

## **Natural Resources Wales permitting decisions**

### **Variation and Consolidation of a bespoke Permit – Sensient Flavors Limited & Volac International Limited**

We have decided to issue a Natural Resources Wales initiated variation and consolidated permit for the Felinfach Effluent Treatment Plant in Ceredigion operated by Sensient Flavors Limited and Volac International Limited.

The permit number is EPR/BP3135EB.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

The permit has been varied following the publication of the revised Best Available Techniques (BAT) Reference Documents (BREF) for Waste Treatment. The associated BAT conclusions to this document were published on 17 August 2018 in the Official Journal of the European Union.

This variation incorporates the changes required by the Industrial Emissions Directive following a statutory review of permits in the Waste Treatment sector. These include the amendment of the wording of several permit conditions relating to notifications, changes to emissions limits and monitoring requirements.

We are satisfied that the operator will be compliant with the published BAT conclusions which will apply from 17 August 2022.

## **Purpose of this document**

This decision document:

- explains how we have carried out our statutory review of the Operator's Permit;
- why we have decided to vary the Permit as a result of that review; and
- why we have included the specific conditions in the revised Permit through the variation notice we are issuing.

It is our record of our decision-making process, to show how we have taken into account all relevant factors in reaching our position.

## **Structure of this document**

- Assessment of Felinfach Effluent Treatment Plant against the published BAT conclusions for Waste Treatment.
- Annex 1 – Decision Checklist regarding relevant BAT Conclusions

## **Assessment of Felinfach Effluent Treatment Plant against the published BAT conclusions for Waste Treatment**

### **1. Our decision**

We have issued a variation, which will allow Sensient Flavors Limited and Volac International Limited to operate the installation, subject to the conditions in the varied permit.

The variation does three things:

- it consolidates the original permit to reflect changes made through earlier variations;
- it brings the permit into line with our modern regulatory template; and
- it varies the permit where appropriate to reflect the outcome of our statutory review and incorporate Best Available Techniques (BAT) and Associated Emission Limit Values (BAT-AELs).

We consider that, in reaching this decision, we have taken into account all relevant considerations and legal requirements and that the permit will continue to ensure that a high level of protection is provided for the environment and human health.

The original permit, issued on the 04/07/2014 ensured that the installation, employed Best Available Techniques (BAT) and ensured a high level of protection for human health and the environment. We have altered the permit as a result of the statutory review, and we are confident that the new requirements will deliver a superior level of protection to that which was previously achieved. Where a site is not currently compliant with BAT, Improvement Conditions have been included to bring the site up standard by 17 August 2022.

## **2. The legal framework**

The Variation and Consolidation Notice (which includes the consolidated permit as Schedule 2) will be issued under Regulation 20 of the Environmental Permitting (England and Wales) Regulations 2016 (EPR). The environmental permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

- an *installation* as described by the Industrial Emissions Directive (IED); and
- subject to aspects of other relevant legislation which also have to be addressed.

We consider that, in issuing the Variation and Consolidated Permit, it will ensure that the operation of the installation complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

We explain how we have addressed specific statutory requirements more fully in the rest of this document.

## **3. How we reached our decision**

### Requesting information to demonstrate compliance with BAT Conclusion techniques

We issued a Notice under Regulation 61(1) of the Environmental Permitting (England and Wales) Regulations 2016 on 05/04/2019 requiring the operator to provide

information to demonstrate how the operation of their installation currently meets, or will subsequently meet, the revised standards described in the relevant BAT Conclusions document.

The Regulation 61(1) Notice required the operator to:

- Describe the techniques that will be implemented before 17 August 2022, which will then ensure that operations meet the revised standard, or
- Justify why standards will not be met by 17 August 2022, and confirmation of the date when the operation of those processes will cease within the installation or an explanation of why the revised BAT standard is not applicable to those processes, or
- Justify why an alternative technique will achieve the same level of environmental protection equivalent to the revised standard described in the BAT Conclusions.
- Where their permitted activity involves the use, production or release of a hazardous substance, as defined in Article 3(18) of the Industrial Emissions Directive, Sensient Flavors Limited and Volac International Limited were required to carry out a risk assessment considering the possibility of soil and groundwater contamination at the permitted installation with such substances. Where risk of such contamination is established prepare a baseline report containing information necessary to determine the state of soil and groundwater contamination so as to make a quantified comparison with the state upon definite cessation of the activity. Sensient Flavors Limited and Volac International Limited have a copy of a consequent baseline report.
- Where their permitted activity involves the use, production, storage or release of priority hazardous substances and any other relevant substances, as defined by the Water Framework Directive, Sensient Flavors Limited and Volac International Limited were required to carry out a risk screening assessment considering the presence of priority hazardous substances at the permitted installation. Where a risk of these substances is established the operator is to sample the effluent and screen for the priority hazardous substances. If these substances are found to be present in the effluent stream, then assessment using the H1 tool and potential detailed modelling will be required to demonstrate that the effluent discharge will not have a significant impact to the receiving water.

Where the operator proposed that they were not intending to meet a BAT standard, that also included a BAT Associated Emission Level (BAT-AEL) described in the Waste

Treatment BAT Conclusions Document, the Regulation 61(1) Notice requested that the operator make a formal request for derogation from compliance with that AEL (as provisioned by Article 15(4) of IED). In this circumstance, the Notice identified that any such request for derogation must be supported and justified by sufficient technical and commercial information that would enable us to determine acceptability of the derogation request.

The Regulation 61(1) Notice response from the operator was received on 12/09/2019 and additional information received on 08/09/2020.

We considered that the response contained sufficient information for us to commence determination of the permit review. The operator made no claim for commercial confidentiality. We have not received any information in relation to the Regulation 61(1) Notice response that appears to be confidential in relation to any part.

## 4. Key issues/Regulation 61 response

BAT Conclusions for the Waste Treatment were published as Commission Implementing Decision EU 2018/1447 in the Official Journal of the EU on 17 August 2018. There are 53 BAT Conclusions. This annex provides a record of decisions made in relation to each relevant BAT Conclusion applicable to the installation. This should be read in conjunction with the permit/variation notice issued.

A response was received from Sensient Flavors Limited and Volac International Limited. Following assessment of the Regulation 61(1) response, further information was requested from Sensient Flavors Limited and Volac International Limited. Where the operator has concluded that they have achieved BAT, and we are in agreement, no further information/justification has been sought by Natural Resources Wales.

## 5. Changes we have made

### Improvement Conditions

Based on the information provided in the Regulation 61(1) response, we consider that we need to set improvement conditions. These conditions are set out below. We are using these conditions to require the operator to provide Natural Resources Wales with details that need to be established or confirmed during operations. The improvement conditions ensure compliance by 2022.

Improvement Conditions 4 - 6 have been imposed to ensure compliance with certain BAT Conclusions by 17 August 2022. See Annex 1 for more details.

Improvement Condition 3 (IC3) has been imposed to ensure compliance with Section 6 of the Regulation 61(1) Notice.

**Table S1.3 Improvement programme requirements**

| Reference | Requirement                                                                                                                                                                                                                 | Date      |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| IC1       | The operator shall install and commission a flow weighted autosampler to collect samples of the treated effluent discharged from emission point W1 in order to meet the terms of conditions 3.5.1 and 3.5.3 of this permit. | Completed |

**Table S1.3 Improvement programme requirements**

| Reference | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Date                                                                         |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| IC2       | The operator shall monitor the discharge from emission point W1 for the following parameters: Metals - Copper (Cu), Lead (Pb), Cadmium (Cd) and Mercury (Hg) Nutrients - Phosphate, Ammonia and Total Nitrogen. Each of these parameters shall be sampled and measured once per month for a period of 12 months. The monitoring shall be conducted in line with the test methods stipulated in the Environment Agency Monitoring Technical Guidance Note M18: "Monitoring of Discharges to Water and Sewer". The monitoring results and details of the analytical methods used shall be submitted in writing to Natural Resources Wales. Emission limit values may subsequently be set in table S3.1 for these parameters following Natural Resources Wales review of the monitoring results. The monitoring results may also be used to inform the Best Available Techniques Reference Document (BREF) permit review process. | Completed                                                                    |
| IC3       | <p>The Operator shall complete and submit for approval in writing by Natural Resources Wales:</p> <ul style="list-style-type: none"> <li>• A baseline report containing information necessary to determine the current state of soil and groundwater contamination;</li> <li>or</li> <li>• Provide a summary report referring to information previously submitted where you are satisfied that such information represents the current state of soil and groundwater contamination;</li> </ul> <p>so as to enable a quantified comparison to be made with the state of soil and groundwater contamination upon definitive cessation of activity.</p>                                                                                                                                                                                                                                                                           | 17 February 2022 or otherwise agreed in writing with Natural Resources Wales |
| IC4       | <p>The operator shall submit for approval in writing by Natural Resources Wales information to evidence compliance with the following BAT requirements in accordance with requirements specified within BAT Conclusions of the Waste Treatment BREF Document (EU 2018) in relation to:</p> <ul style="list-style-type: none"> <li>• BAT 4 - In order to reduce the environmental risk associated with the storage of waste, BAT is to use all of the techniques described within BAT 4 Table.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                       | 17 February 2022 or otherwise agreed in writing with Natural Resources Wales |
| IC5       | <p>The operator shall submit for approval in writing by Natural Resources Wales information to evidence compliance with the following BAT requirements in accordance with requirements specified within BAT Conclusions of the Waste Treatment BREF Document (EU 2018) in relation to:</p> <ul style="list-style-type: none"> <li>• BAT 14 - In order to prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of dust, organic compounds and odour, BAT is to use an appropriate combination of the techniques described within BAT 14 Table.</li> </ul>                                                                                                                                                                                                                                                                                                                               | 17 February 2022 or otherwise agreed in writing with Natural Resources Wales |
| IC6       | <p>The operator shall submit for approval in writing by Natural Resources Wales information to evidence compliance with the following BAT requirements in accordance with requirements specified within BAT Conclusions of the Waste Treatment BREF Document (EU 2018) in relation to:</p> <ul style="list-style-type: none"> <li>• BAT 19 - In order to optimise water consumption, to reduce the volume of waste water generated and to prevent or, where that is not practicable, to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques described within BAT 19 Table.</li> </ul>                                                                                                                                                                                                                                                                                               | 17 February 2022 or otherwise agreed in writing with Natural Resources Wales |

## Operational Changes

Following completion of two existing Improvement Conditions (IC1 and IC2) there has been changes to parameters, monitoring frequencies and reference periods for point source emissions to water. Following installation of a composite sampler through IC1, any reference period currently stated in the permit as 'Spot Sample <sup>Note 1</sup>' with Note 1 stating: 'Spot sample shall be replaced by 24-hour flow proportional composite sample upon completion of IC1.' The composite sampler has now been installed at the site therefore we have replaced 'Spot Sample <sup>Note 1</sup>' with '24-hour flow proportional composite' and have removed Note 1 effective from permit issue. Also within Table S3.1 of the current permit Note 2 states: 'Daily sampling limited to (Monday – Friday) shall be replaced by Daily sampling upon completion of IC1.' Following completion of IC1 we have replaced any monitoring frequency that states 'Daily (Monday – Friday)' <sup>Note 2</sup> with 'Daily' and removed Note 2.

