

Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

INOVYN ChlorVinyls Limited
Runcorn Halochemicals Manufacturing
PO Box 9
Runcorn
Cheshire
WA7 4JE

Variation application number

EPR/BS5428IP/V007

Permit number

EPR/BS5428IP

Runcorn Halochemicals Manufacturing

Permit number EPR/BS5428IP

Introductory note

This introductory note does not form a part of the notice.

Under the Environmental Permitting (England & Wales) Regulations 2010 (schedule 5, part 1, paragraph 19) a variation may comprise a consolidated permit reflecting the variations and a notice specifying the variations included in that consolidated permit.

Schedule 1 of the notice specifies that all the conditions of the permit have been varied and schedule 2 comprises a consolidated permit which reflects the variations being made and contains all conditions relevant to this permit. Only the variations specified in schedule 1 are subject to a right of appeal.

Purpose of Variation EPR/BS5428IP/V007

The requirements of the Industrial Emissions Directive (IED) 2010/75/EU are given force in England through the Environmental Permitting (England and Wales) Regulations 2010 (the EPR) (as amended).

This Permit, for the operation of chlor-alkali production plant, as defined by article 10 of the Industrial Emissions Directive (IED), is varied by the Environment Agency to implement the provisions for Activities Listed in Annex I under Chapter II in the IED, by 9 December 2017 (Article 21(3)).

The schedules specify the changes made to the permit.

As well as implementing Chapter II of IED, the consolidated variation notice takes into account and brings together in a single document all previous variations that relate to the original permit issued. It also modernises the Mercury Cell Chlorine Plant conditions to reflect the conditions contained in our current generic combustion permit template.

Purpose of original permit

The rest of the installation is unchanged and continues to be operated as follows:

The Permit is to operate part of the Runcorn Halochemicals Installation carrying out activities covered by the descriptions in a number of Sections in Part 2 to Schedule 1 of the Environmental Permitting Regulations (England and Wales) Regulations 2010 (and amendments), to the extent authorised by the Permit:

Section 1.1 A(1)(a) – “Burning any fuel in an appliance with a rated thermal input of 50 MW or more”;

Section 4.1 A(1)(a)(vi) - “Producing organic chemicals such as ... organic compounds containing halogens ...”;

Section 4.2 A(1)(a)(i) - “Producing inorganic chemicals such as ... gases, such as ... hydrogen chloride ...”;

Section 4.2 A(1)(a)(iii) - “Producing inorganic chemicals such as ... bases, such as ... sodium hydroxide ...”;

Section 4.2 A(1)(a)(iv) - “Producing inorganic chemicals such as ... salts, such as ... sodium hypochlorite ...”;

Section 4.2 A(1)(a)(vi) - “Producing inorganic chemicals such as ... halogens ...”;

Section 4.2 A(1)(b) – “.....any manufacturing activity which is likely to result in the release into the air of any hydrogen halide... or which is likely to result in the release into the air or water of any halogen...”

Section 5.4 A(1)(a)(ii) – “Disposal of non-hazardous waste in a facility with a capacity of more than 50 tonnes per day by physico-chemical treatment...”

In some sections of the Permit conditions require the Operator to use Best Available Techniques (BAT), in each of the aspects of the management of the installation, to prevent and where that is not practicable to reduce emissions. The conditions do not explain what is BAT. In determining BAT, the Operator should pay particular attention to relevant sections of the Environment Agency industry sector guidance, appropriate Horizontal guidance and other relevant guidance.

The main features of the installation are as follows

Runcorn Halochemicals

The Installation is located at Runcorn, Cheshire, the centre of the site being at National Grid Reference SJ 5020 8050. The area of the Runcorn Site is approximately 125 hectares. The site is within 2 km of the Mersey Estuary Special Protected Area/RAMSAR site/Site of Special Scientific Interest.

The primary purpose of the Installation is to manufacture chlorine based chemicals using salt as the basic feedstock. The salt is electrolytically decomposed to form chlorine and sodium hydroxide (caustic soda). These are then sold or used elsewhere in the installation in the manufacture of mainly chlorine based chemicals.

The main features of the INOVYN ChlorVinyls Limited (ICV) manufacturing assets are as follows. The annexes give a more detailed description of the operations at each of the plants.

The ICV part of the Installation

The ICV operations are based on the manufacture and use of chlorine. Brine is imported by pipeline from Northwich in mid-Cheshire and converted by electrolysis into chlorine, hydrogen and sodium hydroxide (caustic soda).

The bulk of the chlorine produced is used as feedstock for on-site downstream processes for the manufacture of chlorinated methanes, ethanes and paraffins. Chlorine is also shipped to external customers in road tankers and, via by a third party, in cylinders and drums.

Sodium hydroxide is supplied to customers as an aqueous solution.

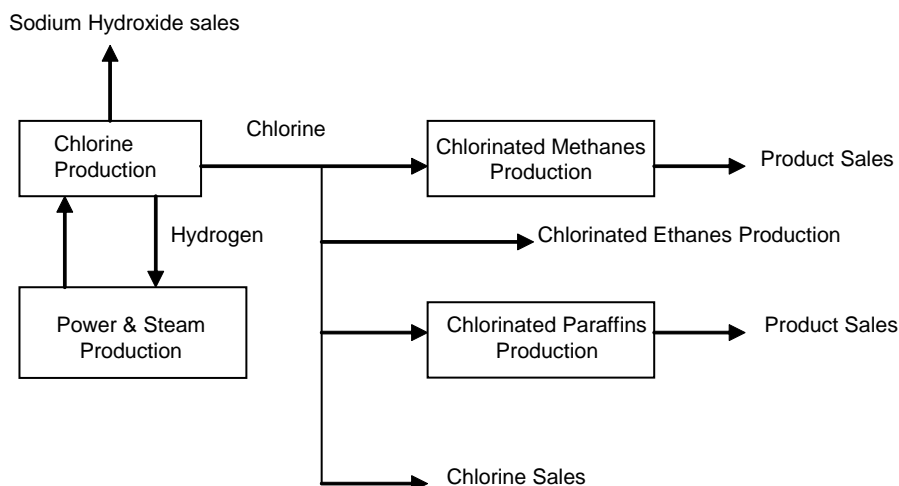
The hydrogen from the process is either sold, or used in the on-site power station that is included in the scope of this permit.

A co-product of the production of the chlorinated hydrocarbons is hydrogen chloride. This material is also used in some of the manufacturing processes (for details, see the appropriate Annexes of this permit), and to maintain the hydrogen chloride balance. Hydrogen chloride not used in the ICV processes is either supplied to other companies located on the site, or dissolved in water to produce hydrochloric acid for sale.

Since the original permit was issued in 2005 several organisational changes have taken place on the installation. The following is a summary of the changes:

- Weston Point Power Station removed from service (2008).
- Unit L mercury cell (chlorine production) removed from service (2008)
- KOH plant removed from service (2008)
- Unit K mercury cell (chlorine production) removed from service (2011)
- Anhydrous caustic soda plant removed from service (2011)
- Per/Tri Plant removed from service (2011)
- EDC Plant transferred to another operator (2015)
- Membrane Plant (chlorine production) transferred to another operator (2015)
- Weaver Power Station removed from service (2015)

Outline of ICV Production Processes



The annexes give a more detailed description of the operations at each of the plants.

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

| Status log of the permit | | |
|--|-------------------------|---|
| Description | Date | Comments |
| Application BS5428IP | Received 14/12/2004 | - |
| Permit issued BS5428IP (EPR/BS5428IP/A001) | 21/07/2005 | - |
| Variation TP3237UW issued (EPR/BS5428IP/V002) | 01/09/2008 | Consolidated permit correcting typographical errors. |
| Variation FP3837GB issued (EPR/BS5428IP/V003) | 20/07/2011 | Issued as a consolidated permit, removing the Unit K Mercury cell for chlorine production and the anhydrous caustic plant from Annex A and removing the Per/Tri plant, for manufacture of chloroethylenes from Annex B. Also adjustment of emission limits to reflect current emission levels and removal of reporting requirements for 'dry' outfalls. |
| Partial Transfer Application EPR/BS5428IP/V007 | Duly made 22/12/2014 | Part transfer of permit EPR/BS5428IP to permit EPR/RP3736WB |
| Partial Transfer determined EPR/BS5428IP/V004 (PAS Ref YP3936WC) | 15/05/2015 | Transfer of membrane chlorine operations out of this permit. |
| Notified of change of company name | 13/07/2015 | Name changed to INOVYN Chlorvinyls Limited. |
| Variation issued EPR/BS5428IP/V005 | 03/08/2015 | Varied permit issued to INOVYN Chlorvinyls Limited. |
| Regulation 60 Notice sent to the Operator (for LCP review) | 31/10/2014 | Issue of a Notice under Regulation 60(1) of the EPR. Environment Agency Initiated review and variation to vary the permit under IED to implement the special provisions for LCP under Chapter III, introducing new Emission Limit Values (ELVs) applicable to LCP, referred to in Article 30(2) and set out in Annex V. |
| Regulation 60 Notice response | 30/03/2015 | Response for LCP review received from the Operator. |

| Status log of the permit | | |
|--|-------------|--|
| Description | Date | Comments |
| Additional information received for LCP review | 24/09/2015 | Response to request for further information dated 09/09/2105 |
| Variation EPR/BS5428IP/V006 (PAS Billing ref: AP3638AC) | 17/12/2015 | Varied permit issued for review of conditions resulting from the response to the Regulation 60(1) Notice of EPR concerning the LCP review. |
| Regulation 60 Notice sent to the Operator (for Chlor-Alkali production review) | 22/05/2015 | Issue of a Notice under Regulation 60(1) of the EPR. Environment Agency Initiated review and variation to vary the permit under IED to implement the provisions for activities listed in Annex I under Chapter II. |
| Regulation 60 Notice response | 21/08/2015 | Response for Chlor-Alkali production review received from the Operator. |
| Additional information received for Chlor-Alkali production review | 01/03/2016 | Response to request for further information dated 03/02/16 |
| Variation EPR/BS5428IP/V007 (PAS Billing ref: XP3031RS) | 16/03/2016 | Varied permit issued for review of conditions resulting from the response to the Regulation 60(1) Notice of EPR concerning the Chlor-Alkali production review. |

| Other Part A installation permits relating to this installation | | |
|--|----------------------|----------------------|
| Operator | Permit number | Date of issue |
| Runcorn MCP Limited (formerly part of INEOS Chlor Limited) | RP3736WB | May 2015 |
| INEOS Enterprises Ltd | HP3534PP | July 2005 |
| Mexichem UK Limited (formerly INEOS Fluor Limited) | QP3535TE | July 2010 |
| Industrial Chemicals Limited (formerly INEOS Chlor Limited (Iron Salts)) | EP3635TU | May 2010 |
| Vynova Runcorn Limited (formerly INEOS ChlorVinyls Limited) | GP3536AC | May 2015 |

The Permit Structure

The complexity of the activities carried on at the Chlorine part of the Runcorn Halochemicals Installation was such that the original Permit could not be structured in the standard manner and remain a coherent document suitable for regulation purposes. It was been necessary to separate plant specific conditions from the general installation conditions. Accordingly, the core part of the Permit comprises the introductory note, the Permit, and those conditions that apply to the whole ICV part of the installation. Annexes A to E inclusive contain further specific conditions and reporting requirements that relate to the Mercury Chlorine, Chlorinated ethanes/ethylenes, Chloromethanes, Chlorinated paraffins and the Power Plant Services respectively.

End of introductory note

Notice of variation and consolidation

The Environmental Permitting (England and Wales) Regulations 2010

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2010 varies and consolidates

Permit number

EPR/BS5428IP

Issued to

INOVYN ChlorVinyls Limited (“the operator”)

whose registered office is

Runcorn Site HQ

South Parade

PO Box 9

Runcorn

Cheshire

WA7 4JE

company registration number **4068812**

to operate part of an installation at

Runcorn Halochemicals Manufacturing

PO Box 9

Runcorn

Cheshire

WA7 4JE

to the extent set out in the schedules.

The retained part of the permit is varied to the extent set out in the schedules.

The notice shall take effect from 16/03/2016.

| Name | Date |
|---------------------|-------------------|
| Mike Jenkins | 16/03/2016 |

Authorised on behalf of the Environment Agency

Schedule 1

The following conditions were varied as a result of an Environment Agency initiated variation:

CORE

Condition 1.1.2 is added, specifying the end date of mercury cell operation.

ANNEX A: MERCURY CHLORINE PLANT

Table A.2.1 in Condition 2.1.1 is modified to include the operating techniques specified in the regulation 60 notice response by the operator.

Condition 2.2.1.2 is modified to show new chlorine emission limits out of CI-09, CI-11 and CI-12.

Condition 2.2.1.3 is modified to include annual spot sampling for chlorine out of CI-11 and CI-12

Condition 2.2.1.4 is modified to remove part (a) of the condition and to indicate new dates in Table A.2.5 appropriate to the Chlor-Alkali production review under IED.

Table A.2.7 in Condition 2.2.2.3 is amended to show the addition of a new emission limit of mercury to water during cellroom decommissioning activities.

Table A.2.8 in Condition 2.2.2.5 is amended to show the addition of a new monitoring frequency of mercury to water during cellroom decommissioning activities.

Table A.2.9 in Condition 2.2.2.6 is modified to indicate new dates appropriate to the Chlor-Alkali production review under IED.

Schedule 2 – new permit

Consolidated permit issued as a separate document.

Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number

EPR/BS5428IP

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/BS5428IP/V007 authorising,

INOVYN ChlorVinyls Limited (“the operator”),

whose registered office is

Runcorn Site HQ

South Parade

PO Box 9

Runcorn

Cheshire

WA7 4JE

company registration number **4068812**

to operate part of an installation at

Runcorn Halochemicals

PO Box 9

Runcorn

Cheshire

WA7 4JE

to the extent authorised by and subject to the conditions of this permit.

| Name | Date |
|--------------|------------|
| Mike Jenkins | 16/03/2016 |

Authorised on behalf of the Environment Agency

Conditions

1 General

1.1 Permitted Activities

1.1.1 The Operator is authorised to carry out the activities and the associated activity specified in Table 1.1

| Table 1.1 | | |
|--|---|--|
| Activity listed in Schedule 1 of the EP Regulations / Associated Activity | Description of specified activity | Limits of specified activity |
| Section 1.1 A(1)(a) | LCP189, LCP190, LCP191: Production of steam using three Boilers: RPB01, RBP02, RBP03 (Each rated 99 MWth input) | From receipt of raw materials to despatch of products and waste, emissions to air of combustion products and discharges to water of waste water. |
| Section 4.1 A(1)(a)(vi) | Production of chlorinated methanes and chlorinated paraffins | Receipt of raw materials to despatch of finished product. |
| Section 4.2 A(1)(a)(i) | Production of hydrogen chloride | Receipt of raw materials to despatch of finished product. |
| Section 4.2 A(1)(a)(iii) | Production of sodium hydroxide | Receipt of raw materials to despatch of finished product. |
| Section 4.2 A(1)(a)(iv) | Production of sodium hypochlorite | Receipt of raw materials to despatch of finished product. |
| Section 4.2 A(1)(a)(vi) | Production of chlorine | Receipt of raw materials to despatch of finished product. |
| Section 4.2 A(1)(b) | Activities using hydrogen chloride and chlorine | Receipt of raw materials to despatch of finished product. |
| Section 5.4 A(1)(a)(ii) | Discharge of treated effluent (including via WEEP) from EIP (outfall W65a) and VDC4 Plant (outfall W65b) | Receipt of aqueous effluent into treatment facilities to discharge into canal. |
| Directly associated activity | Caustic soda storage at Picow Farm | Receipt of caustic soda to despatch of final product |
| Directly associated activity | Storage and handling of all waste material | Production of waste to the disposal from the Permitted Installation as described in the application |
| Directly associated activity | Provision of utilities and services to support all operations | Utilities and services used in the Permitted Installation as described in the application |

1.1.2 The mercury cells for chlorine production, specified in the activity listed in Section 4.2 A(1)(a)(vi) of the EP Regulations shall cease to operate by no later than 9 December 2017.

1.2 Site

1.2.1 The activities authorised under condition 1.1.1 shall not extend beyond the areas numbered '1' on the Site Plan at Schedule 5 to this Permit. The multi-operator installation, being the land shown edged in green on the Site Plan, represents the extent of the installation covered by this Permit and those of the other Operators of the installation. The Site, being the land shown edged in red on the Site Plan, comprises this and other land occupied by the Operators that is not part of the installation.

