF stored in the thermal treatment building at any one time. As per paragraph 2.4.7 there would ordinarily be much less than 20 tonnes and no waste will be stockpiled during weekends or bank holidays. All waste delivered to the SWIP will be processed within 24 hours of its delivery or returned to the WTS.

Fire Detection and Suppression

2.4.10 The design and installation of the automated systems conform to the requirements of British Standard 5839 part 1 2017. Conformation of the specification of this system is provided in Appendix B.

2.4.11 The fire alarm system is an open protocol system which has manual call points and automatic fire detection to all areas of the building.

2.4.12 Fire extinguishers are provided at the SWIP to supress fires if required.

Fire Fighting, Water Supplies and Containment

2.4.13 Procedures for firefighting at the adjacent WTS as set out in section 12 of the WTS FPP are followed and shall apply to the SWIP as supplemented by this EMS.

2.4.14 Mains water will primarily be used to supply the hoses used in the event of a small fire. Fire extinguishers will also be used in the event of a small fire.

2.4.15 The maximum waste volume stored at the site is 111m^3 (RDF bunker). The water supply need is 740litres per hour (111m^3 x 6.67). The overall water supply needed over 3 hours is 133,267 litres (740litresx180minutes).

2.4.16 The closest fire hydrant is located at the top of the access road, which is located less than 100 m from the WTS entrance. This hydrant has been used by West Yorkshire Fire and Rescue Service (FRS) during a previous fire event at the WTS. The hydrant is maintained by the FRS in conjunction with Yorkshire Water and was inspected on 03/03/2021. The hydrant conforms to BS 750.

2.4.17 In the event of a fire, contaminated fire water from firefighting is contained within the thermal treatment building. Polybooms (or similar) are stored on site and would be used to seal off access doorways. Any firewater contained following a fire event would be disposed of a suitable off-site facility

During and After an Incident

2.4.18 The measures set out within the WTS FPP shall apply also to the SWIP. As the SWIP is regulated by the Calderdale Metropolitan Borough Council (CMBC) it would be notified by CVSH following any fire incident.

Complaints

2.4.19 The same complaints system that is detailed in page 22 of the WTS EMS will be used for the SWIP operation.

2.4.20 As part of the complaint system complaints will be recorded on form CV05.Compliants will be clearly specified if they apply to the SWIP or WTS on this form.

Incident Recording and Non-Conformances

2.4.21 The same non-conformity, corrective action and preventive action that is detailed in page 23 of the WTS EMS will be used for the SWIP operation.

2.4.22 CVSH would clearly distinguish between incidents and non-conformances associated with either the SWIP or the WTS.

3 OPERATIONS

3.1 Waste Pre-Acceptance and Waste Acceptance

Acceptable Waste to be Burnt

3.1.1 The SWIP only burns RDF (EWC code 19 12 10) at a feed rate of up to 2 tonnes per hour with a maximum throughput of 10,000 tonnes per annum (tpa). All RDF has been pre-treated within the adjacent WTS, no waste from other offsite facilities is accepted directly into the SWIP.

3.1.2 RDF to be burned within the SWIP has been subject to waste characterisation analysis to confirm its suitability for acceptance for treatment within the SWIP. The RDF would be re-characterised in the event that the WTS changes the permitted waste codes accepted at the WTS or introduces new waste treatment processes that could affect the nature of the RDF output delivered to the SWIP.

3.1.3 An annual waste transfer note is in place to cover waste transfers from the WTS to the SWIP for record-keeping purposes. Duty of care obligations do not apply to such transfers.

Waste Acceptance Procedures

3.1.4 All RDF will come from the existing adjacent WTS operated by CVSH. This RDF is produced from the residual, non-recyclable fraction of the existing waste stream comprising primarily construction and demolition waste. Therefore, the CVSH has full knowledge of what waste types are entering the SWIP as the waste has already been accepted and treated at the adjacent WTS and transferred as RDF to the SWIP.

3.1.5 As stated above, all waste transferred to the SWIP is subject for record-keeping purposes to an annual waste transfer note. Front-end loader drivers visually inspect the material during loading and unloading loading. Should contraries be identified they are removed from the load and returned to the WTS where it would either be quarantined or if suitable for recovery placed with other segregated wastes for removal from the WTS. Records of non-conforming materials within the RDF are kept and will be reviewed to identify the need for improvements.