The current permit lists the following metal parameters:

- Total copper and its compounds
- Total lead and its compounds
- Total cadmium and its compounds
- Total mercury and its compounds

The Operator was required as part of IC2 to monitor these monthly for a period of 12 months in order for NRW to decide whether limits should be set and monitoring continued. We consider we will not set ELVs for any of these parameters and therefore monitoring requirements will be removed from the permit effective from permit issue. We consider this appropriate as:

- The submitted monthly monitoring results are consistently below the analytical method limit of detection for each metal
- There are no BAT-AELs or monitoring requirements for any of the metals stipulated for biological treatment in the Waste Treatment BREF Document (EU 2019)

The listed waste treatment activity has changed from S5.4 A(1)(b)(i) Recovery or a mix of recovery and disposal of non-hazardous waste by biological treatment to S5.4 A(1)(a)(i) Disposal of non-hazardous waste by biological treatment. This was confirmed by the Operator that the existing activity was incorrect as no recovery is involved.

## **Emissions to Water**

As part of our delivery of the Water Framework Directive requirements, we need to identify and assess the impact for all discharges to surface waters and/or sewer from the site for priority hazardous substances and any other relevant substances. The emissions monitoring for these substances should be carried out using the methods and standards described in the M18 guidance on “Monitoring of discharges to water and sewer”.

With reference to the risk assessment guidance on the gov.uk website entitled “Surface water pollution risk assessment for your environmental permit” (accessible via: <https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit>). The Operator did undertake this work as part of an existing Improvement Condition (IC2). Following discharge of IC2 and publication of the Waste Treatment BREF Document (EU 2018) we no longer feel is necessary for the Operator to monitor specified metals in the discharge as explained above. There are no monitoring requirements or BAT-AELs for biological treatment listed in the Waste Treatment BREF Document (EU 2018). Apart from the metals there are no other priority hazardous substances or any other relevant priority hazardous substances in the discharge therefore we consider the screening tests are not required.

## **Emissions to Water – Article 15(4) Derogations**

No derogations

## **Emissions to Air**

There are no point source channelled emissions to air listed in the current permit.

## **Emissions to Air – Article 15(4) Derogations**

No derogations

## **Other IED BREFs relevant to the permit review**

There are no specific listed activities within Table S1.1 of the permit that are within scope of other published BREFS.

## **6. Conclusion**

We consider that the installation already employed what used to be BAT, and that the operator has achieved significant improvements in performance since the permit was

originally granted. The revised BREF and its BAT-AELs provide the opportunity to consider further environmental improvements.

Coupled with the consolidation and modernisation of the permit, we believe this variation provides a sound basis for ongoing regulation of the installation and we are satisfied that the operator is currently achieving or will be achieving all relevant BAT by 17 August 2022.

We believe that we have ensured compliance with all relevant legal requirements in carrying out this review and making our determination on the variation.

## Annex 1: Decision checklist regarding relevant BAT Conclusions

BAT Conclusions for the Waste Treatment Bref were published as Commission Implementing Decision EU 2018/1147 in the Official Journal of the EU on 17 August 2018. There are 53 BAT Conclusions. This checklist provides a record of decisions made in relation to each relevant BAT Conclusion applicable to the installation. This annex should be read in conjunction with the consolidated variation notice.

All BAT Conclusions arising are listed by number in order below;

| BATc number                       | Summary of BAT Conclusion requirement                              | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |                                                                                                                                                                                        |
|-----------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OVERALL ENVIRONMENTAL PERFORMANCE |                                                                    |                                                                                                                                                                           |                                                                                                                                                                                        |
|                                   |                                                                    |                                                                                                                                                                           |                                                                                                                                                                                        |
| 1                                 | Environment Management System (EMS) – <u>ALL</u> of the following: |                                                                                                                                                                           |                                                                                                                                                                                        |
|                                   | I.                                                                 | Management commitment                                                                                                                                                     | Currently Compliant<br>The Operator has stated that they are compliant with the BAT conclusion via their integrated management system, consortium agreement, internal auditing system. |
|                                   | II.                                                                | Environmental policy development including CI of performance                                                                                                              |                                                                                                                                                                                        |
|                                   | III.                                                               | Planning and implementing procedures & targets in conjunction with financial planning & investment                                                                        |                                                                                                                                                                                        |
|                                   | IV.                                                                | <b>Implementation of procedures</b>                                                                                                                                       |                                                                                                                                                                                        |
|                                   |                                                                    | (a) Structure & responsibility                                                                                                                                            |                                                                                                                                                                                        |

| BATc number |       | Summary of BAT Conclusion requirement                                                                                                   | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
|-------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |       | (b) Recruitment, training, awareness & competence                                                                                       |                                                                                                                                                                           |
|             |       | (c) Communication                                                                                                                       |                                                                                                                                                                           |
|             |       | (d) Employee involvement                                                                                                                |                                                                                                                                                                           |
|             |       | (e) Documentation                                                                                                                       |                                                                                                                                                                           |
|             |       | (f) Effective process control                                                                                                           |                                                                                                                                                                           |
|             |       | (g) Maintenance programmes                                                                                                              |                                                                                                                                                                           |
|             |       | (h) Emergency preparedness & response                                                                                                   |                                                                                                                                                                           |
|             |       | (i) Safeguarding compliance with environmental legislation                                                                              |                                                                                                                                                                           |
|             | V.    | <b><i>Checking performance and taking corrective action</i></b>                                                                         |                                                                                                                                                                           |
|             |       | (a) Monitoring & measurement                                                                                                            |                                                                                                                                                                           |
|             |       | (b) Corrective and preventive action                                                                                                    |                                                                                                                                                                           |
|             |       | (c) Maintenance of records                                                                                                              |                                                                                                                                                                           |
|             | VI.   | (d) Independent (where practicable) internal or external EMS auditing                                                                   |                                                                                                                                                                           |
|             |       | Senior management review of EMS                                                                                                         |                                                                                                                                                                           |
|             | VII.  | Following development of cleaner technologies                                                                                           |                                                                                                                                                                           |
|             | VIII. | Whole life cycle considerations when designing a new plant i.e. impacts from eventual decommissioning and throughout its operating life |                                                                                                                                                                           |
|             | IX.   | Regular sectoral bench marking                                                                                                          |                                                                                                                                                                           |
|             | X.    | Waste stream management (BAT 2)                                                                                                         |                                                                                                                                                                           |
|             | XI.   | Inventory of waste water & waste gas streams (BAT 3)                                                                                    |                                                                                                                                                                           |

| BATc number |                                                                                                                | Summary of BAT Conclusion requirement                                                     | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant                                                                   |
|-------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | XII.                                                                                                           | Residues Management Plan – S6.5                                                           | Inventory see BAT 3, Waste stream management see BAT 2. The Odour and Noise and Vibration Management Plans are not considered applicable to this installation. Residues management plan – see BAT 24. Accident Management Plan – see BAT 21 |
|             | XIII.                                                                                                          | Accident Management Plan – S6.5                                                           |                                                                                                                                                                                                                                             |
|             | XIV.                                                                                                           | Odour Management Plan (BAT 12)                                                            |                                                                                                                                                                                                                                             |
|             | XV.                                                                                                            | Noise & Vibration Management Plan (BAT 17)                                                |                                                                                                                                                                                                                                             |
| 2           | Improving overall environmental performance – <u>ALL</u> of the following:                                     |                                                                                           |                                                                                                                                                                                                                                             |
|             | a.                                                                                                             | Set up and implement waste characterisation & pre-acceptance procedures                   | Currently Compliant<br>The Operator has stated theses are in place as per the consortium agreement                                                                                                                                          |
|             | b.                                                                                                             | Set up and implement waste acceptance procedures                                          |                                                                                                                                                                                                                                             |
|             | c.                                                                                                             | Set up and implement a waste tracking system & inventory                                  | Not Applicable – one waste stream                                                                                                                                                                                                           |
|             | d.                                                                                                             | Set up and implement an output quality management system                                  | Currently Compliant<br>Monitoring of effluent as per permit requirements                                                                                                                                                                    |
|             | e.                                                                                                             | Ensure waste segregation                                                                  | Not Applicable                                                                                                                                                                                                                              |
|             | f.                                                                                                             | Ensure waste compatibility prior to mixing or blending                                    |                                                                                                                                                                                                                                             |
|             | g.                                                                                                             | Sort solid incoming waste – S6.4                                                          |                                                                                                                                                                                                                                             |
| 3           | Establish and maintain a waste water and waste gas inventory as part of the EMS - <u>ALL</u> of the following: |                                                                                           |                                                                                                                                                                                                                                             |
|             | Information on characteristics of waste and waste treatment processes                                          |                                                                                           |                                                                                                                                                                                                                                             |
|             | (i)(a)                                                                                                         | simplified process flow sheets showing emission sources                                   | Currently Compliant<br>The Operator stated these process flow sheets are in place, waste waster treatment descriptions are also in place, aerobic treatment is carried out.                                                                 |
|             | (i)(b)                                                                                                         | Process-integrated and waste water/waste gas treatment descriptions including performance |                                                                                                                                                                                                                                             |
|             | Information on characteristics of waste water streams                                                          |                                                                                           |                                                                                                                                                                                                                                             |
| (ii)(a)     | Mean and variability of:                                                                                       |                                                                                           |                                                                                                                                                                                                                                             |

