APPLICATION FOR A PERMIT TO OPERATE A PART A INSTALLATION UNDER THE POLLUTION PREVENTION AND CONTROL (SCOTLAND) REGULATIONS 2012

APPLICATION REFERENCE PPC/A/1136072

RESPONSE TO 1ST JULY SCHEDULE 4 REQUEST FOR FURTHER INFORMATION

Prepared for:

FCC WASTE SERVICES (UK) LIMITED, MILLERHILL, MIDLOTHIAN

July 2015

ECL Document Reference P2154/R020

Prepared by:

Environmental Compliance Limited
Unit G1, The Willowford, Main Avenue,
Treforest Industrial Estate, Pontypridd CF37 5YL

APPLICATION FOR A PERMIT TO OPERATE A PART A INSTALLATION UNDER THE POLLUTION PREVENTION AND CONTROL (SCOTLAND) REGULATIONS 2012

FCC WASTE SERVICES (UK) LIMITED, MILLERHILL, MIDLOTHIAN

APPLICATION REFERENCE PPC/A/1136072

RESPONSE TO 1ST JULY SCHEDULE 4 REQUEST FOR FURTHER INFORMATION

TABLE OF CONTENTS

APPLICATION FOR A PERMIT TO OPERATE A PART A INSTALLATION UNDER THE POLLUTION PREVENTION AND CONTROL (SCOTLAND) REGULATIONS 2012

FCC WASTE SERVICES (UK) LIMITED, MILLERHILL, MIDLOTHIAN

APPLICATION REFERENCE PPC/A/1136072

RESPONSE TO 1ST JULY SCHEDULE 4 REQUEST FOR FURTHER INFORMATION

1. INTRODUCTION

1.1. FCC Waste Services (UK) Limited ("FCC") submitted an application to the Scottish Environment Protection Agency ("SEPA") on 24th April 2015 for a Part A environmental permit to operate a waste treatment facility at Millerhill in Midlothian under the Pollution Prevention and Control (Scotland) Regulations 2012 ("PPC Regulations"). The facility - known as the Millerhill Recycling and Energy Recovery Centre ("Millerhill RERC") - will incorporate primary treatment and secondary treatment techniques to process residual household waste and Commercial and Industrial waste ("C & I waste"). SEPA subsequently issued the reference number PPC/A/1136072 to the application.

1.2. On 8th May 2015, SEPA issued a Notice requiring further information under Paragraph 7 of Schedule 4 of the PPC Regulations ("Schedule 4 Notice"). A response was provided to SEPA on 1st July 2015 in relation to all Items in the Notice with the exception of Item 3 (*Heat and Power Plan)* and Item 4 (*Noise Mitigation BAT Assessment)*, as it had been agreed with SEPA that responses to these items could be carried forward.

1.3. On 1st July 2015, SEPA issued a second Schedule 4 Notice, and the requirements of this Notice are detailed in Table 1 below.

Table 1 Requirements of 1st July Schedule 4 Notice

Information Required	Date Information Required
1. Planning Permission:	
"Please provide confirmation and evidence that detailed planning permission has been approved by the Local Authority."	28 August 2015
2. Odour:	
"Please provide information on the activated carbon abatement unit for odour abatement on the following areas: *a) Which areas of the plant will be extracted and abated? Will the bale store be included?* *b) Details of how stack height will be calculated.* *c) How will the odour unit be sized to ensure efficient removal of odorous compounds and what will be the proposed odour removal efficiency of the activated carbon abatement unit?* *d) Justification of how the operator will meet the required odour units at the site boundary in line with SEPA's odour guidance.* *e) How have the proposed number of air changes within the plant been calculated with reference to the requirements of SEPA's odour guidance?* *f) How will the unit be utilised during unexpected events? i.e. how quickly can it come on line etc?"*	31 July 2015
3. Fire Water:	
"Please provide the following information: *a) How has the required capacity for fire water storage been calculated? This should be based on a worst-case situation.* *b) How will fire water be routed to the storage areas in the event of a fire? This should consider a fire happening at any point on the site.* *c) How will collected fire water be properly disposed of?"*	31 July 2015
4. SUDS:	
"Please provide the following information: *a) How have the SUDS ponds been sized as per the requirements of SUDS Manual CIRIA 697?* *b) How will the 'Fire Break Water Tanks' be managed including:* • *are they drained periodically?* • *what happens when they reach capacity?* • *is there an overflow?* • *is there SUDS treatment before this water is discharged?* • *where do they finally discharge to?* *c) Provide further information on the 'industrial waste water pit' shown on the Millerhill RERC drawing (1309 PPC 121) and details on how this will be used and managed.*	31 July 2015

Table 1 Requirements of 1st July Schedule 4 Notice (cont)

Information Required	Date Information Required
d) Where do the access road and visitor car park drain to and what level of SUDS treatment is provided? *e) How will the run-off from the manoeuvring area near the waste reception hall be dealt with? Please note that under GBR 10 'a discharge from a surface water drainage system must not contain any run-off from the following areas constructed after 1 April 2007 where … vehicle loading or unloading bays where potentially polluting matter is handled.'* *f) Please provide details regarding how the oil storage tanks and ammonia tanks comply with the Scottish Oil Storage Regulations.* *g) Will there be the ability to isolate drainage lines to protect the SUDS ponds?"*	31 July 2015
5. *Air Quality:*	
"Please update the air quality assessment to include information on the following points: *a) Background concentrations from the DEFRA maps may be too low, since the area around the site is currently rural but is expected to become urban. Measured concentrations from nearby urban areas should be used (e.g. Musselburgh).* *b) 24hr PM10 is assessed against a 90.41th percentile, not the 98.08th percentile that is appropriate for Scotland.* *c) Maximum modelled concentration values for each year should be tabulated, not just the maximum values from all years.* *d) Concentrations at every sensitive receptor should be tabulated for every year modelled.* *e) It is unclear how the modelling for abnormal operating conditions was conducted. The higher emission rates should be modelled for every hour of the year and the predicted maximum concentration used rather than using a subset of hours. This will ensure that the effects of high emission rates during lower dispersion periods are considered.* *f) A comparison with results from a second model, such as AERMOD, may be useful as this would allow the confidence and uncertainties of modelling results to be addressed.* *g) The Met Office provides wind data in 10 degree sectors and the 'Met data in sectors of degrees' option should be checked 'on' if the met file has wind direction in 10 degree sectors."*	31 July 2015

Table 1 Requirements of 1st July Schedule 4 Notice (cont)

Information Required	Date Information Required
6. *Human Health:*	
"Please update the human health assessment to include information on the following points: *a) Auchencorth Moss background levels have been used in the assessment on impacts to background levels for releases from the ERC stack. Auchencorth Moss is a remote rural location, a better representative background data would be Motherwell south monitoring station.* *b) The grid references for background levels of particulate matter do not match the proposed location of the facility.* *c) Land deposition rates for arsenic, cadmium and nickel exceed the maximum deposition rate (MDR) for each substance (as stated in Table 26 of the 'Air Quality Assessment') and should be further assessed.* *d) The estimated process concentration (PC) of 0.000842µg/m³for arsenic may increase the existing background level (0.000213µg/m³in the surrounding area by over 395%. As a result, over the lifetime of the plant (about 30 years), releases of arsenic from the ERC stack may change the existing background level for arsenic.* *e) For dioxins, furans and dioxin like PCBs individual congener I-TEFs should be converted using WHO-TEFs to enable comparison with COT TDI (2pg TEQ/kg-body weight/day) and not use the EA EPA hazard or carcinogenic risk quotients.* *f) In carrying out further assessment for chromium VI the applicant applied measured emissions data of 0.000035mg/m³ (0.035mg/m³) provided in the EA Guidance for Group 3 Metals. The applicant needs to clarify whether the EA measured emissions concentration was modelled to provide the process contribution of 0.000000536µg/m³ from a stack height of 75 metres.* *g) It appears in Table 11 of the "Stack height assessment" report is incorrect; the AQS column lists the PC data whilst the PC column lists the AQS data."*	31 July 2015
7. *Noise Mitigation BAT Assessment:*	
"Your application refers to noise mitigation measures that will be incorporated into the plant and gives some examples of potential techniques and equipment. Please provide details of these measures, or if not yet available, the proposed measures. Please also include a BAT assessment to ensure that potential noise issues are designed out or minimised from the plant."	31 July 2015

Table 1 Requirements of Schedule 4 Notice (cont)

Information Required	Date Information Required
8. Heat and Power Plan:	
"a) Please provide a definition of the CHPQA site boundary as described in the SEPA Thermal Treatment of Waste Guidelines 2014. *b) Additional information on the assumptions and working behind the Heat and Power Plan calculations should be provided to SEPA."*	31 July 2015

1.4. This document provides FCC's responses to the Schedule 4 Notice. However, it should be noted that the responses have been made given the information currently available and before the detailed design of the plant has been finalised.

2. PLANNING PERMISSION

2.1. Schedule 4 Notice Requirements

"Please provide confirmation and evidence that detailed planning permission has been approved by the Local Authority."

2.2. Response

It is now expected that the planning application will be determined by Midlothian Council on 25th August 2015. Evidence that planning permission has been granted will be provided to SEPA as soon as possible thereafter.

3. ODOUR

3.1. Schedule 4 Notice Requirements

"Please provide information on the activated carbon abatement unit for odour abatement on the following areas:

a) Which areas of the plant will be extracted and abated? Will the bale store be included?
b) Details of how stack height will be calculated.
c) How will the odour unit be sized to ensure efficient removal of odorous compounds and what will be the proposed odour removal efficiency of the activated carbon abatement unit?
d) Justification of how the operator will meet the required odour units at the site boundary in line with SEPA's odour guidance.
e) How have the proposed number of air changes within the plant been calculated with reference to the requirements of SEPA's odour guidance?
f) How will the unit be utilised during unexpected events? i.e. how quickly can it come on line etc?"

3.2. Response

3.2.1. Activated Carbon Abatement Unit - Areas of Plant Extracted (ref Schedule 4 Notice Item 2a)

3.2.1.1. Air will be extracted and treated in the carbon abatement plant from the following areas of the plant:

- the Waste Reception Hall;
- the Waste Storage Bunker; and
- the Mechanical Pre-treatment Hall.

3.2.1.2. The Bale Storage Hall will not be served by the carbon abatement unit as any waste bales stored here will be wrapped in polythene. This measure will minimise the potential for odour releases to arise from the bales during storage, and, accordingly, it is considered that is no need for the air in the Bale Storage Hall to be extracted to the carbon abatement unit.

3.2.2. Activated Carbon Abatement Unit - Calculation of Stack height (ref Schedule 4 Notice Item 2b)

3.2.2.1. The releases from the activated carbon abatement unit will not be discharged to atmosphere by means of a separate stack as originally indicated, but will, instead, be discharged to atmosphere via the main 75m discharge stack.

3.2.2.2. Given that this will be the case, it is now proposed that the activated carbon abatement unit, together with its associated fan, is relocated closer to the main stack as shown in General Arrangement Drawings OH80 05 02/02/62 G 310, OH80 05 02/02/62 G 311 and OH80 05 02/02/62 G 320, which are provided in Appendix 1 of this document. This location will also help with regard to reducing any associated noise emissions from the unit fan given its proximity to other structures on the site and the attenuation that they will provide.

3.2.3. Activated Carbon Abatement Unit - Sizing (ref Schedule 4 Notice Item 2c)

As indicated previously, whilst the final design stage for the facility has not yet been reached, the following factors will be taken into account when the activated carbon abatement unit is sized and specified:

- the volume of each of the areas to be extracted;
- the extraction rate required to provide the necessary minimum required number of air changes in each of the areas being extracted (see Section 3.2.5. of this document);
- room temperature;
- room humidity;
- likely dust concentration in each area extracted;
- likely concentrations of other pollutants in each area extracted, including hydrogen sulphide, methyl mercaptan, ammonia, amines, alcohols etc;
- the required removal efficiency of the unit; this needs to be such that a maximum odour concentration of 1.0 OUE/m^3, expressed as a 98th percentile of hourly averages, at the site boundary can be achieved at all times when the carbon abatement unit is operational, as indicated in SEPA's *Odour Guidance 2010*; this will include ensuring that a suitable efflux velocity will be achieved from the discharge stack to comply with this requirement; the results of proposed odour dispersion modelling study (see below) will feed into the design calculations for the unit.

3.2.4. Activated Carbon Abatement Unit - Required Odour Units at Site Boundary (ref Schedule 4 Notice Item 2d)

FCC will undertake a suitable odour dispersion modelling study to ensure that a maximum odour concentration of 1.0 OUE/m^3, expressed as a 98th percentile of hourly averages (see above) at the site boundary can be achieved at all times when the activated carbon abatement plant is operational. The results of the study will be used to feed into the design of the activated carbon abatement unit to ensure that the unit is correctly sized and specified.

3.2.5. Activated Carbon Abatement Unit - Number of Air Changes in Plant (ref Schedule 4 Notice Item 3e)

The number of air changes in each area extracted by the activated carbon abatement unit will comply with the minimum requirement detailed in SEPA's *Odour Guidance 2010* i.e. a minimum of three room air changes per hour.

3.2.6. Activated Carbon Abatement Unit - Unexpected Events (ref Schedule 4 Notice Item 3f)

As previously indicated, the final design stage of the project has not been reached. However, suitable arrangements will be incorporated into the design of the unit to facilitate its rapid deployment in the event of an unexpected incident.

4. FIRE WATER

4.1. Schedule 4 Notice Requirements

"Please provide the following information:

a) How has the required capacity for fire water storage been calculated? This should be based on a worst-case situation.

b) How will fire water be routed to the storage areas in the event of a fire? This should consider a fire happening at any point on the site.

c) How will collected fire water be properly disposed of?"

4.2. Response

4.2.1. Revised Foul Drainage Plan

A revised Foul Drainage Plan - Aecom drawing reference EMW-SK-GT-1000 - is provided in Appendix 2 of this document. In particular, this indicates the fire water collection arrangements.

4.2.2. Fire Water Storage - Calculation of Capacity (ref Schedule 4 Notice Item 3a)

4.2.2.1. In Section 10.4.2. of the permit application Supporting Information Document (ECL document reference P2154/R004) it was stated that fire water arising from fire-fighting activities would be directed to, and collected in, the waste storage bunker. The waste bunker has a capacity of approximately 1,650m^3 available, even if the bunker is full of waste.

4.2.2.2. The total discharged water calculation for the fire systems is detailed in Table 2 below; the analysis is based upon ACE 2014.

Table 2 Fire Water Calculation

System	Quantity	Design Density	Area of Operation	Flow Rate	Hydraulic Gradient (15%)	Total (l/min)
Automatic dry pipe sprinkler system to the waste bunker roof	1	10.2	362.7	3699.54	554.931	4254.471
Waste bunker automatic monitor nozzle protection (water cannon)	2	-	-	1000	-	2000
Waste bunker automatic sprinkler system to exposed steel columns	8	10.2	3	244.8	36.72	261.52
Automatic/manual deluge system to waste feed hopper	1	8.1	40	324	48.6	372.6
Automatic/manual deluge system to shredder hopper	1	8.1	25	202.5	30.375	232.875
Internal hose stations	2	-	-	279	-	558
External hydrant flow	2	-	-	946	-	1892
					Total	**9884.716**

Based on an operating time of 120 minutes (NFPA 850/ACE), this equates to a maximum demand scenario of 1,186.2m^3, which is below the available waste bunker storage capacity of 1,650m^3.

4.2.3. Routing of Fire Water to Storage Areas (ref Schedule 4 Notice Item 3b)

All gullies within the plant will drain to the waste bunker, as indicated in the revised Foul Drainage Plan provided in Appendix 2 of this document.

