Review of R1 Applied to CVSH Installation S13/006

R1 is a measure of efficiency for incinerators that supply useable energy. Only energy that is useable can be counted towards R1 and for the incinerator to be considered a "recovery" operation R1 must exceed 0.65. Otherwise the operation is considered a "disposal" operation. The formula for R1 is not a true efficiency and the values of the parameters are adjusted by some factors agreed in the 1990s.

The formula is quite simple but the calculations for the parameters can be complex if done comprehensively.

The parameters are as follows:-

Ep energy actually supplied for useful purposes. This consists of electricity supplied multiplied by 2.6. and heat energy supplied multiplied by 1.1. The object of these factors is to give comparisons to a conventional power plant. Units used are Giga Joules per year (GJ/year)

Ef Energy input from fuels contributing to steam (energy output) in GJ/year This is extra fuel needed to keep the system running if required. Eg diesel to maintain temperature. CVSH/RPS state that no fuel will be used during running. Inciner8 quote average of 65Kg/hr diesel fuel consumption. Inciner8 also quote 40 to 50Kg/hr average in another document.

Ew Energy input from RDF in GJ/year. This is calculated by the quantity burnt multiplied by the calorific value of the RDF. Clearly this value depends entirely on what is being burnt and how much. This depends on accurate and honest record keeping.

Ei Energy imported excluding Ew and Ef in GJ/year. This is energy used to start the system before output is achieved, and electricity etc that may be used before the ORC can be started to supply electricity to the plant. (it is electricity that is used to start and run the plant if the plant is a heat supply only plant with no electric generation)

0.97 Is a factor to account for energy losses in bottom ash and radiation.

The formula is R1 = Ep — (Ef+Ei)/ 0.97(Ef+Ew)

In words that is Useful Energy Produced (Ep) minus extra energy from outside (Ef+Ei), that is net total useful energy or energy worth "money" . Divided by Energy from RDF (Ew) plus energy from extra fuel input to keep it running (Ef) multiplied by the factor 0.97.

Note that the formula is taken over a year. This averages it out and smooths the R1 figure. So bad days can be compensated by good days. It also takes into account all the stops and starts, as annual consumption of fuel and electricity is taken into account to make Ef and Ei more accurate, CVSH and RPS have chosen to ignore these figures, by stating no fuel will be used during running, and start ups and shutdowns are ignored completely. Because they have to shut down every week, Ei will be significant. Inciner8 quote a fuel consumption of 65Kg/hr. or 40 to 50Kg/hr average elswhere.

CVSH parameters presented for approval by RPS were

RDF feed rate	1 ton/hr
RDF calorific value	10Mj/kg

Parasitic demand	20KW
Electricity Produced	0.18MW
Heat Produced	1.25MW
Energy from Auxiliary Firing	OMJ/hr

This gives R1 parameters of:-

Ep = (0.18MW X 3600secs/1000) GJ) X 2.6 + (1.25MW X 3600secs /1000) GJ X1.1= 6.63 GJ/hr
Ef = (20KW X 3600secs / 1000X1000) = 0.072 GJ/hr
E i 0
Ew = (1000Kg X 10MJ/Kg) / 1000 = 10 GJ/hr

This gives an R1 from their calculation of 6.63 - (0.072 + 0) / 0.97 X (10+ 0.072) = 0.67

There are a number of problems with this. Firstly CVSH has done the calculation on a per hour basis which ignores fuel used for starting and shutting down the Plant. Secondly it does not use any auxiliary fuel for firing and Inciner8 quote a consumption of up to 65Kg/hr of diesel. Thirdly it uses a loading of 1 ton per hour when the incinerator is rated for less than 600Kg/hr. Fourthly while the electrical output of the ORC is supported by it's specification, the much more significant figure of 1.25 MW heat output to the dryer is plucked out of thin air with no supporting documentation.