| BATc number |                                                                  | Summary of BAT Conclusion requirement        |  | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant                                    |
|-------------|------------------------------------------------------------------|----------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                                                                  | Flow                                         |  | Currently Compliant                                                                                                                                                                                          |
|             |                                                                  | pH                                           |  | The Operator monitor parameters as per the permit requirements and this is considered sufficient. The Operator has stated they complete daily sampling of waste from both sites, tested for COD, TSS and pH. |
|             |                                                                  | Temperature                                  |  |                                                                                                                                                                                                              |
|             |                                                                  | Conductivity                                 |  |                                                                                                                                                                                                              |
|             | (ii)(b)                                                          | Mean concentration, load and variability of: |  |                                                                                                                                                                                                              |
|             |                                                                  | Total suspended solids                       |  |                                                                                                                                                                                                              |
|             |                                                                  | COD/TOC                                      |  |                                                                                                                                                                                                              |
|             |                                                                  | Nitrogen species                             |  |                                                                                                                                                                                                              |
|             |                                                                  | Phosphorous                                  |  |                                                                                                                                                                                                              |
|             |                                                                  | Metals                                       |  |                                                                                                                                                                                                              |
|             |                                                                  | Priority substances/micropollutants          |  |                                                                                                                                                                                                              |
|             |                                                                  | Any other relevant compounds                 |  |                                                                                                                                                                                                              |
|             | (ii)(c)                                                          | Bioeliminability data (see BAT 52):          |  |                                                                                                                                                                                                              |
|             |                                                                  | BOD                                          |  |                                                                                                                                                                                                              |
|             |                                                                  | BOD to COD ratio                             |  |                                                                                                                                                                                                              |
|             |                                                                  | <a href="#">Zahn-Wellens test</a>            |  |                                                                                                                                                                                                              |
|             |                                                                  | Biological inhibition potential              |  |                                                                                                                                                                                                              |
|             | Information on characteristics of waste gas streams              |                                              |  |                                                                                                                                                                                                              |
|             | (iii)(a)                                                         | Mean and variability of:                     |  | Not Applicable.                                                                                                                                                                                              |
|             |                                                                  | Flow                                         |  |                                                                                                                                                                                                              |
| temperature |                                                                  |                                              |  |                                                                                                                                                                                                              |
| (iii)(b)    | Mean concentration, load and variability of relevant substances: |                                              |  |                                                                                                                                                                                                              |

| BATc number |                                                                                                                                               | Summary of BAT Conclusion requirement                                                  |  | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant                                        |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                                                                                                                                               | Organic compounds                                                                      |  |                                                                                                                                                                                                                  |
|             |                                                                                                                                               | POPs e.g. PCBs                                                                         |  |                                                                                                                                                                                                                  |
|             |                                                                                                                                               | Any other relevant compounds                                                           |  |                                                                                                                                                                                                                  |
|             | (iii)(c)                                                                                                                                      | Flammability                                                                           |  |                                                                                                                                                                                                                  |
|             |                                                                                                                                               | Lower and Higher Explosive Limits                                                      |  |                                                                                                                                                                                                                  |
|             |                                                                                                                                               | Reactivity                                                                             |  |                                                                                                                                                                                                                  |
|             | (iii)(d)                                                                                                                                      | Presence of other substances that may affect the gas treatment system or plant safety: |  |                                                                                                                                                                                                                  |
|             |                                                                                                                                               | O2                                                                                     |  |                                                                                                                                                                                                                  |
|             |                                                                                                                                               | N2                                                                                     |  |                                                                                                                                                                                                                  |
|             |                                                                                                                                               | Water vapour                                                                           |  |                                                                                                                                                                                                                  |
|             |                                                                                                                                               | Dust                                                                                   |  |                                                                                                                                                                                                                  |
| 4           | Reducing environmental risk associated with waste storage – <u>ALL</u> of the following:                                                      |                                                                                        |  | Compliant in the future – The Operator has not provided sufficient details in order to demonstrate full compliance with this BAT conclusion. Thus, an improvement condition has been included within the permit. |
|             | a.                                                                                                                                            | Optimised storage location                                                             |  |                                                                                                                                                                                                                  |
|             | b.                                                                                                                                            | Adequate storage capacity                                                              |  |                                                                                                                                                                                                                  |
|             | c.                                                                                                                                            | Safe storage operation                                                                 |  |                                                                                                                                                                                                                  |
|             | d.                                                                                                                                            | Separate area for storage & handling of packaged hazardous waste                       |  |                                                                                                                                                                                                                  |
| 5           | Set up and implement procedures to reduce the environmental risk associated with handling and transfer of waste - include following elements: |                                                                                        |  | Currently Compliant                                                                                                                                                                                              |
|             | Carried out by competent staff                                                                                                                |                                                                                        |  |                                                                                                                                                                                                                  |
|             | Duly documented, validated and verified                                                                                                       |                                                                                        |  |                                                                                                                                                                                                                  |
|             | Spill prevention, detection and mitigation measures                                                                                           |                                                                                        |  |                                                                                                                                                                                                                  |

| BATc number |                                                                              | Summary of BAT Conclusion requirement                                                                    | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
|-------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | Take precautions when mixing or blending wastes                              | Procedures are risk-based and consider likelihood of accidents, incidents and their environmental impact | The Operator has stated there are procedures in place in their management system. No mixing or blending of wastes is carried out at the site.                             |
|             |                                                                              |                                                                                                          |                                                                                                                                                                           |
| MONITORING  |                                                                              |                                                                                                          |                                                                                                                                                                           |
| 6           | Relevant emissions to water: monitor key process parameters at key locations |                                                                                                          | Currently Compliant – The Operator currently monitors key process parameters such as waste water flow, pH and BOD.                                                        |
|             | Key process parameters                                                       |                                                                                                          |                                                                                                                                                                           |
|             | Waste water flow                                                             |                                                                                                          |                                                                                                                                                                           |
|             | pH                                                                           |                                                                                                          |                                                                                                                                                                           |
|             | Temperature                                                                  |                                                                                                          |                                                                                                                                                                           |
|             | Conductivity                                                                 |                                                                                                          |                                                                                                                                                                           |
|             | BOD                                                                          |                                                                                                          |                                                                                                                                                                           |
|             | Other process parameters                                                     |                                                                                                          |                                                                                                                                                                           |
|             | Key monitoring locations                                                     |                                                                                                          |                                                                                                                                                                           |
|             | Pre-treatment inlet and/or outlet                                            |                                                                                                          |                                                                                                                                                                           |
|             | Final treatment inlet                                                        |                                                                                                          |                                                                                                                                                                           |
|             | Discharge point (to the environment)                                         |                                                                                                          |                                                                                                                                                                           |
|             | Other location                                                               |                                                                                                          |                                                                                                                                                                           |
| 7           | Monitoring emissions to water (refer to table)                               |                                                                                                          | Compliant in the future – The monitoring requirements will be implemented as per the permit requirements. PFOA and PFOS                                                   |
|             | Monitoring parameters depend on waste treatment process(es) involved         |                                                                                                          |                                                                                                                                                                           |

| BATc number      |                                                                                                                                            | Summary of BAT Conclusion requirement | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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|                  |                                                                                                                                            |                                       | not applicable for the waste stream as from food and drink sector.                                                                                                        |
| 8                | <a href="#">Monitoring emissions to air (refer to table)</a><br>Monitoring parameters depend on waste treatment process(es) involved       |                                       | Not Applicable.                                                                                                                                                           |
| 9                | Monitoring diffuse emissions of organic compounds to air from processes involving solvents. Use one or a combination of the following:     |                                       |                                                                                                                                                                           |
|                  | a                                                                                                                                          | Measurement – S6.2 descriptions       | Not Applicable – no processes including solvents at the installation.                                                                                                     |
|                  | b                                                                                                                                          | Emissions factor calculation          |                                                                                                                                                                           |
|                  | c                                                                                                                                          | Mass balance calculation              |                                                                                                                                                                           |
| 10               | Periodically monitor odour emissions where nuisance is expected and/or has been substantiated (monitoring frequency is outlined in BAT 12) |                                       |                                                                                                                                                                           |
|                  | Use EN standards e.g. 13725 or 16841                                                                                                       |                                       | Not Applicable – there are no odour issues with the site.                                                                                                                 |
|                  | Use equivalent methods e.g. ISO / national / international monitoring standards                                                            |                                       |                                                                                                                                                                           |
| 11               | Annual monitoring for:                                                                                                                     |                                       |                                                                                                                                                                           |
|                  | - Water, energy and raw materials                                                                                                          |                                       | Compliant in the future – Monitoring of water, energy and raw materials and generation of waste water and residues will be implemented through the permit requirements.   |
|                  | - Generation of residues and waste water                                                                                                   |                                       |                                                                                                                                                                           |
| EMISSIONS TO AIR |                                                                                                                                            |                                       |                                                                                                                                                                           |