4.2.4. Disposal of Collected Fire Water (ref Schedule 4 Notice Item 3c)

4.2.4.1. Any fire water collected in the industrial waste water pit will be tested before disposal, and, depending on the results of the testing, a suitably licenced waste disposal contractor will be used to remove the water from the site for treatment or disposal, as appropriate.

4.2.4.2. A significant proportion of the fire water will be absorbed within the waste. This would be disposed of in one of two ways depending on the amount of water in the waste, as follows:

- if there is not too much water in the waste, it would go forward for incineration; or
- if there is excessive water in the waste, a suitably licenced waste disposal contractor will be used to remove the waste from the site for treatment or disposal.

5. SUDS

5.1. Schedule 4 Notice Requirements

"Please provide the following information:

a) How have the SUDS ponds been sized as per the requirements of SUDS Manual CIRIA 697?

b) How will the 'Fire Break Water Tanks' be managed including:
- *are they drained periodically?*
- *what happens when they reach capacity?*
- *is there an overflow?*
- *is there SUDS treatment before this water is discharged?*
- *where do they finally discharge to?*

c) Provide further information on the 'industrial waste water pit' shown on the Millerhill RERC drawing (1309 PPC 121) and details on how this will be used and managed.

d) Where do the access road and visitor car park drain to and what level of SUDS treatment is provided?

e) How will the run-off from the manoeuvring area near the waste reception hall be dealt with? Please note that under GBR 10 'a discharge from a surface water drainage system must not contain any run-off from the following areas constructed after 1 April 2007 where … vehicle loading or unloading bays where potentially polluting matter is handled.'

f) Please provide details regarding how the oil storage tanks and ammonia tanks comply with the Scottish Oil Storage Regulations.

g) Will there be the ability to isolate drainage lines to protect the SUDS ponds?"

5.2. Response

5.2.1. Sizing of SUDS Ponds (ref Schedule 4 Notice Item 4a)

The SUDS ponds have been sized by FCC's drainage designer in accordance with parameters provided by Edinburgh and Mid Lothian Councils (Fairhurst). The design parameters have been derived in accordance with the requirements of Scottish Water document *Sewers for Scotland (3rd Edition)*, which accords with the requirements of CIRIA C697. Scottish Water requires that drainage connected to its system is designed in accordance with the requirements of its document.

5.2.2. Fire Water Break Tanks (ref Schedule 4 Notice Item 4b)

5.2.2.1. <u>Draining of Fire Water Break Tanks</u>

There is the capability of draining the tanks if required.

5.2.2.2. <u>Capacity reached in Fire Water Break Tanks</u>

The tanks will be fitted with high level controls, and in the event that these are activated, the feed water valve will close.

5.2.2.3. Fire Water Break Tanks Overflow Arrangements

There will be a recirculation line from the fire pump to re-circulate back to the tanks.

5.2.2.4. SUDS Treatment before Discharge

Treatment of SUDS water before discharge is not currently proposed.

5.2.2.5. Final Discharge of SUDS Water

The SUDS system will discharge to the surface water drainage system as described in Section 4.5.3.2. of the Supporting Information Document (ECL document reference P2154/R004).

5.2.3. Industrial Waste Water Pit (ref Schedule 4 Notice Item 4c)

5.2.3.1. The Industrial waste water pit indicated on drawing reference 1309 PPC 121 in the information supplied with the permit application and also indicated on the revised Foul Drainage Plan referenced above, will be used to collect effluent from the demineralisation plant, condensate and residues from the IBA quenching process and to recycle the collected effluent back to the IBA quenching process (as described in Section 12.2.3.1. of the permit application Supporting Information Document (ECL document reference P2154/R004).

5.2.3.2. The pit will comprise three separate chambers. The first, and largest, chamber has a capacity of approximately 200m^3 and its function is to remove any solids entrained in the incoming effluent. Supernatant from the first compartment decants over to the second - oil interceptor- chamber which has a capacity of approximately 80m^3, and is designed to remove any oil entrained in the effluent. The cleaned effluent then decants over to the third chamber, which has a capacity of approximately 10m^3, from where it is pumped back to the IBA quenching process for re-use.

5.2.3.3. A manhole with a sluice gate or similar will be installed in the boiler hall floor drainage network, upstream of the pit, and this will be closed manually in the event of a fire so that fire water will be prevented from entering the pit and, will, instead, be diverted to the waste bunker.

5.2.4. Access Road and Visitor Car Park Drainage Arrangements (ref Schedule 4 Notice Item 4d)

The access road will drain to a surface water drainage system via a stone filter trench and the car park will drain to a surface system via porous paving and filter trench or petrol interceptors (whichever is preferred by SEPA).

5.2.5. Runoff from Manoeuvring Area near Waste Reception Hall (ref Schedule 4 Notice Item 4e)

Runoff from the manoeuvring area will drain to the surface water drainage system. It is considered that, as there will be no material loaded or unloaded in this area, the requirements of GBR 10 are not applicable.

5.2.6. Oil Storage and Ammonia Tanks (ref Schedule 4 Notice Item 4f)

The tanks will comply with the relevant requirements of the Scottish Oil Storage Regulations, namely:

- the tanks will be strong enough to hold the contents without leaking or bursting;

- the tanks will be positioned to avoid damage as far as is reasonably practicable;
- secondary containment system such in the form of bunds will be provided to contain any leaks from the tanks or its ancillary pipe work and equipment;
- the bunds will have sufficient capacity to contain at least 110% of the maximum contents of the tanks;
- the bund base and walls will be impermeable to water and oil and checked regularly for leaks;
- above-ground pipe work will be properly supported.

5.2.7. Isolation of Drainage Lines (ref Schedule 4 Notice Item 4g)

Shut-off sluices will be provided downstream of areas at risk of being affected by potentially polluting spillages on the site. This arrangement will provide suitable protection to the SUDS ponds.

6. AIR QUALITY

6.1. Schedule 4 Notice Requirements

"Please update the air quality assessment to include information on the following points:

a) *Background concentrations from the DEFRA maps may be too low, since the area around the site is currently rural but is expected to become urban. Measured concentrations from nearby urban areas should be used (e.g. Musselburgh).* Note - SEPA has clarified that this comment refers only to NO_2 and PM_{10}.
b) *24hr PM10 is assessed against a 90.41th percentile, not the 98.98th percentile that is appropriate for Scotland.*
c) *Maximum modelled concentration values for each year should be tabulated, not just the maximum values from all years.*
d) *Concentrations at every sensitive receptor should be tabulated for every year modelled.*
e) *It is unclear how the modelling for abnormal operating conditions was conducted. The higher emission rates should be modelled for every hour of the year and the predicted maximum concentration used rather than using a subset of hours. This will ensure that the effects of high emission rates during lower dispersion periods are considered.*
f) *A comparison with results from a second model, such as AERMOD, may be useful as this would allow the confidence and uncertainties of modelling results to be addressed.*
g) *The Met Office provides wind data in 10 degree sectors and the 'Met data in sectors of degrees' option should be checked 'on' if the met file has wind direction in 10 degree sectors."*

6.2. Response

Please note that most of the issues raised in Item 6 of the Schedule 4 Notice (Human Health) have been incorporated into the responses to Item 5 as they have a direct bearing on how the revised air quality assessments have been carried out.

6.2.1. Comparison with AERMOD (ref Schedule 4 Notice Item 5f)

6.2.1.1. As agreed with SEPA, the ADMS user interface was used for AERMOD, with the same input parameters as the original study. For this sensitivity testing, both ADMS and AERMOD were run without terrain and buildings effects as recommended by CERC. Both models were also run using a single pollutant with an emission rate of 1g/s. The results of each are provided in Table 3 (ADMS) and Table 4 (AERMOD) for each met year considered. A comparison of the maximum PC obtained for each percentile is then provided in Table 5.

Table 3 Maximum PCs predicted by ADMS for each Percentile based on a Pollutant Emission Rate of 1g/s

Percentile	2009 (µg/m³)	2010 (µg/m³)	2011 (µg/m³)	2012 (µg/m³)	2013 (µg/m³)
Annual Mean (1-hour)	0.160	0.125	0.155	0.153	0.156
Annual Mean (24 hour)	0.153	0.153	0.149	0.146	0.149
100th percentile of 1 hour Mean	3.332	3.397	3.391	3.706	3.332
99.19th percentile of 1 hour Mean	2.117	1.880	2.081	2.153	2.127
99.18th percentile of 24 hour Mean	0.755	0.704	0.702	0.718	0.738
99.73rd percentile of 1 hour Mean	1.997	1.880	2.081	2.032	1.964
99.9th percentile of 15 minute Mean	2.652	2.516	2.496	2.527	2.489
98.08th Percentile of 24 hour Mean	0.691	0.628	0.638	0.659	0.642
100th percentile of 8-hour Rolling Mean	2.517	1.789	2.599	2.000	2.316
100th Percentile of 24 hour Mean	0.837	0.812	0.839	0.828	0.859

Table 4 Maximum PCs predicted by AERMOD for each Percentile based on a Pollutant Emission Rate of 1g/s

Percentile	2009 (µg/m³)	2010 (µg/m³)	2011 (µg/m³)	2012 (µg/m³)	2013 (µg/m³)
Annual Mean (1-hour)	0.115	0.087	0.110	0.108	0.108
Annual Mean (24 hour)	0.115	0.087	0.109	0.108	0.108
100th percentile of 1 hour Mean	1.578	1.611	1.593	1.624	1.579
99.19th percentile of 1 hour Mean	1.387	1.393	1.378	1.398	1.401
99.18th percentile of 24 hour Mean	0.661	0.539	0.635	0.601	0.619
99.73rd percentile of 1 hour Mean	1.361	1.367	1.341	1.379	1.393
99.9th percentile of 15 minute Mean	1.948	1.955	1.925	1.970	1.966
98.08th Percentile of 24 hour Mean	0.554	0.462	0.537	0.538	0.499
100th percentile of 8-hour Rolling Mean	0.115	0.087	0.110	0.108	0.108
100th Percentile of 24 hour Mean	0.115	0.087	0.109	0.108	0.108

Note to Table 4

(a) AERMOD does not provide 15 minute mean concentrations. This value was converted from the 99.9th percentile of 1-hourly mean using a conversion factor of 1.34 as indicated in Note 4 to Section 3.3.2 of H1.

Table 5 Comparison of the Maximum PCs predicted by ADMS and AERMOD for each Percentile based on a Pollutant Emission Rate of 1g/s

Percentile	Maximum PC predicted by ADMS ($\mu g/m^3$)	Maximum PC predicted by AERMOD ($\mu g/m^3$)	AEMOD PC expressed as a Percentage of ADMS PC
Annual Mean (1-hour)	0.160	0.115	71.9
Annual Mean (24 hour)	0.153	0.115	75.2
100th percentile of 1 hour Mean	3.706	1.624	43.8
99.19th percentile of 1 hour Mean	2.153	1.401	65.1
99.18th percentile of 24 hour Mean	0.755	0.661	87.5
99.73rd percentile of 1 hour Mean	2.081	1.393	66.9
99.9th percentile of 15 minute Mean	2.652	1.970[(a)]	74.3
98.08th Percentile of 24 hour Mean	0.691	0.554	80.2
100th percentile of 8-hour Rolling Mean	2.599	0.115	4.4
100th Percentile of 24 hour Mean	0.859	0.115	13.4

Note to Table 5

(a) AERMOD does not provide 15 minute mean concentrations. This value was converted from the 99.9th percentile of 1-hourly mean using a conversion factor of 1.34 as indicated in Note 4 to Section 3.3.2 of H1.

6.2.1.2. It can be seen from the comparisons presented in Table 5 that, in all cases, AERMOD predicts lower PCs than ADMS. Therefore, it can be concluded that ADMS provides the worst case scenario and consequently the choice of ADMS as the modelling package for the air quality assessment is valid. Accordingly, all of the additional assessments detailed below have been undertaken using ADMS.

6.2.2. NO_2 and PM_{10} Background Concentrations (ref Schedule 4 Notice Item 5a)

6.2.2.1. Background concentrations for NO_2 and PM_{10} have been obtained from East Lothian's 2014 Air Quality Progress Report (August 2014). An automatic monitoring site is located at North High Street, Musselburgh and provides data for NO_2 and PM_{10}, and passive monitoring for NO_2 is undertaken at various locations in Musselburgh and the other towns of Tranent and Haddington.

6.2.2.2. The annual mean concentrations of NO_2 and PM_{10}, obtained from the automatic monitoring station for 2013 - the latest data available - are 24$\mu g/m^3$ and 16$\mu g/m^3$ respectively.

6.2.2.3. There are 23 passive monitoring locations, the annual mean NO_2 concentration ranges from 10$\mu g/m^3$ to 43$\mu g/m^3$, with an average concentration of 28$\mu g/m^3$. It should be noted that all of the monitoring locations are roadside, and are therefore heavily influenced by vehicle emissions, particularly those locations within Musselburgh High Street which is designated as an AQMA. It is, therefore, considered reasonable to use the values from the automatic monitoring station as representative of both pollutants. Consequently, the background concentration values to be used in this assessment will be 24$\mu g/m^3$ for NO_2 and 16$\mu g/m^3$ for PM_{10}.

6.2.2.4. The revised background data for NO_2 and PM_{10} have been taken into consideration where required in the assessments presented in Section 6.2.7. of this document, and replace the values previously indicated in Section 2.6. of ECL document P2154/R008.

6.2.3. Motherwell South Background Data (ref Schedule 4 Notice Item 6a)

6.2.3.1. Monitoring data for Motherwell South has been obtained and is as follows for the following pollutants:

- arsenic - 0.000290μg/m^3;
- cadmium - 0.0000864μg/m^3;
- total chromium - 0.001307μg/m^3;
- chromium VI (assumed to be 20% of total chromium) - 0.000261μg/m^3; and
- nickel - 0.000559μg/m^3.

6.2.3.2. These background concentrations have been used, where required, in the revised assessments presented in Section 6.2.7. of this document and replace the values previously indicated in Section 2.6. of ECL document P2154/R008.

6.2.4. Grid References (ref Schedule 4 Notice Item 6b)

The grid references for background levels of particulate matter should be 332500, 670500; this is a typographical error in Section 2.6.4. of the original document (ECL document reference P2154/R008). This is also the grid reference for the background concentration of VOCs as benzene; the same typographical error was carried over to Section 2.6.5. of the original document).

6.2.5. Met Data Sectors (ref Schedule 4 Notice Item 5g)

All of the revised assessments have been undertaken using the met data in 10 degree sectors.

6.2.6. 24 Hour PM_{10} (ref Schedule 4 Notice Item 5b)

The 98.08th percentile for 24hour PM_{10} has now been considered in all assessments. The revised data are presented in the assessment detailed in Table 6 below.

6.2.7. Maximum Modelled Concentrations for Each Year (re Schedule 4 Notice Item 5c)

6.2.7.1. The predicted PCs for each of the pollutants considered in the assessment at the maximum point of impact have been extracted and are presented in Table 6 below for each met data year assessed. The assessments also take account of the revised NO_2 and PM_{10} (as indicated in Section 6.2.2. above) and the revised 24hour percentile for PM_{10} (as indicated in Section 6.2.6. above). The maximum predicted PCs are also compared to their respective AQSs.

6.2.7.2. The PCs - are considered potentially significant if the long-term prediction is greater than 1% of the long-term AQS, and, for short-term predictions, a potentially significant concentration would be greater than 10% of the short-term AQS (see Section 2.20.1.1. of ECL Document P2154/R008). In Table 6, any PCs that are above these significance criteria are indicated in bold type.