1.3 Overarching Management Condition

1.3.1 Without prejudice to the other conditions of this Permit, the Operator shall implement and maintain a management system, organisational structure and allocate resources that are sufficient to achieve compliance with the limits and conditions of this Permit.

1.4 Improvement Programme

1.4.1 The Operator shall complete the improvements specified in Table 1.4 by the date specified in that table, and shall send written notification of the date of completion of each requirement to the Agency within 14 days of the completion of each such requirement.

| Table 1.4: Improvement programme applicable to all of the ICV part of the Runcorn Halochemicals Manufacturing Installation [1] | | |
|---|--|--|
| Reference [2] | Requirement | Date |
| 13 | <p>The Operator shall develop and implement a 5 year rolling plan to deliver environmental improvements, such that the installation can achieve BAT standards which are relevant to the industrial sectors in which it operates.</p> <p>The plan should</p> <ol style="list-style-type: none"> 1. be signed off by an executive manager, who has the authority to commit resource to its delivery. 2. include a gap analysis between the current performance of the installation's plants and BAT standards for the relevant sector, taking account of the techniques identified for illustrative processes and where available BAT AELs. 3. identify and prioritise improvements to move towards the sector BAT standards and specify the benefits that those improvements will deliver. 4. include a delivery programme for the identified improvements. 5. include a commitment by the company to resource these projects and the timescale by which a particular aspect of BAT will be delivered. <p>In particular the gap analysis should cover:</p> <ol style="list-style-type: none"> a) the emissions of VOCs to air from the manufacture and storage of chloromethanes; with particular focus on those vents that emit >5 T/yr of class A or high hazard VOCs, or have an overall VOC emission that exceeds 100T/yr; b) secondary containment provisions c) cessation of chlorine production by the mercury cell route d) quality of effluent discharged to outfalls to controlled water e) any other foreseen significant environmental improvements to meet legislative requirements or sector BAT standards. <p>This may include items covered by specific improvement programme items in this or other sections of this permit.</p> <p>Throughout the life of the plan, the Operator shall submit a report every year to the Environment Agency on its progress against the plan. The report shall include:</p> <ol style="list-style-type: none"> a) a review of projects that have been initiated and their progress b) a copy of the delivery programme c) a review of any new projects or any that have been removed from the programme. d) A summary of improvements delivered. | Annually 31 st March (initial submission 15 September 2011) |

| Table 1.4: Improvement programme applicable to all of the ICV part of the Runcorn Halochemicals Manufacturing Installation [1] | | |
|---|--|---|
| Reference [2] | Requirement | Date |
| 14 | a) To determine appropriate emission limits, the operator shall identify the emissions to water of methanol, specifying the source(s), mass rate, concentration and annual mass release. | Complete |
| | b) The operator shall review the emissions identified in (a) above and identify improvements and timescales for their implementation, to deliver reductions. | Complete |
| | c) The Operator shall implement the improvements, identified in (b) above, to the given timescales. | In accordance with the 5 year plan specified in item 13 |

Note [1]: In respect of the Improvement Programmes for the individual plants, the conditions in section 1.4.1 of each of Annexes A to E inclusive apply to the Mercury Chlorine, EIP, Chloromethanes, Chlorinated Paraffins and Power Services Plants respectively.

Note [2]: Items 1 to 12 inclusive have been completed.

- 1.4.2 Where the Operator fails to comply with any requirement by the date specified in Table 1.4 the Operator shall send written notification of such failure to the Agency within 14 days of such date.

1.5 Minor Operational Changes

- 1.5.1 The Operator shall seek the Agency's written agreement to any minor operational changes under condition 2.1.1 of this Permit by sending to the Agency: written notice of the details of the proposed change including an assessment of its possible effects (including waste production) on risks to the environment from the Permitted Installation; any relevant supporting assessments and drawings; and the proposed implementation date.
- 1.5.2 Any such change shall not be implemented until agreed in writing by the Agency. As from the agreed implementation date, the Operator shall operate the Permitted Installation in accordance with that change, and relevant provisions in the Application shall be deemed to be amended.
- 1.5.3 When the qualification "unless otherwise agreed in writing" is used elsewhere in this Permit, the Operator shall seek such agreement by sending to the Agency written notice of the details of the proposed method(s) or techniques.
- 1.5.4 Any such method(s) or techniques shall not be implemented until agreed in writing by the Agency. As from the agreed implementation date, the Operator shall operate the Permitted Installation using that method or technique, and relevant provisions in the Application (and the Site Protection and Monitoring Programme, as the case may be) shall be deemed to be amended.

1.6 Pre-Operational Conditions

There are no pre-operational conditions

1.7 Off-site Conditions

There are no off-site conditions

2 Operating conditions

2.1 In-Process Controls

2.1.1 (i) The permitted installation shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation described in Table 2.1, or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2

(ii) In respect of in-plant controls, the additional conditions in section 2.1 of each of Annexes A to E inclusive apply to the Mercury Chlorine, EIP, Chloromethanes, Chlorinated Paraffins and Power Services Plants respectively.

Table 2.1: Operating techniques

| Description | Parts | Date Received |
|--|---|---------------|
| Supporting information to the application for variation (FP3837GB) | 'Update of Process Description Part 1 – Core Report' Sections 2.3, 2.5, 2.7, 2.8, 2.9 & 2.10 | Nov 2009 |

2.1.2 The Permitted Installation shall, subject to the other conditions of this Permit, be operated using the techniques and in the manner described in the Site Protection and Monitoring Programme submitted under condition 4.1.7 of this Permit (as amended from time to time), or as otherwise agreed in writing by the Agency.

2.1.3 The Operator shall take all practicable measures to prevent or minimise periods when the fridge units on the Chloromethanes plants are unavailable, with the aim of delivering a minimum of 95% availability on demand.

2.2 Emissions

2.2.1 Emissions to Air, (including heat, but excluding Odour, Noise or Vibration) from Specified Points

2.2.1.1 In respect of emissions to air, the conditions in the section 2.2.1 of each of Annexes A to E inclusive apply to the Mercury Chlorine, EIP, Chloromethanes, Chlorinated Paraffins and Power Services Plants respectively.

2.2.2 Emissions to water (other than groundwater), including heat, from specified points

2.2.2.1 In respect of emissions to water, the conditions in the section 2.2.2 of each of Annexes A to E inclusive apply to the Mercury Chlorine, EIP, Chloromethanes, Chlorinated Paraffins and Power Services Plants respectively.

2.2.2.2 Total emissions to water of a substance listed in Table 2.2 shall not exceed the relevant limit in that Table.

Table 2.2: Annual mass emission limits to water from all outfalls

| Substance | Limit |
|--------------------------------|----------------------------|
| Mercury | See Table A.2.9 in Annex A |
| Total chlorinated hydrocarbons | 1000 kg |
| Total heavy metals [1] | 1350 kg |

Note [1]: Total heavy metals including arsenic, boron, chromium, copper, lead, nickel and zinc, but excluding mercury. The limit is based on the differential between the incoming abstracted water from

the Mersey Ship Canal and the brinefields and the discharged effluent, any negative values should be recorded as zero contribution.

2.2.3 Emissions to groundwater

2.2.3.1 No emission from the Permitted Installation shall give rise to the introduction into groundwater of any substance in List I (as defined in the Groundwater Regulations 1998 (S.I. 1998 No. 2746)).

2.2.3.2 No emission from within the Permitted Installation shall give rise to the introduction into groundwater of any substance in List II (as defined in the Groundwater Regulations 1998 (S.I. 1998 No. 2746)) so as to cause pollution (as defined in the Groundwater Regulations 1998 (S.I. 1998 No. 2746)).

2.2.3.3 For substances other than those in List I or II (as defined in the Groundwater Regulations 1998 (SI 1998 No. 2746)), the Operator shall use BAT to prevent or where that is not practicable to reduce emissions to groundwater from the Permitted Installation provided always that the techniques used by the Operator shall be no less effective than those described in the Application.

2.2.4 Fugitive emissions of substances to air

2.2.4.1 The Operator shall use BAT so as to prevent or where that is not practicable to reduce fugitive emissions of substances to air from the Permitted Installation in particular from:

- storage areas
- buildings
- pipes, valves and other transfer systems
- open surfaces

provided always that the techniques used by the Operator shall be no less effective than those described in the Application, where relevant.

2.2.5 Fugitive emissions of substances to water and sewer

2.2.5.1 Subject to condition 2.2.5.2 below, the Operator shall use BAT so as to prevent or where that is not practicable to reduce fugitive emissions of substances to water (other than Groundwater) and sewer from the Permitted Installation in particular from:

- all structures under or over ground
- surfacing
- bunding
- storage areas

provided always that the techniques used by the Operator shall be no less effective than those described in the Application, where relevant.

2.2.5.2 There shall be no emission to water that would cause a breach of an EQS established by the UK Government to implement the Dangerous Substances Directive 76/464/EEC.

2.2.6 Odour

2.2.6.1 The Operator shall use BAT so as to prevent or where that is not practicable to reduce odorous emissions from the Permitted Installation, in particular by:

- limiting the use of odorous materials
- restricting odorous activities
- controlling the storage conditions of odorous materials
- controlling processing parameters to minimise the generation of odour
- optimising the performance of abatement systems
- timely monitoring, inspection and maintenance

- employing, where appropriate, an approved odour management plan

provided always that the techniques used by the Operator shall be no less effective than those described in the Application, where relevant.

2.2.7 Emissions to Land (other than to Groundwater)

2.2.7.1 No emission from the Permitted installation shall be made to land.

2.3 Management

2.3.1 A copy of this Permit and those parts of the application referred to in this Permit shall be available, at all times, for reference by all staff carrying out work subject to the requirements of the Permit.

Training

2.3.2 The Permitted Installation shall be supervised by staff who are suitably trained and fully conversant with the requirements of this Permit.

2.3.3 All staff shall be fully conversant with those aspects of the Permit conditions which are relevant to their duties and shall be provided with adequate professional technical development and training and written operating instructions to enable them to carry out their duties.

2.3.4 The Operator shall maintain a record of the skills and training requirements for all staff whose tasks in relation to the Permitted Installation may have an impact on the environment and shall keep records of all relevant training.

Maintenance

2.3.5 All plant and equipment used in operating the Permitted Installation, the failure of which could lead to an adverse impact on the environment, shall be maintained in good operating condition.

2.3.6 The Operator shall maintain a record of relevant plant and equipment covered by condition 2.3.5 and for such plant and equipment:

- a) a written or electronic maintenance programme; and
- b) records of its maintenance.

Incidents and Complaints

2.3.7 The Operator shall maintain and implement written procedures for:

- a) taking prompt remedial action, investigating and reporting actual or potential non-compliance with operating procedures or emission limits and if such event occur;
- b) investigating incidents, (including any malfunction, breakdown or failure of plant, equipment or techniques, down time, any short term and long term remedial measures and near misses) and prompt implementation of appropriate actions; and
- c) ensuring that detailed records are made of all such actions and investigations.

2.3.8 The Operator shall record and investigate complaints concerning the Permitted Installation's effects or alleged effects on the environment. The record shall give the date and nature of complaint, time of complaint, name of complainant (if given), a summary of any investigation and the results of such investigation and any actions taken.

2.4 Efficient use of raw materials

2.4.1 The Operator shall –

- a) maintain the raw materials table or description submitted in response to Section 2.4 of the Application and in particular consider on a periodic basis whether there are suitable alternative materials to reduce environmental impact;

- b) carry out periodic waste minimisation audits and water use efficiency audits. If such an audit has not been carried out in the 2 years prior to the issue of this Permit, then the first such audit shall take place within 2 years of its issue. The methodology used and an action plan for increasing the efficiency of the use of raw materials or water shall be submitted to the Agency within 2 months of completion of each such audit and a review of the audit and a description of progress made against the action plan shall be submitted to the Agency at least every 4 years thereafter; and
- c) ensure that incoming water use is directly measured and recorded.

2.5 Waste Storage and Handling

2.5.1 The Operator shall design, maintain and operate all facilities for the storage and handling of waste on the Permitted installation such that there are no emissions to water or land during normal operation and that emissions to air and the risk of accidental emission to water or land are minimised.

2.6 Waste recovery or disposal

2.6.1 Waste produced at the Permitted Installation shall be:

- a) recovered to no lesser extent than described in the Application; and
- b) where not recovered, disposed of while avoiding or reducing any impacts on the environment provided always that this is not done in any way that would have a greater effect on the environment than that described in the Application.

2.6.2 The Operator shall maintain the waste recovery or disposal table or description submitted in response to Section 2.6 of the Application and in particular review the available options for waste recovery and disposal for the purposes of complying with condition 2.6.1 above.

2.6.3 The Operator shall maintain and implement a system which ensures that a record is made of the quantity, composition, origin, destination (including whether this is a recovery or disposal operation) and where relevant removal date of any waste that is produced at the Permitted Installation.

2.7 Energy Efficiency

2.7.1 The Operator shall produce a report on the energy consumed at the Permitted Installation over the previous calendar year, by 31 January each year, providing the information required by condition 4.1.2.

2.7.2 The Operator shall maintain and update annually an energy management system which shall include, in particular, the monitoring of energy flows and targeting of areas for improving energy efficiency.

2.7.3 The Operator shall design, maintain and operate the Permitted Installation so as to secure energy efficiency, taking into account relevant guidance including the Agency's Energy Efficiency Horizontal Guidance Note H2 as from time to time amended. Energy efficiency shall be secured in particular by:

- ensuring that the appropriate operating and maintenance systems are in place;
- ensuring that all plant is adequately insulated to minimise energy loss or gain;
- ensuring that all appropriate containment methods, (e.g. seals and self-closing doors) are employed and maintained to minimise energy loss;
- employing appropriate basic controls, such as simple sensors and timers, to avoid unnecessary discharge of heated water or air;
- where building services constitute more than 5% of the total energy consumption of the installation, identifying and employing the appropriate energy efficiency techniques for building

services, having regard in particular to the Building services part of the Agency's Energy Efficiency Horizontal Guidance Note H2; and

- maintaining and implementing an energy efficiency plan which identifies energy saving techniques that are applicable to the activities and their associated environmental benefit and prioritises them, having regard to the appraisal method in the Agency's Energy Efficiency Horizontal Guidance Note H2.

2.7.4 For the activities referenced in the Core part of the permit – table 1.1: LCP189, LCP190 and LCP191, the operator shall:

- (a) take appropriate measures to ensure that energy is used efficiently in the activities;
- (b) take appropriate measures to ensure the efficiency of energy generation at the permitted installation is maximised;
- (c) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and
- (d) take any further appropriate measures identified by a review.

2.8 Accident prevention and control

2.8.1 The Operator shall maintain and implement when necessary the accident management plan submitted or described in response to Section 2.8 of the Application. The plan shall be reviewed at least every 2 years or as soon as practicable after an accident, whichever is the earlier, and the Agency notified of the results of the review within 2 months of its completion.

2.9 Noise and Vibration

2.9.1 The Operator shall use BAT so as to prevent or where that is not practicable to reduce emissions of noise and vibration from the Permitted Installation, in particular by:

- equipment maintenance, e.g. Of fans, pumps, motors, conveyors and mobile plant;
- use and maintenance of appropriate attenuation, e.g. Silencers, barriers, enclosures;
- timing and location of noisy activities and vehicle movements;
- periodic checking of noise emissions, either qualitatively or quantitatively; and
- maintenance of building fabric,

provided always that the techniques used by the Operator shall be no less effective than those described in the Application, where relevant.

2.10 Monitoring

2.10.1 The Operator shall maintain and implement an emissions monitoring programme which ensures that emissions are monitored from the specified points, for the parameters listed in and to the frequencies and methods described in

- Tables A.2.4 & A.2.8 of Annex A
- Tables B.2.5 & B.2.8 of Annex B
- Tables C.2.4 & C.2.8 of Annex C
- Table D.2.4 of Annex D
- Tables E.2.4 & E.2.7 of Annex E

unless otherwise agreed in writing, and that the results of such monitoring are assessed. The programme shall ensure that monitoring is carried out under an appropriate range of operating conditions.

2.10.2 The Operator shall carry out environmental or other specified substance monitoring to the frequencies and methods described in Table 2.10

| Table 2.10: Other monitoring requirements | | | |
|--|---|---|---|
| Description of point of measurement | Substances | Monitoring frequency | Monitoring method |
| Sydney Street receptor | Mercury in air | Continuous sampling; weekly analysis | Aspirated air passed over suitable adsorption medium. Analysis by standard method |
| Weston Hill Brine Reservoirs | Methylene chloride, Others as required [1] | Continuous sampling; weekly analysis | Aspirated air passed over suitable adsorption medium. Analysis by standard method |
| Sutton Weir | Soluble mercury in water, Others as required [1] | Weekly spot sampling and analysis | Analysis by standard method |

Note [1]: From time to time, Agency may require the monitoring of other substances.