| BATc number                                                                                                                                                                                                                       | Summary of BAT Conclusion requirement                                                                                                                                                  | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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| 12                                                                                                                                                                                                                                | <b>Set up, implement and review an Odour Management Plan (as part of the site EMS) where nuisance is expected and/or has been substantiated. Include ALL of the following:</b>         | Not Applicable – there are no odour issues with the site.                                                                                                                 |
|                                                                                                                                                                                                                                   | Protocol containing actions and timelines                                                                                                                                              |                                                                                                                                                                           |
|                                                                                                                                                                                                                                   | Protocol for conducting odour monitoring (BAT 10)                                                                                                                                      |                                                                                                                                                                           |
|                                                                                                                                                                                                                                   | Protocol for response to odour incidents/complaints                                                                                                                                    |                                                                                                                                                                           |
|                                                                                                                                                                                                                                   | Odour prevention and reduction programme                                                                                                                                               |                                                                                                                                                                           |
| 13                                                                                                                                                                                                                                | <b>Techniques to prevent, or where not practicable reduce odour emissions. Use one or a combination of the following:</b>                                                              |                                                                                                                                                                           |
|                                                                                                                                                                                                                                   | a.                                                                                                                                                                                     | Minimising residence times (open systems only)                                                                                                                            |
|                                                                                                                                                                                                                                   | b.                                                                                                                                                                                     | Use chemical treatment (N/A if desired output is hampered)                                                                                                                |
|                                                                                                                                                                                                                                   | c.                                                                                                                                                                                     | Optimising aerobic treatment – see examples. Refer to BAT 36 for wastes other than water-based liquid waste.                                                              |
| Currently Compliant<br>The Operator has stated that they ensure proper aeration conditions for open unroofed tanks and that all non aeration tanks are covered.                                                                   |                                                                                                                                                                                        |                                                                                                                                                                           |
| 14                                                                                                                                                                                                                                | <b>Techniques to prevent, or where not practicable reduce diffuse emissions to air, in particular of dust, organic compounds and odour. Use one or a combination of the following:</b> |                                                                                                                                                                           |
|                                                                                                                                                                                                                                   | a.                                                                                                                                                                                     | Minimising potential diffuse emission sources – see examples                                                                                                              |
|                                                                                                                                                                                                                                   | b.                                                                                                                                                                                     | Select and use high-integrity equipment – see examples                                                                                                                    |
|                                                                                                                                                                                                                                   | c.                                                                                                                                                                                     | Corrosion prevention – see examples                                                                                                                                       |
|                                                                                                                                                                                                                                   | d.                                                                                                                                                                                     | Containment, collection and treatment of diffuse emissions – see examples                                                                                                 |
|                                                                                                                                                                                                                                   | e.                                                                                                                                                                                     | Dampening (with water or fog)                                                                                                                                             |
|                                                                                                                                                                                                                                   | f.                                                                                                                                                                                     | Maintenance – see examples                                                                                                                                                |
| Compliant in the future – The Operator stated that this is not applicable but has not provided sufficient details to justify this against the BAT conclusion. Thus, an improvement condition has been included within the permit. |                                                                                                                                                                                        |                                                                                                                                                                           |

| BATc number          |                                                                                                                                                                                                   | Summary of BAT Conclusion requirement                                        | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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|                      | g.                                                                                                                                                                                                | Cleaning of waste treatment and storage areas – see examples                 |                                                                                                                                                                           |
|                      | h.                                                                                                                                                                                                | Leak Detection And Repair (LDAR) programme for organics – S6.2               |                                                                                                                                                                           |
| 15                   | Use flaring only for safety reasons or non-routine operating conditions (OTNOC). Use <u>both</u> of the following:                                                                                |                                                                              | Not Applicable – the installation does not undertake flaring.                                                                                                             |
|                      | a.                                                                                                                                                                                                | Correct plant design – see examples                                          |                                                                                                                                                                           |
|                      | b.                                                                                                                                                                                                | Plant management including gas system balancing and advanced process control |                                                                                                                                                                           |
| 16                   | Reduce emissions to air when flaring is unavoidable. Use <u>both</u> of the following:                                                                                                            |                                                                              | Not Applicable – the installation does not undertake flaring.                                                                                                             |
|                      | a.                                                                                                                                                                                                | Correct design of flaring devices – see examples                             |                                                                                                                                                                           |
|                      | b.                                                                                                                                                                                                | Monitoring and recording as part of flare management – see examples          |                                                                                                                                                                           |
| NOISE AND VIBRATIONS |                                                                                                                                                                                                   |                                                                              |                                                                                                                                                                           |
| 17                   | Set up, implement, and regularly review a Noise and Vibration Management Plan (as part of the EMS) where nuisance is expected and/or has been substantiated. Include <u>ALL</u> of the following: |                                                                              | Not Applicable – The installation does not experience noise or vibration issues.                                                                                          |
|                      | I.                                                                                                                                                                                                | Protocol with actions and timelines                                          |                                                                                                                                                                           |
|                      | II.                                                                                                                                                                                               | Noise and vibration monitoring plan/protocol                                 |                                                                                                                                                                           |
|                      | III.                                                                                                                                                                                              | Noise & vibration complaint response plan/protocol                           |                                                                                                                                                                           |
|                      | IV.                                                                                                                                                                                               | Noise and vibration reduction programme                                      |                                                                                                                                                                           |

| BATc number                                                                                                                                                                                                      | Summary of BAT Conclusion requirement                                                                                                                                                | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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| 18                                                                                                                                                                                                               | <b>Techniques to prevent, or where not practicable reduce noise and vibration emissions. Use one or a combination of the following:</b>                                              |                                                                                                                                                                           |
|                                                                                                                                                                                                                  | a.                                                                                                                                                                                   | Appropriate location of equipment and buildings                                                                                                                           |
|                                                                                                                                                                                                                  | b.                                                                                                                                                                                   | Operational measures – see examples                                                                                                                                       |
|                                                                                                                                                                                                                  | c.                                                                                                                                                                                   | Low-noise equipment – see examples                                                                                                                                        |
|                                                                                                                                                                                                                  | d.                                                                                                                                                                                   | Noise & vibration control equipment – see examples                                                                                                                        |
|                                                                                                                                                                                                                  | e.                                                                                                                                                                                   | Noise attenuation – see examples                                                                                                                                          |
| Currently Compliant – The Operator has stated that there are acoustic covers in place and regular noise surveys are carried out at the installation.                                                             |                                                                                                                                                                                      |                                                                                                                                                                           |
| <b>EMISSIONS TO WATER</b>                                                                                                                                                                                        |                                                                                                                                                                                      |                                                                                                                                                                           |
| 19                                                                                                                                                                                                               | <b>Optimise water consumption, reduce waste water generation and prevent or where not practicable reduce emissions to soil and water. Use one or a combination of the following:</b> |                                                                                                                                                                           |
|                                                                                                                                                                                                                  | a.                                                                                                                                                                                   | Water management – see examples                                                                                                                                           |
|                                                                                                                                                                                                                  | b.                                                                                                                                                                                   | Water recirculation                                                                                                                                                       |
|                                                                                                                                                                                                                  | c.                                                                                                                                                                                   | Impermeable surface                                                                                                                                                       |
|                                                                                                                                                                                                                  | d.                                                                                                                                                                                   | Reduce likelihood and impact of tank/vessel overflows and failures – see examples                                                                                         |
|                                                                                                                                                                                                                  | e.                                                                                                                                                                                   | Roofing of waste storage and treatment areas                                                                                                                              |
|                                                                                                                                                                                                                  | f.                                                                                                                                                                                   | Segregation of water streams (being mindful of existing plant constraints)                                                                                                |
|                                                                                                                                                                                                                  | g.                                                                                                                                                                                   | Adequate drainage infrastructure                                                                                                                                          |
|                                                                                                                                                                                                                  | h.                                                                                                                                                                                   | Design and maintenance provisions to allow risk-based leak detection and repair. Minimise use of underground components.                                                  |
| Compliant in the future – The Operator has not provided sufficient details in order to demonstrate full compliance with this BAT conclusion. Thus, an improvement condition has been included within the permit. |                                                                                                                                                                                      |                                                                                                                                                                           |

| BATc number |                                                          | Summary of BAT Conclusion requirement                                             | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant                                                               |
|-------------|----------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | i.                                                       | Appropriate buffer storage capacity (being mindful of existing plant constraints) |                                                                                                                                                                                                                                         |
| 20          | <b>Treat waste water using a combination of:</b>         |                                                                                   |                                                                                                                                                                                                                                         |
|             | <b><i>Preliminary, primary and general treatment</i></b> |                                                                                   |                                                                                                                                                                                                                                         |
|             | a.                                                       | Equalisation                                                                      | Currently Compliant – The installation is comprised of primary treatment with balance tank; dissolved air flotation (DAF) plant; anoxic pre-mixing (Selector Tank); conventional activated sludge; and gravity sludge settlement tanks. |
|             | b.                                                       | Neutralisation                                                                    |                                                                                                                                                                                                                                         |
|             | c.                                                       | Physical separation                                                               |                                                                                                                                                                                                                                         |
|             | <b><i>Physico-chemical treatment</i></b>                 |                                                                                   |                                                                                                                                                                                                                                         |
|             | d.                                                       | Adsorption                                                                        | Not Applicable – biological treatment                                                                                                                                                                                                   |
|             | e.                                                       | Distillation/rectification                                                        |                                                                                                                                                                                                                                         |
|             | f.                                                       | Precipitation                                                                     |                                                                                                                                                                                                                                         |
|             | g.                                                       | Chemical oxidation                                                                |                                                                                                                                                                                                                                         |
|             | h.                                                       | Chemical reduction                                                                |                                                                                                                                                                                                                                         |
|             | i.                                                       | Evaporation                                                                       |                                                                                                                                                                                                                                         |
|             | j.                                                       | Ion exchange                                                                      |                                                                                                                                                                                                                                         |
|             | k.                                                       | Stripping                                                                         |                                                                                                                                                                                                                                         |
|             | <b><i>Biological treatment</i></b>                       |                                                                                   |                                                                                                                                                                                                                                         |
|             | l.                                                       | Activated sludge process                                                          | Currently Compliant                                                                                                                                                                                                                     |
|             | m.                                                       | Membrane bioreactor                                                               | The process uses activated sludge process.                                                                                                                                                                                              |
|             | <b><i>Nitrogen removal</i></b>                           |                                                                                   |                                                                                                                                                                                                                                         |
|             | n.                                                       | Nitrification/denitrification (where biological treatment used)                   | Currently Compliant<br>The process has an anoxic selector tank in use.                                                                                                                                                                  |