Table 6 Comparison of Maximum Predicted Process Contributions (PCs) with Air Quality Standards, IED ELVs

Pollutant	Met Data Year	Maximum PC (µg/m³)	AQS (µg/m³)	PC as % of AQS
NO_2 (annual)	2009	2.14	40	**5.36**
	2010	1.54		**3.85**
	2011	2.07		**5.17**
	2012	2.01		**5.03**
	2013	2.06		**5.16**
NO_2 (1 hour, 99.79th percentile)	2009	10.45	200	5.23
	2010	10.35		5.17
	2011	10.33		5.17
	2012	12.74		6.37
	2013	10.93		5.46
SO_2 (24 hour, 99.18th percentile)	2009	3.99	125	3.19
	2010	3.28		2.62
	2011	3.65		2.92
	2012	3.66		2.93
	2013	3.88		3.10
SO_2 (1 hour, 99.73rd percentile)	2009	5.67	350	1.62
	2010	6.00		1.71
	2011	5.68		1.62
	2012	6.05		1.73
	2013	5.64		1.61
SO_2 (15minute, 99.9th percentile)	2009	6.64	266	2.50
	2010	6.82		2.56
	2011	6.99		2.63
	2012	6.88		2.59
	2013	6.78		2.55
PM_{10} (annual mean)	2009	0.146	18	0.81
	2010	0.106		0.59
	2011	0.142		0.79
	2012	0.137		0.76
	2013	0.141		0.78
PM_{10} (24hour, 99.08th percentile)	2009	0.648	50	1.30
	2010	0.555		1.11
	2011	0.634		1.27
	2012	0.635		1.27
	2013	0.664		1.33
$PM_{2.5}$ (annual mean)	2009	0.146	25	0.58
	2010	0.106		0.42
	2011	0.142		0.57
	2012	0.137		0.55
	2013	0.141		0.56

Table 6 Comparison of Maximum Predicted Process Contributions (PCs) with Air Quality Standards, IED ELVs (cont)

Pollutant	Met Data Year	Maximum PC ($\mu g/m^3$)	AQS ($\mu g/m^3$)	PC as % of AQS
$PM_{2.5}$ (annual mean)	2009	0.146	12	**1.22**
	2010	0.106		0.88
	2011	0.142		**1.18**
	2012	0.137		**1.14**
	2013	0.141		**1.18**
CO (8 hour, 100th percentile)	2009	5.301	10000	0.053
	2010	5.631		0.056
	2011	5.678		0.057
	2012	5.792		0.058
	2013	5.917		0.059
VOC (as benzene) (annual mean)	2009	0.153	3.25	**4.71**
	2010	0.110		**3.38**
	2011	0.148		**4.54**
	2012	0.144		**4.42**
	2013	0.147		**4.53**
Ammonia (annual mean)	2009	0.153	180	0.085
	2010	0.110		0.061
	2011	0.148		0.082
	2012	0.144		0.080
	2013	0.147		0.082
Ammonia (1-hour, 100th percentile)	2009	1.492	2500	0.060
	2010	1.477		0.059
	2011	1.475		0.059
	2012	1.819		0.073
	2013	1.560		0.062
Hydrogen Chloride (1-hour, 100th percentile)	2009	1.492	750	0.20
	2010	1.477		0.20
	2011	1.475		0.20
	2012	1.819		0.24
	2013	1.560		0.21
Hydrogen Fluoride (annual mean)	2009	0.0153	16	0.10
	2010	0.0110		0.069
	2011	0.0148		0.092
	2012	0.0144		0.090
	2013	0.0147		0.092
Hydrogen Fluoride (1-hour, 100th percentile)	2009	0.149	160	0.093
	2010	0.148		0.092
	2011	0.148		0.092
	2012	0.182		0.11
	2013	0.156		0.097

Table 6 Comparison of Maximum Predicted Process Contributions (PCs) with Air Quality Standards, IED ELVs (cont)

Pollutant	Met Data Year	Maximum PC ($\mu g/m^3$)	AQS ($\mu g/m^3$)	PC as % of AQS
Antimony[a] (annual mean)	2009	0.0077	5	0.15
	2010	0.0055		0.11
	2011	0.0074		0.15
	2012	0.0072		0.14
	2013	0.0074		0.15
Antimony[a] (1-hour, 100th percentile)	2009	0.075	150	0.19
	2010	0.074		0.18
	2011	0.074		0.18
	2012	0.091		0.23
	2013	0.0780		0.19
Arsenic[a] (annual mean)	2009	0.0077	0.003	**255**
	2010	0.0055		**183**
	2011	0.0074		**245**
	2012	0.0072		**239**
	2013	0.0074		**245**
Cadmium[b] (annual mean)	2009	0.0008	0.005	**15.3**
	2010	0.0005		**11.0**
	2011	0.0007		**14.8**
	2012	0.0007		**14.4**
	2013	0.0007		**14.7**
Chromium III[a] (annual mean)	2009	0.0077	5	0.15
	2010	0.0055		0.11
	2011	0.0074		0.15
	2012	0.0072		0.14
	2013	0.0074		0.15
Chromium III[a] (1-hour, 100th percentile)	2009	0.075	150	0.050
	2010	0.074		0.049
	2011	0.074		0.049
	2012	0.091		0.061
	2013	0.0780		0.052
Chromium VI[c] (annual mean)	2009	0.00153	0.0002	**765**
	2010	0.00110		**549**
	2011	0.00148		**738**
	2012	0.00144		**718**
	2013	0.00147		**737**
Arsenic[a] (annual mean)	2009	0.0077	0.003	**255**
	2010	0.0055		**183**
	2011	0.0074		**245**
	2012	0.0072		**239**
	2013	0.0074		**245**

Table 6 Comparison of Maximum Predicted Process Contributions (PCs) with Air Quality Standards, IED ELVs (cont)

Pollutant	Met Data Year	Maximum PC ($\mu g/m^3$)	AQS ($\mu g/m^3$)	PC as % of AQS
Cobalt[a] (annual mean)	2009	0.0077	0.2	**3.83**
	2010	0.0055		**2.75**
	2011	0.0074		**3.69**
	2012	0.0072		**3.59**
	2013	0.0074		**3.68**
Cobalt[a] (1-hour, 100th percentile)	2009	0.075	6	1.24
	2010	0.074		1.23
	2011	0.074		1.23
	2012	0.091		1.52
	2013	0.078		1.30
Copper[a] (annual mean)	2009	0.0077	10	0.077
	2010	0.0055		0.055
	2011	0.0074		0.074
	2012	0.0072		0.072
	2013	0.0074		0.074
Copper[a] (1-hour, 100th percentile)	2009	0.075	200	0.037
	2010	0.074		0.037
	2011	0.074		0.037
	2012	0.091		0.045
	2013	0.0780		0.039
Lead[a] (annual mean)	2009	0.0077	0.25	**3.06**
	2010	0.0055		**2.20**
	2011	0.0074		**2.95**
	2012	0.0072		**2.87**
	2013	0.0074		**2.95**
Manganese[a] (annual mean)	2009	0.0077	1	0.77
	2010	0.0055		0.55
	2011	0.0074		0.74
	2012	0.0072		0.72
	2013	0.0074		0.74
Manganese[a] (1-hour, 100th percentile)	2009	0.075	1500	0.005
	2010	0.074		0.005
	2011	0.074		0.005
	2012	0.091		0.006
	2013	0.0780		0.005
Mercury[d] (annual mean)	2009	0.00077	0.25	0.31
	2010	0.00055		0.22
	2011	0.00074		0.30
	2012	0.00072		0.29
	2013	0.00074		0.29

Table 6 Comparison of Maximum Predicted Process Contributions (PCs) with Air Quality Standards, IED ELVs (cont)

Pollutant	Met Data Year	Maximum PC (μg/m³)	AQS (μg/m³)	PC as % of AQS
Mercury[d] (1-hour, 100th percentile)	2009	0.0075	7.5	0.10
	2010	0.0074		0.10
	2011	0.0074		0.10
	2012	0.0091		0.12
	2013	0.00780		0.10
Nickel[a] (annual mean)	2009	0.0077	0.02	**38.3**
	2010	0.0055		**27.5**
	2011	0.0074		**36.9**
	2012	0.0072		**35.9**
	2013	0.0074		**36.8**
Thallium[b] (annual mean)	2009	0.00077	1	0.077
	2010	0.00055		0.055
	2011	0.00074		0.074
	2012	0.00072		0.072
	2013	0.00074		0.074
Thallium[a] (1-hour, 100th percentile)	2009	0.0075	30	0.025
	2010	0.0074		0.025
	2011	0.0074		0.025
	2012	0.0091		0.030
	2013	0.0078		0.026
Vanadium[a] (annual mean)	2009	0.0073	5	0.15
	2010	0.0053		0.11
	2011	0.0071		0.14
	2012	0.0068		0.14
	2013	0.0071		0.14
Vanadium[a] (24-hour, 100th percentile)	2009	0.0410	1	4.10
	2010	0.0395		3.95
	2011	0.0413		4.13
	2012	0.0401		4.01
	2013	0.0447		4.47
Benzo[a]pyrene (annual mean)	2009	0.0000153	0.00025	**6.12**
	2010	0.0000110		**4.40**
	2011	0.0000148		**5.90**
	2012	0.0000144		**5.74**
	2013	0.0000147		**5.90**
PCBs (annual mean)	2009	0.000000153	0.2	<0.0001
	2010	0.000000110		<0.0001
	2011	0.000000148		<0.0001
	2012	0.000000144		<0.0001
	2013	0.000000147		<0.0001

Table 6 Comparison of Maximum Predicted Process Contributions (PCs) with Air Quality Standards, IED ELVs (cont)

Pollutant	Met Data Year	Maximum PC ($\mu g/m^3$)	AQS ($\mu g/m^3$)	PC as % of AQS
PCBs (24-hour, 100th percentile)	2009	0.00000149	6	<0.0001
	2010	0.00000148		<0.0001
	2011	0.00000148		<0.0001
	2012	0.00000182		<0.0001
	2013	0.00000156		<0.0001
Dioxins/Furans (annual maen)	2009	0.0000000015	No standard applies	-
	2010	0.0000000011		-
	2011	0.0000000015		-
	2012	0.0000000014		-
	2013	0.0000000015		-

Notes to Table 6

(a) Emission at 100% of the Group 3 metals ELV.
(b) Emission at 100% of the Group 1 metals ELV.
(c) Emission at 20% of the group 3 metals ELV.
(d) Emission at 100% of the Group 2 metals ELV.

6.2.7.3. It can be seen from the data in Table 6, that, for the majority of pollutants assessed, the impact of the proposed facility is not significant. Accordingly, these have not been considered further in the assessment.

6.2.7.4. It can be seen that the short-term impacts for all pollutants can be classed as not significant, and, accordingly, no further short-term assessment is required.

6.2.7.5. However, there are a number potentially significant long-term impacts for nitrogen dioxide, $PM_{2.5}$, VOCs (as benzene), arsenic, cadmium, chromium VI, cobalt, lead, nickel and benzo[a]pyrene, although it is important to note that the metals have, at this step of the assessment, each been modelled at their respective ELVs (with the exception of chromium VI which has been modelled at 20% of the Group 3 metals ELV (see Section 2.20.2. of ECL Report P2154/R008).

6.2.7.6. However, it would not be reasonable to assume that each Group 3 metal emits at the maximum ELV for the group. In this regard, the EA has provided guidance on the steps required for assessing the impact of metals emissions (see Section 2.20.2. of ECL Report P2154/R008). This indicates that, for the second step of the assessment, each of the Group 3 metals is present at 11% of the Group 3 metals ELV. Accordingly, for those Group 3 metals not screened out as being insignificant, the PCs have been re-modelled on this basis (again, with the exception of chromium VI which is assumed to be at 2.2% of the Group 3 metals ELV i.e. 11% of 20%). Similarly, it would not be reasonable to assume that that each of the Group 1 metals is present at the maximum ELV for the group, and, accordingly, each of the Group 1 metals - in this case, only cadmium - is present at 50% of the Group 1 metals ELV.

6.2.7.7. Using the approach detailed in Section 6.2.7.6. above the revised comparison of the predicted pollutant PCs with their respective AQSs is presented in Table 7 for those metals classed as potentially significant (see Section 6.2.7.5.) above. As previously, the data is presented for each year of met data used. Again, any PCs that are above the 1% significance criteria are indicated in bold type.

Table 7 Step 2 Screening - Comparison of Potentially Significant Metal Maximum Predicted Process Contributions (PCs) with Air Quality Standards at Relevant Percentages of IED ELV

Pollutant	Stack Height	Maximum PC (µg/m³)	AQS (µg/m³)	PC as % of AQS
Arsenic[(a)] (annual mean)	2009	0.000842	0.003	**28.1**
	2010	0.000604		**20.1**
	2011	0.000811		**27.0**
	2012	0.00079		**26.3**
	2013	0.000811		**27.0**
Cadmium[(b)] (annual mean)	2009	0.000383	0.005	**7.65**
	2010	0.000275		**5.49**
	2011	0.000369		**7.38**
	2012	0.000359		**7.18**
	2013	0.000368		**7.37**
Chromium VI[(c)] (annual mean)	2009	0.000168	0.0002	**84.2**
	2010	0.000121		**60.4**
	2011	0.000162		**81.1**
	2012	0.000158		**79.0**
	2013	0.000162		**81.1**
Cobalt[(a)] (annual mean)	2009	0.00084	0.2	0.42
	2010	0.00060		0.30
	2011	0.00081		0.41
	2012	0.00079		0.39
	2013	0.00081		0.41
Lead[(a)] (annual mean)	2009	0.000842	0.25	0.34
	2010	0.000604		0.24
	2011	0.000811		0.32
	2012	0.00079		0.32
	2013	0.000811		0.32
Nickel[(a)] (annual mean)	2009	0.000842	0.02	**4.21**
	2010	0.000604		**3.02**
	2011	0.000811		**4.06**
	2012	0.00079		**3.95**
	2013	0.000811		**4.05**

Notes to Table 7

(a) Based on emission at 11% of Group 3 metals ELV.
(b) Based on emission at 50% of Group 1 metals ELV.
(c) Based on emission at 2.2% of Group 3 metals ELV.

6.2.7.8. It can be seen from the data in Table 7 that the long-term impacts of cobalt and lead can be classed as not significant, and, therefore, no further assessment is required.

6.2.7.9. Accordingly, long-term releases of nitrogen dioxide, $PM_{2.5}$, VOCs (as benzene), arsenic, cadmium, chromium VI, nickel and benzo[a]pyrene still require further assessment.

6.2.7.10. The next stage of the Step 2 impact significance screening process is to compare the long-term pollutant PECs (see Section 20.1.2.1. of ECL Report P2154/R008) for those pollutants which have not yet been screened out as being insignificant with their respective AQSs. One of two criteria is then used to determine whether a PEC is significant, namely, for Group 3 metals the criterion indicated in Section 2.20.1.3. of of ECL Report P2154/R008 is used and for all other pollutants, the criterion indicated in Section 2.20.1.2. of ECL Report P2154/R008 is used. This comparison is presented in Table 8. Any PECs that exceed the significance criteria referenced above are indicated in bold type.