The ORC requires 1.5MW/hr heat to produce 200KW of electricity. It discards 1280KW in cooling water at 30degC this is too cool and unusable for the dryer. (figures from Zuccato Spec sheet on CMBC web site)

Assuming that the SWIP runs for 50 weeks per year and 5 days a week. Then that is
5 X24X50 =6000 hrs per year. Assume (optimistically) that 4 hours per week is start and shutdown time then there is 100 hours a year running on diesel (warm up) and 5800 hours on RDF. Using quoted 65Kg/hr diesel consumption.(this may be higher if 65kg/hr is "average") using their calculation.

Ep = 38454 GJ/year Ef = 417 GJ/year Ei = 45 X 65 X 100/1000=295 GJ/year Ew =58000GJ/year

R1 = 38454-(417+295)/0.97 (58000+417) = 37742/56664= 0.667

This indicates that the start and shutdown is not hugely significant but will probably be higher if the warm up time is longer and the fuel consumption higher when running on Diesel alone during warm up.

Taking the specification of the Inciner8 1000G downloaded from their website, but using RPS/CVSH optimistic figures for output as we have no others. We will calculate at 600Kg/hr and use the 65KG/hr fuel (specified average fuel consumption) for Ef and 0.18Kw for Ei we get

Ep=38454GJ/yr Ef= 6000hrX65Kg/hrX45MJ/kg/ 1000=17550GJ/yr Ei=417GJ/yr Ew=34800GJ/yr **R1=**

38454-(17550+417) / 0.97 (17550+34800) = 0.40 well below the required 0.65.

This is R1 using figures that are reasonably confirmed apart from the output to the Dryer. Documentation on the dryer that I have found confirms that heat from heat recovery plants can be used with Stronga dryers, but I found no indication of the actual energy requirements and hence no confirmation of the 1.25MW quoted for the FD17 dryer.

Conclusions from the above.

1/ A major issue is the totally unsupported specification for energy consumption of the Stronga FD17 Dryer and it's unavailability for use during the night. This is one of the single largest factors in the R1 formula at 1.25MW.

2/ The second major issue is the amount of auxiliary fuel used which CVSH state to be zero but Inciner8 state to average 40 to 65Kg/hr.

3/ If confirmed figures are used from printed specifications, including auxiliary fuel then R1 is too low for the Plant to be classed as "recovery" that is even using CVSH dryer figure which is probably too high. If a lower dryer output is used, R1 will be even lower.

4/ Discharge of condition 8 (R1) Report. Signed by XXXXX. States that GJ are used rather than GJ per year, and it states that no input energy or fuel Ei is quoted and it will have to be taken into account. However it is stated that detail is sufficient to satisfy condition 8. This is clearly incorrect and she has not cross checked the figures provided against plant specifications. By not using annual figures extra fuel and energy consumed is omitted. By not checking the Inciner8 documents the significant auxiliary fuel use was missed. There is no request for details of the dryer which is the main consumer of "recovered"output energy, and is questionable. The actual specified load of maximum 1000Kg/hr is also incorrect as it is 600Kg/hr or 500Kg/hr depending on which Inciner8 document you read.

5/ The permit application is for burning 2000Kg/hr. Of RDF, Double what the submitted calculation is for, this will depress R1 further if all other factors are constant.

6/ The calorific value of the RDF specified by CVSH (10MJ/kg) is rather low and is more likely to be around 14 to16MJ/kg, which will depress the value of R1 even further.

From the above, significant clarification is required for the specification of all parameters and achieving R1 above 0.65 is extremely unlikely under any conditions achievable by the specified conditions in the application for an Environmental Permit S13/006.

XXXXX 1/11/2024

Comments on RPS response to CMBCs second request for further information.
Reference S13/006 28/10/2024

XXXXX

The following is a view of the RPS response taken with my XXXXX experience of 50 years in various diverse industries, including Rolls Royce, British Aerospace, Motorola, Texas Instruments, National Semiconductors, Zetex, Philips, Seagate Disc Drives, British Nuclear Fuels, United Biscuits, Tenco Coffee and Golden Wonder plus many others.