| BATc number                                                                                                                                                       | Summary of BAT Conclusion requirement | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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|                                                                                                                                                                   | <b>Solids removal</b>                 |                                                                                                                                                                           |
|                                                                                                                                                                   | o.                                    | Coagulation and flocculation                                                                                                                                              |
|                                                                                                                                                                   | p.                                    | Sedimentation                                                                                                                                                             |
|                                                                                                                                                                   | q.                                    | Filtration (sand, micro, ultra)                                                                                                                                           |
|                                                                                                                                                                   | r.                                    | Flotation                                                                                                                                                                 |
| <b>BAT-AELs for DIRECT discharges to a receiving waterbody (mg/l)</b><br><i>Table 6.1 and its supporting notes. Monitoring requirements are outlined in BAT 7</i> |                                       |                                                                                                                                                                           |
|                                                                                                                                                                   | TOC                                   | 10.0-60<br>10-100 for water-based liquid waste                                                                                                                            |
|                                                                                                                                                                   | COD (TOC is preferred)                | 30-180<br>30-300 for water-based liquid waste                                                                                                                             |
|                                                                                                                                                                   | Suspended solids                      | 5.0-60                                                                                                                                                                    |
|                                                                                                                                                                   | HOI                                   | 0.5-10 applying to specific waste treatments                                                                                                                              |
|                                                                                                                                                                   | Total N                               | 1-25 for biological treatment and waste oil re-refining<br>10-60 for water-based liquid waste                                                                             |
|                                                                                                                                                                   | Total P                               | 0.3-2 for biological treatment<br>1-3 for water-based liquid waste                                                                                                        |

| BATc number |                                                                        | Summary of BAT Conclusion requirement                                                                                      |  | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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|             | Phenol                                                                 | 0.05-0.2 for waste oil re-refining and physio-chemical treatment of waste with CV<br>0.05-0.3 for water-based liquid waste |  |                                                                                                                                                                           |
|             | Free CN-                                                               | 0.02-0.1 for water-based liquid waste                                                                                      |  |                                                                                                                                                                           |
|             | AOX                                                                    | 0.2-1 for water-based liquid waste                                                                                         |  |                                                                                                                                                                           |
|             | Metals & Metalloids – specific waste treatments as listed in Table 6.1 |                                                                                                                            |  |                                                                                                                                                                           |
|             | As                                                                     | 0.01-0.05                                                                                                                  |  |                                                                                                                                                                           |
|             | Cd                                                                     | 0.01-0.05                                                                                                                  |  |                                                                                                                                                                           |
|             | Cr                                                                     | 0.01-0.15                                                                                                                  |  |                                                                                                                                                                           |
|             | Cu                                                                     | 0.05-0.5                                                                                                                   |  |                                                                                                                                                                           |
|             | Pb                                                                     | 0.05-0.1                                                                                                                   |  |                                                                                                                                                                           |
|             | Ni                                                                     | 0.05-0.5                                                                                                                   |  |                                                                                                                                                                           |
|             | Hg                                                                     | 0.5-5                                                                                                                      |  |                                                                                                                                                                           |
|             | Zn                                                                     | 0.1-1                                                                                                                      |  |                                                                                                                                                                           |
|             | Metals & Metalloids – treatment of water-based liquid waste            |                                                                                                                            |  |                                                                                                                                                                           |
|             | As                                                                     | 0.01-0.1                                                                                                                   |  |                                                                                                                                                                           |
|             | Cd                                                                     | 0.01-0.1                                                                                                                   |  |                                                                                                                                                                           |
|             | Cr                                                                     | 0.01-0.3                                                                                                                   |  |                                                                                                                                                                           |

| BATc number |                                                                                   | Summary of BAT Conclusion requirement        | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |                                        |
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|             | Hexavalent Cr [Cr(VI)]                                                            | 0.01-0.1                                     |                                                                                                                                                                           |                                        |
|             | Cu                                                                                | 0.05-0.5                                     |                                                                                                                                                                           |                                        |
|             | Pb                                                                                | 0.05-0.3                                     |                                                                                                                                                                           |                                        |
|             | Ni                                                                                | 0.05-1                                       |                                                                                                                                                                           |                                        |
|             | Hg                                                                                | 1.0-10                                       |                                                                                                                                                                           |                                        |
|             | Zn                                                                                | 0.1-2                                        |                                                                                                                                                                           |                                        |
|             | <b>BAT-AELs for INDIRECT discharges to a receiving waterbody (mg/l)</b>           |                                              |                                                                                                                                                                           | Not Applicable – no indirect discharge |
|             | Table 6.2 and its supporting notes. Monitoring requirements are outlined in BAT 7 |                                              |                                                                                                                                                                           |                                        |
|             | HOI                                                                               | 0.5-10 applying to specific waste treatments |                                                                                                                                                                           |                                        |
|             | Free CN-                                                                          | 0.02-0.1 for water-based liquid waste        |                                                                                                                                                                           |                                        |
|             | AOX                                                                               | 0.2-1 for water-based liquid waste           |                                                                                                                                                                           |                                        |
|             | Metals & Metalloids – specific waste treatments as listed in Table 6.2            |                                              |                                                                                                                                                                           |                                        |
|             | As                                                                                | 0.01-0.05                                    |                                                                                                                                                                           |                                        |
|             | Cd                                                                                | 0.01-0.05                                    |                                                                                                                                                                           |                                        |
|             | Cr                                                                                | 0.01-0.15                                    |                                                                                                                                                                           |                                        |
|             | Cu                                                                                | 0.05-0.5                                     |                                                                                                                                                                           |                                        |
|             | Pb                                                                                | 0.05-0.1                                     |                                                                                                                                                                           |                                        |
|             | Ni                                                                                | 0.05-0.5                                     |                                                                                                                                                                           |                                        |

| BATc number                            |                                                                                                                                                                     | Summary of BAT Conclusion requirement            | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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|                                        | Hg                                                                                                                                                                  | 0.5-5                                            |                                                                                                                                                                           |
|                                        | Zn                                                                                                                                                                  | 0.1-1                                            |                                                                                                                                                                           |
|                                        | Metals & Metalloids – treatment of water-based liquid waste                                                                                                         |                                                  |                                                                                                                                                                           |
|                                        | As                                                                                                                                                                  | 0.01-0.1                                         |                                                                                                                                                                           |
|                                        | Cd                                                                                                                                                                  | 0.01-0.1                                         |                                                                                                                                                                           |
|                                        | Cr                                                                                                                                                                  | 0.01-0.3                                         |                                                                                                                                                                           |
|                                        | Hexavalent Cr [Cr(VI)]                                                                                                                                              | 0.01-0.1                                         |                                                                                                                                                                           |
|                                        | Cu                                                                                                                                                                  | 0.05-0.5                                         |                                                                                                                                                                           |
|                                        | Pb                                                                                                                                                                  | 0.05-0.3                                         |                                                                                                                                                                           |
|                                        | Ni                                                                                                                                                                  | 0.05-1                                           |                                                                                                                                                                           |
|                                        | Hg                                                                                                                                                                  | 1.0-10                                           |                                                                                                                                                                           |
|                                        | Zn                                                                                                                                                                  | 0.1-2                                            |                                                                                                                                                                           |
| EMISSIONS FROM ACCIDENTS AND INCIDENTS |                                                                                                                                                                     |                                                  |                                                                                                                                                                           |
| 21                                     | Techniques to prevent or limit the environmental consequences of accidents and incidents, as part of the Accident Management Plan. Use <u>ALL</u> of the following: |                                                  | Currently Compliant                                                                                                                                                       |
|                                        | a.                                                                                                                                                                  | Protection measures – see examples               |                                                                                                                                                                           |
|                                        | b.                                                                                                                                                                  | Management of incidental or accidental emissions |                                                                                                                                                                           |

| BATc number         |                                                                                                                                  | Summary of BAT Conclusion requirement                               | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant                                                                      |
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|                     | c.                                                                                                                               | Incident/accident registration and assessment system – see examples | The Operator has stated there is an accident management plan in place as part of their management system.                                                                                                                                      |
| MATERIAL EFFICIENCY |                                                                                                                                  |                                                                     |                                                                                                                                                                                                                                                |
| 22                  | Use materials efficiently by substituting materials with waste e.g. waste acids/alkalis for pH adjustment, fly ashes for binders |                                                                     | Currently Compliant – The Operator has stated they use a selector tank for biomass conditioning and pH correction. They also have stated they reuse the water from the sludge thickening system to correct the pH of the DAF plant.            |
| ENERGY EFFICIENCY   |                                                                                                                                  |                                                                     |                                                                                                                                                                                                                                                |
| 23                  | Use energy efficiently by using <u>both</u> of the following techniques:                                                         |                                                                     | Currently Compliant – The Operator has stated there is continual monitoring of energy use and reviewed against key performance indicators. There are conditions in the current permit to review and record the energy use at the installation. |
|                     | a.                                                                                                                               | Energy efficiency plan                                              |                                                                                                                                                                                                                                                |
|                     | b.                                                                                                                               | Energy balance record                                               |                                                                                                                                                                                                                                                |
| REUSE OF PACKAGING  |                                                                                                                                  |                                                                     |                                                                                                                                                                                                                                                |
| 24                  | Maximise the reuse of packaging as part of a Residues Management Plan (see BAT 1 XII.)                                           |                                                                     | Currently Compliant – The Operator has stated that chemicals are delivered in bulk containers where possible and if not possible the drums are recycled or returned to the supplier.                                                           |