Waste Deliveries

3.1.6 RDF is transferred from the main processing shed at the WTS using a front loader and loaded directly into the waste reception hopper of the SWIP or temporarily stored within the bunker within the thermal treatment building. The front loaders will enter the thermal treatment building through the vehicular access doors. These will be fast-acting internally mounted heavy-duty polyethylene roller shutter variety and will only open to permit access in and out of the building by vehicles during normal daytime working hours. At all other times the doors will remain closed.

3.2 Plant Operation

3.2.1 The SWIP will be operated in accordance with the following documents:

- Pollution Control System (i8-PCS) Installation & Operation Manual
- Operation, Maintenance and Installation Handbook, 7-Burner Incinerator Model with Autoloader, I8-1000 (A,G,M) Variants with CE7 Advanced Control Panel

3.2.2 Copies of these manuals will be available within the thermal treatment building.

Combustion Temperature and Residence Time

3.2.3 The SWIP is designed and operated to achieve a combustion temperature in the secondary chamber of at least 850°C for two seconds after the last injection of combustion air and under the most unfavourable conditions. The SWIP has been subject to computational fluid dynamic (CFD) modelling to demonstrate that the design can meet these requirements, and this will be verified at the point the plant is brought into operation. Records of the CFD modelling and verification tests are kept. Record keeping is detailed in section 6 of this EMS. In the event of plant modifications to the SWIP unit that could affect the secondary combustion zone further CFD modelling and/or verification tests would be carried out to confirm temperature and residence time requirements would still be met.

3.2.4 During operation the SWIP combustion control system monitors and regulates the plant to ensure these conditions are maintained. In the event that temperatures fall and approach the minimum of 850°C within the secondary chamber the auxiliary burners automatically fire to ensure the temperature does not fall below the minimum whilst waste is being burned. These burners are also be used during start-up and shutdown. It is not anticipated that these burners will be used to maintain temperature levels within the secondary chamber during normal operations.

Energy Recovery

3.2.5 The SWIP recovers energy, via combustion, from RDF. The SWIP produces both power and heat. Heat is recovered from the hot flue gases in a stainless-steel heat exchanger producing saturated steam. The steam is used to generate approximately 180-200 kW of electricity with 1.28 $MW_{th\ of}$ residual heat being made available for supply to the drying plant which will be installed within the adjacent WTS. The SWIP is only operated when the drying plant is also available for use in accordance with condition 6 of the planning permission.

3.2.6 The facility is designed to meet R1 status. The R1 efficiency of the SWIP will be calculated annually in accordance with the R1 scheme approved by CMBC (Planning Condition 8 ï R1 Scheme). A record of the calculation will be made in accordance with R1 calculation spreadsheet forming Appendix A to the R1 Scheme.

3.3 Cleaning and Maintenance

Housekeeping

3.3.1 Housekeeping measures are implemented at the SWIP which include:

- The thermal treatment building is kept clean and tidy;
- Any spillage of materials and waste is immediately cleaned up;
- The Site Manger will undertake site inspections which will include checking for dust and litter at the SWIP and implementing corrective measures should be identified. The site inspections will be recorded on the daily inspection form (SWIP Form 1); and
- The SWIP will be regularly inspected and maintained to ensure it is in good working order. Inspection and maintenance will be in accordance with manufactures recommendations as a minimum.

Inspections and Maintenance

3.3.2 Key plant/infrastructure that will be subject to routine inspection will include:

- Routine inspection of the thermal treatment building fabric;

- Routine inspection and maintenance of the automatic doors to the thermal treatment building to ensure they remain in good working order.
- The ceramic filter unit will be regularly inspected and maintained to ensure it is effectively controlling particulate emissions;
- The CEMs monitoring emissions from the SWIP will be subject to routine calibration checks; and
- Routine inspection of the SWIP will be undertaken to ensure it remains airtight and that key systems are working effectively (ID fan, reagent injection systems).

3.3.3 CVSH undertakes maintenance in accordance with the maintenance instructions for the pollution control system detailed within sections 7 and 8 of the Pollution Control System (i8-PCS_ Installation & Operation Manual and the maintenance instructions for the incinerator detailed between pages 34-39 of the Operation, Maintenance and Installation Handbook for the 7-Burner Incineration Model with Autoloader.