Table 8 Step 2 Screening - Comparison of Long-term Predicted Environmental Concentrations (PECs) with Air Quality Standards

Pollutant	Met Data Year	Long-term PC (μg/m³)	Background Concentration (μg/m³)[(a)]	Long-term PEC (μg/m³)	AQS (μg/m³)	Long-term PEC as a %age of AQS
NO_2 (annual mean)	2009	2.14	24	26.1	40	65.4
	2010	1.54		25.5		63.8
	2011	2.07		26.1		65.2
	2012	2.01		26.0		65.0
	2013	2.06		26.1		65.2
PM2.5 (annual mean))	2009	0.146	7.94	8.09	12	67.4
	2010	0.106		8.05		67.0
	2011	0.142		8.08		67.3
	2012	0.137		8.08		67.3
	2013	0.141		8.08		67.3
VOC (annual mean)	2009	0.153	0.329	0.482	3.25	14.8
	2010	0.110		0.439		13.5
	2011	0.148		0.477		14.7
	2012	0.144		0.473		14.5
	2013	0.147		0.476		14.7
Arsenic[(b)] (annual mean)	2009	0.000842	0.000290	0.00113	0.003	37.7
	2010	0.000604		0.000894		29.8
	2011	0.000811		0.00110		36.7
	2012	0.000790		0.00108		36.0
	2013	0.000811		0.00110		36.7
Cadmium[(c)] (annual mean)	2009	0.000383	0.0000864	0.000469	0.005	9.39
	2010	0.000275		0.000361		7.23
	2011	0.000369		0.000455		9.11
	2012	0.000359		0.000445		8.91
	2013	0.000368		0.000454		9.09
Chromium VI[(d)] (annual mean)	2009	0.000168	0.000261	0.000429	0.0002	**215**
	2010	0.000121		0.000382		**191**
	2011	0.000162		0.000423		**212**
	2012	0.000158		0.000419		**210**
	2013	0.000162		0.000423		**212**

Table 8 Step 2 Screening - Comparison of Long-term Predicted Environmental Concentrations (PECs) with Air Quality Standards (cont)

Pollutant	Met Data Year	Long-term PC ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)(a)	Long-term PEC ($\mu g/m^3$)	AQS ($\mu g/m^3$)	Long-term PEC as a %age of AQS
Nickel(b) (annual mean)	2009	0.000842	0.000559	0.00140	0.02	7.01
	2010	0.000604		0.00116		5.81
	2011	0.000811		0.00137		6.85
	2012	0.000790		0.00135		6.75
	2013	0.000811		0.00137		6.85
Benzo[a] pyrene (annual mean)	2009	0.0000153	0.000035	0.0000503	0.00025	20.1
	2010	0.0000110		0.0000460		18.4
	2011	0.0000148		0.0000498		19.9
	2012	0.0000144		0.0000494		19.7
	2013	0.0000147		0.0000497		19.9

Notes to Table 8

(a) See Sections 6.2.2.and 6.2.3. of this document.
(b) Based on emission at 11% of Group 3 metals ELV.
(c) Based on emission at 50% of Group 1 metals ELV.
(d) Based on emission at 2.2% of Group 3 metals ELV.

6.2.7.11. It can be seen from the data in Table 8, that the long-term impacts of nitrogen dioxide, $PM_{2.5}$, benzene, arsenic, cadmium, nickel and benzo[a]pyrene can be screened out as not being significant and no further assessment is required. However, chromium VI cannot be screened out at this stage and, therefore, requires further assessment.

6.2.7.12. Chromium VI

Where the release is still considered to be potentially significant, Step 3 of the EA Guidance allows the applicant to justify the percentage for each metal. For municipal waste incinerators, the EA provides a range of actual measured emissions (19 measurements from 13 plants). Appendix A of the EA Guidance indicates that the mean total chromium emission concentration is $0.0109 mg/m^3$, whilst Appendix B indicates that the mean chromium VI emission concentration is $0.000035 mg/m^3$. Given that Appendix A also indicates that the total chromium concentration equates to 2.2% of the Group 3 metals total, the percentage of chromium VI in the emissions equates to 0.007% (0.000035x2.2%/0.0109) of the total chromium emissions for MWIs.

Using the approach detailed above, the revised comparison of the CrVI PC with its AQS is presented in Table 9.

Table 9 Step 3 Screening - Comparison of Potentially Significant Metal Predicted Maximum Ground Level Process Contributions (PCs) with Air Quality Standards at Relevant Percentages of IED ELV

Pollutant	Met Data Year	Maximum PC ($\mu g/m^3$)	AQS ($\mu g/m^3$)	PC as % of AQS
Chromium VI (annual mean)	2009	0.00000054	0.0002	0.27
	2010	0.00000038		0.19
	2011	0.00000052		0.26
	2012	0.00000050		0.25
	2013	0.000000516		0.26

It can be seen from the data in Table 9 that the long-term impacts of chromium VI can be screened out as not being significant and, accordingly, no further assessment is required.

6.2.8. Sensitive Receptor Locations Process Concentrations for Each Year Modelled (ref Schedule 4 Notice Item 5d)

6.2.8.1. The PCs from the proposed facility for each sensitive receptor considered, for each year of met data modelled are presented in Appendix 3 of this document; the values indicated take account of the responses provided in Sections 6.2.5. and 6.2.6. of this document.

6.2.8.2. ECL Report P2154/R008 submitted as part of the PPC Permit application supporting information demonstrated that releases from the proposed facility are considered unlikely to result in a breach of current AQSs or have a detrimental effect on local human health at the maximum predicted receptor concentration for each statistic (averaging period and percentile). Consequently, the same conclusion can be reached for all sensitive receptor locations considered in this assessment.

6.2.9. Abnormal Emissions (ref Schedule 4 Notice Item 6e)

6.2.9.1. The emissions rates, for those pollutants to which abnormal emission rates apply, are provided in Table 10 and have been modelled for every hour of each year considered in the modelling study. A comparison of the pollutants PCs with their respective AQSs is presented in Table 11. As abnormal conditions can only apply for a maximum of 4 hours at any one time, and 60 hours in a year, only the short-term averaging periods have been considered. Any PCs that are above the 10% short-term significance criterion are highlighted in bold.

Table 10 Short-term Emission Concentrations and Emission Rates for Abnormal Releases

Pollutant	Half Hour Limit (mg/Nm^3)	Half Hour Emission Rate (g/s)	Maximum Emission Concentration (mg/Nm^3)	Maximum Emission Rate (g/s)
Nitrogen Dioxide	400	12.168	-	-
Sulphur Dioxide	200	0.123	-	-
Particulate Matter, as PM_{10}	30	0.912	150	4.56
Carbon Monoxide	100	-	150	4.56
Hydrogen Chloride	60	0.608	-	-
Hydrogen Fluoride	4	1.824	-	-

Table 11 Comparison of Maximum Predicted Pollutant Process Contributions (PCs) with Air Quality Standards for Abnormal Emissions

Pollutant	Met Data Year	Maximum PC ($\mu g/m^3$)	AQS ($\mu g/m^3$)	PC as % of AQS
Nitrogen Dioxide 1 hour, 99.79th percentile)[(a)]	2009	20.90	200	**10.5**
	2010	20.69		**10.4**
	2011	20.67		**10.3**
	2012	25.49		**12.7**
	2013	21.85		**10.9**
Sulphur Dioxide (24 hour, 99.18th percentile)	2009	15.95	125	**12.8**
	2010	13.11		**10.5**
	2011	14.58		**11.7**
	2012	14.62		**11.7**
	2013	15.50		**12.4**
Sulphur Dioxide (1 hour, 99.73rd percentile)	2009	22.66	350	6.47
	2010	23.98		6.85
	2011	22.72		6.49
	2012	24.20		6.92
	2013	22.56		6.45
Sulphur Dioxide (15minute, 99.9th percentile)	2009	26.55	266	9.98
	2010	27.27		**10.3**
	2011	27.93		**10.5**
	2012	27.49		**10.3**
	2013	27.11		**10.2**
Particulate Matter, as PM_{10} (24hour, 99.08th percentile) @ 30mg/Nm^3	2009	1.944	50	3.89
	2010	1.666		3.33
	2011	1.901		3.80
	2012	1.906		3.81
	2013	1.993		3.99

Table 11 Comparison of Maximum Predicted Pollutant process Contributions (PCs) with Air Quality Standards for Abnormal Emissions (cont)

Pollutant	Met Data Year	Maximum PC ($\mu g/m^3$)	AQS ($\mu g/m^3$)	PC as % of AQS
Particulate Matter, as PM_{10} (24hour, 99.08th percentile) @ 150mg/Nm^3	2009	9.721	50	**19.4**
	2010	8.332		**16.7**
	2011	9.507		**19.0**
	2012	9.531		**19.1**
	2013	9.964		**19.9**
Carbon Monoxide (8 hour, 100th percentile)	2009	15.892	10000	0.16
	2010	16.881		0.17
	2011	17.022		0.17
	2012	17.364		0.17
	2013	17.738		0.18
Hydrogen Chloride (1-hour, 100th percentile)	2009	8.952	750	1.19
	2010	8.862		1.18
	2011	8.852		1.18
	2012	10.916		1.46
	2013	9.359		1.25
Hydrogen Fluoride (1-hour, 100th percentile)	2009	0.604	160	0.38
	2010	0.598		0.37
	2011	0.597		0.37
	2012	0.736		0.46
	2013	0.631		0.39

Note to Table 11

(a) Assuming 35% of NOx is oxidised to NO_2. 35% NO to NO_2 (ref: Guidance on NO_x and NO_2 Conversion Ratios as referenced in AQTAG06 *Technical guidance on detailed modelling approach for an appropriate assessment* (March 2014)); SEPA approved the use of this approach via email correspondence.

6.2.9.2. It is evident from the data in Table 101 that PCs of SO_2 (1-hour averaging period) PM_{10} (at the 30mg/Nm^3 ELV), CO, HCl and HF can be considered to be not significant as the short term PCs are less than 10% of the short-term AQS.

6.2.9.3. PCs for SO_2, NO_2 and PM_{10} are above 10% of the short-term AQSs, however, detailed assessment of short-term effects is often complex. In accordance with SEPA Guidance Note H1 *"a pragmatic approach is suggested that unless the short-term PC exceeds 30% of the short-term AQS then the emissions may be considered tolerable"*. Consequently, as the short-term impacts for SO_2, NO_2 and PM_{10} are a maximum of 19.9% of the relevant AQS, they can be considered tolerable.

6.2.10. Land Deposition of Metals (ref Schedule 4 Notice Item 6c)

6.2.10.1. The assessment of the impact of emissions deposited from air to land was further assessed as requested. ADMS was used to model the metals deposition in order to compare the total deposition flux with the maximum rate of deposition benchmark for each of the relevant pollutants. The results are provided in Table 12 below; any PCs that are above the 1% significance criterion are highlighted in bold.

Table 12 Comparison of Predicted Metal Deposition Rates with Maximum Deposition Rates

Pollutant	Met Data Year	Total Deposition Rate (mg/m²/day)	Maximum Rate of Deposition (mg/m²/day)	Total Deposition as a % of the Maximum Rate of Deposition
Arsenic	2009	0.00788	0.02	**39.4**
	2010	0.00623		**31.1**
	2011	0.00783		**39.1**
	2012	0.00922		**46.1**
	2013	0.00736		**36.8**
Cadmium	2009	0.00079	0.009	**8.78**
	2010	0.00062		**6.89**
	2011	0.00078		**8.67**
	2012	0.00092		**10.2**
	2013	0.00074		**8.22**
Chromium	2009	0.00788	1.5	0.5
	2010	0.00623		0.4
	2011	0.00783		0.5
	2012	0.00922		0.6
	2013	0.00736		0.5
Copper	2009	0.00788	0.25	**3.15**
	2010	0.00623		**2.49**
	2011	0.00783		**3.13**
	2012	0.00922		**3.69**
	2013	0.00736		**2.94**
Lead	2009	0.00788	1.1	0.7
	2010	0.00623		0.6
	2011	0.00783		0.7
	2012	0.00922		0.8
	2013	0.00736		0.7
Mercury	2009	0.00079	0.004	**19.7**
	2010	0.00062		**15.6**
	2011	0.00078		**19.6**
	2012	0.00092		**23.0**
	2013	0.00074		**18.4**
Nickel	2009	0.00788	0.11	**7.16**
	2010	0.00623		**5.66**
	2011	0.00783		**7.11**
	2012	0.00922		**8.38**
	2013	0.00736		**6.69**

6.2.10.2. It can be seen from the data in Table 12, that only chromium and lead can be considered not significant. Accordingly, these have not been considered for further assessment.

6.2.10.3. Arsenic, cadmium, copper, mercury and nickel have predicted deposition rates which are greater than 1% of the maximum rate of deposition, and, therefore, require further assessment.

6.2.10.4. The metals have, at this step of the assessment, each been modelled at their respective ELVs, however, it would not be reasonable to assume that each Group 3 metal emits at the maximum ELV for the group. In this regard, the EA has provided guidance on the steps required for assessing the impact of metals emissions (see Section 2.20.2. of ECL Report P2154/R008). This indicates that, for the second step of the assessment, each of the Group 3 metals is present at 11% of the Group 3 metals ELV. Accordingly, for those Group 3 metals not screened out as being insignificant, the PCs have been re-modelled on this basis. Similarly, it would not be reasonable to assume that that each of the Group 1 metals is present at the maximum ELV for the group, and, accordingly, each of the Group 1 metals - in this case, only cadmium - is present at 50% of the Group 1 metals ELV.

6.2.10.5. Using the approach detailed in Section 6.2.10.4., the revised comparison of the predicted pollutant PCs with their respective AQSs is presented in Table 13 for those metals classed as potentially significant (see Section 7.2.3.3.). Again, any PCs that are above the 1% significance criterion are indicated in bold type.

Table 13 Step 2 Screening - Comparison of Potentially Significant Metal Deposition Rates at Relevant Percentages of IED ELV with Maximum Deposition Rates

Pollutant	Met Data Year	Total Deposition Flux (mg/m²/day)	Maximum Rate of Deposition (mg/m²/day)	Total Deposition as a % of the Maximum Rate of Deposition
Arsenic[a]	2009	0.000867	0.02	**4.33**
	2010	0.000685		**3.42**
	2011	0.000861		**4.31**
	2012	0.001014		**5.07**
	2013	0.000810		**4.05**
Cadmium[b]	2009	0.000394	0.009	**4.38**
	2010	0.000311		**3.46**
	2011	0.000391		**4.35**
	2012	0.000461		**5.12**
	2013	0.000368		**4.09**
Copper[a]	2009	0.000867	0.25	0.35
	2010	0.000685		0.27
	2011	0.000861		0.34
	2012	0.001014		0.41
	2013	0.000810		0.32

Table 13 Step 2 Screening - Comparison of Potentially Significant Metal Deposition Rates at Relevant Percentages of IED ELV with Maximum Deposition Rates (cont)

Pollutant	Met Year	Total Deposition Flux (mg/m²/day)	Maximum Rate of Deposition (mg/m²/day)	Total Deposition as a % of the Maximum Rate of Deposition
Mercury[c]	2009	0.000788	0.004	**19.7**
	2010	0.000623		**15.6**
	2011	0.000783		**19.6**
	2012	0.000922		**23.0**
	2013	0.000736		**18.4**
Nickel[a]	2009	0.000867	0.11	0.79
	2010	0.000685		0.62
	2011	0.000861		0.78
	2012	0.001014		0.92
	2013	0.000810		0.74

Notes to Table 13

(a) At 11% of Group 3 metals ELV
(b) At 50% of Group 1 metals ELV
(c) At 100% of Group 2 metals ELV

6.2.10.6. It can be seen from the data in Table 13, that the impacts of copper and nickel can be screened out as being insignificant and no further assessment is required. However, arsenic, cadmium and mercury cannot be screened out at this stage and, therefore, require further assessment.

6.2.10.7. Where the release is still considered to be potentially significant, Step 3 of the guidance allows the applicant to justify the percentage for each metal. As part of the original air dispersion modelling report (ECL Report P2154/R008) and assessment of the air quality impacts based on actual emissions data from FCC's Lincoln plant was undertaken; given the similarity in design of the two plants, it is considered that this approach is justified. The monitoring data from Lincoln for arsenic, cadmium and mercury are provided in Table 14 and an assessment of the impact at actual emission rates is provided in Table 15.