| BATc number                                      | Summary of BAT Conclusion requirement                                                                                                                                                          |                                                                               | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MECHANICAL TREATMENT OF WASTE (GENERAL BAT)      |                                                                                                                                                                                                |                                                                               |                                                                                                                                                                           |
| 25                                               | Reduce emissions to air of dust, particulate-bound metals, PCDD/F and dioxin-like PCBs by applying BAT 14d <u>AND</u> using one or a combination of the following techniques:                  |                                                                               |                                                                                                                                                                           |
|                                                  | a.                                                                                                                                                                                             | Cyclone – see S6.1                                                            | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
|                                                  | b.                                                                                                                                                                                             | Fabric filter – see S6.1                                                      |                                                                                                                                                                           |
|                                                  | c.                                                                                                                                                                                             | Wet scrubbing – see S6.1                                                      |                                                                                                                                                                           |
|                                                  | d.                                                                                                                                                                                             | Water injection into the shredder                                             |                                                                                                                                                                           |
|                                                  | <b>BAT-AEL for channelled dust emissions to air from the mechanical treatment of waste (mg/Nm3)</b><br><i>Table 6.3 and its supporting note. Monitoring requirements are outlined in BAT 8</i> |                                                                               |                                                                                                                                                                           |
| Dust                                             | 2.0-5.0                                                                                                                                                                                        | As above.                                                                     |                                                                                                                                                                           |
| MECHANICAL TREATMENT OF METAL WASTE BY SHREDDING |                                                                                                                                                                                                |                                                                               |                                                                                                                                                                           |
| 26                                               | Improve overall environmental performance and prevent emissions due to accidents and incidents. Use BAT 14g <u>AND ALL</u> of the following techniques:                                        |                                                                               |                                                                                                                                                                           |
|                                                  | (a)                                                                                                                                                                                            | Detailed inspection procedure for baled waste before shredding                | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
|                                                  | (b)                                                                                                                                                                                            | Remove dangerous items from waste inputs and dispose of them in a safe manner |                                                                                                                                                                           |
|                                                  | (c)                                                                                                                                                                                            | Treatment of containers accompanied by a declaration of cleanliness           |                                                                                                                                                                           |

| BATc number                                              |                                                                                                                                                                                                      | Summary of BAT Conclusion requirement                                                        |  | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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| 27                                                       | Prevent deflagrations and reduce emissions from deflagrations. Use technique a. <u>AND ONE OR BOTH</u> of techniques b. and c.                                                                       |                                                                                              |  | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
|                                                          | a.                                                                                                                                                                                                   | Deflagration management plan with reduction programme, incident review and response protocol |  |                                                                                                                                                                           |
|                                                          | b.                                                                                                                                                                                                   | Pressure relief dampers                                                                      |  |                                                                                                                                                                           |
|                                                          | c.                                                                                                                                                                                                   | Pre-shredding (device)                                                                       |  |                                                                                                                                                                           |
| 28                                                       | Use energy efficiently by keeping the shredder feed stable                                                                                                                                           |                                                                                              |  | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
| MECHANICAL TREATMENT OF WEEE CONTAINING VFCs AND/OR VHCs |                                                                                                                                                                                                      |                                                                                              |  |                                                                                                                                                                           |
| 29                                                       | Techniques to prevent, or where not practicable reduce emissions of organic compounds to air. Apply BAT 14d <u>AND</u> BAT14h <u>AND</u> technique a. <u>AND ONE OR BOTH</u> of techniques b. and c. |                                                                                              |  |                                                                                                                                                                           |
|                                                          | a.                                                                                                                                                                                                   | Optimised removal and capture of refrigerants and oils                                       |  | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
|                                                          | b.                                                                                                                                                                                                   | Cryogenic condensation                                                                       |  |                                                                                                                                                                           |
|                                                          | c.                                                                                                                                                                                                   | Adsorption                                                                                   |  | As above.                                                                                                                                                                 |
|                                                          | BAT-AELs for channelled TVOC and CFC emissions to air from treatment of WEEE containing VFCs and/or VHCs (mg/Nm3)<br>Table 6.4. Monitoring requirements are outlined in BAT 8                        |                                                                                              |  |                                                                                                                                                                           |
|                                                          | TVOC                                                                                                                                                                                                 | 3.0-15                                                                                       |  | As above.                                                                                                                                                                 |
|                                                          | CFCs                                                                                                                                                                                                 | 0.5-10                                                                                       |  |                                                                                                                                                                           |
| 30                                                       | Prevent emissions due to explosions when treating WEEE containing VFCs and/or VHCs. Use <u>EITHER</u> of the following techniques:                                                                   |                                                                                              |  |                                                                                                                                                                           |
|                                                          | a.                                                                                                                                                                                                   | Inert atmosphere e.g. N2                                                                     |  | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
|                                                          | b.                                                                                                                                                                                                   | Forced ventilation                                                                           |  |                                                                                                                                                                           |

| BATc number                                        | Summary of BAT Conclusion requirement                                                                                                                                                                 |                              | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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| MECHANICAL TREATMENT OF WASTE WITH CALORIFIC VALUE |                                                                                                                                                                                                       |                              |                                                                                                                                                                           |
| 31                                                 | Reduce emissions to air of organic compounds by applying BAT 14d <u>AND</u> using one or a combination of the following techniques:                                                                   |                              |                                                                                                                                                                           |
|                                                    | a.                                                                                                                                                                                                    | Adsorption – see S6.1        | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
|                                                    | b.                                                                                                                                                                                                    | Biofilter – see S6.1         |                                                                                                                                                                           |
|                                                    | c.                                                                                                                                                                                                    | Thermal oxidation – see S6.1 |                                                                                                                                                                           |
|                                                    | d.                                                                                                                                                                                                    | Wet scrubbing – see S6.1     |                                                                                                                                                                           |
|                                                    | BAT-AEL for channelled TVOC emissions to air from the mechanical treatment of waste with calorific value (mg/Nm3)<br>Table 6.5 and its supporting note. Monitoring requirements are outlined in BAT 8 |                              |                                                                                                                                                                           |
|                                                    | TVOC                                                                                                                                                                                                  | 10.0-30.0                    | As above.                                                                                                                                                                 |
| MECHANICAL TREATMENT OF WEEE CONTAINING MERCURY    |                                                                                                                                                                                                       |                              |                                                                                                                                                                           |
| 32                                                 | Reduce mercury emissions to air by collecting them at source, sending them to abatement and carrying out adequate monitoring.<br>This includes <u>ALL</u> of the following:                           |                              |                                                                                                                                                                           |
|                                                    | Equipment is enclosed, under negative pressure and connected to a LEV system                                                                                                                          |                              | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
|                                                    | Waste gas treated using dedusting techniques – see examples – followed by adsorption on activated carbon                                                                                              |                              |                                                                                                                                                                           |
|                                                    | Monitoring of waste gas treatment efficiency                                                                                                                                                          |                              |                                                                                                                                                                           |
|                                                    | Mercury levels measured at least weekly within treatment and storage areas                                                                                                                            |                              |                                                                                                                                                                           |

| BATc number                                        | Summary of BAT Conclusion requirement                                                                                                                                                                                                                                                                    | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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|                                                    | <b>BAT-AEL for channelled mercury (Hg) emissions to air from the mechanical treatment of WEEE containing mercury (<math>\mu\text{g}/\text{Nm}^3</math>)</b><br><i>Table 6.6. Monitoring requirements are outlined in BAT 8</i>                                                                           |                                                                                                                                                                           |
|                                                    | Hg                                                                                                                                                                                                                                                                                                       | 2.0-7.0                                                                                                                                                                   |
| As above.                                          |                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                           |
| <b>BIOLOGICAL TREATMENT OF WASTE (GENERAL BAT)</b> |                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                           |
| 33                                                 | <b>Reduce odour emissions and improve overall environmental performance by selecting the waste input (to ensure its suitability for biological treatment). See also BAT 2</b>                                                                                                                            | Not Applicable – there is only one waste input into the plant                                                                                                             |
| 34                                                 | <b>Reduce emissions to air of dust, organic compounds and odorous compounds (including H<sub>2</sub>S &amp; NH<sub>3</sub>) by using one or a combination of the following techniques:</b>                                                                                                               |                                                                                                                                                                           |
|                                                    | a.                                                                                                                                                                                                                                                                                                       | Adsorption – see S6.1                                                                                                                                                     |
|                                                    | b.                                                                                                                                                                                                                                                                                                       | Biofilter – see S6.1                                                                                                                                                      |
|                                                    | c.                                                                                                                                                                                                                                                                                                       | Fabric filter – see S6.1.                                                                                                                                                 |
|                                                    | d.                                                                                                                                                                                                                                                                                                       | Thermal oxidation – see S6.1                                                                                                                                              |
|                                                    | e.                                                                                                                                                                                                                                                                                                       | Wet scrubbing – see S6.1                                                                                                                                                  |
|                                                    | Not Applicable.                                                                                                                                                                                                                                                                                          |                                                                                                                                                                           |
|                                                    | <b>BAT-AEL for channelled NH<sub>3</sub>, odour, dust and TVOC emissions to air from the biological treatment of waste (<math>\text{mg}/\text{Nm}^3</math>) (<math>\text{ou}_\text{E}/\text{m}^3</math>)</b><br><i>Table 6.7 and its supporting notes. Monitoring requirements are outlined in BAT 8</i> |                                                                                                                                                                           |
|                                                    | NH <sub>3</sub>                                                                                                                                                                                                                                                                                          | 0.3-20                                                                                                                                                                    |
|                                                    | Odour                                                                                                                                                                                                                                                                                                    | 200-1000                                                                                                                                                                  |
|                                                    | Dust                                                                                                                                                                                                                                                                                                     | 2.0-5.0                                                                                                                                                                   |
|                                                    | TVOC                                                                                                                                                                                                                                                                                                     | 5.0-40                                                                                                                                                                    |
| Not Applicable.                                    |                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                           |