3.4 Plant Failures

3.4.1 The plant is designed for safe shutdown in the event of an automatic or manually initiated shutdown. Procedures for safe shutdown as contained within Pollution Control System (i8-PCS) Installation & Operation Manual and the 7-Burner Incinerator Operation Maintenance and Installation Handbook are followed.

3.4.2 Should abatement plant fail, if the problem cannot be rectified by site staff within 4 hours[5] the plant will be shut down until a repair can be made. Any such event constitutes áabnormal operationô and will be noted in the site diary, details will be recorded on SWIP Form 2 and will include date and time of failure starting, duration of operation before shutdown and cumulative hours for each year. Spares for the abatement equipment will be held on site.

3.4.3 In the event of a prolonged shutdown any RDF at the SWIP will be transferred to the WTS pending removal off site. No new RDF is delivered from the WTS in the event of plant shutdown.

3.5 Residue Storage and Disposal

3.5.1 The SWIP will be operated in such a way as to achieve a level of incineration such that the total organic carbon content of slag and bottom ashes is less than 3 % or their loss on ignition is less than 5 % of the dry weight of the material.

Bottom Ash

3.5.2 The SWIP will generate bottom ash. Bottom ash will be manually raked by trained staff directly into containers which will be sealed within the thermal treatment building once full. Bottom ash will be handled separately to APC residues.

3.5.3 Bottom ash is sampled and tested to assess its hazard levels. It is expected that the bottom ash will be deemed non-hazardous and may be recycled, with possible applications for land spreading or for use as a component in the manufacture of construction materials such as breeze blocks.

3.5.4 In the event that the bottom ash cannot be recycled the residue would be disposed of at a landfill which is permitted to accept non-hazardous waste.

[5] Where multiple abatement plant failures occur the cumulative number of hours in any one year where the SWIP could operate will not exceed 60 hours.

3.5.5 Full containers will be loaded on to collection vehicles within the thermal treatment building prior to transfer offsite.

APC Residues

3.5.6 All APC residue handling takes place within the thermal treatment building. APC residues are collected from the hopper beneath the ceramic filter and loaded into fully enclosed skips using a vacuum. The enclosed skips are subsequently loaded directly onto collection vehicles within the thermal treatment building.

3.5.7 The APC residues are sampled and tested to assess its hazard levels. The APC residue is expected to be classified as a hazardous waste and are disposed of to landfill which is authorised to receive hazardous waste.

4 EMISSIONS AND MONITORING

4.1 Emissions

Emissions to Air

4.1.1 The combustion of RDF in the SWIP generates emissions to air predominately comprising nitrogen, carbon dioxide and water but also containing low levels of the following pollutants:

- Particles
- TOC
- HCl
- HF
- SO_2
- NO_X
- CO
- Heavy Metals[6]
- Dioxins and furans

4.1.2 SNCR is used for NO_x abatement using a water-based urea fluid as a reducing agent.

4.1.3 The SWIP is equipped with a hydrated lime injection to provide control emissions of acid gases (SO_2, HCl and HF).

4.1.4 Activated cardon is injected into the flue. This provides additional control of emissions of dioxins and furans, and volatile heavy metals such as mercury, which may be present in the flue gas generated by the combustion of the RDF.

4.1.5 A Ceramic filter is used to control particulates from the SWIP stack including particulate phase heavy metals.

4.1.6 All emissions to air will be controlled and effectively abated by the above-mentioned processes so as to comply with the permit conditions which are in turn formulated so as to ensure that the SWIP complies with the applicable requirements of the IED as set out in Schedule 13 to EPR 2016.

Dust

4.1.7 CVSH follow the management measures set out in the Dust Management Plan[7] to minimise dust from the SWIP operations. The Dust Management Plan has been approved by CMBC pursuant to condition 14 of the planning permission.

Emissions to Water and Sewer

4.1.8 There are no process emissions to surface water, groundwater or sewer from the SWIP. Clean rainwater ruin-off from the thermal treatment building roof is discharged direct to surface water. Given these waters are clean no treatment or monitoring of this release is required.

[6] Includes, cadmium, thallium, mercury, antimony, arsenic, lead, chromium, cobalt, copper, manganese, nickel and vanadium.