2.10.3 The Operator shall notify the Agency at least 14 days in advance of undertaking monitoring and/ or spot sampling, where such notification has been requested in writing by the Agency.

2.10.4 The Operator shall maintain records of all monitoring taken or carried out (this includes records of the taking and analysis of samples instrument measurements (periodic and continual), calibrations, examinations, tests and surveys) and any assessment or evaluation made on the basis of such data.

2.10.5 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme in condition 2.10.1 of this Permit and the environmental or other monitoring specified in condition 2.10.2 shall have either MCERTS certification or MCERTS accreditation (as appropriate) unless otherwise agreed in writing.

2.10.6 There shall be provided:

- a) safe and permanent means of access to enable sampling/monitoring to be carried out in relation to the emission points in the tables referred to in Schedule 2 to the core part of this Permit, unless otherwise specified in that Schedule; unless otherwise agreed in writing and
- b) safe means of access to other sampling/monitoring points when required by the Agency.

2.10.7 The Operator shall carry out the on-going monitoring identified in the Site Protection and Monitoring Programme submitted under condition 4.1.7, unless otherwise agreed in writing by the Agency.

2.10.8 Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.

2.11 Closure and Decommissioning

2.11.1 The Operator shall maintain and operate the Permitted Installation so as to prevent or minimise any pollution risk, including the generation of waste, on closure and decommissioning in particular by:-

- a) attention to the design of new plant or equipment;
- b) the maintenance of a record of any events which have, or might have, impacted on the condition of the site along with any further investigation or remediation work carried out; and
- c) the maintenance of a site closure plan to demonstrate that the installation can be decommissioned avoiding any pollution risk and returning the site of operation to a satisfactory state.

- 2.11.2 Notwithstanding condition 2.11.1 of this Permit, the Operator shall carry out a full review of the Site Closure Plan at least every 4 years.
- 2.11.3 The site closure plan shall be implemented on final cessation or decommissioning of the Permitted activities or part thereof.
- 2.11.4 The Operator shall give at least 30 days written notice to the Agency before implementing the site closure plan.

2.12 Multiple Operator installations

There are no conditions arising solely as a result of the interactions of the Permits covering this installation.

2.13 Transfer to Effluent Treatment Plant

- 2.13.1 Transfers to effluent treatment plants shall occur using the techniques and in the manner described in the Application or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2 of this Permit.

3 Records

- 3.1 The Operator shall ensure that all records required to be made by this Permit and any other records made by it in relation to the operation of the Permitted Installation shall:-
- a) be made available for inspection by the Agency at any reasonable time;
 - b) be supplied to the Agency on demand and without charge;
 - c) be legible;
 - d) be made as soon as reasonably practicable;
 - e) indicate any amendments which have been made and shall include the original record wherever possible;
 - f) be retained at the Permitted Installation, or other location agreed by the Agency in writing, for a minimum period of 4 years from the date when the records were made, unless otherwise agreed in writing; and
 - g) where they concern the condition of the site of the Installation or are related to the implementation of the Site Protection and Monitoring Programme, be kept at the Permitted Installation, or other location agreed by the Agency in writing, until all parts of the Permit have been surrendered.

4 Reporting

- 4.1.1 All reports and written and or oral notifications required by this Permit shall be made or sent to the Agency using the contact details notified in writing to the Operator by the Agency.
- 4.1.2 The Operator shall, unless otherwise agreed in writing, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:-
- a) in respect of the parameters, emission points and reporting periods specified in the tables given in; Schedule 2 to the core part of this permit, Schedule A(1) of Annex A, Schedule B(1) of Annex B, Schedule C(1) of Annex C, Schedule D(1) of Annex D, Schedule E(1) of Annex E
 - b) giving the information from such results and assessments as may be required by the forms specified in those Tables; and
 - c) to the Agency within 28 days of the end of the reporting period.
- 4.1.3 a) The Operator shall submit to the Agency reports on the performance over the previous year of; the overall ICV part of the Permitted Installation and the individual parts of the installation by

providing the information specified in Table S4.2 of Schedule 4 and in the performance data tables given in each of Schedules A(2), B(2), C(2), D(2) and E(2) of Annexes A, B, C, D and E, respectively; assessed at any frequency specified therein.

- b) The information shall be reported to the Agency by 28 February of each year, using the forms specified in Table S3 to Schedule 3 of the Core part of this Permit and Table SA(3) of Annex A; Table SB(3) of Annex B, Table SC(3) of Annex C, Table SD(3) of Annex D, Table SE(3) of Annex E, or otherwise as agreed in writing with the Environment Agency.
- c) For LCP189, LCP190 and LCP191, a report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The reports shall include as a minimum:
 - (i) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data; and
 - (ii) the annual production /treatment data set out in schedule E(2) table SE(2.1).

4.1.4 The Operator shall review fugitive emissions, having regard to the application of Best Available Techniques, on an annual basis, or such other period as shall be agreed in writing by the Agency, and a summary report on this review shall be sent to the Agency detailing such emissions and the measures taken to reduce them within 3 months of the end of such period.

4.1.5 Where the Operator has a formal environmental management system applying to the Permitted Installation which encompasses annual improvement targets the Operator shall, not later than 31 March in each year, provide a summary report of the previous year's progress against such targets.

4.1.6 The Operator shall, within 6 months of receipt of written notification from the Agency, submit to the Agency a report assessing whether all appropriate preventive measures continue to be taken against pollution, in particular through the application of the best available techniques, at the installation. The report shall consider any relevant published technical guidance current at the time of the notification which is either supplied with or referred to in the notification, and shall assess the costs and benefits of applying techniques described in that guidance, or otherwise identified by the Operator, that may provide environmental improvement.

4.1.7 The Operator shall,

- a) within two months of the date of this permit, submit a detailed Site Protection and Monitoring Programme (SPMP), and
- b) implement and maintain the SPMP submitted under condition 4.1.7 (a); and
- c) carry out regular reviews of it at a minimum frequency of every 2 years; and
- d) report the results of such reviews and any changes made to the SPMP to the Agency within 1 month of the review or change.

4.1.8 This condition is no longer required.

4.1.9 This condition is no longer required.

4.1.10 The operator shall carry out a review, at the end of each calendar year, of the findings from the investigation of incidents that have occurred during that year, which are classified as environmental in the Operator's incident management system, including those notified to the Agency under conditions 5.1.1 and 5.1.2. The review should look at common root causes and consider whether changes implemented to address specific incidents have a broader application elsewhere in the installation. A report on the findings of this review shall be submitted to the Agency, no later than the 31 March of each year.

5 Notifications

5.1.1 In the event:

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

5.1.2 Any information provided under condition 5.1.1(a)(i) or 5.1.1(b)(i) where the information relates to the breach of a condition specified in the permit, shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.

5.1.3 The Operator shall give written notification as soon as practicable prior to any of the following:-

- a) permanent cessation of the operation of part or all of the Permitted Installation;
- b) cessation of operation of part or all of the Permitted Installation for a period likely to exceed 1 year; and
- c) resumption of the operation of part or all of the Permitted Installation after a cessation notified under condition 5.1.3 (b).

5.1.4 The Operator shall notify the Agency, as soon as reasonably practicable, of any information concerning the state of the Site which adds to

- a) that provided to the Agency as part of the Application; or to
- b) that in the Site Protection and Monitoring Programme submitted under condition 4.1.7 of this Permit.

5.1.5 The Operator shall notify the following matters to the Agency in writing within 14 days of their occurrence:-

- a) where the Operator is a registered company:-
 - any change in the Operator's trading name, registered name or registered office address;
 - any change to particulars of the Operator's ultimate holding company (including details of an ultimate holding company where an Operator has become a subsidiary);
 - any steps taken with a view to the Operator going into administration, entering into a company voluntary arrangement or being wound up;
- b) where the Operator is a corporate body other than a registered company:
 - any change in the Operator's name or address;
 - any steps taken with a view to the dissolution of the Operator.
- c) In any other case: -

the death of any of the named Operators (where the Operator consists of more than one named individual);

any change in the Operator's name(s) or address(es);

any steps taken with a view to the Operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case them being in a partnership, dissolving the partnership;

- 5.1.6 Where the Operator has entered into a Climate Change Agreement with the Government, the Operator shall notify the Agency within one month of:-
- a) a decision by the Secretary of State not to re-certify that Agreement.
 - b) a decision by either the Operator or the Secretary of State to terminate that agreement.
 - c) any subsequent decision by the Secretary of State to re-certify such an Agreement.
- 5.1.7 Where the Operator has entered into a Direct Participant Agreement in the Emissions Trading Scheme which covers emissions relating to the energy consumption of the activities, the Operator shall notify the Agency within one month of:-
- a) a decision by the Operator to withdraw from or the Secretary of State to terminate that agreement.
 - b) a failure to comply with an annual target under that Agreement at the end of the trading compliance period.
- 5.1.8 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:
- a) the Environment Agency shall be notified at least 14 days before making the change; and
 - b) the notification shall contain a description of the proposed change in operation.
- 5.1.9 The operator shall inform the Environment Agency in writing of the closure of any LCP within 28 days of the date of closure.

6 Interpretation

6.1.1 In this Permit, the following expressions shall have the following meanings:-

“*Accident*” means an accident that may result in pollution.

“*Abatement system*” means that equipment dedicated to the removal of polluting substances from releases from the Installation to air or water media.

“*Application*” means the application for this Permit, together with any response to a notice served under Schedule 5 to the EP Regulations and any operational change agreed under the conditions of this Permit.

“*background concentration*” means such concentration of that substance as is present in:

water supplied to the site; or

where more than 50% of the water used at the site is directly abstracted from ground or surface water on site, the abstracted water; or

where the Permitted Installation uses no significant amount of supplied or abstracted water, the precipitation on to the site.

“*BAT*” means best available techniques means the most effective and advanced stage of development of activities and their methods of operation which indicates the practical suitability of particular techniques to prevent and where that is not practicable to reduce emissions and the impact on the environment as a whole. For these purposes: “available techniques” means “those techniques which have been developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the cost and advantages, whether or not the techniques are used or produced inside the United Kingdom, as long as they are reasonably accessible to the operator”; “best” means “in relation to techniques, the most effective in achieving a high general level of protection of the environment as a whole” and “techniques” “includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned.”

“*CEN*” means Comité Européen de Normalisation.

“*EP Regulations*” or EPR means the Environmental Permitting (England and Wales) Regulations 2010 (as amended) and words and expressions defined in the EP Regulations shall have the same meanings when used in this Permit save to the extent they are specifically defined in this Permit.

“*Fugitive emission*” means an emission to air or water (including sewer) from the Permitted Installation which is not controlled by an emission or background concentration limit under the conditions in section 2.2 in each of the Annexes of this Permit.

“*Groundwater*” means all water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

“*Indicative Target*” in respect of emissions to water or air is the highest level of emission of a substance that would normally be experienced at an emission point. Occasionally, and not normally greater than 5% of the time, emissions higher than this can be expected as a natural feature of the activity concerned. A brief exceedance of an Indicative Target is not considered a Regulatory breach. There are specific conditions in the Permit to assess whether prolonged breaches of an Indicative Target are regulatory breaches. All exceedances of Indicative Targets are investigated by the Operator. Indicative Targets may not have associated emission limits.

“*Industrial Emissions Directive*” or “*IED*” means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions.

“*large combustion plant*” or “*LCP*” is a combustion plant or group of combustion plants discharging waste gases through a common windshaft or stack, where the total thermal input is 50 MW or more, based on net calorific value. The calculation of thermal input, excludes individual combustion plants with a rated thermal input below 15MW.

“*MCERTS*” means the Environment Agency’s Monitoring Certification Scheme.

“*Monitoring*” includes the taking and analysis of samples, instrumental measurements (periodic and continual), calibrations, examinations, tests and surveys.

“*MSDL*” means minimum shut-down load as defined in Implementing Decision 2012/249/EU.

“*MSUL*” means minimum start-up load as defined in Implementing Decision 2012/249/EU.

“*Natural gas*” means naturally occurring methane with no more than 20% by volume of inert or other constituents.

“*Permitted Installation*” means the activities and the limits to those activities described in Table 1.1.1 of this Permit.

“*Quarter*” means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

“*Sewer*” means sewer within the meaning of section 219(1) of the Water Industry Act 1991.

“*Staff*” includes employees, directors or other officers of the Operator, and any other person under the Operator’s direct or indirect control, including contractors.

“*TOC*” means Total Organic Carbon. In respect of releases to air, this means the gaseous and vaporous organic substances, expressed as TOC.

“*WEEP*” means West End Effluent Plant.

“*Year*” means calendar year ending 31 December.

6.1.2 Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

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

a) In relation to the Runcorn Boiler Plant the concentration in dry air at a temperature of 273K and at a pressure of 101.3 kPa, and with an oxygen content of 3% w/w dry.

b) in relation to gases from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content

6.1.4 This condition has been deleted.

6.1.5 This condition has been deleted.

6.1.6 This condition has been deleted.

6.1.7 Where any condition of this Permit refers to the whole or parts of different documents, in the event of any conflict between the wording of such documents, the wording of the document(s) with the most recent date shall prevail to the extent of such conflict.

Schedule 1 – Notification

This page outlines the information that the Operator must provide to satisfy conditions 5.1.1 and 5.1.2 of the core part of this Permit.

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

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

Part A

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

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

| | |
|---|--|
| (b) Notification requirements for the breach of a limit | |
| To be notified within 24 hours of detection unless otherwise specified below | |
| Emission point reference/ source | |
| Parameter(s) | |
| Limit | |
| Measured value and uncertainty | |
| Date and time of monitoring | |
| Measures taken, or intended to be taken, to stop the emission | |

The time periods for notification should be based on the site-specific risk and deviations from 24 hours should be justified.

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

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

Part B – to be submitted as soon as practicable

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

| | |
|------------------|--|
| Name* | |
| Post | |
| Signature | |
| Date | |

* authorised to sign on behalf of the operator

Schedule 2 – Reporting of monitoring data

Parameters for which reports shall be made for the installation, in accordance with conditions 4.1.2 and 4.1.3 of this permit are listed below:

| Table S2: Reporting of monitoring data | | | |
|---|----------------------------|-------------------------|----------------------|
| Parameter | Emission point | Reporting period | Periods begin |
| Mercury | All ICV outfalls | Annual | 1 January |
| Total chlorinated hydrocarbons | All ICV outfalls | Annual | |
| Total heavy metals | All ICV outfalls | Annual | |
| TOC | All ICV outfalls | Annual | |
| Total NMVOCs | All emission points to air | Annual | |
| Total Class A and high hazard VOCs | All emission points to air | Annual | |

Schedule 3 – Forms to be used – Installation reporting

| Table S3: Reporting Forms (Installation reporting) | | |
|---|------------------|------------------|
| Media / parameter | Frequency | Form Name |
| Emissions to Water | Annual | ICV_Annual1 |
| Energy consumption | Annual | ICV_Annual2 |
| Water usage | Annual | ICV_Annual2 |
| Environmental sampling | Annual | ICV_ENV1 |

Schedule 4 - Reporting of performance data

Data required to be recorded and reported by Condition 4.1.3. The data should be assessed at the frequency given and reported annually to the Agency.