| BATc number                                      |                                                                                                                                                                      | Summary of BAT Conclusion requirement                     |  | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |                                                                          |
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| 35                                               | Reduce the generation of waste water and reduce water usage by using <u>ALL</u> of the following:                                                                    |                                                           |  | Currently Compliant – The Operator has stated the use of a reverse osmosis plant meets the requirements of this BAT conclusion.                                           |                                                                          |
|                                                  | a.                                                                                                                                                                   | Segregation of water streams (see also BAT 19f)           |  |                                                                                                                                                                           |                                                                          |
|                                                  | b.                                                                                                                                                                   | Water recirculation                                       |  |                                                                                                                                                                           |                                                                          |
|                                                  | c.                                                                                                                                                                   | Minimisation of the generation of leachate                |  |                                                                                                                                                                           |                                                                          |
| BIOLOGICAL TREATMENT OF WASTE: AEROBIC METHODS   |                                                                                                                                                                      |                                                           |  |                                                                                                                                                                           |                                                                          |
| 36                                               | Reduce emissions to air and improve overall environmental performance by monitoring and/or controlling key waste and process parameters. Include following elements: |                                                           |  |                                                                                                                                                                           |                                                                          |
|                                                  | Waste input characteristics e.g. C to N ratio, particle size                                                                                                         |                                                           |  | Not Applicable – This is not applicable to the installations activities.                                                                                                  |                                                                          |
|                                                  | Temperature and moisture content within windrows (Moisture monitoring not needed for enclosed processes where H&S issues have been identified)                       |                                                           |  |                                                                                                                                                                           |                                                                          |
|                                                  | Aeration of the windrow                                                                                                                                              |                                                           |  |                                                                                                                                                                           |                                                                          |
|                                                  | Windrow porosity, height and width                                                                                                                                   |                                                           |  |                                                                                                                                                                           |                                                                          |
| 37                                               | Reduce diffuse emissions to air of dust, odour and bioaerosols from open-air treatment steps. Use <u>ONE OR BOTH</u> of the following techniques:                    |                                                           |  |                                                                                                                                                                           |                                                                          |
|                                                  | a.                                                                                                                                                                   | Use of semi-permeable membrane covers                     |  |                                                                                                                                                                           | Not Applicable – This is not applicable to the installations activities. |
|                                                  | b.                                                                                                                                                                   | Adaptation of operations to the meteorological conditions |  |                                                                                                                                                                           |                                                                          |
| BIOLOGICAL TREATMENT OF WASTE: ANAEROBIC METHODS |                                                                                                                                                                      |                                                           |  |                                                                                                                                                                           |                                                                          |

| BATc number                                    |                                                                                                                                                                      | Summary of BAT Conclusion requirement                                        | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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| 38                                             | Reduce emissions to air and improve overall environmental performance by monitoring and/or controlling key waste and process parameters. Include following elements: |                                                                              |                                                                                                                                                                           |
|                                                | Implement a manual and/or automatic monitoring system to:                                                                                                            |                                                                              |                                                                                                                                                                           |
|                                                | Ensure a stable digester operation                                                                                                                                   | Not Applicable – This is not applicable to the installations activities.     |                                                                                                                                                                           |
|                                                | Minimise operational difficulties and associated odour emissions                                                                                                     |                                                                              |                                                                                                                                                                           |
|                                                | Provide sufficient early warning of system failures                                                                                                                  |                                                                              |                                                                                                                                                                           |
|                                                | Windrow porosity, height and width                                                                                                                                   | As above.                                                                    |                                                                                                                                                                           |
|                                                | Monitoring and/or control of key waste and process parameters – examples below:                                                                                      |                                                                              |                                                                                                                                                                           |
|                                                | pH and alkalinity of the digester feed                                                                                                                               | As above.                                                                    |                                                                                                                                                                           |
|                                                | Digester operating temperature                                                                                                                                       |                                                                              |                                                                                                                                                                           |
|                                                | Hydraulic and organic loading rates of the digester feed                                                                                                             |                                                                              |                                                                                                                                                                           |
|                                                | Volatile fatty acids and NH3 concentrations within digester & digestate                                                                                              |                                                                              |                                                                                                                                                                           |
|                                                | Biogas quantity, composition (e.g. H2S) and pressure                                                                                                                 |                                                                              |                                                                                                                                                                           |
|                                                | Liquid and foam levels in the digester                                                                                                                               |                                                                              |                                                                                                                                                                           |
| MECHANICAL BIOLOGICAL TREATMENT (MBT) OF WASTE |                                                                                                                                                                      |                                                                              |                                                                                                                                                                           |
| 39                                             | Reduce emissions to air. Generally applicable to new plants, existing plants may have layout constraints. Use BOTH of the following techniques:                      |                                                                              |                                                                                                                                                                           |
|                                                | a.                                                                                                                                                                   | Segregation of the waste gas streams (refer to inventory described in BAT 3) | Not Applicable – This is not applicable to the installations activities.                                                                                                  |

| BATc number                                                                        |                                                                                                                                                        | Summary of BAT Conclusion requirement                                                               | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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|                                                                                    | b.                                                                                                                                                     | Recirculation of waste gas. Waste gas treatment is described in BAT 34 and recirculation in BAT 35. |                                                                                                                                                                           |
| PHYSICO-CHEMICAL TREATMENT OF SOLID AND/OR PASTY WASTE                             |                                                                                                                                                        |                                                                                                     |                                                                                                                                                                           |
| 40                                                                                 | Improve overall environmental performance by monitoring the waste input as part of the waste pre-acceptance and acceptance procedures. See also BAT 2. |                                                                                                     |                                                                                                                                                                           |
|                                                                                    | Monitoring the waste input                                                                                                                             |                                                                                                     |                                                                                                                                                                           |
|                                                                                    | Content of organics, oxidising agents, metals, salts, odorous compounds                                                                                |                                                                                                     | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
| H2 formation potential upon mixing of flue-gas treatment residues/ashes with water |                                                                                                                                                        |                                                                                                     |                                                                                                                                                                           |
| 41                                                                                 | Reduce emissions to air of dust, organic compounds and NH3 by applying BAT 14d <u>AND</u> using one or a combination of the following techniques:      |                                                                                                     |                                                                                                                                                                           |
|                                                                                    | a.                                                                                                                                                     | Adsorption – see S6.1                                                                               | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
|                                                                                    | b.                                                                                                                                                     | Biofilter – see S6.1                                                                                |                                                                                                                                                                           |
|                                                                                    | c.                                                                                                                                                     | Fabric filter – see S6.1.                                                                           |                                                                                                                                                                           |
|                                                                                    | d.                                                                                                                                                     | Wet scrubbing – see S6.1                                                                            |                                                                                                                                                                           |
|                                                                                    | BAT-AEL for channelled NH3, odour, dust and TVOC emissions to air from the physico-chemical treatment of solid and/or pasty waste (mg/Nm3)             |                                                                                                     |                                                                                                                                                                           |
|                                                                                    | Table 6.8. Monitoring requirements are outlined in BAT 8                                                                                               |                                                                                                     |                                                                                                                                                                           |
| Dust                                                                               | 2.0-5.0                                                                                                                                                | As above.                                                                                           |                                                                                                                                                                           |

| BATc number                                              | Summary of BAT Conclusion requirement                                                                                                                  |                                                             | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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| RE-REFINING OF WASTE OIL                                 |                                                                                                                                                        |                                                             |                                                                                                                                                                           |
| 42                                                       | Improve overall environmental performance by monitoring the waste input as part of the waste pre-acceptance and acceptance procedures. See also BAT 2. |                                                             |                                                                                                                                                                           |
|                                                          | Monitoring the waste input                                                                                                                             |                                                             |                                                                                                                                                                           |
|                                                          | Chlorinated compounds e.g. solvents or PCBs                                                                                                            |                                                             | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
| 43                                                       | Reduce quantity of waste sent for disposal by using <u>ONE OR BOTH</u> of the following techniques:                                                    |                                                             |                                                                                                                                                                           |
|                                                          | a.                                                                                                                                                     | Material recovery e.g. organic residues in asphalt products | As above.                                                                                                                                                                 |
|                                                          | b.                                                                                                                                                     | Energy recovery                                             |                                                                                                                                                                           |
| 44                                                       | Reduce emissions to air of organic compounds by applying BAT 14d <u>AND</u> using one or a combination of the following techniques:                    |                                                             |                                                                                                                                                                           |
|                                                          | a.                                                                                                                                                     | Adsorption – see S6.1                                       | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
|                                                          | b.                                                                                                                                                     | Thermal oxidation – see S6.1                                |                                                                                                                                                                           |
|                                                          | c.                                                                                                                                                     | Wet scrubbing – see S6.1                                    |                                                                                                                                                                           |
|                                                          | The BAT-AEL for TVOC emissions to air set in Section 4.5 (below) applies.                                                                              |                                                             |                                                                                                                                                                           |
| Monitoring requirements are outlined in BAT 8            |                                                                                                                                                        |                                                             |                                                                                                                                                                           |
| PHYSICO-CHEMICAL TREATMENT OF WASTE WITH CALORIFIC VALUE |                                                                                                                                                        |                                                             |                                                                                                                                                                           |
| 45                                                       | Reduce emissions to air of organic compounds by applying BAT 14d <u>AND</u> using one or a combination of the following techniques:                    |                                                             |                                                                                                                                                                           |
|                                                          | a.                                                                                                                                                     | Adsorption – see S6.1                                       | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
|                                                          | b.                                                                                                                                                     | Cryogenic condensation – see S6.1                           |                                                                                                                                                                           |