I find the response by RPS on behalf of CVSH to be incorrect, incomplete and perverse. They are incorrect in the statement that CMBC is not entitled to ask the questions and require answers. However according to :-

Environmental permitting: Core guidance For the Environmental Permitting (England and Wales) Regulations 2016 (SI 2016 No 1154)

"6.19 The regulator should require further information only where that information is essential to allow the application to be determined. Any request for further information should meet at least one of the following criteria. The information must be necessary to:

- assess whether the proposal meets any Directive or other requirements; or
- determine the appropriate permit conditions. 6.20 This information might, for example, comprise of either:
- information to understand sufficiently the environmental impact or risk posed; or
- information to understand the proposed operations sufficiently. "

Since the answers provided by RPS are confusing, sometimes contradictory and sometimes incorrect, CMBC is clearly under a duty to ask for clarification. Including clarification as to why the specification of equipment in the application does not agree with manufacturers specification. A bald statement that a member of CVSH staff has witnessed an incinerator burning 2000Kg/hr does not provide any proof of compliance or performance, especially with with no documentation.

Firstly taking the 6 questions asked by CMBC the REGULATOR of this installation in turn. RPS has responded on behalf of CVSH.

The first one is:-

Confirm, by way of technical documentation supplied by the manufacturer, that the i8-1000 small waste incineration plant can facilitate a burn rate of up to 2000kg per hour.

RPS has not answered that at all, unless CMBC have been given documentation that they have not provided to us. There is NO manufacturers documentation, just an out of the sky assurance that the incinerator has been modified to burn 2000Kg/hr. The main modification they quote is the autoloader which they claim to have been specially designed for CVSH. (2.1.12) . This is not the case as it is part of Inciner8's standard range of options. An autoloader may slightly increase the overall burn rate as the Incinerator lid will

not have to be opened and closed to load it so the RDF flow in is smoothed, however we are talking about possibly circa 10% increase in capacity not a 400% increase! They claim that there were trials in Stockport witnessed by XXXXX as due diligence that proved it could run at 2000Kg/hr . This is hearsay with no documentation, witnessed by a person whose main interest is burning 2000kg/hr. This is NOT independent verification or due diligence.

If the plant had been so extensively modified to be able to burn 4 times its original design spec. Then the the manufacturer (Inciner8) would have issued an ECN (Engineering Change Note) for the plant which would detail the modifications and the new specifications, and guarantees that it would meet emissions etc. Where are they? If not generally available they would certainly have been given to the customer, CVSH, who could produce them as evidence of compliance.

It is unclear within the text of the Air Quality Assessment whether the burn rate has been used to inform any of the emissions calculations. Confirm if the burn rate has been used, and if so, specify what burn rate has been used.

RPS has answered this by Stating that the planning permission permits 2000Kg/hr. However if the equipment is not capable of dealing with 2000Kg/hr and staying within EPR emissions that is irrelevant as the planning permission only covers the use of the land.

They also state without any evidence that XXXXX witnessed one running 2000Kg/hr and meeting emissions. Where was it? Where is the documentation or Data to prove it? XXXXX is neither independent or an incinerator engineer, indeed he has an interest in making it run at 2000Kg/hr. Burn rate.

Where is the engineering documentation showing what was done to the incinerator and the filter system to give it the ability to run at 4 times the normal rated loading.

The following information has already been provided on the CMBC website for the application:-

Environment Statement (ES) Addendum to 2017 ES Chapter 7: Air Quality (July 2019). Table 3.6 Stack Characteristics

Parameter	Unit	Value
Stack height	m	12
Internal diameter	m	0.4
Efflux velocity	m.s-1	21.3
Efflux temperature	o C	300
Normalised volumetric flow (Dry, 0°C, 11% 02)	m3 .s-1	1.28

Environmental Statement (ES) Addendum - Additional Air Quality Assessment (July 2019).

Table 3.1 Stack Characteristics Page 22 Parameters as above.

Response to Air Quality Consultants Review of Air Quality Assessment (March 2022).