Table 14 Emissions Monitoring Data from FCC's Lincoln Plant

Pollutant	Dec 2014 (mg/m³)	Jul 2014 (mg/m³)	April 2014 (mg/m³)	Average (mg/m³)	IED ELV (mg/m³)	Actual Concentration as a % of IED ELV
Arsenic	0.0005	0.0003	0.0003	0.00037	0.5	0.07
Cadmium	0.0003	0.0002	0.0003	0.00027	0.05	0.54
Mercury	0.0002	0.0004	0.0016	0.00073	0.05	1.5

Table 15 Step 3 Screening - Comparison of Potentially Significant Metal Deposition Rates at Actual Emission Rates with Maximum Deposition Rates

Pollutant	Met Year	Total Deposition Flux (mg/m²/day)	Maximum Rate of Deposition (mg/m²/day)	Total Deposition as a % of the Maximum Rate of Deposition
Arsenic	2009	0.0000058	0.02	0.029
	2010	0.0000046		0.023
	2011	0.0000057		0.029
	2012	0.0000068		0.034
	2013	0.0000054		0.027
Cadmium	2009	0.0000042	0.009	0.047
	2010	0.0000033		0.037
	2011	0.0000042		0.046
	2012	0.0000049		0.055
	2013	0.0000039		0.044
Mercury	2009	0.000012	0.004	0.29
	2010	0.000009		0.23
	2011	0.000011		0.29
	2012	0.000014		0.34
	2013	0.000011		0.27

6.2.10.8. The data in Table 15 shows that arsenic, cadmium and mercury can be screened out as being not significant as the total deposition rate is less than 1% of the maximum rate of deposition.

6.2.11. Process Contributions from Arsenic (ref Schedule 4 Notice Item 6d)

The estimated process contribution for arsenic is 0.000842μg/m³ based on arsenic being emitted at 11% of the Group 3 Metals ELV, i.e. an emission concentration of 0.055mg/m³. Monitoring data from FCC's sister plant in Lincoln has indicated that the actual emission concentration of arsenic is likely to be 0.00037mg/m³, or 0.07% of the Group 3 ELV. Consequently, based on actual emissions monitoring data, the estimated process contribution for arsenic is more likely to be 0.00000532mg/m³. This would equate to a 2.5% increase to the background concentration. The PC itself would be 0.18% of the air quality standard for arsenic and would be classed as not significant in accordance with the criterion detailed SEPA's H1 guidance note. It is considered therefore that this small increase would not have any significant effect on local air quality.

6.2.12. Chromium VI (ref Schedule 4 Notice Item 6f)

It can be confirmed that the EA measured emissions concentration of chromium VI of 0.000035mg/m³ was modelled at 75m to provide the PC of 0.000000536μ/m³.

6.2.13. Table 11 of Stack Height Assessment Report (ref Schedule 4 Notice Item 6g)

Table 11 of the Stack Height Screening Assessment report is reproduced as Table 16 below, revised as requested by SEPA (also please note revised table heading).

Table 16 Revised Table 11 from Stack Height Screening Assessment, Step 3 Screening for Chromium VI

Pollutant	Stack Height (m)	PC ($\mu g/m^3$)	AQS ($\mu g/m^3$)	PC as a %age of AQS [(a)]
Chromium VI	50	0.00000144	0.0002	0.72
	55	0.00000125		0.62
	60	0.00000106		0.53
	65	0.00000103		0.52
	70	0.000000705		0.35
	75	0.000000536		0.27
	80	0.000000427		0.21
	85	0.000000342		0.17
	90	0.000000272		0.14

7. HUMAN HEALTH

7.1. Schedule 4 Notice Requirements

"Please update the human health assessment to include information on the following points:

a) Auchencorth Moss background levels have been used in the assessment on impacts to background levels for releases from the ERC stack. Auchencorth Moss is a remote rural location, a better representative background data would be Motherwell south monitoring station.

b) The grid references for background levels of particulate matter do not match the proposed location of the facility.

c) Land deposition rates for arsenic, cadmium and nickel exceed the maximum deposition rate (MDR) for each substance (as stated in Table 26 of the 'Air Quality Assessment') and should be further assessed.

d) The estimated process concentration (PC) of 0.000842µg/m^{3}for arsenic may increase the existing background level (0.000213µg/m^{3}in the surrounding area by over 395%. As a result, over the lifetime of the plant (about 30 years), releases of arsenic from the ERC stack may change the existing background level for arsenic.

e) For dioxins, furans and dioxin like PCBs individual congener I-TEFs should be converted using WHO-TEFs to enable comparison with COT TDI (2pg TEQ/kg-body weight/day) and not use the EA EPA hazard or carcinogenic risk quotients.

f) In carrying out further assessment for chromium VI the applicant applied measured emissions data of 0.000035mg/m^3 (0.035mg/m^3) provided in the EA Guidance for Group 3 Metals. The applicant needs to clarify whether the EA measured emissions concentration was modelled to provide the process contribution of 0.000000536µg/m^3 from a stack height of 75 metres.

g) It appears in Table 11 of the "Stack height assessment" report is incorrect; the AQS column lists the PC data whilst the PC column lists the AQS data."

7.2. Response

Please note that most of the issues raised in Item 6 of the Schedule 4 Notice have been incorporated into the responses to Item 5 (Air Quality) as they have a direct bearing on how the revised air quality assessments have been carried out. As a result of this approach, only Item 6e is still to be addressed and that is addressed below.

7.2.1. Assessment of Total Daily Intake of Dioxin and Furans and Dioxin-like PCBs using WHO-TEFs and Comparison with COT TDI (ref Schedule 4 Notice Item 6e)

7.2.1.1. An assessment of the predicted total daily in intake of dioxins and furans and dioxin-like PCBs (averaged over a lifetime (70 years)) has been undertaken with individual congeners converted using WHO-TEFs. The total intake has then been compared with the Committee for Toxicity Tolerable Daily Intake ("COT TDI") value of 2pg TEQ/Kg body weight/per day.

7.2.1.2. The assessment for dioxins and furans has been based on an emission concentration of 0.1ng/m^3 (i.e. the IED ELV) whilst that for dioxin-like PCBs has been based on an expected maximum emission concentration of 0.025ng/m^3. It should be noted that actual measured dioxin-like PCB emission concentrations for FCC's Lincoln facility are somewhat lower than this - namely, 0.00031ng/m^3 and 0.0049ng/m^3 - however a value of 0.025ng/m^3 has been used to represent a worst-case scenario.

7.2.1.3. For dioxin-like PCBs, the twelve dioxin-like PCBs listed in Table 2-5 of Chapter 2 of the US EPA's Human Health Risk Assessment Protocol, namely, PCB 77, 81, 105, 114, 118, 123, 126, 156, 157, 167, 169, 189. Toxicity Equivalency Factors ("TEFs") for the twelve dioxin-like PCBs were taken from the 2005 World Health Organisation Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxin and Dioxin-like Compounds. The emissions profile for the twelve dioxin-like PCBs were obtained from the National Environmental Research Institute, Aarhus University, Denmark, Technical Report no 786 2010, Project Report 5 *Emission factors and emission inventory for decentralised CHP production*.

7.2.1.4. Tables 17 - 19 present a comparison of the predicted total daily intake of each type of substance against the COT TDI value of 2pg/kg (body weight)/day for each human receptor scenario at each of the sensitive receptors. Table 17 provides the results for dioxin/furan only assessment, Table 18 provides the results for dioxin-like PCBs and Table 19 provides the total predicted ADD from both dioxins and furans and dioxin-like PCBs.

Table 17 Predicted Dioxin and Furan Intake

Receptor Ref No	Receptor Name	Total Dioxin and Furan Intake (pg TEQ/kg BW/day)					
		Resident Child	Resident Adult	Farmer Child	Farmer Adult	Fisher Child	Fisher Adult
R1	Stoneyhill Primary School	0.000912	0.000146	n/a	n/a	n/a	n/a
R2	Whitehill	0.003617	0.001205	0.057618	0.040006	0.071953	0.071891
R3	Queen Margret University Halls	n/a	0.000344	n/a	n/a	n/a	n/a
R4	Stoneybank	0.004972	0.001653	0.080259	0.055734	0.094594	0.094506
R5	Queen Margret University	n/a	0.000244	n/a	n/a	n/a	n/a
R6	Whitecraig Primary School	0.000230	0.000061	n/a	n/a	n/a	n/a
R7	Old Craighall Village	0.001191	0.000401	0.017325	0.012026	0.031659	0.031638
R8	Wellington Farm	0.000861	0.000292	0.012078	0.008378	0.026412	0.026397
R9	Newton House	0.000572	0.000198	0.007654	0.005301	0.021988	0.021978
R10	Dalkeith High School	0.000047	0.000052	n/a	n/a	n/a	n/a
R11	Old Craighall Road	0.000705	0.000242	0.009689	0.006717	0.024023	0.024011
R12	Shawfair Area (existing)	0.000663	0.000229	0.009367	0.006492	0.023702	0.023688
R13	Shawfair Area (existing)	0.000478	0.000168	0.006533	0.004519	0.020867	0.020857
R14	Shawfair Area (existing)	0.000498	0.000175	0.006995	0.004841	0.021329	0.021317
R15	Shawfair Area (existing)	0.000916	0.000310	0.013451	0.009335	0.027785	0.027765
R16	Lowe's Fruit Farm	0.000377	0.000135	0.004621	0.003190	0.018956	0.018948
R17	Newton Village	0.000691	0.000236	0.009551	0.006624	0.023885	0.023871
R18	Spire Shawfair Hospital	0.000526	0.000184	n/a	n/a	n/a	n/a
R19	Newton Village	0.001365	0.000459	0.021252	0.014754	0.035586	0.035556
R20	Millerhill Road - west	0.002689	0.000891	0.041777	0.029027	0.056111	0.056059
R21	Danderhall	0.001595	0.000533	0.024283	0.016864	0.038617	0.038585
R22	Danderhall Primary School	0.000609	0.000110	n/a	n/a	n/a	n/a
R23	Hilltown	0.003355	0.001110	0.052373	0.036393	0.066707	0.066644
R24	Millerhill Road - east	0.002470	0.000821	0.038544	0.026775	0.052878	0.052830

Table 17 Predicted Dioxin and Furan Intake (cont)

Receptor Ref No	Receptor Name	Total Dioxin and Furan Intake (pg TEQ/kg BW/day)					
		Resident Child	Resident Adult	Farmer Child	Farmer Adult	Fisher Child	Fisher Adult
R25	Shawfair Area (existing)	0.004008	0.001332	0.064542	0.044825	0.078876	0.078800
R26	Edinburgh Royal Infirmary	0.000854	0.000292	n/a	n/a	n/a	n/a
R27	Shawfair (within new development)	0.004008	0.001332	0.064542	0.044825	0.078876	0.078800
R28	Cauldcoats	0.000786	0.000270	0.011477	0.007952	0.025811	0.025796
R29	Greengables Nursery School	0.000212	0.000060	n/a	n/a	n/a	n/a
R30	Redcroft	0.000418	0.000148	0.005033	0.003477	0.019367	0.019361
R31	Whitehill Mains	0.000449	0.000158	0.005379	0.003719	0.019713	0.019707
R32	Newcraighall Town	0.000372	0.000132	0.004052	0.002797	0.018386	0.018382
R33	New Craighall Primary School	0.000196	0.000057	n/a	n/a	n/a	n/a
R34	Royal Hospital for Sick Children	0.000551	0.000261	n/a	n/a	n/a	n/a

Table 18 Predicted Dioxin-like PCB Intake

Receptor Ref No	Receptor Name	Total Dioxin Like PCB Intake (pg TEQ/kg BW/day)					
		Resident Child	Resident Adult	Farmer Child	Farmer Adult	Fisher Child	Fisher Adult
R1	Stoneyhill Primary School	0.00000014	0.000000026	n/a	n/a	n/a	n/a
R2	Whitehill	0.00000035	0.00000011	0.0000023	0.0000016	0.000027	0.000028
R3	Queen Margret University Halls	n/a	0.000000084	n/a	n/a	n/a	n/a
R4	Stoneybank	0.00000046	0.00000014	0.0000031	0.0000022	0.000028	0.000029
R5	Queen Margret University	n/a	0.000000047	n/a	n/a	n/a	n/a
R6	Whitecraig Primary School	0.000000047	0.0000000076	n/a	n/a	n/a	n/a
R7	Old Craighall Village	0.00000024	0.000000073	0.0000013	0.00000095	0.000026	0.000028
R8	Wellington Farm	0.00000019	0.000000057	0.0000010	0.00000073	0.000026	0.000027
R9	Newton House	0.00000012	0.000000037	0.00000064	0.00000047	0.000025	0.000027
R10	Dalkeith High School	0.0000000087	0.000000004	n/a	n/a	n/a	n/a

Table 18 Predicted Dioxin-like PCB Intake (cont)

Receptor Ref No	Receptor Name	Total Dioxin Like PCB Intake (pg TEQ/kg BW/day)					
		Resident Child	Resident Adult	Farmer Child	Farmer Adult	Fisher Child	Fisher Adult
R11	Old Craighall Road	0.00000016	0.000000047	0.00000082	0.00000060	0.0000255	0.0000274
R12	Shawfair Area (existing)	0.00000013	0.000000040	0.00000072	0.00000053	0.000025	0.000027
R13	Shawfair Area (existing)	0.000000087	0.000000027	0.00000048	0.00000035	0.000025	0.000027
R14	Shawfair Area (existing)	0.000000096	0.000000029	0.00000053	0.00000039	0.000025	0.000027
R15	Shawfair Area (existing)	0.00000022	0.000000066	0.0000012	0.00000085	0.000026	0.000028
R16	Lowe's Fruit Farm	0.000000075	0.000000023	0.00000039	0.00000029	0.000025	0.000027
R17	Newton Village	0.00000018	0.000000054	0.00000093	0.00000068	0.000026	0.000027
R18	Spire Shawfair Hospital	0.000000096	0.000000029	n/a	n/a	n/a	n/a
R19	Newton Village	0.00000025	0.000000075	0.0000014	0.0000010	0.000026	0.000028
R20	Millerhill Road - west	0.00000052	0.00000016	0.0000029	0.0000021	0.000028	0.000029
R21	Danderhall	0.00000032	0.000000096	0.0000017	0.0000013	0.000026	0.000028
R22	Danderhall Primary School	0.00000016	0.000000025	n/a	n/a	n/a	n/a
R23	Hilltown	0.00000061	0.00000018	0.0000034	0.0000025	0.000028	0.000029
R24	Millerhill Road - east	0.00000043	0.00000013	0.0000024	0.0000018	0.000027	0.000028
R25	Shawfair Area (existing)	0.00000047	0.00000014	0.0000030	0.0000021	0.000028	0.000029
R26	Edinburgh Royal Infirmary	0.00000013	0.000000039	n/a	n/a	n/a	n/a
R27	Shawfair (within new development)	0.00000047	0.00000014	0.0000030	0.0000021	0.000028	0.000029
R28	Cauldcoats	0.00000010	0.000000031	0.0000006	0.00000043	0.000025	0.000027
R29	Greengables Nursery School	0.000000016	0.000000004	n/a	n/a	n/a	n/a
R30	Redcroft	0.000000083	0.000000025	0.00000042	0.00000031	0.000025	0.000027
R31	Whitehill Mains	0.00000010	0.000000030	0.00000050	0.00000037	0.000025	0.000027
R32	Newcraighall Town	0.000000092	0.000000028	0.00000044	0.00000033	0.000025	0.000027
R33	New Craighall Primary School	0.00000014	0.000000035	n/a	n/a	n/a	n/a
R34	Royal Hospital for Sick Children	0.000000017	0.000000005	n/a	n/a	n/a	n/a