| BATc number                                                     |                                                                                                                                     | Summary of BAT Conclusion requirement                                                         | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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|                                                                 | c.                                                                                                                                  | Thermal oxidation – see S6.1                                                                  |                                                                                                                                                                           |
|                                                                 | d.                                                                                                                                  | Wet scrubbing – see S6.1                                                                      |                                                                                                                                                                           |
|                                                                 | <b>The BAT-AEL for TVOC emissions to air set in Section 4.5 (below) applies.</b><br>Monitoring requirements are outlined in BAT 8   |                                                                                               |                                                                                                                                                                           |
| REGENERATION OF SPENT SOLVENTS                                  |                                                                                                                                     |                                                                                               |                                                                                                                                                                           |
| 46                                                              | Improve overall environmental performance by using <u>ONE OR BOTH</u> of the following techniques:                                  |                                                                                               |                                                                                                                                                                           |
|                                                                 | a.                                                                                                                                  | Material recovery (by evaporation from distillation residues)                                 | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
|                                                                 | b.                                                                                                                                  | Energy recovery e.g. using distillation residues                                              |                                                                                                                                                                           |
| 47                                                              | Reduce emissions to air of organic compounds by applying BAT 14d <u>AND</u> using <u>a combination of</u> the following techniques: |                                                                                               |                                                                                                                                                                           |
|                                                                 | a.                                                                                                                                  | Recirculation of process off-gases in a steam boiler.<br>Avoid generating PCBs and/or PCDD/Fs | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
|                                                                 | b.                                                                                                                                  | Adsorption – see S6.1                                                                         |                                                                                                                                                                           |
|                                                                 | c.                                                                                                                                  | Thermal oxidation – see S6.1. Avoid generating PCBs and/or PCDD/Fs                            |                                                                                                                                                                           |
|                                                                 | d.                                                                                                                                  | Condensation or cryogenic condensation                                                        |                                                                                                                                                                           |
|                                                                 | e.                                                                                                                                  | Wet scrubbing – see S6.1                                                                      |                                                                                                                                                                           |
|                                                                 | <b>The BAT-AEL for TVOC emissions to air set in Section 4.5 (below) applies.</b><br>Monitoring requirements are outlined in BAT 8   |                                                                                               |                                                                                                                                                                           |
| BAT-AEL FOR EMISSIONS OF ORGANIC COMPOUNDS TO AIR – SECTION 4.5 |                                                                                                                                     |                                                                                               |                                                                                                                                                                           |

| BATc number                                                                                                              | Summary of BAT Conclusion requirement                                                                                                                                                                                                                                                  |                                                                                                                                      | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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| <b>(RE-REFINING OF WASTE OIL)<br/>(PHYSICO-CHEMICAL TREATMENT OF WASTE WITH CV)<br/>(REGENERATION OF SPENT SOLVENTS)</b> |                                                                                                                                                                                                                                                                                        |                                                                                                                                      |                                                                                                                                                                           |
|                                                                                                                          | <b>BAT-AEL for channelled TVOC emissions to air from the re-refining of waste oil, physico-chemical treatment of waste with calorific value and regeneration of spent solvents (mg/Nm3)</b><br><i>Table 6.9 and its supporting note. Monitoring requirements are outlined in BAT 8</i> |                                                                                                                                      |                                                                                                                                                                           |
|                                                                                                                          | TVOC                                                                                                                                                                                                                                                                                   | 5.0-30                                                                                                                               | As above.                                                                                                                                                                 |
| <b>THERMAL TREATMENT OF SPENT ACTIVATED CARBON, WASTE CATALYSTS AND EXCAVATED CONTAMINATED SOIL</b>                      |                                                                                                                                                                                                                                                                                        |                                                                                                                                      |                                                                                                                                                                           |
| 48                                                                                                                       | <b>Improve overall environmental performance by using <u>ALL</u> of the following techniques:</b>                                                                                                                                                                                      |                                                                                                                                      |                                                                                                                                                                           |
|                                                                                                                          | a.                                                                                                                                                                                                                                                                                     | Heat recovery from the furnace off-gas e.g. for preheating combustion air or steam generation                                        | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
|                                                                                                                          | b.                                                                                                                                                                                                                                                                                     | Indirectly fired furnace i.e. avoids contact between the furnace contents and the burner flue-gases. Note applicability constraints. |                                                                                                                                                                           |
|                                                                                                                          | c.                                                                                                                                                                                                                                                                                     | Process-integrated techniques to reduce emissions to air – see examples                                                              |                                                                                                                                                                           |
| 49                                                                                                                       | <b>Reduce emissions to air of HCl, HF, dust and organic compounds by applying BAT 14d <u>AND</u> using one or a combination of the following techniques:</b>                                                                                                                           |                                                                                                                                      |                                                                                                                                                                           |
|                                                                                                                          | a.                                                                                                                                                                                                                                                                                     | Cyclone – see S6.1                                                                                                                   | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
|                                                                                                                          | b.                                                                                                                                                                                                                                                                                     | Electrostatic precipitator (ESP) – see S6.1                                                                                          |                                                                                                                                                                           |

| BATc number                                                                             |                                                                                                                                                                                           | Summary of BAT Conclusion requirement                     | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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|                                                                                         | c.                                                                                                                                                                                        | Fabric filter – see S6.1                                  | As above.                                                                                                                                                                 |
|                                                                                         | d.                                                                                                                                                                                        | Wet scrubbing – see S6.1                                  |                                                                                                                                                                           |
|                                                                                         | e.                                                                                                                                                                                        | Adsorption – see S6.1                                     |                                                                                                                                                                           |
|                                                                                         | f.                                                                                                                                                                                        | Condensation – see S6.1                                   |                                                                                                                                                                           |
|                                                                                         | g.                                                                                                                                                                                        | Thermal oxidation – see S6.1                              |                                                                                                                                                                           |
|                                                                                         | Note supporting text for BAT 49g (thermal oxidation)<br>Monitoring requirements are outlined in BAT 8. No BAT-AELs have been set for this BATc.                                           |                                                           |                                                                                                                                                                           |
| WATER WASHING OF EXCAVATED CONTAMINATED SOIL                                            |                                                                                                                                                                                           |                                                           |                                                                                                                                                                           |
| 50                                                                                      | Reduce emissions to air of dust and organic compounds from the storage, handling and washing steps by applying BAT 14d <u>AND</u> using one or a combination of the following techniques: |                                                           | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
|                                                                                         | a.                                                                                                                                                                                        | Adsorption – see S6.1                                     |                                                                                                                                                                           |
|                                                                                         | b.                                                                                                                                                                                        | Fabric filter – see S6.1                                  |                                                                                                                                                                           |
|                                                                                         | c.                                                                                                                                                                                        | Wet scrubbing – see S6.1                                  |                                                                                                                                                                           |
| Monitoring requirements are outlined in BAT 8. No BAT-AELs have been set for this BATc. |                                                                                                                                                                                           |                                                           |                                                                                                                                                                           |
| Decontamination of equipment containing PCBs                                            |                                                                                                                                                                                           |                                                           |                                                                                                                                                                           |
| 51                                                                                      | Reduce emissions to air of PCBs and organic compounds and improve overall environmental performance by using <u>ALL</u> of the following techniques:                                      |                                                           | Not Applicable – This is not applicable to the installations activities.                                                                                                  |
|                                                                                         | a.                                                                                                                                                                                        | Coating of the storage and treatment areas – see examples |                                                                                                                                                                           |

| BATc number                           |                                                                                                                                                        | Summary of BAT Conclusion requirement                                                      | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
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|                                       | b.                                                                                                                                                     | Implementation of staff access rules to prevent dispersion of contamination – see examples |                                                                                                                                                                           |
|                                       | c.                                                                                                                                                     | Optimised equipment cleaning and drainage – see examples                                   |                                                                                                                                                                           |
|                                       | d.                                                                                                                                                     | Control and monitoring of emission to air – see examples                                   |                                                                                                                                                                           |
|                                       | e.                                                                                                                                                     | Disposal of waste treatment residues – see examples                                        |                                                                                                                                                                           |
|                                       | f.                                                                                                                                                     | Recovery of solvent when solvent washing is used                                           |                                                                                                                                                                           |
|                                       | Monitoring requirements are outlined in BAT 8. No BAT-AELs have been set for this BATc.                                                                |                                                                                            |                                                                                                                                                                           |
| TREATMENT OF WATER-BASED LIQUID WASTE |                                                                                                                                                        |                                                                                            |                                                                                                                                                                           |
| 52                                    | Improve overall environmental performance by monitoring the waste input as part of the waste pre-acceptance and acceptance procedures. See also BAT 2. |                                                                                            | Not Applicable.                                                                                                                                                           |
|                                       | Monitoring the waste input                                                                                                                             |                                                                                            |                                                                                                                                                                           |
|                                       | Bioeliminability e.g. BOD, BOD-COD ratio, Zahn-Wellens test, biological inhibition potential                                                           |                                                                                            |                                                                                                                                                                           |
|                                       | Feasibility of emulsion breaking e.g. lab testing                                                                                                      |                                                                                            |                                                                                                                                                                           |
| 53                                    | Reduce emissions to air of HCl, NH3 and organic compounds by applying BAT 14d <u>AND</u> using one or a combination of the following techniques:       |                                                                                            | Not Applicable.                                                                                                                                                           |
|                                       | a.                                                                                                                                                     | Adsorption – see S6.1                                                                      |                                                                                                                                                                           |
|                                       | b.                                                                                                                                                     | Biofilter – see S6.1                                                                       |                                                                                                                                                                           |
|                                       | c.                                                                                                                                                     | Thermal oxidation – see S6.1.                                                              |                                                                                                                                                                           |

| BATc number |                                                                                                                                                                                                                   | Summary of BAT Conclusion requirement | Status/comment<br>One of the following:<br>Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | d.                                                                                                                                                                                                                | Wet scrubbing – see S6.1              |                                                                                                                                                                           |
|             | <b>BAT-AELs for channelled HCl and TVOC emissions to air from the treatment of water-based liquid waste (mg/Nm3)</b><br><i>Table 6.10 and its supporting notes. Monitoring requirements are outlined in BAT 8</i> |                                       |                                                                                                                                                                           |
|             | HCl                                                                                                                                                                                                               | 1.0-5.0                               | Not Applicable.                                                                                                                                                           |
|             | TVOC                                                                                                                                                                                                              | 3.0-20                                |                                                                                                                                                                           |

## **Annex 2: Consultation on the draft decision where an Article 15(4) derogation has been applied**

No derogations were requested.