Table 3.1 Stack Characteristics Page 35 Parameters as above.

Application for a permit to operate Schedule 13 small waste incineration plant Local Authority — Pollution Prevention and Control Pollution Prevention and Control Act, 1999 Environmental Permitting (England and Wales) Regulations 2016

Section 6 The small waste incineration plant

6.1 Description of plant Provide in Table 2 a full description of the plant, with additional information referenced. If there is no place in the table for the details please use a separate sheet.

Table 2: Description of plant
Manufacturer Inciner8 Model 184000
Proposed stack and discharge conditions. Stack height (m) 12
Efflux speed (m/s) 21.3
Efflux temperature (K) 573.15
Year of manufacture 2020
Serial number (if known)
Thermal input kW 1,500
Rate of incineration (kg/h) 2
Secondary combustion chamber/ afterburner
Afterburner fitted Yes Inlet temp 1,300 °C
Additional information Appendix D
Residence time (s) 2
Outlet temp 850 °C
Technical drawing Appendix D

Schedule 13 SWIP Permit Application

Exhaust stack 3.6.23

Flue gas exiting the ceramic filter will be discharged via a 12 m stack at an efflux velocity of 21.3 m/s during operation of the SWIP.

From the above comes calculation of **Flue Gas Efflux Mass**

Mass per sec = flue area X velocity X density Flues gas

Density of flue gas depends on temperature and pressure. Since this is efflux to atmosphere, the quoted temperature of 300degC and pressure of 1 bar pressure is used, (see reference 3) giving a density of 0.6Kg/m3. From the table in reference 3.

Mass per sec = 0.126m2 X 21.3m/s X 0.6 Kg/m3 = 1.61 Kg/s X3600s = 5797Kg/hr efflux.

Ratio of flue gas to RDF is theoretically in the range 4.5 to 18. research indicates that 10Kg or more flue gas to 1Kg RDF is fairly typical. See "Heat Mass Balance Example" (Reference 5) which gives 18Kg flue gas per 1Kg RDF and Mass Energy Balance of Fixed Bed Incinerators (Reference 4) para 1 which gives a ratio of 11Kg flue gas per 1Kg RDF.

From the above it indicates that the specified flue efflux for all the air quality modelling and peer reviews is based on an RDF throughput of between 1288Kg/hr and 386 Kg/hr. The typical figure is most likely approx 580Kg/hr. These figures depend on the quality of RDF .

CVSH are applying for a throughput of 2000Kg/hr of RDF which would result in likely stack emissions of 20,000Kg/hr of flue gas or approx 3.5 times the stack emissions that the modelling has been done for. It is probable that the heat exchanger and filter system would limit the possible throughput of flue gas thus choking the incinerator. **The dispersion models are invalid for 2000Kg/hr. because there would be significantly more (3.5 times) flue gas emitted than modelled for.**

References:-
1/ Documents on Calderdale Planning website for S13/006
2/ Documents/downloads on Inciner8 website
3/ https://www.pipeflowcalculations.com/tables/flue-gas.xhtml for specific heat Cp and densities.
4/ Mass And Energy Balance For Fixed Bed Incinerators First paragraph supports 1Kg fuel=10Kg flue gas approximation
https://www.jmest.org/wp-content/uploads/JMESTN42351027.pdf
5/ How do you calculate the mass of flue gas generated in boilers. Supports 1Kg fuel= 10Kg flue gas Approximation.
https://www.powerplantandcalculations.com/2023/10/How-do-you-calculate-the-mass-of-flue/020gas-generated-in-Boilers.html#:—:text=ThecY020mass%20oP/020flue%20gae/020is°/020equal%20to°/020the/020mass,the/020massee/0200/020these/020products.

Confirm by way of technical documentation supplied by the manufacturer that the abatement equipment fitted to the i8-1000 incinerator can achieve the Industrial Emissions Directive (IED) limit values that have been used within the Environmental Statement Addendum Additional Air Quality Assessment and ES Addendum to the 2017 ES Chapter 7: Air Quality at a higher burn rate of 2000kg

There is NO technical documentation provided from Inciner8 to state that the heat exchanger and filter system was capable of running at burn rate of 2000Kg/hr. of RDF.