Table S4.1: Annual Production/Treatment

None required

Table S4.2: Performance parameters

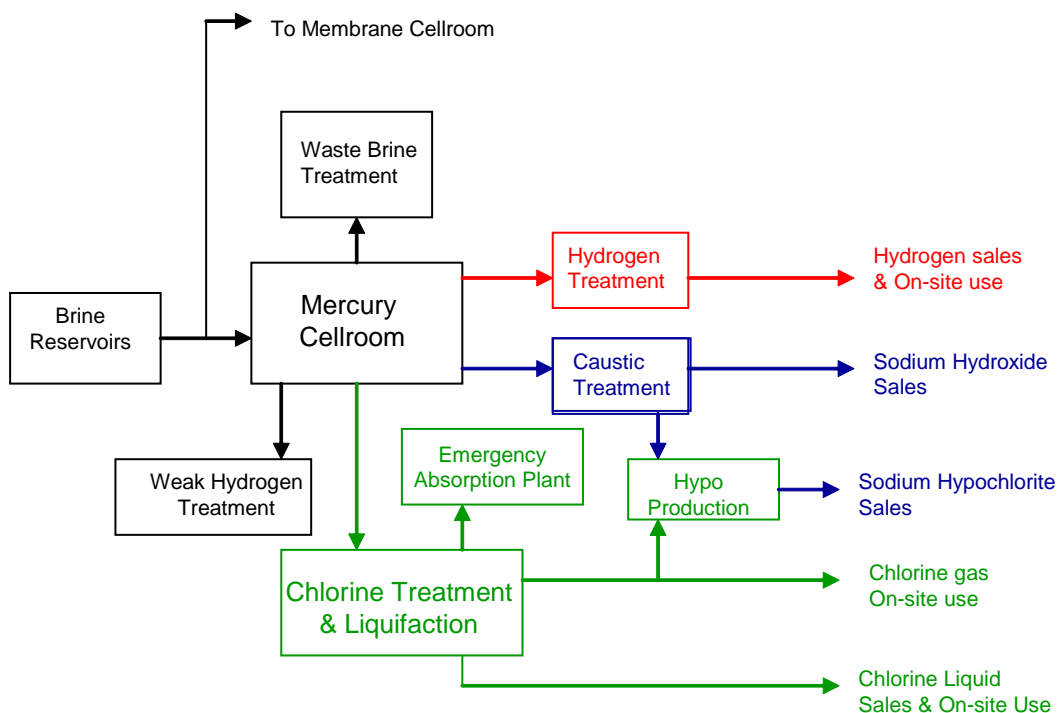
| Parameter | Frequency of assessment | Performance indicator |
|---|-------------------------|-----------------------|
| Energy consumption | Annual | MWh |
| Total water usage | Annual | m ³ |
| Total emissions to water of CHCs, metals, TOC | Annual | kg |
| Soluble mercury levels at Sutton Weir | Annual | µg/l |

Annex A: Mercury Chlorine Plant – Specific Conditions

Process description (this description does not form part of the Permit)

Chlorine Production

The process for the production of chlorine is complex and is summarised in the following diagram



Brine Storage

The main raw material, brine (concentrated salt solution), is imported from Lostock by pipeline and stored in the Weston Brine Reservoirs.

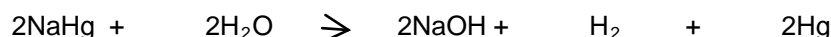
Mercury Cells

The mercury cellroom electrolyses brine to produce chlorine, sodium hydroxide and hydrogen. The cellroom capacity is 300,000 tpa, used to produce chlorine for the site. Replacement capacity is now provided by membrane technology. The electrolysis process operates in two stages:

- Direct electrical current is passed through the brine solution. Chlorine is evolved at the anode and sodium is captured as amalgam in the flowing liquid mercury cathode.



- The amalgam is passed through a denuder where it reacts with water.



The mercury is recycled from the denuder to the cells.

Waste Brine Treatment Plant (WBTP)

The WBTP decontaminates used brine from the mercury cellrooms and other miscellaneous effluents by the addition of aqueous sodium bisulphide which precipitates mercury as mercuric sulphide. Recovered mercury is recycled and the clean waste brine is discharged to outfall W2.

Hydrogen Vent Treatment (HVT – Weak hydrogen treatment on diagram)

The HVT plant removes mercury from the weak hydrogen vent stream arising from the ventilation of items such as cell end boxes and mercury pumping tanks, to prevent emission of mercury into the cellroom. After treatment this stream is vented to atmosphere via a high level stack.

Chlorine Treatment and Liquefaction Plant (LCM)

The purpose of the LCM plant is to treat and liquefy chlorine produced in the mercury cellrooms. The chlorine is cooled and filtered to remove brine mist, the chlorinated condensate/brine stream being returned to the cellrooms. The chlorine is then dried by contact in a column with concentrated sulphuric acid. The spent acid is returned to the sulphuric acid plant for treatment or sale. UV light treatment destroys traces of potentially explosive nitrogen trichloride (NCl₃). The gas is filtered, compressed and some is liquefied ready for further use or for sale. The liquid chlorine is used on site and exported by road tanker, in drums and in cylinders.

Emergency Absorption Plant (EAP)

The EAP is capable of absorbing safely the full chlorine production from the site in the event that it cannot be processed through the chlorine liquefaction system. The plant has sufficient absorption capacity to allow the cellrooms to be shut down safely.

Production of Sodium Hypochlorite (Hypo 3)

The purpose of the plant is to absorb safely the residual chlorine streams arising from various parts of the plant. Chlorine is reacted with caustic soda:



Caustic Soda Treatment Plant (CTP)

The CTP removes mercury from the caustic soda product of the mercury cellrooms by activated carbon filtration, adjusts its strength to about 50% by water addition and prepares it for storage and sale.

Strong Hydrogen Vent Treatment (SHVT – Hydrogen treatment on diagram)

The purpose of this plant is to remove mercury and sodium hydroxide mist from the hydrogen stream sent to the boiler plant for use as fuel (hence reducing the emissions from the combustion plant chimney) and for compression before off-site sales. The hydrogen is scrubbed in a packed column irrigated with a mixture of brine, sodium hypochlorite and sodium bicarbonate.

Emissions to Air

The main emissions to air are from the mercury cellroom ventilation units. Process emissions include those from the hypo plant, emergency absorption plant, WBTP, HVT and SHVT. The main components of the emissions are hydrogen and trace quantities of mercury and chlorine.

Emissions to Water

The principal emissions to water are surface water arisings and spent brine discharged to the Weston Canal. These emissions contain trace quantities of mercury.

1.4 Improvement Programme

- 1.4.1 The Operator shall complete the improvements specified in Table A.1.4 by the date specified in that table, and shall send written notification of the date of completion of each requirement to the Agency within 14 days of the completion of each such requirement.

| Table A.1.4: Improvement programme for Chlorine Plant | | |
|--|--|--|
| Reference [1] | Requirement | Date |
| 4 | <p>The Operator shall implement measures to control the pH and available chlorine discharged from the laundry to outfall W16 to move towards:</p> <ul style="list-style-type: none"> a pH limit of 5 – 10 and a target of 6 – 9 an available chlorine limit of 20 mg/l and a target of 5 mg/l <p>A project plan shall be submitted to the Agency for approval. Implementation of the above plan to a timetable agreed by the Agency.</p> | In accordance with the 5 yr plan specified in item 13 of table 1.4 |
| 5 | <p>The Operator shall implement measures to control the temperature of the effluent discharged to outfall W2 after removal of mercury and heavy metals to move towards a limit of 50°C and a target of 35°C:</p> <p>A project plan shall be submitted to the Agency for approval. Implementation of the above plan to a timetable agreed by the Agency.</p> | In accordance with the 5 yr plan specified in item 13 of table 1.4 |
| 6 | <p>The operator shall submit, for approval by the Environment Agency, a report setting out progress to achieving the BAT conclusion Associated Emission Levels (BATc AEL) where BAT is currently not achieved, but will be achieved before 9 December 2017. The report shall include, but not be limited to, the following:</p> <ol style="list-style-type: none"> Current performance against the BATc AEL. Methodology for reaching the AELs. Associated targets / timelines for reaching compliance by 9 December 2017. <p>The report shall address the following BAT Conclusions:</p> <ul style="list-style-type: none"> BAT 3 | <p>Progress reports by</p> <p>09/06/16 09/12/16 09/06/17</p> |
| 7 | <p>The operator shall submit, for approval by the Environment Agency, a report setting out progress to achieving the 'Narrative' BAT where BAT is currently not achieved, but will be achieved before 9 December 2017. The report shall include, but not be limited to, the following:</p> <ol style="list-style-type: none"> Methodology for achieving BAT. Associated targets / timelines for reaching compliance by 9 December 2017. <p>The report shall address the following BAT Conclusions:</p> <ul style="list-style-type: none"> BAT 2, BAT 3, BAT 7, BAT 17 | <p>Progress reports by</p> <p>09/06/16 09/12/16 09/06/17</p> |

Note [1]: Items 1, 2 and 3 have been completed.

- 1.4.2 Where the Operator fails to comply with any requirement by the date specified in Table A.1.4 the Operator shall send written notification of such failure to the Agency within 14 days of such date.

2 Operating Conditions

2.1 In-Process Controls

2.1.1 The Permitted Installation shall, subject to the conditions of this Permit, be operated using the techniques and in the manner described in the documentation specified in Table A.2.1, or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2 of the Core section of this Permit.

| Table A.2.1: Operating techniques | | |
|--|--|---|
| Description | Parts | Date Received |
| Application | The response to questions 2.1 and 2.2 given in each of the sections 2.1 and 2.2 of the Chlorine Production parts of the application describing: a) the mercury cellrooms b) chlorine handling c) caustic soda handling d) hydrogen handling | 14/12/04 |
| Application | The response to questions 2.10 in respect of monitoring methods and monitoring frequency described in sections 2.10.1 of each of the Chlorine Production parts of the application | 14/12/04 |
| Additional information | Additional information supplied by the operator in several letters | 27/01/05, 01/02/05, 07/02/05, 08/03/05 |
| Supporting information to the application for variation (FP3837GB) | Process Description Part 2 – Chlorine Production Mercury-Technology Chlorine Plant – update September 2009 to reflect K and L unit closure sections 2.1, 2.2, 2.4, 2.6 & 2.10 | November 2009 |
| Supporting information to the application for partial transfer EPR/BS5428IP/V004 EPR/RP3736WB/T001 | The information describing modified operating techniques supplied in the application | 09/12/14 |
| Regulation 60(1) Notice – request for further information dated 22/05/15 | Technical standards in relation to Best available techniques as described in BAT conclusions under Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions for chlor-alkali production BAT Conclusions Numbers: BAT 1 (cell technology); BAT 2 (decommissioning plan); BAT 3 (Hg emissions during decommissioning); BAT 7 (emissions monitoring); BAT 17 (site remediation). (BAT 4, BAT 5, BAT 6, BAT 8, BAT 9, BAT 10, BAT 11, BAT 12, BAT 13, BAT 14, BAT 15 and BAT 16 are not relevant for this review.) | Received 21/08/15 |

2.2 Emissions

2.2.1 Emissions to Air, (including heat, but excluding Odour, Noise or Vibration) from Specified Points

2.2.1.1 Emissions to air from the emission points in Table A.2.2 shall only arise from the sources specified in that Table.

| Table A.2.2: Emission points to air | |
|--|---|
| Emission point reference | Source |
| Mercury Cellrooms | |
| CI-01, | Caustic header vent for mercury cellrooms J |
| CI-04, CI-05, CI-06 | Cellroom ventilation for mercury cellrooms J, K and L |
| CI-08 | Waste Brine Treatment Plant (WBTP) H2S scrubber vent (intermittent) |
| CI-09 | Hydrogen Vents Treatment (HVT) Stack |
| CI-100 | "D" Fan (Intermittent – emergency use only) |
| Chlorine Handling | |
| CI-11 | Hypo 3 vent stack |
| CI-12 | Emergency Absorption Plant (EAP) Vent Stack |
| Caustic Soda Handling | |
| CI-07 | Caustic treatment plant (CTP) F100 stock tank extract |
| Hydrogen | |
| CI-146 | SHVT vent (intermittent) |

2.2.1.2 The limits for emissions to air for the parameters and emission points set out in Table A.2.3 shall not be exceeded.

| Table A.2.3 : Emissions to air – Limits and Indicative Targets | | | |
|---|--------------------|-------------------------------|--|
| Emission Point | Indicative Targets | Limits | |
| | | Chlorine (mg/m ³) | Mercury |
| CI-01 | 7 | --- | 200 g/h from all emission points in total, averaged over a calendar month |
| CI-04, CI-05, CI-06 | 100 | --- | |
| CI-07 | 50 | --- | |
| CI-09 | 50 | 10 | |
| CI-09 | 300 [1] | 10 | |
| CI-11 | --- | 10 | |
| CI-12 | --- | 10 | |
| CI-100 | 300 | --- | |
| All other emission points | --- | --- | |

Note [1]: Indicative target is applicable when the HVT undergoes online maintenance

2.2.1.3 Emissions to air shall be measured at a frequency and by a method specified in Table A.2.4, or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2 of this Permit.

| Table A.2.4: Emissions to Air: Reporting of monitoring data | | | |
|--|-----------------------|---------------------------|---|
| Parameter | Emission point | Sampling Frequency | Monitoring Method |
| Mercury | CI-01, CI-07, CI-09 | Monthly | Sampling and analysis based on BS EN 13211 to ISO 17025, by Cold Vapour Atomic Absorption |
| | CI-04, CI-05, CI-06 | Weekly | Sampling and analysis by UV Spectrometry, to ISO 17025 |
| | CI-100 | On use | Sampling and analysis based on BS EN 13211 to ISO 17025, by Cold Vapour Atomic Absorption |
| | All | Quarterly | Calculation from all results to determine average and maximum emission per hour in the period |
| Chlorine | CI-09 | Monthly | Sampling and analysis based on US EPA 26 to ISO 17025, by ion chromatography. |
| | CI-11, CI-12 | Continuous | Instrument based on electrochemical principles. |
| | | Annual | Sampling and analysis based on US EPA 26 to ISO 17025, by ion chromatography |

2.2.1.4 In respect of lifetime and annual emission limits for mercury:

Total emissions to air of mercury in any year from all emission points shall not exceed the relevant limit in Table A.2.5

| Table A.2.5: Annual limits to air | | |
|--|--------------------|--|
| Substance | Year | Limit – kg |
| Mercury to air | 2015 – 09/12/17 | 1000 (each year) |
| | 10/12/2017 onwards | Residual quantities of vapour from mercury inventory in cell rooms |

2.2.2 Emissions to water (other than groundwater), including heat, and excluding odour, noise or vibration from specified points

Emissions to Water (other than to Sewer)

2.2.2.1 Emissions to water from the emission point specified in Table A.2.6 shall only arise from the sources specified in that Table.

| Table A.2.6: Emission points to water | | | |
|--|-------------------------|-------------------------------|------------------------|
| Emission Point Reference | Principal Source | Description of sources | Receiving Water |
| W1 | Mercury cellroom | Surface water | Weston Canal |

Table A.2.6: Emission points to water

| Emission Point Reference | Principal Source | Description of sources | Receiving Water |
|--------------------------|-----------------------------|------------------------|-----------------|
| W2 | Mercury cellroom | WBTP effluent | Weston Canal |
| W5 | Mercury cellroom | Emergency Waste Brine | Weston Canal |
| W7 | Mercury cellroom | Surface water | Weston Canal |
| W8 | Mercury cellroom | Surface water | Weston Canal |
| W9 | Mercury cellroom | Brine by-pass route | Weston Canal |
| W10 | Mercury cellroom | Surface water | Weston Canal |
| W11 | Mercury cellroom | Surface water | Weston Canal |
| W34 | Mercury cellroom | Emergency Waste Brine | Weston Canal |
| W12 | Chlorine handling plant | Process effluent | Weston Canal |
| W13 | Chlorine handling plant | Surface water | Weston Canal |
| W14 | Chlorine handling plant | Surface water | Weston Canal |
| W16 | Chlorine handling plant | Surface water | Weston Canal |
| W16a | Chlorine handling plant | Surface water | Weston Canal |
| W27a | Caustic soda handling plant | Surface water | Weston Canal |

2.2.2.2 The limits for the emissions to water for the parameters and emission points set out in Table A.2.7 shall not be exceeded.

2.2.2.3 During all times, the Operator shall use his best endeavours to not exceed the Indicative Targets for emissions to water, specified in Table A.2.7 and:

- a) on no occasion shall the measured value remain in the zone between the Indicative Target and the Limit for a period longer than the Time Constraint specified in Table A.2.7
- b) the Cumulative Time that the measured value remains between the Indicative Target and the Limit, within any one month, shall not exceed the cumulative time specified in Table A.2.7.