[7] Dust Management Plan, Small Waste Incineration Plant and Dryer Plant, Calder Valley Skip Hire Limited, V2 R1 1 May 2020

Noise and Vibration

4.1.9 A Noise Management Plan (NMP) is in place and covers the management measures for controlled noise from the SWIP and the adjacent WTS (Belmont Industrial Estate, Calder Valley Skip Hire, Noise Management Plan, July 2020). The NMP has been approved by CMBC pursuant to condition 11 of the planning permission. CVSH will follow the relevant requirements for the SWIP as set out in the NMP.

4.2 Emissions Monitoring

Emissions to Air

4.2.1 Emissions to air will be monitored as per the requirements set out in the Schedule 13 Environmental Permit Conditions (monitoring of emission to air).

Fugitive Emissions of Dust

4.2.2 Dust will be monitored as per the arrangement set out in the Dust Management Plan.

Noise Monitoring

4.2.3 There are no noise monitoring requirements set out in the permit, planning consent or the noise management plan. Nonetheless, both the operation of the SWIP and the operation of the adjacent WTS must meet and continue to meet the noise emissions requirements of condition 10 of the planning consent.

Residues

4.2.4 The TOC or LOI of bottom ashes is monitored. This sampling and monitoring is carried out to BS EN 14899.

Odour

4.2.5 CVSH will monitor on a daily basis the odour of the RDF. Having regard to the nature of the residual wastes from which the RDF will be processed it is not anticipated that it will be õoffensiveö or õmalodourousö. Nonetheless, if the monitoring determines that the odour is õoffensiveöor õmalodourousöthen this will be documented on the daily inspection form (SWIP Form 1). The WTS EMS also determined that any additional odour monitoring such as gas monitoring using designated equipment is not required.

5 REVIEW

5.1.1 This EMS will be reviewed regularly alongside the WTS EMS annual review. Page 5 of the CVSH WTS EMS details the EMS review process further. Any updates to the EMS, including this supplement for the SWIP, will be communicated to the SWIP operational and management team.

5.1.2 A review of the EMS would also be triggered by any of the following events:

- There is reason to suspect it no longer meets the objectives of the guidance.
- There is a near miss that would have resulted in the SWIP falling out of compliance with the environmental permit.
- CMBC asks CVSH to revise it.

6 REPORTING AND RECORD KEEPING

6.1.1 The daily site inspection is recorded in the SWIP Mangerâs Site Diary which is a kept in the SWIP control room.

6.1.2 The Site Manger will also complete the daily inspection form (hard copy), SWIP Form 1 As regards the thermal treatment building and operations associated with the SWIP, the site inspection includes:

- Compliance with the environmental permit and EMS (and will be extended to include the SWIP);
- RDF storage
- Gas Oil storage;
- Urea, hydrated lime and activated carbon storage;
- Integrity of thermal treatment building fabric including floor surfaces;
- Dust and odour emissions as well as presence of litter and pests (should there be any); and
- Complaints received.

6.1.3 The records that will be kept are shown in Table 2. The waste transfer notes referred to in Table 2 apply to the adjacent WTS, rather than the SWIP but they are included in Table 2 for the sake of completeness.

Table 2 Records

Item to be Recorded	Type of Record	Time Record will be Retained
Waste types and quantities accepted	Waste transfer notes including codes	2 Years
Monitoring of waste gases	Electronic records including all the parameters required by permit conditions	2 Years
Daily site inspection (Form 1)	Hard copies of completed form 1	1 Year
Abnormal conditions (Form 2)	All relevant records including hard copy of competed Form 2, emails and other electronic records	1 Year
Training	Training given to relevant staff, with dates and reviews	The period the person is employed at the site +1 year
CFD and verification of the residence time and temperature	All relevant records including paper reports, emails and other electronic records	Until superseded
Residues disposed of from the SWIP	Waste transfer notes	2 Years
Records of waste characterisation of the RDF, BA and APC residues	All relevant records including paper reports, emails and other electronic records	2 Years
R1 calculation	All relevant records including paper reports, emails and other electronic records	1 Year
Non-conforming materials	All relevant records including paper reports, emails and other electronic records	2 Years
Records of incident, accident or emergency investigations	All relevant records including paper reports, emails and other electronic records	For the operational life of the SWIP

Appendix A
SWIP EMS FORMS

Appendix B
FIRE DETECTION SYSTEM SPECIFICATION LETTER