From the above flue efflux calculation and the specifications of the filter system the desired flue gas throughput of 2000Kg/hr of RDF is impossible as it would generate in the region of 20,000 Kg/hr of flue gas.

The heat exchanger (18-212) is only rated for 1.04 Kg/s or 3,744Kg/hr of flue gas, Spec. is from Inciner8 specification documents.

The filter system (ICP-S) is rated at 6500m3/hr. Using the flue gas density from the reference 3 above, 0.5 Kg/m3 this gives a mass flow of 6500X 0.5 = 3250 Kg/hr. of Flue gas. Spec from Inciner8 specification documents.

From the above that the most the standard Inciner8 abatement equipment can cope with is in the region of 400Kg/hr of RDF but that is dependant on the quality of the RDF. RPS has not provided any documentation of modifications, or certification to indicate that the equipment can burn more than the standard specification. CVSH have applied to run it at 4 or 5 times the standard specification with no proper guarantees that it is possible on the equipment specified.

Confirm the flow rate simulation report remains accurate if the burn rate increases to 2000kg per hour.

RPS 2.2.21 response is incorrect. They state that the simulation was done for a burn rate of 1000Kg/hr. On page 9 of the Solidworks Simulation Document it states:-

The size of these volumes has been guided by the instruction manual which recommends that the unit runs at 1/3 of capacity for optimal burn and to avoid flashing.

Then on page 17 Under "Results", the drawing showing Mass Flows through the incinerator shows as 325 to 340 Kg/hr of FLUE GAS not RDF throughput. From the information in References 4 and 5 above the ratio of flue gas to RDF burnt is in the region of 10Kg of flue gas from 1 Kg RDF. That would indicate the simulation was for 34Kg/hr of RDF producing the circa 340Kg/hr of Flue Gas as shown under "results" in the Solidworks simulation document.

Should 2000Kg/hr of RDF be burnt that would result in circa 20,000Kg/hr of flue gas being generated, 60 times the flow that the simulation was done at. The residence time would be extremely short even if that burn rate could be achieved.

The rest of the RPS response is waffle to avoid answering the question.

Confirm the total bottom ash capacity of the i8-
1000 incinerator.

RPS have stated that the incinerator has a bottom ash capacity of 1.8m3. If they burn 2000Kg/hr then they will generate 60Kg/hr of bottom ash. Using a bottom ash density from an academic paper in "International Journal of Pavement Technology" on using fly ash for pavements and roads. They give a density of 1387Kg/m3 from 13 of samples (see page 187, table 1, reference below) Elsewhere densities of 700 to 1200Kg/m3 are suggested so 1387Kg/m3 is a best case for CVSH.

1387Kg/m3X 1.8m3 = 2,496Kg maximum bottom ash capacity in Kg.

2496Kg / 60Kg/hr = 41.6 hrs run time at 2000Kg/hr before the incinerator has to shut down, cool, and bottom ash emptied. Every 2 days?. This will drastically reduce weekly throughput. At 500Kg/hr it could run for a week, however that would depend on 3% bottom ash, originally RPS stated that bottom ash would be 10% of RDF, in which case even at 500Kg/hr burn rate it would have to be shut down mid week to clear the ash.

RPS have then stated that an automatic bottom ash clearance system **could** be retrofitted. This is not in the current specification and simple arithmetic above indicates that no proper design or thought has gone into the current installation or application for a permit. Indeed at the appeal enquiry they stated that the ash would be cleared manually on the Monday, after the incinerator had cooled over the weekend.

RPS patronisingly state that requesting clarity on ash cappacity is a silly question. The above clearly proves that it is not a silly question and that the system as specified by them, is not capable of running a full week without significant modification. This had already been pointed out at the appeal by the objectors so why are the details and specification of this significant modification not included in this "completely new" application?