Table A.2.7: Limits and targets for emissions to water

| Parameter | | Outfall | | | | Exceptions |
|-----------------------------|-------------------|-------------------|--------|-----------|--------|---------------------------|
| | | W7, W13, W14, W16 | W8 | W12, W27a | W2, W9 | |
| Temperature (°C) | Limit | 50 | 50 | 50 | 50 | W2 = 70 |
| | Indicative target | 35 | 35 | 35 | 35 | W2 = 60 |
| pH range | Limit | 4 - 10 | 4 - 10 | 5 - 10 | 5 - 10 | W16 = 5 - 12 |
| | Indicative target | 6 - 9 | 6 - 9 | 6 - 9 | 6 - 9 | W27a [5], W16 = 6 - 11 |
| Suspended solids (mg/l) [1] | Limit | 150 | 150 | 150 | 150 | |
| | Indicative target | 100 | 100 | 100 | 100 | |

Table A.2.7: Limits and targets for emissions to water

| | | Outfall | | | | |
|--|-------------------|----------------------|--------------|--------------|--------------|-------------|
| | | W7, W13, W14, W16 | W8 | W12, W27a | W2, W9 | Exceptions |
| Available Chlorine (mg/l) | Limit | 20 | - | 20 | - | W16 = 30 |
| | Indicative target | 5 | - | 5 | - | W16 = 15 |
| Mercury (during chlorine production activities) (mg/l) | Limit | 1.0 | 1.0 | 1.0 | 0.4 | W2 [4][3] |
| | Indicative target | 0.2 | 0.2 | 0.2 | 0.2 | |
| Mercury (during cellroom decommissioning activities) | Limit | - | - | - | 15 µg/l | W2 Only [7] |
| Total heavy metals (mg/l) [2] | Limit | 5 | - | 5 | - | |
| | Indicative target | 1 | - | 1 | - | |
| Visible oil or grease | | None visible | None visible | None visible | None visible | |
| Sulphide (mg/l) [6] | Limit | - | - | - | 50 | W2 only |
| | Indicative target | | | | 30 | W2 only |
| Indicative target time constraint (hrs) | | 4 | 4 | 4 | 4 | |
| Indicative target cumulative time (hrs) | | 8 | 8 | 8 | 8 | |

Note [1]: Emission limits and targets for suspended solids do not apply during or immediately after heavy rainfall or after the testing of a fire water main.

Note [2]: Total heavy metals including arsenic, boron, chromium, copper, lead, nickel and zinc, but excluding mercury and those metals contained in the incoming abstracted water contribution from the Mersey Ship Canal and the brinefields.

Note [3]: In the event an emergency release of brine is required from the mercury cellroom which is passed to the WBTP for treatment, the Hg limit and target of W2 are suspended for the duration of the release.

Note [4]: Limit for Outfall W2 is based on a 4-hour composite sample.

Note [5]: Target for W27a suspended when WBTP off-line; limit unaffected.

Note [6]: Target = 60 mg/l, limit = 100 mg/l during periods of start-up and shutdown of J-Unit.

Note [7]: Limit for Outfall W2 is based on a 24-hour flow proportional composite sample.

2.2.2.4 In the event of an unusual discharge from those emission points, identified in Table A2.6, for which there are no monitoring requirements, the Operator should take a sample and monitor for any relevant determinands.

2.2.2.5 Emissions to water shall be measured at the frequency specified and using the method described in Table A.2.8, or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2 of the core Permit.

Table A.2.8: Emissions to Water: Monitoring Requirements

| Parameter | Outfall | | | | Monitoring Method |
|--|-----------------------------|----|--------------|-----------|---|
| | W7, W13, W14, W16, | W8 | W12, W27a | W2, W9 | |
| Temperature | W | W | W | W | Sampling and analysis to ISO17025 by thermometry |
| pH | W | W | W | W | Sampling and analysis to ISO17025 by titrimetry |
| Suspended solids | W | W | W | W | Sampling and analysis to ISO17025 by gravimetry |
| Available Chlorine | W | - | W | - | Sampling and analysis to ISO17025 by iodometric titrimetry |
| Mercury (during chlorine production activities) | W | W | W | W [1] | Sampling and analysis to ISO17025 by atomic fluorescence |
| Mercury (during cellroom decommissioning activities) | - | - | - | Daily [2] | EN ISO 12846 (modified) and EN ISO 17852 (Sampling and analysis to ISO17025 by atomic fluorescence) |
| Total heavy metals | M | - | M | - | Sampling and analysis to ISO17025 by ICP-AES |
| Visible oil and grease | W | W | W | W | Visual check |
| Sulphide | - | - | - | W | Sampling and analysis to ISO17025 by titrimetry |

Note [1]: The sample from outfall W2 during chlorine production activities, for mercury analysis, is a 4 hourly composite and is analysed by UV techniques.

Note [2]: The sample from outfall W2 during cellroom decommissioning activities, for mercury analysis, is a 24 hour flow proportional composite.

Key: M = monthly spot sample W = weekly spot sample

2.2.2.6 Total emissions to water of mercury in any year from the installation shall not exceed the relevant limit in Table A.2.9.

Table A.2.9: Time based limits to water

| Substance | Year | Limit | Time Reference |
|--|--------------------|--|----------------|
| Mercury to water in total from all mercury bearing outfalls, controlled by the operator, from the Installation | 2015 – 09/12/2017 | 250 kg | Annual |
| | 10/12/2017 onwards | Residual quantities remaining in environment after mercury cell operation ceases | Annual |

Emissions to sewer

There are no process emissions to sewer from the Chlorine Plant.

Annex A: Schedule A(1) – Reporting of monitoring data: Mercury Chlorine Plant

Parameters for which reports shall be made, in accordance with conditions 4.1.2 and 4.1.3 of this Permit, are listed below.

| Table SA(1): Reporting of monitoring data | | | |
|---|--|-------------------------|--|
| Parameter | Emission point | Reporting period | Periods begin |
| Mercury | CI-01, CI-04, CI-05, CI-06, CI-07, CI-09, CI-100 | Quarterly | 1 January, 1 April, 1 July, 1 October |
| Chlorine | CI-09, CI-11, CI-12 | Quarterly | |
| Temperature, pH, suspended solids, visible oil and grease | W2, W7, W8, W12, W13, W14, W16, W27a, W9 | Quarterly | |
| Available chlorine, total heavy metals | W7, W12, W13, W14, W16, W27a, | Quarterly | |
| Mercury | W2, W7, W8, W12, W13, W14, W16, W27a, W9 | Quarterly | |
| Sulphide | W2 | Quarterly | |
| Mercury | Whole plant – environmental impact | Quarterly | |
| Mercury to air (with respect to lifetime reduction plan) | All emission points including those from the EIP and Power Services plants | Annual | 1 January |
| Waste disposal and recovery | Chlorine plant | Annual | |

Annex A: Schedule A(2) - Reporting of performance data: Mercury Chlorine Plant

Data required to be recorded and reported by Condition 4.1.3. The data should be assessed at the frequency given and reported annually to the Agency.

| Table SA(2.1): Annual Production/Treatment |
|---|
| None required |

| Table SA(2.2): Performance parameters | | |
|--|--------------------------------|---|
| Parameter | Frequency of assessment | Performance indicator |
| Hydrogen vent treatment plant (with respect to condition 2.2.1.2 {note 1}, emission point CI-09) | Annual | Availability |
| Emissions to water via the emergency outfalls W5 and W34: | Annual | Number of occasions Overall duration Estimated Hg mass released |
| Environmental impact of mercury emissions to air | Annual | Ground level concentration |
| Time constraints for exceedances of indicative targets (in respect of condition 2.2.2.3) | Quarterly | No breaches of condition. |

Annex A: Schedule A(3) - Reporting Forms: Mercury Chlorine Plant

| Table SA(3): Reporting Forms | | |
|---------------------------------------|------------------|---|
| Media / parameter | Frequency | Form Name |
| Emissions of mercury to air and water | Annual | Chlorine_Annual1 |
| Emissions to Air | Quarterly | Chlorine/Air11 |
| | Annual | Chlorine_Annual1 |
| Emissions to Water | Quarterly | Chlorine/Water1, Chlorine/Water2, Chlorine/Water3, Chlorine/Water4 |
| | Annual | ICV_Annual2 |
| Waste disposal and recovery | Annual | Chlorine_Annual1 |
| Performance indicators | Annual | Chlorine_Annual1 |

Annex B: EIP Plant – Specific Conditions

Process description *(this description does not form a part of the Permit)*

EIP Treatment Plant

The Environmental Improvement Project (EIP) plant is an abatement plant, which treats aqueous material produced by the chlorinated hydrocarbon plants on the Runcorn site. The treated material is discharged to one of three locations: aqueous material to Weston Canal, treated vents to atmosphere via the plant stack and dewatered solids to registered landfill.

Aqueous waste is transferred to EIP from contributory plants either by pipeline or road tanker. An effluent pit remains operational to collect drainings from the VDC4 (shutdown) plant area for processing through the EIP plant. The plant has approximately 10,000m³ buffer storage capacity. Aqueous material is stripped for organics by the passage of air through the effluent in one of two air stripper columns. The vent from the air strippers passes on to the thermal oxidiser for further treatment. The stripped effluent then undergoes pH correction, before combining with effluent from sludge treatment before being treated for suspended solids removal. Treated effluent passes directly to outfall W65b in Weston Canal.

Sludges that accumulate in interception pits on contributory plants, and sludges that form in the aqueous collection area of EIP, are stripped of their volatile organic content by the passage of steam. The vent from sludge treatment passes on to the thermal oxidiser for further treatment. The stripped sludge is pH adjusted in the steam stripper vessel before combining with solids after pH adjustment for de-watering.

Gaseous vents from the air stripping and steam stripping of sludges pass into an incinerator for thermal oxidation. The incinerator operates above 1200°C, with a minimum residence time of 2 seconds.

Energy from the combustion process is recovered in a waste heat boiler, which operates at around 15 barg and cools the process gases down to 250-300°C. The cooled combustion gases are then quenched in the HCl absorber, and hydrogen chloride in the combustion gases is absorbed into dilute hydrochloric acid, which is recycled to the front end of the process.

Any residual hydrogen chloride and trace amounts of chlorine in the vent are removed in a caustic scrubber. Spent caustic scrubber liquor is generally recycled back through the EIP aqueous system.

Gases from the caustic scrubber are released to atmosphere via a 60-metre vent stack. The vent from the air stripper can go directly to atmosphere via a local 32-metre stack during incinerator outages. Other smaller vent emissions include those from effluent buffer storage, the sludge steam stripper and fire relief systems.

Solid waste from the Filter Press is disposed of by the most appropriate disposal route using suitable contractors. The waste generally includes solids from the filter press and solid waste from the sand filters.

1.4 Improvement Programme

- 1.4.1 The Operator shall complete the improvements specified in Table B.1.1 by the date specified in that table, and shall send written notification of the date of completion of each requirement to the Agency within 14 days of the completion of each such requirement.

| Table B.1.1: Improvement programme for EIP | | |
|--|--|--|
| Reference [1] | Requirement | Date |
| 5 | The Operator shall submit an annual report, by the 31st January every year, based on the data reported in accordance with the requirements of Table SB(2.2) 'Performance parameters', on the availability of the EIP Vent incinerator. The report should include an analysis of the causes of downtime and consider measures to be taken to reduce these, with the goal of delivering a year on year reduction in abatement downtime to achieve an overall availability of >99.5%, when required for duty. | First submission 6 weeks after issue of variation FP3837GB |
| 7 | The Operator shall implement measures to control the pH of effluent discharged to outfall W65b to achieve: <ul style="list-style-type: none"> a pH limit of 5 – 10 and an indicative target of 6 – 9 A project plan shall be submitted to the Agency for approval Implementation of the above plan to a timetable agreed by the Agency | In accordance with the 5 yr plan specified in item 13 of table 1.4 |
| 10 | The Operator shall, where practicable, design a sample point and implement a suitable method for monitoring emissions of total chlorinated hydrocarbons from EIP33. In design of the sample point; regard should be given to the Environment Agency Technical Guidance Note M1. The Operator shall submit a report in writing, to the EA, giving the specification of the sample point and monitoring method and identifying the timescale for its installation as part of the 5yr plan. | Complete |

Note [1]: Items 1, 2, 3, 4, 6, 8 and 9 have been completed.

- 1.4.2 Where the Operator fails to comply with any requirement by the date specified in Table B.1.1 the Operator shall send written notification of such failure to the Agency within 14 days of such date.

2 Operating Conditions

2.1 In-Process Controls

- 2.1.1 The Permitted Installation shall, subject to the conditions of this Permit, be operated using the techniques and in the manner described in the documentation specified in Table B.2.1, or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2 of the Core section of this Permit.

| Table B.2.1: Operating techniques | | |
|-----------------------------------|-------|---------------|
| Description | Parts | Date Received |

| Table B.2.1: Operating techniques | | |
|--|---|----------------------|
| Description | Parts | Date Received |
| Application | The response to questions 2.1 and 2.2 given in each of the sections 2.1 and 2.2 of the Chlorinated Ethanes/Ethylenes part of the application describing EIP plant | 14/12/04 |
| Supporting information to the application for partial transfer EPR/BS5428IP/V004 EPR/RP3736WB/T001 | The information describing modified operating techniques supplied in the application (including arrangements for moving operations from permit this annex into permit AP3931FT) | 09/12/14 |

2.2 Emissions

2.2.1 Emissions to Air, (including heat, but excluding Odour, Noise or Vibration) from Specified Points

2.2.1.1 Emissions to air from the emission points in Table B.2.2 shall arise from the sources specified in that Table.

| Table B.2.2: Emission points to air | |
|--|---|
| Emission point reference | Source |
| EIP Plant | |
| EIP-31 | Vent treatment stack from EIP incinerator |
| EIP-33 | Air stripper vent |

2.2.1.2 The limits for emissions to air for the parameters and emission points set out in Table B.2.3 shall not be exceeded.

2.2.1.3 The Operator shall use his best endeavours to ensure emissions to air do not exceed the Indicative Targets described in Table B.2.3

| Table B.2.3: Emission limits to air | | | |
|--|----------------------|--------------|---------------|
| Emissions Point | | | |
| Parameter | Unit | Limit | Target |
| EIP-31 | | | |
| VOC [1] | (mg/m ³) | 20 | |
| Particulate matter | (mg/m ³) | 5 | |
| Hydrogen Chloride | (mg/m ³) | 10 | |
| Chlorine | (mg/m ³) | 10 | |
| Sulphur Dioxide | (mg/m ³) | 50 | |
| Oxides of nitrogen | (mg/m ³) | 200 | |
| Dioxins | (ng/m ³) | 0.5 | 0.1 |
| Mercury | (mg/m ³) | 0.1 | |
| Total metals | (mg/m ³) | 1 | |

| Table B.2.3: Emission limits to air | | | |
|--|----------------------|--------------|---------------|
| Emissions Point | | | |
| Parameter | Unit | Limit | Target |
| Carbon Monoxide | (mg/m ³) | 50 | |
| EIP-33 | | | |
| Chlorinated VOCs | (kg/hr) | 100 | 50 |

Note [1] expressed as carbon

2.2.1.4 Emissions to air shall be measured at a frequency and by a method specified in Table B.2.4, or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2 of this Permit.

| Table B.2.4: Emissions to Air: Monitoring Methods and Frequencies | | | |
|---|---|---------------------------|---|
| Parameter | Emission point | Sampling Frequency | Monitoring Method |
| EIP Plant - Sampling and analysis to in house methods based on the following methods to ISO 17025: | | | |
| VOC | EIP-31 | Quarterly | Extractive/GC-FID/MS |
| Total Chlorine | EIP-31 | Quarterly | US EPA 26/ion chromatography |
| Hydrogen Chloride | EIP-31 | Quarterly | BS EN 1911/ ion chromatography |
| NO _x , Sulphur Dioxide | EIP-31 | Quarterly | Extractive/EC Cell |
| Carbon Monoxide | EIP-31 | Quarterly | Extractive/atomic fluorescence |
| Mercury | EIP-31 | Quarterly | BS EN 13284/gravimetry |
| Particulates | EIP-31 | Quarterly | BS EN 13284/ICP AES |
| Metals | EIP-31 | Quarterly | BS EN 1948/external subcontract |
| Dioxins | EIP-31 | Quarterly | BS EN 1948/external subcontract |
| Carbon monoxide, Chlorine | EIP-31 | Continuous | On-line analyser |
| Total chlorinated hydrocarbons | EIP-33 | Quarterly | [1] |
| | All EIP emission points identified in the application [1] | Annually | Estimate based on number of occasions and duration equipment used |

Note [1] Measurement of emissions of total chlorinated VOCs from EIP-33 will be by calculation until completion of improvement item reference 10 in table B1.1

2.2.1.5 Total emissions to air from emission points set out in Table B.2.2, above, in any year, of a substance listed in Table B.2.5 should not exceed the relevant limit in that Table.

Table B.2.5: Annual limits to air

| Substance | Limit – tonnes |
|---|----------------|
| EDC | 50 |
| Class A VOCs (ethylene, vinyl chloride and CTC) | 50 |
| Class B VOCs | 5 |

2.2.2 Emissions to water (other than groundwater), including heat, and excluding odour, noise or vibration from specified points

Emissions to Water (other than to Sewer)

2.2.2.1 Emissions to water from the emission point specified in Table B.2.6 shall only arise from the sources specified in that Table.

Table B.2.6: Emission points to water

| Emission Point Reference | Principal Sources | Description | Receiving Water |
|--------------------------|-------------------|------------------------------------|-----------------|
| W65a | VDC4 plant | Treated effluent and Surface water | Weston Canal |
| W65b | EIP | Treated effluent | Weston Canal |

2.2.2.2 The limits for the emissions to water for the parameters and emission points set out in table B.2.7 shall not be exceeded.