Table 19 Predicted Dioxin and Furan and Dioxin-like PCB Intake Combined

Receptor Ref No	Receptor Name	Total Dioxin and Furan and Dioxin Like PCB Intake Combined (pg TEQ/kg BW/day)					
		Resident Child	Resident Adult	Farmer Child	Farmer Adult	Fisher Child	Fisher Adult
R1	Stoneyhill Primary School	0.000912	0.000146	n/a	n/a	n/a	n/a
R2	Whitehill	0.00362	0.00121	0.0576	0.0400	0.0720	0.0719
R3	Queen Margret University Halls	n/a	0.000344	n/a	n/a	n/a	n/a
R4	Stoneybank	0.00497	0.00165	0.0803	0.0557	0.0946	0.0945
R5	Queen Margret University	n/a	0.000244	n/a	n/a	n/a	n/a
R6	Whitecraig Primary School	0.000230	0.0000615	n/a	n/a	n/a	n/a
R7	Old Craighall Village	0.00119	0.000401	0.0173	0.0120	0.0317	0.0317
R8	Wellington Farm	0.000861	0.000292	0.0121	0.00838	0.0264	0.0264
R9	Newton House	0.000572	0.000198	0.00765	0.00530	0.0220	0.0220
R10	Dalkeith High School	0.0000472	0.0000518	n/a	n/a	n/a	n/a
R11	Old Craighall Road	0.000705	0.000242	0.00969	0.00672	0.0240	0.0240
R12	Shawfair Area (existing)	0.000663	0.000229	0.00937	0.00649	0.0237	0.0237
R13	Shawfair Area (existing)	0.000478	0.000168	0.00653	0.00452	0.0209	0.0209
R14	Shawfair Area (existing)	0.000498	0.000175	0.00700	0.00484	0.0214	0.0213
R15	Shawfair Area (existing)	0.000917	0.000311	0.0135	0.00934	0.0278	0.0278
R16	Lowe's Fruit Farm	0.000377	0.000135	0.00462	0.00319	0.0190	0.0190
R17	Newton Village	0.000691	0.000236	0.00955	0.00662	0.0239	0.0239
R18	Spire Shawfair Hospital	0.000526	0.000184	n/a	n/a	n/a	n/a
R19	Newton Village	0.00137	0.000459	0.0213	0.0148	0.0356	0.0356
R20	Millerhill Road - west	0.00269	0.000891	0.0418	0.0290	0.0561	0.0561
R21	Danderhall	0.00159	0.000533	0.0243	0.0169	0.0386	0.0386
R22	Danderhall Primary School	0.000609	0.000110	n/a	n/a	n/a	n/a
R23	Hilltown	0.00336	0.00111	0.0524	0.0364	0.0667	0.0667
R24	Millerhill Road - east	0.00247	0.000821	0.0385	0.0268	0.0529	0.0529

Table 19 Predicted Dioxin and Furan and Dioxin-like PCB Intake Combined (cont)

Receptor Ref No	Receptor Name	Total Dioxin and Furan and Dioxin Like PCB Intake Combined (pg TEQ/kg BW/day)					
		Resident Child	Resident Adult	Farmer Child	Farmer Adult	Fisher Child	Fisher Adult
R25	Shawfair Area (existing)	0.00401	0.00133	0.0645	0.0448	0.0789	0.0788
R26	Edinburgh Royal Infirmary	0.000854	0.000292	n/a	n/a	n/a	n/a
R27	Shawfair (within new development)	0.00401	0.00133	0.0645	0.0448	0.0789	0.0788
R28	Cauldcoats	0.000786	0.000271	0.0115	0.00795	0.0258	0.0258
R29	Greengables Nursery School	0.000212	0.0000596	n/a	n/a	n/a	n/a
R30	Redcroft	0.000419	0.000148	0.00503	0.00348	0.0194	0.0194
R31	Whitehill Mains	0.000449	0.000158	0.00538	0.00372	0.0197	0.0197
R32	Newcraighall Town	0.000372	0.000132	0.00405	0.00280	0.0184	0.0184
R33	New Craighall Primary School	0.000196	0.0000568	n/a	n/a	n/a	n/a
R34	Royal Hospital for Sick Children	0.000551	0.000261	n/a	n/a	n/a	n/a

7.2.1.5. It can be seen from the date in Table 17, that the total predicted total daily intake of dioxins and furans varies depending on receptor type and location, ranging from 0.0946pg TEQ/kg (body weight)/day for the Fisher Child scenario at Stoneybank to 0.000047pg TEQ/kg (body weight)/day for the Resident Child Scenario at Dalkeith High School.

7.2.1.6. It can be seen from the data in Table 18, that the total predicted total daily intake of dioxin-like PCBs also varies depending on receptor type and location, ranging from 0.000029pg TEQ/kg (body weight)/day for the Fisher Adult scenario at Hilltown to 0.000000004pg TEQ/kg (body weight)/day for the Resident Adult scenario at Dalkeith High School.

7.2.1.7. It can be seen from the data in Table 19, that the total predicted total daily intake of dioxins and dioxin-like PCBs is influenced predominantly by the dioxin intake (this is due to the different toxicological profile of dioxins and dioxin-like PCBs). The total predicted daily intake from both again varies depending on receptor type and location, ranging from 0.0946pg TEQ /kg (body weight)/day for the Fisher Child scenario at Stoneybank to 0.000047pg TEQ/kg (body weight)/day for the Resident Child Scenario at Dalkeith High School.

7.2.1.8. All values are all well below the COT TDI value of 2pg/kg (body weight)/day, and, therefore, the facility will have negligible impact on human health with regard to intake of dioxins and furans and dioxin-like PCBs.

8. NOISE MITIGATION BAT ASSESSMENT

8.1. Schedule 4 Notice Requirements

"Your application refers to noise mitigation measures that will be incorporated into the plant and gives some examples of potential techniques and equipment. Please provide details of these measures, or if not yet available, the proposed measures. Please also include a BAT assessment to ensure that potential noise issues are designed out or minimised from the plant."

8.2. Response

The Noise Mitigation BAT Assessment report (Noise and Vibration Consultants Ltd report reference R15.0702/DRK) is provided in Appendix 4 of this document.

9. HEAT AND POWER PLAN

9.1. Schedule 4 Notice Requirements

"a) Please provide a definition of the CHPQA site boundary as described in the SEPA Thermal Treatment of Waste Guidelines 2014.

b) Additional information on the assumptions and working behind the Heat and Power Plan calculations should be provided to SEPA."

9.2. Response

9.2.1. Revised Heat and Power Plan

The Heat and Power Plan originally submitted in support of the permit application has been revised and a copy of the revised Plan is provided in Appendix 5 of this document.

9.2.2. CHPQA Site Boundary (ref Schedule 4 Notice Item 9a)

The CHPQA site boundaries are defined on the drawings provided in Appendix 6 of this document for the following three cases:

- Case 1 - No heat export, initial operation;
- Case 2 - 10MW heat export; and
- Case 3 - 20MW heat export.

9.2.3. Supporting Calculations for Revised Heat and Power Plan (ref Schedule 4 Notice Item 9b)

9.2.3.1. Calculation of GCV(ar)

Table 20 presents a summary of the estimated percentage of the various hydrogen-containing materials in the feedstock and the estimated percentage of hydrogen in each of those materials.

Table 20 Feedstock Composition

Material in Feedstock	Estimated Percentage in Feedstock	Estimated Percentage of Hydrogen in Material
Paper / Card	9.79	6
Plastic Film	8.07	156
Dense Plastic	5.09	16
Textiles	2.76	6
Miscellaneous	23.48	7
Organic	81.13	6

Based on the data in Table 20, the dry hydrogen percentage has been calculated to be 7.91%. The following feedstock given properties have also been assumed:

- NCV(ar)- 7.50 MJ/kg;
- free moisture - 40.0%.

In order to calculate GCV(ar), the following conversions have been used (as per CHPQA Guidance Note 29):

NCVar = NCVdry x (100 – m)/100 – 2.442 x m / 100

GCVdry = NCVdry + (2.442 x 8.936 x Hdry) / 100

GCVar = GCVdry x (100 – m) / 100.

Using the data and conversions detailed above, the following values have been calculated:

NCV(dry) = 12.38 MJ/kg;
GCV(dry) = 14.10 MJ/kg; and
GCV(ar) = 8.46 MJ/kg.

9.2.3.2. Calculation of Indicative Efficiency at Start-up

The indicative efficiency at start-up (no heat export) has been calculated in and is presented in Table 3.3 of the Revised Heat and Power Plan (see Appendix 5 of this document).

9.2.3.3. CHPQA Quality Index Calculations

The CHPQA Quality Index calculations are presented for the 10MW case and the 20MW case in Table 4.7 of the Revised Heat and Power Plan (see Appendix 5 of this document). The assumptions made in these calculations relating to the district heating heat exchanger primary side are presented in Table 21 below.

Table 21 Assumptions Made in CHPQA QI Calculations, District Heat Exchanger Primary Side

Parameter	10MW Case	20MW Case
Out Temperature (°C)	115	115
Return Temperature(°C)	70	70
Change in Temperature, ΔT (°C)	45	45
Water Flow (t/hr)	191	382
Specific Heat Capacity of Water Cp	4.1868	4.1868
Heat Output (MH/hr)	35,986	71,971
Heat Output (GJ/a)	287,884	0
Heat Output (MWH/a)	79,969	0
Return Water to Boiler(MWh/a)	15,300	30,500
Return Water to Boiler (KJ/kg)	334.944	334.944
Return Water to Boiler (GJ/a)	11,388	22,702

APPLICATION FOR A PERMIT TO OPERATE
A PART A INSTALLATION UNDER
THE POLLUTION PREVENTION AND CONTROL
(SCOTLAND) REGULATIONS 2012

APPLICATION REFERENCE PPC/A/1136072

SUPPLEMENTARY RESPONSE TO 1ST JULY SCHEDULE 4 REQUEST FOR FURTHER INFORMATION

Prepared for:

FCC WASTE SERVICES (UK) LIMITED, MILLERHILL, MIDLOTHIAN

August 2015

ECL Document Reference P2154/R022

Prepared by:

Environmental Compliance Limited
Unit G1, The Willowford, Main Avenue,
Treforest Industrial Estate, Pontypridd CF37 5YL

APPLICATION FOR A PERMIT TO OPERATE A PART A INSTALLATION UNDER THE POLLUTION PREVENTION AND CONTROL (SCOTLAND) REGULATIONS 2012

FCC WASTE SERVICES (UK) LIMITED, MILLERHILL, MIDLOTHIAN

APPLICATION REFERENCE PPC/A/1136072

SUPPLEMENTARY RESPONSE TO 1ST JULY SCHEDULE 4 REQUEST FOR FURTHER INFORMATION

TABLE OF CONTENTS

APPLICATION FOR A PERMIT TO OPERATE A PART A INSTALLATION UNDER THE POLLUTION PREVENTION AND CONTROL (SCOTLAND) REGULATIONS 2012

FCC WASTE SERVICES (UK) LIMITED, MILLERHILL, MIDLOTHIAN

APPLICATION REFERENCE PPC/A/1136072

SUPPLEMENTARY RESPONSE TO 1ST JULY SCHEDULE 4 REQUEST FOR FURTHER INFORMATION

1. INTRODUCTION

1.1. FCC Waste Services (UK) Limited ("FCC") submitted an application to the Scottish Environment Protection Agency ("SEPA") on 24th April 2015 for a Part A environmental permit to operate a waste treatment facility at Millerhill in Midlothian under the Pollution Prevention and Control (Scotland) Regulations 2012 ("PPC Regulations"). The facility - known as the Millerhill Recycling and Energy Recovery Centre ("Millerhill RERC") - will incorporate primary treatment and secondary treatment techniques to process residual household waste and Commercial and Industrial waste ("C & I waste"). SEPA subsequently issued the reference number PPC/A/1136072 to the application.

1.2. On 8th May 2015, SEPA issued a Notice requiring further information under Paragraph 7 of Schedule 4 of the PPC Regulations ("Schedule 4 Notice"). A response was provided to SEPA on 1st July 2015 in relation to all Items in the Notice with the exception of Item 3 (*Heat and Power Plan)* and Item 4 (*Noise Mitigation BAT Assessment)*, as it had been agreed with SEPA that responses to these items could be carried forward.

1.3. On 1st July 2015, SEPA issued a second Schedule 4 Notice, and a response to all items in the Notice was provided to SEPA on 31st July 2015.

1.4. However, SEPA has requested that further information/clarification is provided in relation to one of the Schedule 4 Notice matters, namely the arrangements for the storage of RDF in the Bale Store whilst the EfW plant is not operational to ensure that odour arising from the storage of bales is not an issue. This is addressed in Section 2 of this document.

1.5. Also SEPA has requested that additional information on air quality is provided, and this is addressed in Section 3 of this document.

2. STORAGE OF RDF IN BALE STORE

2.1. Schedule 4 Notice Requirements

The additional queries posed by SEPA are as follows (note that all these queries are based on the responses previously provided by FCC to SEPA in ECL document P2154/R020):

- *"On what is the assumption that the bale store will not create an odour problem based?*
- *If the storage of bales in the bale store does create an odour problem, what further measures can be taken to mitigate the problem?*
- *Would connecting the bale store to the carbon abatement unit be prohibitively difficult or expensive?*
- *Are there significant reasons from having the bale store separate from the main building? This separation appears to cause several potential issues e.g. traffic, noise, odour etc. Could this be revised?"*

2.2. Responses

2.2.1. Basis of Assumptions for Bale Store not creating an Odour Problem

2.2.1.1. The bales will actually be wrapped in six layers of polythene, as is the case at a number of FCC's other facilities. The wrapping undertaken at the other sites has changed over time to the current levels to ensure bales are sealed and robust in nature to minimise damage and any potential for odour release, i.e. continual improvement in FCC's operations. This measure will not only provide protection against physical damage, but will be effective in containing any odour that may be generated during storage. Based on experience at other facilities, bales will only be stored three-high; this has been proven to be effective in minimising the potential for damage to the polythene wrapping, which, in turn, minimises the potential for odour to be released from the bales whilst in storage as a result of damage to the wrapping.

2.2.1.2. The door to the Bale Store will be kept closed at all times except when access is required. No other activities will be undertaken in the Bale Store, which will minimise the number of times that the door will need to be opened.

2.2.1.3. RDF bales are stored externally to a limited extent at some of FCC's other facilities (Costessey - Norwich, Bletchley – Milton Keynes, Alfreton – Derbyshire, CWAC at Elsmere Port and Sutton Courtney – Oxfordshire) without odour problems arising. Clearly, storing bales internally, as will be the case at Millerhill, can only further minimise the potential for odour issues to arise, and could be regarded as being BAT.

2.2.2. Mitigation Measures that could be used in the Event of an Odour Problem Arising

2.2.2.1. In the event that this becomes a problem, FCC would give consideration to the installation of an air curtain at the door to the Bale Store. This would automatically be activated when the door is opened and would blow air down the door surface to ensure that any odour inside the building is kept within the confines of the building. Consideration would also be given to using air curtains in combination with an odour neutralisation spray. However, FCC is of the opinion that neither these measures, nor any other specific odour mitigation measures will be needed, as the measures described above will be effective in preventing odour releases from the Bale Store. Accordingly, no additional odour mitigation measures are proposed at this time for the Bale Store.

2.2.2.2. The storage of RDF bales in the Bale Store will be addressed in the facility's Odour Management Plan.

2.2.3. Connection of Bale Store to Odour Abatement Unit

In terms of additional cost, whilst no specific figures are currently available, it is considered that the additional cost of connecting the Bale Store to the odour abatement unit would significantly increase the already substantial cost of the unit (which, as currently specified, is in the region of £500,000). Connecting the Bale Store to the odour abatement unit would require:

- approximately 75m - 100m of additional ducting (depending on the exact arrangements);
- a suitable support structure for the additional ducting; the design of this would have to take account of normal operational requirements at the facility, particularly vehicle movements;
- additional fans to ensure that there is not a problem with pressure drop in the additional ducting; and
- a significantly larger capacity odour abatement unit to handle the additional volume of air from the Bale Store.