Reference :- Municipal incinerated bottom ash (MIBA) characteristics and potential for use in road pavements XXXXX

https://pure-oai.bham.ac.uk/ws/files/41984159/1_s2.0 S1996681416301729_main.pdf

Stipulate the approximated amount of bottom ash generated over a 24hr period with a burn rate of 1000kg per hr and 2000kg per hour.

RPS has answered this in tons or 1000Kg using a figure of 3% bottom ash, and not actually answered the question which asks for a 24hour period.
Even using the high density of 1387Kg/m3 (see above) this results in a volume of:-
30X24= 720Kg/hr ash for a burn rate of 1000Kg/hr. of RDF over 24hrs.
Which equates to 1387Kg/m3 / 720Kg/hr = 0.5m3 of bottom ash over 24hrs.
For a 2000Kg/hr burn rate of RDF results in a volume of 1m3 / 24 hour period.

Research indicates a probable lower density of bottom ash which means higher volume of bottom ash. possibly filling the bottom ash bin in as little as 24hrs. RPS has previously stated 10% bottom ash which will treble the volume of bottom ash. It can be seen that the bottom ash bin will be full in less than a week and possibly a day or so, preventing a full 5 day week of running.

Conclusions From RPS Response to Second Request for Information

1/ RPS has tried to waffle and bulldoze their way out of this request for further information. In my opinion CMBC as regulator is entitled to ask any reasonable questions about the equipment and process they are being asked to regulate. RPS is clearly not used to having it's applications scrutinised and questioned, they keep attempting to intimidate CMBC by stating that the questions are not justified.

2/ RPS has failed to provide any manufacturers documentation or certification or waranties for 2000Kg/hr, as requested. Why is this? This is not top secret technology, and I cannot see CVSH providing any expertise to develop something special. Unless CMBC has some information from Inciner8 that has not been published, my belief is that CVSH/RPS are calling CMBCs bluff and trying to say they have special Incinerator that runs 4 times normal specification without any proof or documentation. They have previously provided documentation for a standard machine.

3/ The Air Quality modelling is done for a flue gas efflux from burning circa 500Kg/hr. If they burn 2000Kg/hr the Efflux will be 3 to 4 times that (see calculations) and the air quality models therefore cannot be valid. That is in addition to all the other doubts that have been cast on the air quality modelling.

4/ The Solid Works flow rate modelling is for a very low Flue Gas flow (340Kg/hr) and cannot be valid for 2000Kg/hr. of RDF burning. (see calculations above)

5/ The ash bins will be full before a 5 day week unless the system is run at circa 400Kg/hr of RDF which I suspect is its design burn rate. RPS have suggested a significant modification to automatically remove ash. This is a known problem, highlighted by the objectors at the previous appeal. Why has it not become part of the "new" application?

6/ XXXX witnessing a burn in Stockport is not due diligence, it is hearsay without proper documentation and is not independent or qualified, as he has a clear interest in seeing a good result at 2000Kg/hr. There is no documentation to say a) What was burnt? b) What was the machine spec. Type of bed etc. ? c) Did it meet emissions spec. At 2000Kg/hr. d) Did it have the same filter and heat exchanger as the CVSH incinerator? e) Where was it?

It is quite clear that the application started with expectation that it would be rubber stamped and passed. There are so many errors and contradictions within the application that it is difficult to follow for example the number of different burn rates that have been quoted in the application, 2000Kg/hr 1000Kg/hr 2Kg/hr and 600Kg/hr. The flue gas Efflux used for the Air Quality modelling is too low by a factor of 3 or 4. The Solid Works residence time simulation is much too low a flow rate of Flue gas (circa 340KG/hr Flue Gas) to be meaningful)

CVSH have applied to run an incinerator that has not been installed or certified by the manufacturer, that will clearly have to be extensively modified to work in the way that CVSH want (eg automatic ash Clearance) The application is ad hoc and has been altered to suit questions as they have been asked of CVSH/RPS.