Table B.2.7 Limits and Targets for Emissions to water from the EIP Plant

| Parameter | | W65a | W65b | Exceptions |
|---|-------------------|--------------|--------------|----------------|
| Temperature (°C) | Limit | 50 | 50 | |
| | Indicative target | 35 | 35 | |
| pH range | Limit | 5 – 10 | 5 – 10 | |
| | Indicative target | 6 – 9 | 6 - 10 | |
| Suspended solids (mg/l) [1] | Limit | 150 | 150 | |
| | Indicative target | 100 | 100 | |
| Available Chlorine (mg/l) | Limit | 20 | 20 | |
| | Indicative target | 5 | 5 | |
| Total chlorinated hydrocarbons (mg/l) [2] | Limit | 5 | 5 | |
| | Indicative target | 2 | 3 | |
| Visible oil or grease | | None visible | None visible | |
| Sodium Chlorate (mg/l) | Limit | - | 50 | W65b = 200 [3] |
| | Indicative target | - | 30 | |
| Total organic | Limit | - | 450 | |

Table B.2.7 Limits and Targets for Emissions to water from the EIP Plant

| Parameter | | W65a | W65b | Exceptions |
|---|-------------------|------|------|------------|
| carbon (mg/l) | Indicative target | - | 350 | |
| Indicative target time constraint (hrs) | | 4 | 4 | |
| Indicative target cumulative time (hrs) | | 8 | 8 | |

Note [1]: Emission limits and targets for suspended solids do not apply during or immediately after heavy rainfall or after the testing of a fire water main.

Note [2]: Chlorinated hydrocarbons include VCM, CFM, CTC, 1,1 dichloroethane, EDC, 1,1,2-trichloroethane, trichloroethylene, tetrachloroethylene, trichlorobenzene, hexachlorobenzene and hexachlorobutadiene

Note [3] When Chloromethane plant send NaOH scrubber drainings to EIP then the limit shall be 200mg/l.

2.2.2.3 During all times, the Operator shall use his best endeavours to not exceed the Indicative Targets for emissions to water, specified in Table B.2.7 and:

- a) on no occasion shall the measured value remain in the zone between the Indicative Target and the Limit for a period longer than the Time Constraint specified in Table B.2.7
- b) the Cumulative Time that the measured value remains between the Indicative Target and the Limit, within any one month, shall not exceed the cumulative time specified in Table B.2.7

2.2.2.4 Emissions to water shall be measured at the frequency specified and using the method described in Table B.2.8, or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2 of this Permit.

Table B.2.8: Emissions to water: monitoring frequencies and methods

| Outfall | W65a | W65b | Monitoring Method |
|--------------------------------|------|------|--|
| Temperature | W | W | Sampling and analysis to ISO17025 by thermometry |
| pH | W | W | Sampling and analysis to ISO17025 by titrimetry |
| Suspended solids | W | W | Sampling and analysis to ISO17025 by gravimetry |
| Available chlorine | W | W | Sampling and analysis to ISO17025 by iodometric titrimetry |
| Total chlorinated hydrocarbons | W | W | Sampling and analysis to ISO17025 by GC FID/MS |
| Visible oil & grease | W | W | Visual check |
| TOC | - | W | Sampling and analysis to ISO17025 by infra red techniques |
| Sodium chlorate | - | W | Sampling and analysis to ISO17025 by ion chromatography |

Table B.2.8: Emissions to water: monitoring frequencies and methods

| Outfall | W65a | W65b | Monitoring Method |
|--|-------------|-------------|--|
| Dioxin | - | H | Sampling and analysis to US EPA 1613 by external subcontract |
| Mercury [1] | M | M | Sampling and analysis to ISO17025 by atomic fluorescence |
| Total heavy metals excluding mercury [1] | M | M | Sampling and analysis to ISO17025 by ICP-AES |

Key: W weekly spot sample M monthly spot sample H half-yearly spot sample

Note 1: measurement for the purpose of calculating the total annual mass released to water from the installation.

Emissions to sewer

There are no specific controls imposed on emissions to sewer in this Part of the Permit.

Annex B: Schedule B(1) - Reporting of monitoring data: EIP Plant

Parameters for which reports shall be made, in accordance with conditions 4.1.2 and 4.1.3 of this Permit, are listed below.

| Table SB(1): Reporting of monitoring data | | | |
|--|--|-------------------------|---|
| Parameter | Emission point | Reporting period | Periods begin |
| As listed in Table B.2.8 | W65a, W65b | Quarterly | 1 January 1 April 1 July 1 October |
| Mercury to air (with respect to lifetime reduction plan) | Emissions from EIP are reported as part of the Chlorine Plant emissions report | Annual | 1 January |

Annex B: Schedule B(2) - Reporting of performance data: EIP Plant

Data required to be recorded and reported by Condition 4.1.3. The data should be assessed at the frequency given and reported annually to the Agency.

| Table SB(2.1): Annual Production/Treatment |
|---|
| None required |

| Table SB(2.2): Performance parameters | | |
|---|-------------------------|--|
| Parameter | Frequency of assessment | Performance indicator |
| Time EIP vent incinerator unavailable | Annual | <ul style="list-style-type: none"> hrs unavailable, excluding periods when the air strippers are non operational; consequential additional emissions |
| Time constraints for exceedances of indicative targets (in respect of condition 2.2.2.3 in Annex B of the permit) | Quarterly | No breaches of condition. |

Annex B: Schedule B(3) - Reporting Forms: EIP Plant

| Table SB(3): Reporting Forms | | |
|-------------------------------------|----------------------------|------------------|
| Media / parameter | Reporting frequency | Form Name |
| Emissions to Air: | Quarterly | EIP/Air1 |
| | Annual | EIP_Annual1 |
| Emissions to Water: | Quarterly | EIP/Water1 |
| | Annual | ICV_Annual1 |
| Waste: | Annual | EIP_Annual1 |
| Performance indicators | Annual | EIP_Annual1 |

Annex C: Chloromethanes Plant – Specific Conditions

Process description (this description does not form part of the Permit)

Chloromethanes Production

The Chloromethanes complex consists of three highly integrated plants.

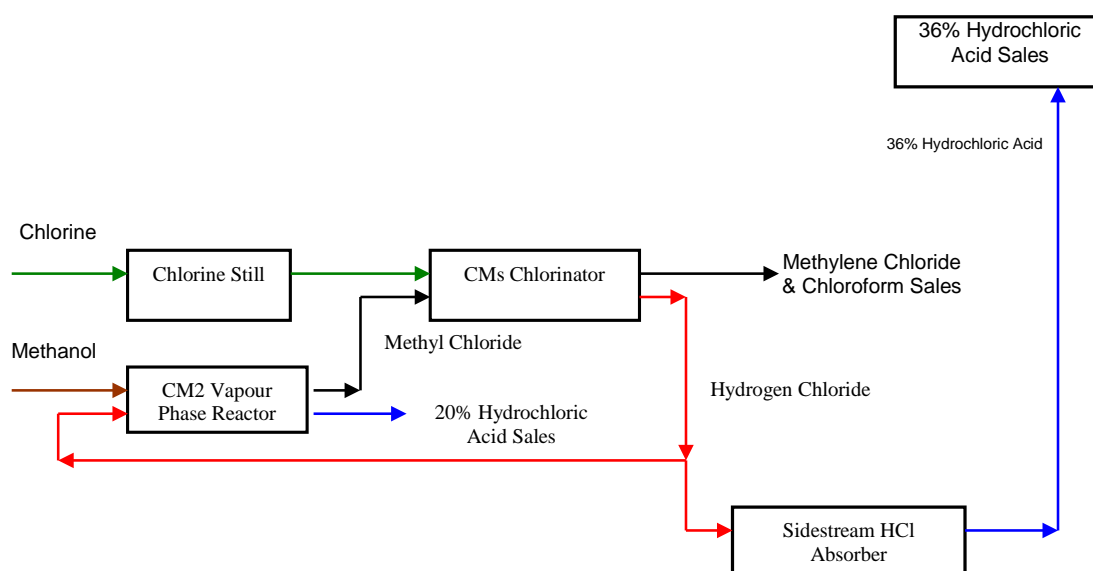
The Chloromethanes complex consists of the main CM2 plant and also associated processing units in CM2 middle area and Dimethylether stripper located on the CM1 plant.

The CM2 plant produces methylene chloride (ME) and chloroform (CFM) for sale. It also produces high-grade 36% and commercial grade 20% hydrochloric acid for sale. The 36% acid stream is processed via the Sidestream HCl plant.

The annual plant capacity of the Chloromethanes complex is 200,000 tonne of chlorinated methanes and approximately 12,000 tonnes of hydrochloric acid (on a 100% HCl basis).

The process flow between the units is shown diagrammatically below:

Chloromethanes Process Flows



Emissions to Air

Dimethylether (DME) produced as a by-product in the hydrochlorination sections is vented to atmosphere. The main process vents in each CM plant contain trace quantities of chloromethane products and hydrogen chloride.

Emissions to air from CM2 Plant are from two refrigeration units which also reduce the emission temperature to below -40°C to give effective condensation and abatement. One of the fridge units is associated with vent CM2-19, which is the combined vent for a number of stock tanks and the loading bay operation. The second fridge unit is associated with vent CM2-20, the combined vent for plant equipment such as distillation units and other in-plant tankage. Various plant streams are collected together and pass through caustic and HCl scrubbers before being vented to atmosphere via the main plant vent CM2-01.

In the event that any of the fridge units become unavailable, emissions to air are made without abatement via the component plant vents, or in the case of CM2 Plant, via vent CM2-02.

Emissions to Water

Waste aqueous streams are neutralised at WEEP then sent to the EIP Plant for further treatment before discharge via authorised outfall. Other arisings are surface waters that contain traces of chlorinated compounds.

1.4 Improvement Programme

- 1.4.1 The Operator shall complete the improvements specified in Table C.1.4 by the date specified in that table, and shall send written notification of the date of completion of each requirement to the Agency within 14 days of the completion of each such requirement.

| Table C.1.4: Improvement programme for Chloromethanes Plant | | |
|--|---|--|
| Reference [1] | Requirement | Date |
| 2 | The Operator shall submit an annual report, by the 31st January every year, based on the data reported in accordance with the requirements of Table SC(2.2) 'Performance parameters', on the availability of the CM2-19 and CM2-20 vent refrigeration unit. The report should include an analysis of the causes of downtime and consider measures to be taken to reduce these, with the goal of delivering a year on year reduction in abatement downtime to achieve an overall availability of >99.5%, when required for duty. | First submission 6 weeks after the date of issue of Variation FP3837GB (EPR/BS5428IP/V003) |
| 3 | The operator shall submit an annual report on the number of hours that emissions to air, from the CM2 plant, of vinyl chloride, methylene chloride, methyl chloride, chloroform and carbon tetrachloride exceed the indicative targets specified in Table C.2.3 The report shall also include an estimate of the total mass released, in excess of the indicative target, during these periods and consider their causes. The operator shall seek to deliver a year on year reduction in both the frequency of these exceedences and the mass released. | First submission 6 weeks after the date of issue of Variation FP3837GB (EPR/BS5428IP/V003) |

Note [1]: Item Reference 1 is complete.

- 1.4.2 Where the Operator fails to comply with any requirement by the date specified in Table C.1.4 the Operator shall send written notification of such failure to the Agency within 14 days of such date.

2 Operating Conditions

2.1 In-Process Controls

- 2.1.1 The Permitted Installation shall, subject to the conditions of this Permit, be operated using the techniques and in the manner described in the documentation specified in Table C.2.1, or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2 of the Core section of this Permit.

| Table C.2.1: Operating techniques | | |
|--|---|----------------------|
| Description | Parts | Date Received |
| Application | The response to questions 2.1 and 2.2 given in each of the sections 2.1 and 2.2 of the Chlorinated Methanes part of the application describing: a) CM1 plant | 14/12/04 |

| Table C.2.1: Operating techniques | | |
|--|---|----------------------|
| Description | Parts | Date Received |
| | b) CM2 plant c) CM2 Middle Area (formerly Hydrochloric Acid Plant) | |
| Application | The response to questions 2.10 in respect of monitoring methods and monitoring frequency described in sections 2.10.1 of the Chlorinated Methanes part of the application | 14/12/04 |
| Additional information | Additional information supplied by the operator in several letters | 07/02/05, 06/07/05 |
| Supporting information to the application for partial transfer EPR/RP3736WB/T001 EPR/BS5428IP/V004 | The information describing modified operating techniques supplied in the application. | 09/12/14 |

2.2 Emissions

2.2.1 Emissions to Air, (including heat, but excluding Odour, Noise or Vibration) from Specified Points

2.2.1.1 Emissions to air from the emission points in Table C.2.2 shall only arise from the sources specified in that Table.

| Table C.2.2: Emission points to air | |
|--|---|
| Emission point reference | Source |
| CM1-02 | Dimethyl ether (DME) stripper (50m) |
| CM1-04 | Methanol tanks vent |
| CM1-06 | Sulphuric acid stock tank (6m) |
| CM2-01 | Main plant vent (60 m) |
| CM2-02 | Combined product distillation vent (30 m) – normally discharges via CM2-20 |
| CM2-03 | ME azeo still – normally discharges via CM2-20 |
| CM2-04 | CFM azeo still – normally discharges via CM2-20 |
| CM2-05 | Methylene chloride (ME) check tank – normally discharges via CM2-20 |
| CM2-06 | Chloroform (CFM) check tank – normally discharges via CM2-20 |
| CM2-07 | Carbon tetrachloride (CTC) intermediate tank – normally discharges via CM2-20 |
| CM2-08 | ME stock tank vents – normally discharges via CM2-19 |
| CM2-09 | CFM stock tank vents – normally discharges via CM2 – 19 |
| CM2-10 | Wet rework tank – normally discharges via CM2-20 or CM2-02 |
| CM2-11 | Dry rework tank – normally discharges via CM2-20 or CM2-02 |

| Table C.2.2: Emission points to air | |
|--|--|
| Emission point reference | Source |
| CM2-12 | ME check tank (intermittent) |
| CM2-14 | CMs tanker loading bay -- normally discharges to CM2-19 |
| CM2-18 | Rework phase Separator (intermittent) |
| CM2-19 | Refrigeration Unit combined vent outlet (15 m) {the vents combined are CM2-08, CM2-09, CM2-14 and CM2-23; all of which release intermittently} If Unit unavailable, component vents discharge via the individual vents |
| CM2-20 | Refrigeration Unit combined vent outlet (22m) {the vents combined are CM2-02, CM2-03, CM2-04, CM2-05, CM2-06, CM2-07, CM2-10 & CM2-11} If Unit unavailable, component vents discharge either via CM2-02 or the individual local vents |
| CM2-23 | normally discharges to CM2-19 |
| HCI-03 | Check tank scrubber (15 m) |
| HCI-05 | Tanks 1103, 1104 scrubber (5 m) |
| HCI-06 | Tanks 1109 scrubber (6 m) |
| HCI-07 | Tanks 1110 scrubber (6 m) |
| HCI-08 | Loading bay scrubber (5 m) |
| HCI-09 | Loading bay scrubber (future) |

2.2.1.2 The limits for emissions to air for the parameters and emission points set out in Table C.2.3 shall not be exceeded.