As previously stated, whilst the additional cost is not accurately known at this stage, it is anticipated that it will be significant enough for it not to represent BAT, especially given that FCC does not consider this measure will be necessary.

2.2.4. Reasons for Bale Store to be separate from Main Building

The position of the Bale Store was carefully evaluated during the initial design stage of the facility, and the proposed location was finalised after taking into account a number of factors including ease of access. However, the primary reason for putting the Bale Store in its proposed location is related to mitigation of fire risk, and, accordingly, it is not feasible to relocate it to a seemingly more operationally appropriate location at the facility.

3. AIR QUALITY

3.1. SEPA Requirements

SEPA has made the following additional comment in relation to the air dispersion modelling study:

> *"The values for the Predicted Environmental Concentrations (PECs) are only provided for the pollutants where Process Concentrations ("PCs") exceed significance criteria. PECs for all modelled pollutants and AQSs would normally be expected. Please provide an update report with the PECs for all pollutants."*

Accordingly, Section 2.6. (Background Air Quality) of the original modelling report - ECL document reference P2154/R008 - has been revised to cover all pollutants and the PECs - both short-term and long-term - for all pollutants are indicated.

3.2. Revised Section 2.6. - Background Air Quality - of Original Modelling Report

3.2.1. Background air quality data has been obtained for all pollutants considered in the study so that the PECs for all pollutants –-both short-term and long-term - can be calculated. The sections below indicate what the background concentration for each pollutant is and from where the data has been sourced.

3.2.2. The revised background data has been taken into consideration when calculating the Predicated Environmental Concentrations ("PECs") presented in Section 3.3. of this document, and replace the values previously indicated in Section 2.6. of ECL document P2154/R008.

3.2.3. Nitrogen Dioxide (NO_2)

3.2.3.1. Background concentrations for NO_2 have been obtained from East Lothian's 2014 Air Quality Progress Report (August 2014). An automatic monitoring site is located at North High Street, Musselburgh and provides data for NO_2, and passive monitoring for NO_2 is undertaken at various locations in Musselburgh and the other towns of Tranent and Haddington.

3.2.3.2. The annual mean concentrations of NO_2 obtained from the automatic monitoring station for 2013 - the latest data available is 24μg/m^3.

3.2.3.3. There are 23 passive monitoring locations, the annual mean NO_2 concentration ranges from 10μg/m^3 to 43μg/m^3, with an average concentration of 28μg/m^3. It should be noted that all of the monitoring locations are roadside, and are therefore heavily influenced by vehicle emissions, particularly those locations within Musselburgh High Street which is designated as an AQMA. It is, therefore, considered reasonable to use the values from the automatic monitoring station as representative of both pollutants. Consequently, the background concentration values to be used in this assessment will be 24μg/m^3.

3.2.4. Sulphur Dioxide

The 2001 DEFRA mapped SO_2 concentration for the area surrounding the proposed facility is 2.716μg/m^3 and, accordingly, this value is assumed to be representative of the background concentration at the site and nearby sensitive receptor locations. Year adjustments are not considered to be required, as it is considered that, away from specific locations near industrial sources or areas of high domestic coal burning, that SO_2 background concentrations would change very little, i.e. the factor would be close to 1[(1)].

3.2.5. Particulate Matter

3.2.5.1. Background concentrations for PM_{10} have been obtained from East Lothian's 2014 Air Quality Progress Report (August 2014). An automatic monitoring site is located at North High Street, Musselburgh and provides data for PM_{10}.

3.2.5.2. The annual mean concentrations of PM_{10}, obtained from the automatic monitoring station for 2013 - the latest data available - is 16μg/m^3. Consequently this value has been used for PM_{10}.

3.2.5.3. Monitoring for $PM_{2.5}$ is not undertaken at this location, therefore background concentrations for $PM_{2.5}$ have been obtained from the DEFRA UK Background Air Pollution Maps[(2)]. These 1 km grid resolution maps are derived from a complex modelling exercise that takes into account emissions inventories and measurements of ambient air pollution from both automated and non-automated sites. In order to be consistent with the location for the PM_{10} background data, $PM_{2.5}$ data has been obtained at NGR 334500, 672500 - the closest appropriate 1km grid square to the automatic monitor. The concentration at this grid square is 8.158μg/m^3 and consequently has been used in the assessment.

3.2.6. Volatile Organic Compounds (as Benzene)

The 2015 DEFRA mapped benzene concentration for the area surrounding the proposed facility is 0.329μg/m^3 (NGR 332500, 670500) and, accordingly, this value is assumed to be representative of the background concentration at the site and nearby sensitive receptor locations

3.2.7. Trace Metals

3.2.7.1. Monitoring of trace elements has been undertaken by DEFRA since 1976. Currently, monitoring of twelve metals is carried out at locations throughout the UK, predominantly in urban locations. In addition, concentrations of As, Cd, Hg, and Ni are monitored at a further ten rural locations.

3.2.7.2. The closest location to the application site is the rural site at Auchencorth Moss, approximately 18km to the south waste of the site, however, SEPA considered that data from Motherwell South would be more representative of future conditions at the proposed installation location (as indicated in their Schedule 4 request for further

(1) Defra - Air Pollution Background Concentration Maps: A User Guide for Local Authorities June 2014
(2) http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html

information). Consequently, the mean concentrations measured at Motherwell South in 2013 (latest data available at time of writing) have been used for the assessment and are summarised in Table 1.

3.2.7.3. For CrVI, it has been assumed that the background concentration is 20% of the total Cr concentration (as indicated in the EPAQS report *Guidelines for metals and metalloids in ambient air for the protection of human health*, May 2009).

3.2.7.4. Antimony and thallium are not routinely measured, and, consequently, in the absence of any suitable data, it has been assumed that the background concentration of both these metals is zero.

Table 1 Annual Mean Trace Metal Concentrations

Metal	Annual Mean Concentration 2013 (ng/m^3)
Antimony (Sb)	0
Arsenic (As)	0.290
Cadmium (Cd)	0.0864
Total Chromium (Cr)	1.307
Hexavalent Chromium (Cr VI)	0.261
Cobalt (Co)	0.0524
Copper (Cu)	4.798
Lead (Pb)	2.495
Manganese (Mn)	2.267
Mercury (Hg)	2.084
Nickel (Ni)	0.559
Thallium (Tl)	0
Vanadium (V)	0.513

3.2.8. Polyaromatic Hydrocarbons (PAH) as Benzo[a]pyrene)

3.2.8.1. Ambient monitoring of benzo[a]pyrene ("B[a]P") is carried out as part of the DEFRA PAH Network at a number of locations around the UK.

3.2.8.2. There are two monitoring sites in close proximity to the proposed RERC, namely Edinburgh St Leonards and Auchencorth Moss. The latest data available from Edinburgh St Leonards is 2006, at an average annual mean concentration of $0.039ng/m^3$, and Auchencorth Moss, 2013 data is available, at an average annual mean concentration of $0.035ng/m^3$. Although the Edinburgh St Leonards monitoring station is closer to the proposed RERC (6.5km north-west of the stack) as the data is significantly older, it is proposed to use the Auchencorth Moss data (17.6km south-west of the stack). The average annual mean PAH concentration for 2013 of $0.035ng/m^3$ is assumed to provide a reasonable estimate of the background concentration at the proposed facility and at sensitive receptor locations.

3.2.9. Carbon Monoxide (CO)

The 2001 DEFRA mapped CO concentrations for the area surrounding the proposed facility (332500, 670500) is 0.269mg/m^3. The year adjustment factor for 2015 is 0.430. Consequently a background concentration of 0.124mg/m^3 has been used in the assessments.

3.2.10. Ammonia (NH_3)

3.2.10.1. Gaseous ammonia (NH_3) is measured monthly at 85 sites across the UK. The monitoring provides a baseline in the reduced nitrogen species (NH_3 + NH_4^+), which is necessary for examining responses to changes in the agricultural sector and to verify compliance with targets set by international agreements.

3.2.10.2. The closest monitoring site to the proposed RERC is Edinburgh St Leonards. The latest data available from Edinburgh St Leonards is from 2014, it gives an average annual mean concentration of 0.998μg/m^3 and has been used in the assessments.

3.2.11. Hydrogen Fluoride (HF)

Monitoring of ambient levels of HF is not currently carried out in the UK. A modelling study has suggested a natural background concentration of 0.5μg/m^3 with an elevated background of 3μg/m^3 where there are local anthropogenic emission sources [(3)]; the higher of these two values has been used in the assessment.

3.2.12. Hydrogen Chloride (HCl)

3.2.12.1. Ambient monitoring of HCl is carried out as part of UK Acid Gases and Aerosols Monitoring Network (AGANet) at a number of locations around the UK. The closest monitoring site is at Edinburgh St Leonards.

3.2.12.2. The average annual mean HCl concentration measured in 2014 was 0.314μg/m^3 - and is assumed to provide a reasonable estimate of the background concentration at the proposed RERC.

3.2.13. Dioxins and Furans (PCDD/Fs)

3.2.13.1. Monitoring of PCDD/Fs is currently carried out by DEFRA at six locations in the UK (Hazelrigg, High Muffles, London, Manchester, Weybourne and Auchencorth Moss).

3.2.13.2. To provide an indication of the range of PCDD/F concentrations that occur in the UK, a summary of the data for Manchester and Auchencorth Moss is presented in Table 2 for 2010.

---

(3) EPAQS (February 2006), Guidelines for Halogen and Hydrogen Halides in Ambient Air for Protecting Human Health Against Acute Irritancy Effects

Table 2 Annual Mean PCDD/F Concentrations for Manchester and Auchencorth Moss

Year	$fgTEQ/m^3$	
	Manchester	Auchencorth Moss
2010	48.7	5.01

3.2.13.3. The proposed facility is currently located in a rural area, however, there is significant planned development, therefore whilst the average concentration of dioxins and furans measured in Manchester (48.7fgTEQ/m^3) is considered to be higher than future background concentrations, this figure has been used in the assessment to represent the worst case scenario.

3.2.14. Polychlorinated Biphenyls ("PCBs")

3.2.14.1. Monitoring of PCBs is currently carried out by DEFRA at six locations in the UK (Hazelrigg, High Muffles, London, Manchester, Weybourne and Auchencorth Moss).

3.2.14.2. To provide an indication of the range of PCB concentrations that occur in the UK, a summary of the data for Manchester and Auchencorth Moss) is presented in Table 3 for 2010.

Table 3 Annual Mean PCB Concentrations for Manchester and Auchencorth Moss

Year	$fgTEQ/m^3$	
	Manchester	Auchencorth Moss
2010	24.08	13.3

3.2.14.3. The proposed facility is currently located in a rural area, however, there is significant planned development, therefore whilst the average concentration of PCBs measured in Manchester (24.08fgTEQ/m^3) is considered to be higher than future background concentrations, this figure has been used in the assessment to represent the worst case scenario.

3.3. Predicted Environmental Concentrations ("PECs")

3.3.1. PCs and PECs for all pollutants, for each year of met data modelled have been calculated and are provided in Table 4 below. All values are expressed with the pollutant at the appropriate IED ELV and the PCs and PECs are expressed as a percentage of the relevant AQS.

3.3.2. For the long term emissions, PECs are calculated by adding the long term process contribution to the long term ambient background concentration. For short term emissions, the PECs are calculated by adding the short term PC to twice the long term ambient concentration. The PECs for both long term and short term have then been compared with the relevant short or long term EAL or EQS as appropriate.

Table 4 Comparison of Maximum PCs and Maximum PECs with Air Quality Standards, IED ELVs

Pollutant	Met Data Year	Max PC (µg/m³)	AQS (µg/m³)	PC as % of AQS	Back-ground (µg/m³)	Max PEC (µg/m³)	PEC as % of AQS
NO_2 (annual)	2009	2.14	40	5.36	24.0	26.14	65.4
	2010	1.54		3.85		25.54	63.8
	2011	2.07		5.17		26.07	65.2
	2012	2.01		5.03		26.01	65.0
	2013	2.06		5.16		26.06	65.2
NO_2 (1 hour, 99.79th percentile)	2009	10.45	200	5.23	48.0	58.45	29.2
	2010	10.35		5.17		58.35	29.2
	2011	10.33		5.17		58.33	29.2
	2012	12.74		6.37		60.74	30.4
	2013	10.93		5.46		58.93	29.5
SO_2 (24 hour, 99.18th percentile)	2009	3.99	125	3.19	5.43	9.42	7.54
	2010	3.28		2.62		8.71	6.97
	2011	3.65		2.92		9.08	7.26
	2012	3.66		2.93		9.09	7.27
	2013	3.88		3.10		9.31	7.45
SO_2 (1 hour, 99.73rd percentile)	2009	5.67	350	1.62	5.43	11.10	3.17
	2010	6.00		1.71		11.43	3.27
	2011	5.68		1.62		11.11	3.18
	2012	6.05		1.73		11.49	3.28
	2013	5.64		1.61		11.08	3.16
SO_2 (15minute, 99.9th percentile)	2009	6.64	266	2.50	5.43	12.07	4.54
	2010	6.82		2.56		12.25	4.61
	2011	6.99		2.63		12.42	4.67
	2012	6.88		2.59		12.31	4.63
	2013	6.78		2.55		12.21	4.59
PM_{10} (annual mean)	2009	0.146	18	0.81	16	16.15	89.7
	2010	0.106		0.59		16.11	89.5
	2011	0.142		0.79		16.14	89.7
	2012	0.137		0.76		16.14	89.6
	2013	0.141		0.78		16.14	89.7
PM_{10} (24hour, 98.08th percentile)	2009	0.648	50	1.30	32	0.65	1.30
	2010	0.555		1.11		0.56	1.11
	2011	0.634		1.27		0.63	1.27
	2012	0.635		1.27		0.64	1.27
	2013	0.664		1.33		0.66	1.33

Table 4 Comparison of Maximum Predicted Process Contributions (PCs) with Air Quality Standards, IED ELVs (cont)

Pollutant	Met Data Year	Max PC ($\mu g/m^3$)	AQS ($\mu g/m^3$)	PC as % of AQS	Back-ground ($\mu g/m^3$)	Max PEC ($\mu g/m^3$)	PEC as % of AQS
$PM_{2.5}$ (annual mean)	2009	0.146	25	0.58	8.16	8.30	33.2
	2010	0.106		0.42		8.26	33.0
	2011	0.142		0.57		8.30	33.2
	2012	0.137		0.55		8.29	33.2
	2013	0.141		0.56		8.30	33.2
$PM_{2.5}$ (annual mean)	2009	0.146	12	1.22	8.16	8.30	69.2
	2010	0.106		0.88		8.26	68.9
	2011	0.142		1.18		8.30	69.2
	2012	0.137		1.14		8.29	69.1
	2013	0.141		1.18		8.30	69.2
CO (8 hour, 100th percentile)	2009	5.301	10000	0.053	0.000124	5.30	0.053
	2010	5.631		0.056		5.63	0.056
	2011	5.678		0.057		5.68	0.057
	2012	5.792		0.058		5.79	0.058
	2013	5.917		0.059		5.92	0.059
VOC (as benzene) (annual mean)	2009	0.153	3.25	4.71	0.329	0.48	14.8
	2010	0.110		3.38		0.44	13.5
	2011	0.148		4.54		0.48	14.7
	2012	0.144		4.42		0.47	14.5
	2013	0.147		4.53		0.48	14.7
Ammonia (annual mean)	2009	0.153	180	0.085	0.998	1.15	0.64
	2010	0.110		0.061		1.11	0.62
	2011	0.148		0.082		1.15	0.64
	2012	0.144		0.080		1.14	0.63
	2013	0.147		0.082		1.15	0.64
Ammonia (1-hour, 100th percentile)	2009	1.492	2500	0.060	2.00	3.49	0.14
	2010	1.477		0.059		3.47	0.14
	2011	1.475		0.059		3.47	0.14
	2012	1.819		0.073		3.82	0.15
	2013	1.560		0.062		3.56	0.14
Hydrogen Chloride (1-hour, 100th percentile)	2009	1.492	750	0.20	0.628	2.12	0.28
	2010	1.477		0.20		2.10	0.28
	2011	1.475		0.20		2.10	0.28
	2012	1.819		0.24		2.45	0.33
	2013	1.560		0.21		2.19	0.29