The entire project is an experiment to run an Incinerator at circa 4 times its design capacity at the risk to the health and well being of the residents of Sowerby Bridge and surrounding area. Monitored by a Council that does not have the expertise to understand it, and maintained by a Company that has no experience of Incineration and does not care about local residents.

Conclusions from above and previous comments and objections

The points below are justified above or by references and calculations made in more detail in previous comments and objections submitted to CMBC by myself. Please note that figures and quantities used in these comments are by their nature approximate as we have not been given exact figures to work with, and some have a range of values depending on conditions, however to prevent argument they are generous in CVSH's favour, and the factors involved are so large (well in excess of 200%) that the approximations used are clearly acceptable.

1/ This is effecively an application for an Environmental Permit for an experiment to run an incinerator at 3 or 4 times it's design capacity and "fix" any problems that may arise as

CVSH runs it. CVSH has demonstrated by their poor planning and design that they do not have the expertise to do this, and Engineers with significant experience consider this extremely unlikely to be possible. It will be very expensive to monitor properly.

2/ CVSH has failed to provide any feasible design and documentation from manufacturers, or approved bodies, to indicate that the proposed Incinerator is capable of achieving the proposed 2000Kg/hr burn rate at all, let alone while complying with emissions and safety regulations.

3/ Instead of providing documentation and referenced answers to CMBC legitimate questions, CVSH and RPS have continually relied on denying that CMBC as regulator should be asking these questions, or by making bald unsubstantiated statements that are not supported by any proper documentation.

4/ The sole beneficiary of this permit is CVSH at the expense of the health and well-being of thousands of residents of Sowerby Bridge and surrounding areas.

5/ The air modelling is severely flawed. It is based on a flue efflux rate of approx. 1/3 or less than the Efflux Rate at the 2000Kg/hr. The UK Met Office states the weather in the valley cannot be adequately modelled. The weather data used is from Leeds Bradford Airport and Bingley weather centre, both on high, flat areas, unlike the steep sided valley bottom where the incinerator is proposed. The software used for the air modelling is not capable of resolving this complex situation adequately. See details and references provided in previous comments and objections. If the input data is incorrect the output will be Incorrect.

7/ There are no proper calculations to prove R1 will be met, indeed calculations have been provided by myself and others to indicate it cannot possibly meet R1 by a long way. This is a breach of condition 8 of the planning permission which states it must be a "recovery operation" with R1 in excess of 0.65

8/ There are other Planning Issues raised that have not been complied with.

9/ There are flooding issues and flood mitigation measures that have not been complied with by CVSH or enforced by CMBC. CMBC should look carefully at those and the use of incorrect post codes with lower flood risk.

I reiterate all my earlier comments and objections sent in to CMBC re the previous planning applications and the previous application for an Environmental Permit and the application for this Environmental Permit. I have been objecting to this Incinerator since 2015 and the longer it goes on the more I learn about the situation, the regulations and the plant, the more "errors" and faults and problems I find in the Applications.

CMBC must follow the guidance of the Government Inspector, John Woolcock in his statement and refusal to the previous almost identical application :-

" I have taken into account all other matters raised in the evidence but have found nothing to outweigh the main considerations that lead to my conclusions. I am unable to find that granting an environmental permit for the SWIP would not have an unacceptable adverse effect on human health and the environment. "

CMBC must refuse this Permit to allow CVSH to perform this dangerous and badly planned experiment to run an Incinerator beyond design capacity, in a steep sided valley bottom, and thereby avoid the significant risk to the Health of Local Residents of Sowerby Bridge and the surrounding area, already suffering from poor air quality.

Glossary :-

CVSH	Calder Valley Skip Hire
CMBC	Calderdale Metropolitan Borough Council
RPS	Technical Representative of CVSH
EA	Environmental Agency
SWIP	Small Waste Incineration Plant
RDF	Refuse Derived Fuel
Bottom Ash	Solid Residue Left in Incinerator after Combustion
R1	Measure of Energy Recovery from RDF (must exceed 0.65 to be a recovery plant)