2.2.1.3 The Operator shall use his best endeavours to ensure emissions to air do not exceed the Indicative Targets described in Table C.2.3

| Table C.2.3: Emission Limits to air (CM1, CM2, HCI Plants) | | | | | | | | | |
|---|--------|-----------------------------|--------------------------------|------------------------|----------------------------------|--------------------------|----------------------------|-----------------------------|--|
| Emission Point | | Methyl chloride kg/h | Methylene chloride kg/h | Chloroform kg/h | Carbon tetrachloride kg/h | Class B VOCs kg/h | Vinyl chloride kg/h | HCl mg/m³ | Cl₂ mg/m³ |
| CM1 Plant | | | | | | | | | |
| CM1-02 | Target | 15 | ---- | ---- | ---- | 100 | ---- | ---- | ---- |
| CM1-06 | Target | 15 | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| Total from CM1 plant [2] [6] | Limit | 180 | ---- | ---- | ---- | 200 | ---- | ---- | ---- |
| CM2 Plant | | | | | | | | | |
| CM2-01 | Limit | ---- | ---- | ---- | ---- | ---- | ---- | 10 | 10 |
| CM2-01 | Target | 50 | 3 | 3 | ---- | 10 | --- | --- | --- |
| CM2-02 [3] | Target | ---- | 160 | 70 | 16 | --- | ---- | ---- | ---- |

Table C.2.3: Emission Limits to air (CM1, CM2, HCl Plants)

| Emission Point | | Methyl chloride kg/h | Methylene chloride kg/h | Chloroform kg/h | Carbon tetrachloride kg/h | Class B VOCs kg/h | Vinyl chloride kg/h | HCl mg/m ³ | Cl ₂ mg/m ³ |
|------------------------------|--------|----------------------|-------------------------|-----------------|---------------------------|-------------------|---------------------|-----------------------|-----------------------------------|
| CM2-02 [4] | Target | ---- | 28 | 17 | 12 | --- | ---- | ---- | ---- |
| CM2-19 | Target | ---- | 5 | 5 | --- | ---- | --- | --- | --- |
| CM2-19 [2] | Target | ---- | 150 | 100 | ---- | ---- | ---- | ---- | ---- |
| CM2-20 | Target | ---- | 5 | 5 | ---- | ---- | ---- | ---- | ---- |
| CM2-20 [2] | Target | | 120 | 50 | 10 | --- | ---- | ---- | ---- |
| Total from CM2 plant [1] [7] | Limit | 100 | 15 | 15 | ---- | 15 | ---- | ---- | ---- |
| Total from CM2 plant [2] [7] | Limit | 100 | 275 | 155 | ---- | ---- | ---- | ---- | ---- |
| Middle Area | | | | | | | | | |
| Total HCl plant [5] | Limit | ---- | ---- | ---- | ---- | ---- | ---- | 10 | ---- |

Note [1]: Limit relates to periods when all associated fridge units are available, i.e. the exit temperature is less than -30°C

Note [2]: Limits relate to periods when the associated fridge unit(s) is not available i.e. exit temperature is greater than -30°C

Note [3]: Targets applicable when the CM2-20 fridge unit is unavailable and the combined vents for CM2-20 are diverted to CM2-02

Note [4]: Targets applicable when the CM2-20 fridge unit is unavailable and emissions are via the individual local vents.

Note [5]: For Total from HCl Plant, limits apply to the combined emissions from all HCl emission points listed in Table C.2.2

Note [6]: For Total from CM1 Plant, limits apply to the combined emissions from all CM1 emission points listed in Table C.2.2

Note [7]: For Total CM2 Plant, limits apply to the combined emissions from all CM2 emission points listed in Table C.2.2

2.2.1.4 Emissions to air shall be measured at a frequency and by a method specified in Table C.2.4, or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2 of this Permit.

Table C.2.4: Emissions to Air: Reporting of monitoring data

| Parameter | Emission point | Monitoring Frequency | Monitoring Method |
|----------------------------------|----------------|----------------------|--|
| CM1 Plant | | | |
| Substances listed in Table C.2.3 | CM1-02 | Monthly | Sampling and analysis to in house methods to ISO 17025 |
| Substances listed in Table C.2.3 | CM1-06, CM1-04 | Annually | Calculated estimate based on tank breathing and usage cycle losses |

| Table C.2.4: Emissions to Air: Reporting of monitoring data | | | |
|--|---|-----------------------------|--|
| Parameter | Emission point | Monitoring Frequency | Monitoring Method |
| CM2 Plant | | | |
| Substances listed in Table C.2.3 | CM2-01, CM2-19, CM2-20, CM2-02 | Monthly | Sampling and analysis to in house methods to ISO 17025 |
| Substances listed in Table C.2.3 | CM2-02, CM2-03, CM2-04, CM2-05, CM2-06, CM2-07, CM2-08, CM2-09, CM2-10, CM2-11, CM2-12, CM2-14, CM2-18 & CM2-23 | Monthly | Calculated estimate based on the duration that CM2-20 or CM2-19 fridge units are not available and equipment usage |
| Middle Area | | | |
| Organic substances listed in Table C.2.3 | HCI-06, HCI-07 | Monthly | Sampling and analysis in-house and by external contractor |

2.2.1.5 Total emissions to air from emission point(s) referenced in Table C.2.2 in any year of a substance listed in Table C.2.5 should not exceed the relevant limit in that Table.

| Table C.2.5: Annual limits to air (CM1, CM2, CM2 Middle Plants) | |
|--|-----------------------|
| Substance | Limit – tonnes |
| Chloroform | 50 |
| High hazard VOCs (vinyl chloride) | 8 |
| Class A VOCs (methyl chloride, methylene chloride, carbon tetrachloride, chloroform, others) | 600 |
| Class B VOCs (Dimethyl ether, methanol, others) | 660 |

2.2.2 Emissions to water (other than groundwater), including heat, and excluding odour, noise or vibration from specified points

Emissions to Water (other than to Sewer)

2.2.2.1 Emissions to water from the emission point specified in Table C.2.6 shall only arise from the sources specified in that Table

| Table C.2.6: Emission points to water | | | |
|--|--------------------------|---------------------------------------|------------------------|
| Emission Point Reference | Principal Sources | Description | Receiving Water |
| RSV-1b | Roads and plant | Surface water and quenched condensate | Weston Canal |
| RSV-3 | Roads and plant | Surface water | Weston Canal |
| W61 | Roads and plant | Surface water and quenched condensate | Weston Canal |

2.2.2.2 The limits for the emissions to water for the parameters and emission points set out in Table C2.7 shall not be exceeded.

Table C.2.7: Emissions limits to water:

| Outfall | | W61 | RSV-1b | RSV-3 |
|---|--------|---------|---------|---------|
| Temperature (°C) | Limit | 50 | 50 [2] | 50 |
| | Target | 40 | 35 | 35 |
| pH | Limit | 4 – 10 | 5 – 10 | 5 – 10 |
| | Target | 5 – 9 | 6 - 9 | 6 - 9 |
| Suspended solids (mg/l) | Limit | 150 [1] | 150 [1] | 150 [1] |
| | Target | 100 | 100 | 100 |
| Available chlorine (mg/l) | Limit | -- | 20 | 20 |
| | Target | -- | 5 | 5 |
| Total chlorinated hydrocarbons (mg/l) | Limit | 2 | 5 | 5 |
| | Target | 1 | 1 | 2 |
| Visible oil & grease | Limit | None | None | None |
| Total Organic Carbon (mg/l) | Limit | 60 | 60 | --- |
| | Target | 30 | 30 | --- |
| Indicative target time constraint (hrs) | | 4 | 4 | 4 |
| Indicative target cumulative time (hrs) | | 8 | 8 | 8 |

Note [1]: Emission limits and targets for suspended solids do not apply during or immediately after heavy rainfall or after the testing of a fire water main.

Note [2]: During a sulphuric acid plant start-up, the RSV-1b temperature limit shall be increased to 60°C, for no longer than 1 hr on any 1 occasion. The target is suspended during sulphuric acid start-up periods.

2.2.2.3 During all times, the Operator shall use his best endeavours to not exceed the Indicative Targets for emissions to water, specified in Table C.2.7 and:

- a) on no occasion shall the measured value remain in the zone between the Indicative Target and the Limit for a period longer than the Time Constraint specified in Table C.2.7
- b) the Cumulative Time that the measured value remains between the Indicative Target and the Limit, within any one month, shall not exceed the cumulative time specified in Table C.2.7

2.2.2.4 no condition.

2.2.2.5 Emissions to water shall be measured at a frequency specified and using the monitoring methods described in Table C.2.8, or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2 of this Permit.

Table C.2.8: Emissions to water: monitoring frequencies

| Outfall | W61 | RSV-1b | RSV-3 | Monitoring Method |
|------------------|-----|--------|-------|---|
| Temperature | W | W | W | Sampling and analysis to ISO 17025 by thermometry |
| pH | W | W | W | Sampling and analysis to ISO 17025 by titrimetry |
| Suspended solids | W | W | W | Sampling and analysis to ISO |

Table C.2.8: Emissions to water: monitoring frequencies

| Outfall | W61 | RSV-1b | RSV-3 | Monitoring Method |
|--------------------------------------|-----|--------|-------|---|
| | | | | 17025 by gravimetry |
| Available chlorine | - | W | W | Sampling and analysis to ISO 17025 by iodometric titrimetry |
| Mercury | - | M | M | Sampling and analysis to ISO 17025 by atomic fluorescence |
| Total heavy metals excluding mercury | - | M | M | Sampling and analysis to ISO 17025 by ICP-AES |
| Total chlorinated hydrocarbons [1] | W | W | W | Sampling and analysis to ISO 17025 by GC FID/MS |
| Visible oil & grease | W | W | W | Visual check |
| TOC | W | W | - | Sampling and analysis to ISO 17025 by Infra-red techniques |

Note [1]: The trichlorobenzene, hexachlorobenzene and hexachlorobutadiene components are monitored monthly. Weekly measured results of total chlorinated hydrocarbons include the most recent values of these components.

Key: W = weekly spot sample; M = monthly spot sample;

Emissions to sewer

There are no specific controls imposed on emissions to sewer in this Part of the Permit.

Annex C: Schedule C(1) – Reporting of monitoring data: Chloromethanes Plant

Parameters for which reports shall be made, in accordance with conditions 4.1.2 and 4.1.3 of this Permit, are listed below.

| Table SC(1): Reporting of monitoring data | | | |
|--|--|-------------------------|--|
| Parameter | Emission point | Reporting period | Periods begin |
| As listed in Table C.2.3 | From CM1 and CM2 Plants to air; as listed in Table C.2.2 | Quarterly | 1 January, 1 April, 1 July, 1 October |
| As listed in Table C.2.8 | RSV-1b, RSV-3, W61 | Quarterly | |
| Dichloromethane | Whole plant – environmental impact | Quarterly | |
| Waste disposal and recovery | Chloromethanes plant | Annual | 1 January |
| High hazard VOCs, Class A VOCs, Class B VOCs, chloroform | All emission points to air specified in Table C.2.2 | Annual | |
| Suspended solids, available chlorine, total chlorinated hydrocarbons, methanol | All emission points to water specified in Table C.2.7 | Annual | |

Annex C: Schedule C(2) - Reporting of performance data: Chloromethanes Plant

Data required to be recorded and reported by Condition 4.1.3. The data should be assessed at the frequency given and reported annually to the Agency.

| Table SC(2.1): Annual Production/Treatment |
|---|
| None required |

| Table SC(2.2): Performance parameters | | |
|--|--------------------------------|---|
| Parameter | Frequency of assessment | Performance indicator |
| Time CM2-19 fridge unit unavailable [2] | Monthly | Availability (hrs available of hrs required)[1]; consequential additional emissions (kgs VOC) |
| Time CM2-20 fridge unit unavailable [2] | Monthly | Availability (hrs available / hrs required)[1] consequential additional emissions (kgs VOC) |
| Environmental impact of dichloromethane emissions to air | Annual | Ground level concentration |
| Time constraints for exceedances of indicative targets | Quarterly | No breaches of condition. |

Notes:

[1] hours required excludes any periods when the VOC emitting plants are not operating – such as during a shutdown.

[2] The fridge unit is considered unavailable when the fridge unit exit temperature is >-30°C

Annex C: Schedule C(3) - Reporting Forms: Chloromethanes Plant

| Table SC(3): Reporting Forms | | |
|--|------------------|----------------------|
| Media / parameter | Frequency | Form Name |
| Emissions to Air | Quarterly | CM/Air1, CM/Air2 |
| | Annual | CM_Annual1 |
| Emissions to Water | Quarterly | CM/Water1, CM/Water2 |
| | Annual | ICV_Annual1 |
| Environmental (air) As required by condition 2.10.2 of the core permit | Annual | CM_Annual1 |
| Waste | Annual | CM_Annual1 |
| Performance indicators | Annual | CM_Annual1 |

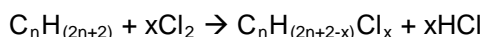
Annex D: Chlorinated Paraffins Plant – Specific Conditions

Process description (this description does not form a part of the Permit)

Chlorinated Paraffins

The plant produces chlorinated paraffins under the trade name of 'Cereclor'. Cereclor is used in a variety of applications, including PVC and paints manufacture, and is distributed to customers via road tankers or in drums.

Cereclor is produced by reacting chlorine with n-paraffins. It is a substitution reaction resulting in hydrogen chloride as co-product:



The plant is integrated into the site chlorine distribution network by a connection to the storage tanks adjacent to the plant. The plant receives paraffin via road tankers into the various paraffin stock tanks. The plant produces a variety of grades of Cereclor, which are distinguished by their base paraffin (short chain C10-13 or medium chain C14-17) and the amount of chlorine that has been added (up to 71% by weight). The Cereclor is stabilised before product handling.

Anhydrous hydrogen chloride is absorbed in water and purified to produce high-grade 36% aqueous hydrochloric acid for sale. A caustic scrubbing system absorbs small quantities of unreacted chlorine.

An effluent system allows the plant to process its own aqueous effluent, which is then discharged via the Per/Tri plant to the EIP treatment plant and ultimately to outfall.

Residual quantities of chlorine and hydrogen chloride are discharged to air via a single vent stack. The paraffin and Cereclor stock tanks breathe to atmosphere via vents on the top.

1.4 Improvement Programme

- 1.4.1 The Operator shall complete the improvements specified in Table D.1.1 by the date specified in that table, and shall send written notification of the date of completion of each requirement to the Agency within 14 days of the completion of each such requirement.

| Table D.1.1: Improvement programme | | |
|------------------------------------|---------------|------|
| Reference | Requirement | Date |
| | None required | |

- 1.4.2 Where the Operator fails to comply with any requirement by the date specified in Table D.1.1 the Operator shall send written notification of such failure to the Agency within 14 days of such date.

2 Operating Conditions

2.1 In-Process Controls

- 2.1.1 The Permitted Installation shall, subject to the conditions of this Permit, be operated using the techniques and in the manner described in the documentation specified in Table D.2.1, or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2 of the Core section of this Permit.

| Table D.2.1: Operating techniques | | |
|-----------------------------------|--|---------------|
| Description | Parts | Date Received |
| Application | The response to questions 2.1 and 2.2 given in each of the sections 2.1 and 2.2 of the Chlorinated Paraffins part of the application describing: a) Chlorinated Paraffins production plant b) Hydrochloric acid production plant | 14/12/04 |
| Application | The response to questions 2.10 in respect of monitoring methods and monitoring frequency described in section 2.10.1 of the Chlorinated Paraffins part of the application | 14/12/04 |
| Additional information | Additional information supplied by the operator in several letters | 07/02/05 |

2.2 Emissions

2.2.1 Emissions to Air, (including heat, but excluding Odour, Noise or Vibration) from Specified Points

- 2.2.1.1 Emissions to air from the emission points in Table D.2.2 shall only arise from the sources specified in that Table (note [1]).

| Table D.2.2: Emission points to air | |
|-------------------------------------|-----------------|
| Emission point reference | Source |
| CER-01 | Main Plant vent |

Note [1] Other emission points sources, not listed in this table, are shown in section 3.1.1 of the Chlorinated Paraffins part of the application.

- 2.2.1.2 The limits for emissions to air for the parameters and emission points set out in Table D.2.3 shall not be exceeded.

| Table D.2.3 : Emission limits to air (Cereclor Plant) | | | |
|--|--------|--|-------------------------------------|
| Emission point reference | | Hydrogen chloride (mg/m³) | Chlorine (mg/m³) |
| CER-01 | Limit | --- | 10 |
| | Target | 10 | - |

- 2.2.1.3 The Operator shall use his best endeavours to ensure emissions to air do not exceed the Indicative Targets described in Table D.2.3
- 2.2.1.4 Emissions to air shall be measured at a frequency and by a method specified in Table D.2.4, or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2 of this Permit.

| Table D.2.4: Emissions to Air: Reporting of monitoring data | | | |
|--|---------------------------|---------------------------|---|
| Parameter | Emission point | Sampling Frequency | Monitoring Method |
| Hydrogen chloride | CER-01 | Monthly | Sampling and analysis based on BS EN 1911 to ISO 17025, by ion chromatography. |
| Chlorine | CER-01 | Monthly | Sampling and analysis based on US EPA 26 to ISO 17025, by ion chromatography. |
| Chlorine | Scrubber outlet to CER-01 | Continuous | Gradwell chlorine probe; monthly calibration |
| Paraffin, Cereclor | Stock tank vents | As required | By calculation, based on vapour/liquid equilibrium constants for liquid transfers |

2.2.2 Emissions to water (other than groundwater), including heat, and excluding odour, noise or vibration from specified points

Emissions to Water (other than to Sewer)

There are no specific controls imposed on emissions to water in this Part of the Permit.

Emissions to sewer

There are no specific controls imposed on emissions to sewer in this Part of the Permit.