Table 4 Comparison of Maximum Predicted Process Contributions (PCs) with Air Quality Standards, IED ELVs (cont)

Pollutant	Met Data Year	Max PC (μg/m³)	AQS (μg/m³)	PC as % of AQS	Back-ground (μg/m³)	Max PEC (μg/m³)	PEC as % of AQS
Hydrogen Fluoride (annual mean)	2009	0.0153	16	0.10	3	3.02	18.8
	2010	0.0110		0.069		3.01	18.8
	2011	0.0148		0.092		3.01	18.8
	2012	0.0144		0.090		3.01	18.8
	2013	0.0147		0.092		3.01	18.8
Hydrogen Fluoride (1-hour, 100th percentile)	2009	0.149	160	0.093	6	6.15	3.84
	2010	0.148		0.092		6.15	3.84
	2011	0.148		0.092		6.15	3.84
	2012	0.182		0.11		6.18	3.86
	2013	0.156		0.097		6.16	3.85
Antimony[(a)] (annual mean)	2009	0.0077	5	0.15	0	0.0077	0.15
	2010	0.0055		0.11		0.0055	0.11
	2011	0.0074		0.15		0.0074	0.15
	2012	0.0072		0.14		0.0072	0.14
	2013	0.0074		0.15		0.0074	0.15
Antimony[(a)] (1-hour, 100th percentile)	2009	0.075	150	0.19	0	0.075	0.050
	2010	0.074		0.18		0.074	0.049
	2011	0.074		0.18		0.074	0.049
	2012	0.091		0.23		0.091	0.061
	2013	0.0780		0.19		0.078	0.052
Arsenic[(a)] (annual mean)	2009	0.0077	0.003	255	0.000290	0.0079	265
	2010	0.0055		183		0.0058	193
	2011	0.0074		245		0.0077	256
	2012	0.0072		239		0.0075	249
	2013	0.0074		245		0.0077	255
Cadmium[(b)] (annual mean)	2009	0.0008	0.005	15.3	0.00000864	0.00085	17.0
	2010	0.0005		11.0		0.00064	12.7
	2011	0.0007		14.8		0.00082	16.5
	2012	0.0007		14.4		0.00080	16.1
	2013	0.0007		14.7		0.00082	16.5
Chromium III[(a)] (annual mean)	2009	0.0077	5	0.15	0.00131	0.0090	0.18
	2010	0.0055		0.11		0.0068	0.14
	2011	0.0074		0.15		0.0087	0.17
	2012	0.0072		0.14		0.0085	0.17
	2013	0.0074		0.15		0.0087	0.17

Table 4 Comparison of Maximum Predicted Process Contributions (PCs) with Air Quality Standards, IED ELVs (cont)

Pollutant	Met Data Year	Max PC (μg/m³)	AQS (μg/m³)	PC as % of AQS	Back-ground (μg/m³)	Max PEC (μg/m³)	PEC as % of AQS
Chromium III[a] (1-hour, 100th percentile)	2009	0.075	150	0.050	0.00261	0.077	0.051
	2010	0.074		0.049		0.076	0.051
	2011	0.074		0.049		0.076	0.051
	2012	0.091		0.061		0.094	0.062
	2013	0.0780		0.052		0.081	0.054
Chromium VI[c] (annual mean)	2009	0.00153	0.0002	765	0.000261	0.00179	896
	2010	0.00110		549		0.00136	680
	2011	0.00148		738		0.00174	868
	2012	0.00144		718		0.00170	849
	2013	0.00147		737		0.00174	868
Cobalt[a] (annual mean)	2009	0.0077	0.2	3.83	0.0000524	0.00771	3.85
	2010	0.0055		2.75		0.00555	2.77
	2011	0.0074		3.69		0.00743	3.71
	2012	0.0072		3.59		0.00723	3.62
	2013	0.0074		3.68		0.00742	3.71
Cobalt[a] (1-hour, 100th percentile)	2009	0.075	6	1.24	0.000105	0.0747	1.25
	2010	0.074		1.23		0.0740	1.23
	2011	0.074		1.23		0.0739	1.23
	2012	0.091		1.52		0.0911	1.52
	2013	0.078		1.30		0.0781	1.30
Copper[a] (annual mean)	2009	0.0077	10	0.077	0.00480	0.0125	0.12
	2010	0.0055		0.055		0.0103	0.10
	2011	0.0074		0.074		0.0122	0.12
	2012	0.0072		0.072		0.0120	0.12
	2013	0.0074		0.074		0.0122	0.12
Copper[a] (1-hour, 100th percentile)	2009	0.075	200	0.037	0.00960	0.0842	0.042
	2010	0.074		0.037		0.0834	0.042
	2011	0.074		0.037		0.0834	0.042
	2012	0.091		0.045		0.1006	0.050
	2013	0.0780		0.039		0.0876	0.044
Lead[a] (annual mean)	2009	0.0077	0.25	3.06	0.00250	0.0101	4.06
	2010	0.0055		2.20		0.0080	3.20
	2011	0.0074		2.95		0.0099	3.95
	2012	0.0072		2.87		0.0097	3.87
	2013	0.0074		2.95		0.0099	3.95

Table 4 Comparison of Maximum Predicted Process Contributions (PCs) with Air Quality Standards, IED ELVs (cont)

Pollutant	Met Data Year	Max PC (µg/m³)	AQS (µg/m³)	PC as % of AQS	Back-ground (µg/m³)	Max PEC (µg/m³)	PEC as % of AQS
Manganese[a] (annual mean)	2009	0.0077	1	0.77	0.00227	0.00992	0.99
	2010	0.0055		0.55		0.00776	0.78
	2011	0.0074		0.74		0.00964	0.96
	2012	0.0072		0.72		0.00945	0.94
	2013	0.0074		0.74		0.00964	0.96
Manganese[a] (1-hour, 100th percentile)	2009	0.075	1500	0.005	0.00453	0.0791	0.0053
	2010	0.074		0.005		0.0784	0.0052
	2011	0.074		0.005		0.0783	0.0052
	2012	0.091		0.006		0.0955	0.0064
	2013	0.0780		0.005		0.0825	0.0055
Mercury[d] (annual mean)	2009	0.00077	0.25	0.31	0.00208	0.00285	0.071
	2010	0.00055		0.22		0.00263	0.066
	2011	0.00074		0.30		0.00282	0.071
	2012	0.00072		0.29		0.00280	0.070
	2013	0.00074		0.29		0.00282	0.071
Mercury[d] (1-hour, 100th percentile)	2009	0.0075	7.5	0.10	0.00417	0.0116	0.16
	2010	0.0074		0.10		0.0116	0.15
	2011	0.0074		0.10		0.0115	0.15
	2012	0.0091		0.12		0.0133	0.18
	2013	0.00780		0.10		0.0120	0.16
Nickel[a] (annual mean)	2009	0.0077	0.02	38.3	0.000559	0.00821	41.1
	2010	0.0055		27.5		0.00605	30.3
	2011	0.0074		36.9		0.00794	39.7
	2012	0.0072		35.9		0.00774	38.7
	2013	0.0074		36.8		0.00793	39.6
Thallium[b] (annual mean)	2009	0.00077	1	0.077	0	0.000765	0.077
	2010	0.00055		0.055		0.000549	0.055
	2011	0.00074		0.074		0.000738	0.074
	2012	0.00072		0.072		0.000718	0.072
	2013	0.00074		0.074		0.000737	0.074
Thallium[a] (1-hour, 100th percentile)	2009	0.0075	30	0.025	0	0.00746	0.025
	2010	0.0074		0.025		0.00738	0.025
	2011	0.0074		0.025		0.00738	0.025
	2012	0.0091		0.030		0.00910	0.030
	2013	0.0078		0.026		0.00780	0.026

Table 4 Comparison of Maximum Predicted Process Contributions (PCs) with Air Quality Standards, IED ELVs (cont)

Pollutant	Met Data Year	Max PC (μg/m³)	AQS (μg/m³)	PC as % of AQS	Back-ground (μg/m³)	Max PEC (μg/m³)	PEC as % of AQS
Vanadium[a] (annual mean)	2009	0.0073	5	0.15	0.000513	0.00781	0.16
	2010	0.0053		0.11		0.00581	0.12
	2011	0.0071		0.14		0.00759	0.15
	2012	0.0068		0.14		0.00735	0.15
	2013	0.0071		0.14		0.00757	0.15
Vanadium[a] (24-hour, 100th percentile)	2009	0.0410	1	4.10	0.00103	0.0420	0.84
	2010	0.0395		3.95		0.0406	0.81
	2011	0.0413		4.13		0.0423	0.85
	2012	0.0401		4.01		0.0411	0.82
	2013	0.0447		4.47		0.0457	0.91
Benzo[a]pyrene (annual mean)	2009	0.0000153	0.00025	6.12	0.0000350	0.0000503	20.1
	2010	0.0000110		4.40		0.0000460	18.4
	2011	0.0000148		5.90		0.0000498	19.9
	2012	0.0000144		5.74		0.0000494	19.7
	2013	0.0000147		5.90		0.0000497	19.9
PCBs (annual mean)	2009	0.000000153	0.2	<0.0001	0.0000241	0.0000242	0.012
	2010	0.000000110		<0.0001		0.0000242	0.012
	2011	0.000000148		<0.0001		0.0000242	0.012
	2012	0.000000144		<0.0001		0.0000242	0.012
	2013	0.000000147		<0.0001		0.0000242	0.012
PCBs (24-hour, 100th percentile)	2009	0.00000149	6	<0.0001	0.0000482	0.0000497	0.00083
	2010	0.00000148		<0.0001		0.0000496	0.00083
	2011	0.00000148		<0.0001		0.0000496	0.00083
	2012	0.00000182		<0.0001		0.0000500	0.00083
	2013	0.00000156		<0.0001		0.0000497	0.00083
Dioxins/Furans (annual mean)	2009	0.0000000015	No standard applies	-	0.0000487	0.0000487	n/a
	2010	0.0000000011		-		0.0000487	
	2011	0.0000000015		-		0.0000487	
	2012	0.0000000014		-		0.0000487	
	2013	0.0000000015		-		0.0000487	

Notes to Table 4

(a) Emission at 100% of the Group 3 metals ELV.
(b) Emission at 100% of the Group 1 metals ELV.
(c) Emission at 20% of the group 3 metals ELV.
(d) Emission at 100% of the Group 2 metals ELV.

3.3.3. It can be seen from the data in Table 4 that some of the PECs are potentially significant. However, ECL Report P2154/R020, Section 6.2.7, has clearly demonstrated that following the guidance in H1, these can all be screened out as not significant.

APPLICATION FOR A PERMIT TO OPERATE A PART A INSTALLATION UNDER THE POLLUTION PREVENTION AND CONTROL (SCOTLAND) REGULATIONS 2012

APPLICATION REFERENCE PPC/A/1136072

FURTHER SUPPLEMENTARY RESPONSE TO 1ST JULY SCHEDULE 4 REQUEST FOR FURTHER INFORMATION

Prepared for:

FCC WASTE SERVICES (UK) LIMITED,
MILLERHILL, MIDLOTHIAN

August 2015

ECL Document Reference P2154/R023

Prepared by:

Environmental Compliance Limited
Unit G1, The Willowford, Main Avenue,
Treforest Industrial Estate, Pontypridd CF37 5YL

APPLICATION FOR A PERMIT TO OPERATE A PART A INSTALLATION UNDER THE POLLUTION PREVENTION AND CONTROL (SCOTLAND) REGULATIONS 2012

FCC WASTE SERVICES (UK) LIMITED, MILLERHILL, MIDLOTHIAN

APPLICATION REFERENCE PPC/A/1136072

FURTHER SUPPLEMENTARY RESPONSE TO 1ST JULY SCHEDULE 4 REQUEST FOR FURTHER INFORMATION

TABLE OF CONTENTS

APPLICATION FOR A PERMIT TO OPERATE A PART A INSTALLATION UNDER THE POLLUTION PREVENTION AND CONTROL (SCOTLAND) REGULATIONS 2012

FCC WASTE SERVICES (UK) LIMITED, MILLERHILL, MIDLOTHIAN

APPLICATION REFERENCE PPC/A/1136072

FURTHR SUPPLEMENTARY RESPONSE TO 1ST JULY SCHEDULE 4 REQUEST FOR FURTHER INFORMATION

1. INTRODUCTION

1.1. FCC Waste Services (UK) Limited ("FCC") submitted an application to the Scottish Environment Protection Agency ("SEPA") on 24th April 2015 for a Part A environmental permit to operate a waste treatment facility at Millerhill in Midlothian under the Pollution Prevention and Control (Scotland) Regulations 2012 ("PPC Regulations"). The facility - known as the Millerhill Recycling and Energy Recovery Centre ("Millerhill RERC") - will incorporate primary treatment and secondary treatment techniques to process residual household waste and Commercial and Industrial waste ("C & I waste"). SEPA subsequently issued the reference number PPC/A/1136072 to the application.

1.2. On 8th May 2015, SEPA issued a Notice requiring further information under Paragraph 7 of Schedule 4 of the PPC Regulations ("Schedule 4 Notice"). A response was provided to SEPA on 1st July 2015 in relation to all Items in the Notice with the exception of Item 3 (*Heat and Power Plan)* and Item 4 (*Noise Mitigation BAT Assessment)*, as it had been agreed with SEPA that responses to these items could be carried forward.

1.3. On 1st July 2015, SEPA issued a second Schedule 4 Notice, and a response to all items in the Notice was provided to SEPA on 31st July 2015.

1.4. However, SEPA has requested that further information/clarification is provided in relation to one of the Schedule 4 Notice matters, namely the revised drainage scheme for the site. This is addressed in Section 2 of this document.

2. REVISED DRAINAGE SCHEME

2.1. Schedule 4 Notice Requirements

The additional queries posed by SEPA are as follows (note that all these queries are based on the responses previously provided by FCC to SEPA in ECL document P2154/R020, and the Sections referenced below refer to sections within ECL document P2154/R020):

- *Please confirm that any overflow from the fire break water tanks will drain to the site's SUDS scheme via the surface water drainage system.*
- *In Section 5.2.4 you offer to provide one of two SUDS options for run-off arising from the car park; SEPA would ask that you provide porous paving and a filter trench, rather than petrol interceptors (interceptors do not represent recognised SUDS).*
- *In Section 5.2.5 you explain why you feel GBR 10 will not apply to surface water drainage from the manoeuvring area. The GBR will always apply to new surface water drainage systems. Do you mean that you will meet the terms of GBR as there will be no polluting material handled in the manoeuvring area?*
- *Please confirm that the site's SUDS scheme will meet the requirements of GBR's 10 and 11 of CAR.*

2.2. Responses

2.2.1. Overflow from Fire Break Water Tanks

The fire suppression system has not yet been designed in detail, however, in principal, and subject to agreement with SEPA, the fire break water tanks will drain to the sites SUDS scheme via the surface water drainage system. The detailed design of this system will depend on the maintenance regime of the system and the quality, volume and discharge rate of the discharged water

2.2.2. Porous Paving and Filter Trench

FCC can confirm that porous paving and a filter trench will be provided in preference to a petrol interceptor.

2.2.3. Material to be Handled in the Manoeuvring Area

No polluting material will be handled in the manoeuvring area.

2.2.4. Requirements of GBR10 and GBR 11

FCC confirms that the requirements of GBR 10 and GBR 11 will be met.