Annex D: Schedule D(1) - Reporting of monitoring data: Chlorinated Paraffins Plant

Parameters for which reports shall be made, in accordance with conditions 4.1.2 and 4.1.3 of this Permit, are listed below.

| Table SD(1): Reporting of monitoring data | | | |
|--|-----------------------------|-------------------------|--|
| Parameter | Emission point | Reporting period | Periods begin |
| Hydrogen chloride | CER-01 | Quarterly | 1 January, 1 April, 1 July, 1 October |
| Chlorine | CER-01 | Quarterly | |
| Waste disposal and recovery | Chlorinated paraffins plant | Annual | 1 January |
| Paraffin | Stock tank vents | Annual | |
| Cereclor | Stock tank vents | Annual | |

Annex D: Schedule D(2) - Reporting of performance data: Chlorinated Paraffins Plant

Data required to be recorded and reported by Condition 4.1.3. The data should be assessed at the frequency given and reported annually to the Agency.

| Table SD(2.1): Annual Production/Treatment |
|---|
| None required |

| Table SD(2.2): Performance parameters |
|--|
| No other monitoring required |

Annex D: Schedule D(3) - Reporting Forms: Chlorinated Paraffins Plant

| Table SD(3): Reporting Forms | | |
|-------------------------------------|------------------|------------------|
| Media / parameter | Frequency | Form Name |
| Emissions to Air | quarterly | Cereclor/Air1 |
| | annual | Cereclor_Annual1 |
| Waste | annual | Cereclor_Annual1 |
| Performance Parameters | annual | Cereclor_Annual1 |

Annex E: Power Services – Specific Conditions

Process description (this description does not form part of the Permit)

Runcorn Boiler Plant (RBP)

The Power Services part of the ICV operations at Runcorn Site consists of the Runcorn Boiler Plant (RBP) to generate steam for use on Runcorn Site. Fuels used are natural gas and hydrogen. High grade water is also produced both as a feedstock for the boilers and for use on Runcorn Site.

The RBP consists of three boilers equipped with modern low NO_x burners and produce high-pressure steam (about 45 bar) used directly by some consumer plants. Other steam generation is de-superheated to intermediate pressure (approximately 14 bar) before joining the existing site steam distribution network. Each boiler is rated at 99 MW_{th} input with a total design total thermal input capacity of approximately 285 MW_{th}. The boilers release combustion gases through individual flues, each of height 50 m. There is no common windshield but the flues are tied together for stability. Cooling water for the power plant is taken directly from the Manchester Ship Canal and returned after a single pass through the plant to the Weston Canal.

Two fuels are used: natural gas, supplied from the existing pipeline, and hydrogen, produced on site by the electrolysis of brine. There is provision for the future installation and use of distillate oil as a fuel, in order to protect steam supplies if existing fuel sources prove unreliable. A variation to the permit would be required if distillate oil firing is installed.

The water feed is returned condensate, topped up by potable water supplied from a water treatment plant. The process incorporates a water treatment plant designed to maximise re-use of returned condensate. The water treatment plant also supplies demineralised water to other plants, predominantly for local steam raising or chemical production. The plant operates ion exchange technology to produce demineralised water of suitable quality to feed to the boilers.

Effluent arises from the water treatment plant. Alternate caustic and acid washes are fed to the effluent treatment tanks. Control systems are designed to ensure that the flows are such that the resultant mixture (sodium chloride) is essentially neutral. Fine trimming of pH is carried out within the effluent treatment plant prior to the liquid being discharged to outfall.

The Runcorn Boiler Plant LCP is subject to the requirements of IED but not to the National Emissions Reduction Programme (NERP).

The Operator has chosen to operate this LCP under the ELV compliance route.

1.4 Improvement Programme

- 1.4.1 The Operator shall complete the improvements specified in Table E.1.1 by the date specified in that table, and shall send written notification of the date of completion of each requirement to the Agency within 14 days of the completion of each such requirement.

| Table E.1.1: Improvement programme for Power Services | | |
|---|--|----------|
| Reference [1] | Requirement | Date |
| 4 | The Operator shall submit a report describing how estimates of the annual mass releases of particulates and sulphur dioxide from Weaver Power Station and Runcorn Boiler Plant are determined | Complete |
| 5 | The Operator shall install and operate equipment for the continuous monitoring of emissions of carbon monoxide from the stacks of each of the Runcorn Boiler Plant boilers | 31/06/16 |
| 6 | For LCPD LCP200, LCP 201 and LCP 202 (now LCP189, LCP190 and LCP191 under IED). Annual emissions of dust, sulphur dioxide and oxides of nitrogen including energy usage for the year 01/01/2015 to 31/12/2015 shall be submitted to the Environment Agency using form AAE1 via the NERP Registry. If the LCPD LCP was a NERP plant the final quarter submissions shall be provided on the RTA 1 form to the NERP Registry. | 28/01/16 |

Note [1]: Items Reference 1, 2 and 3 have been completed.

- 1.4.2 Where the Operator fails to comply with any requirement by the date specified in Table E.1.1 the Operator shall send written notification of such failure to the Agency within 14 days of such date.

2 Operating Conditions

2.1 In-Process Controls

- 2.1.1 The Permitted Installation shall, subject to the conditions of this Permit, be operated using the techniques and in the manner described in the documentation specified in Table E.2.1, or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2 of the Core section of this Permit.

| Table E.2.1: Operating techniques | | |
|--|---|---------------|
| Description | Parts | Date Received |
| Application | The response to questions 2.1 and 2.2 given in each of the sections 2.1 and 2.2 of the Power Services part of the application describing: a) Weston Point Power Station [1] b) Weaver Power Station and Cooling Towers [1] c) Runcorn Boiler Plant | 14/12/04 |
| Application | The response to questions 2.10 in respect of monitoring methods and monitoring frequency described in section 2.10.1 of the Power Services part of the application | 14/12/04 |
| Additional information | Additional information supplied by the operator in several letters | 07/02/05 |
| Response to regulation 60(1) Notice – request for information dated 31/10/14 | Compliance routes and operating techniques identified in response to questions 2 (compliance route), 4 (boiler configuration), 5 (net rated thermal input), 6 (MSUL/MSDL), 7 (proposed ELVs), 9 (monitoring requirements). | 31/03/15 |
| Request for further information by email | Operating techniques identified in response to questions 5 (net rated thermal input), 9 (monitoring requirements). | 24/09/15 and |

| | | |
|----------------|--|----------|
| dated 09/09/15 | | 14/10/15 |
|----------------|--|----------|

Note [1]: these parts of the power plant have been decommissioned and are no longer in service.

- 2.1.2 For the following activities referenced in Table 1.1: LCP189, LCP190, LCP191; without prejudice to condition 2.1.1, the activity shall be operated in accordance with the “Electricity Supply Industry IED Compliance Protocol for Utility Boilers and Gas Turbines” revision 1 dated February 2015 or any later version unless otherwise agreed in writing by the Environment Agency.
- 2.1.3 For the following activities referenced in Table 1.1: LCP189, LCP190, LCP191; the end of the start up period and the start of the shutdown period shall conform to the specifications set out in Table E.2.1 and Table E.2.1(a).

| Table E.2.1(a): Start-up and Shut-down thresholds for LCP189, LCP190 and LCP191 | | |
|--|--|--|
| | Minimum start-up load | Minimum shut-down load |
| Emission Point (Unit Reference) | Output Load (MW and % of rated power output) | Output Load (MW and % of rated power output) |
| RBP-01 (LCP189), RBP-02 (LCP190) and RBP-03 (LCP191) | 20 MWth 21% | 20 MWth 21% |

2.2 Emissions

2.2.1 Emissions to Air, (including heat, but excluding Odour, Noise or Vibration) from Specified Points

- 2.2.1.1 Emissions to air from the emission points in Table E.2.2 shall only arise from the sources specified in that Table (note [1]).

| Table E.2.2: Emission points to air | |
|--|--|
| Emission point reference | Source |
| RBP-01, RBP-02, RBP-03 | Runcorn Boiler Plant stacks (3 boilers, 1 stack each) (50 m) |

Note [1] Other emission points sources, not listed in this table, are shown in sections 3.1.1, 3.1.2 and 3.1.3 of the Power Services part of the application

- 2.2.1.2 The limits for emissions to air for the parameters and emission points set out in Table E.2.3 shall not be exceeded.

| Table E.2.3 : Emission limits to air (Power Services) | | | |
|--|---|-----------------------|---|
| Emission point reference | Parameter with different fuel arrangements | Limit [1] [2] | Reference period |
| RBP-01 (LCP189) | Oxides of Nitrogen Burning Natural Gas | 100 mg/m ³ | Calendar monthly mean |
| | | 110 mg/m ³ | Daily mean of validated hourly averages |
| RBP-02 (LCP190) | | 200 mg/m ³ | 95% of validated hourly averages within a calendar year |
| RBP-03 (LCP191) | Oxides of Nitrogen Burning Hydrogen Fuel | 200 mg/m ³ | Calendar monthly mean |
| | | 220 mg/m ³ | Daily mean of validated hourly averages |
| | | 400 mg/m ³ | 95% of validated hourly averages within a calendar year |
| | Oxides of Nitrogen Burning a mixture of Natural Gas and Hydrogen fuel [3] | [4] mg/m ³ | Calendar monthly mean |
| | | [5] mg/m ³ | Daily mean of validated hourly averages |
| | | [6] mg/m ³ | 95% of validated hourly averages within a |

Table E.2.3 : Emission limits to air (Power Services)

| Emission point reference | Parameter with different fuel arrangements | Limit [1] [2] | Reference period |
|--------------------------|--|-----------------------|---|
| | | | calendar year |
| | Carbon monoxide | 100 mg/m ³ | Calendar monthly mean |
| | | 110 mg/m ³ | Daily mean of validated hourly averages |
| | | 200 mg/m ³ | 95% of validated hourly averages within a calendar year |
| | Sulphur dioxide | 35 mg/m ³ | - |
| | Dust | 5 mg/m ³ | - |
| | Mercury Burning Hydrogen Fuel only | No limit set | Half-hourly average |

Note [1]: For compliance criteria, see conditions 6.1.3 in the Core part of this permit.

Note [2]: These limits do not apply during start up or shut down.

Note [3]: In the formula describing the emission limit value (see note [4])

“x” represents the average mass fraction of hydrogen in the mixture over the reference period being monitored.

“Q_{NG}” and “Q_{H₂}” represent the heat capacities of the Natural Gas and Hydrogen fuels respectively.

Q values are determined at least once per quarter

Note [4]: $100 (1 - x) Q_{NG} + 200 x Q_{H_2}$

$$\frac{100 (1 - x) Q_{NG} + 200 x Q_{H_2}}{(1 - x) Q_{NG} + x Q_{H_2}}$$

Note [5]: 110% of calendar monthly mean value calculated in accordance with note [4]

Note [6]: 200% of calendar monthly mean value calculated in accordance with note [4]

2.2.1.3 Emissions to air shall be measured at a frequency and by a method specified in Table E.2.4, or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2 of this Permit.

Table E.2.4: Emissions to Air: Monitoring Requirements

| Emission point | Parameter | Monitoring Frequency | Monitoring Method |
|--------------------|--|--|--|
| RBP-01 (LCP189) | NOx | Continuous | BS EN 14181 |
| RBP-02 (LCP190) | Carbon monoxide | Continuous (<i>subject to completion of item 5 in Table E.1.1</i>) | BS EN 14181 |
| RBP-03 (LCP191) | Sulphur dioxide | At least every 6 months | Concentration by calculation, as agreed in writing with the Environment Agency |
| | Dust | At least every 6 months | Concentration by calculation, as agreed in writing with the Environment Agency |
| | Oxygen, Water vapour | Continuous; as appropriate to reference | BS EN 14181 |
| | Stack gas temperature, Stack gas pressure | Continuous; as appropriate to reference | Traceable to national standards |
| | Mercury | Quarterly [1][2] | Sampling and analysis based on BS EN 13211 to ISO 17025, by |

| Table E.2.4: Emissions to Air: Monitoring Requirements | | | |
|---|---|--|-------------------------------|
| Emission point | Parameter | Monitoring Frequency | Monitoring Method |
| | | | cold vapour atomic absorption |
| | As required by the Method Implementation Document for BS EN 15259 | Pre-operation and when there is a significant operational change | BS EN 15259 |

Note [1] monitoring for mercury is only required when the RBP is burning hydrogen fuel sourced from the mercury chlorine plant.

Note [2] surrogate monitoring for mercury may take place at emission point Cl-146 (see Annex A, Table A.2.2).

2.2.1.4 No condition applies.

2.2.1.5 No condition applies.

2.2.1.6 No condition applies.

2.2.2 Emissions to water (other than groundwater), including heat, and excluding odour, noise or vibration from specified points

Emissions to Water (other than to Sewer)

2.2.2.1 Emissions to water from the emission points specified in Table E.2.5 shall only arise from the sources specified in that Table

| Table E.2.5: Emission points to water | | |
|--|---|------------------------|
| Emission Point Reference | Description of sources | Receiving Water |
| W19 | Arisings from water treatment area | Weston Canal |
| W22 | Cooling water from Manchester Ship Canal | Weston Canal |
| W24 | Surface water and arisings from Water Softening Plant | Weston Canal |
| W27 | Surface water | Weston Canal |

2.2.2.2 The limits for the emissions to water for the parameters and emission points set out in Table E.2.6 shall not be exceeded.

| Table E.2.6: Emissions limits to water: | | | | |
|--|--------|----------------|------------|------------|
| Parameter | | Outfall | | |
| | | W22 | W24 | W27 |
| Temperature (°C) | Limit | 50 | 50 | 50 |
| | Target | 35 | 35 | 35 |
| pH | Limit | 6-9 | 6-9 | 6-9 |
| Suspended solids (mg/l) [1] | Limit | 150 [2] | 150 | 150 |
| | Target | 100 [2] | 100 | 100 |
| Visible oil & grease | Limit | None | None | None |
| Time constraint (hours/occasion) | | 4 | 4 | 4 |
| Cumulative time (hrs/mth) | | 8 | 8 | 8 |

Note [1]: Emission limits and targets for suspended solids do not apply during or immediately after heavy rainfall or after the testing of a fire water main.

Note [2]: The limit and target apply to the increment between the incoming feedwater and the

outgoing effluent.

2.2.2.3 During all times, the Operator shall use his best endeavours to not exceed the Indicative Targets for emissions to water, specified in Table E.2.6 and:

- a) on no occasion shall the measured value remain in the zone between the Indicative Target and the Limit for a period longer than the Time Constraint specified in Table E.2.6
- b) the Cumulative Time that the measured value remains between the Indicative Target and the Limit, within any one month, shall not exceed the cumulative time specified in Table E.2.6

2.2.2.4 No condition applies

2.2.2.5 Emissions to water shall be measured at a frequency and using the methods specified in Table E.2.7, or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2 of this Permit.

| Table E.2.7: Emissions to water: monitoring frequencies | | | | |
|--|------------|------------|------------|---|
| Outfall | W24 | W27 | W22 | Monitoring Method |
| Temperature | W | W | W | Sampling and analysis to ISO 17025 by thermometry |
| pH | W | W | W | Sampling and analysis to ISO 17025 by titrimetry |
| Suspended solids | W | W | W | Sampling and analysis to ISO 17025 by gravimetry |
| Available chlorine | W | W | W | Sampling and analysis to ISO 17025 by iodometric titrimetry |
| Visible oil & grease | W | W | W | Visual check |
| Mercury | M | M | M | Sampling and analysis to ISO 17025 by atomic fluorescence |
| Total heavy metals excluding mercury | M | M | M | Sampling and analysis to ISO 17025 by ICP-AES |

Key: W = weekly spot sample; M = monthly spot sample;

Emissions to sewer

There are no specific controls imposed on emissions to sewer in this Part of the Permit.

2.3 Monitoring for the purposes of the Industrial Emissions Directive Chapter III

2.3.1 All monitoring shall be carried out in accordance with the provisions of Annex V of the Industrial Emissions Directive.

2.3.2 If the monitoring results for more than 10 days a year are invalidated within the meaning set out in condition 2.3.7, the operator shall:

- (a) within 28 days of becoming aware of this fact, review the causes of the invalidations and submit to the Environment Agency for approval, proposals for measures to improve the reliability of the continuous measurement systems, including a timetable for the implementation of those measures; and
- (b) implement the approved proposals.

2.3.3 Continuous measurement systems on emission points from the LCP shall be subject to quality control by means of parallel measurements with reference methods at least once every calendar year.

2.3.4 Unless otherwise agreed in writing by the Environment Agency in accordance with condition 2.3.5 below, the operator shall carry out the methods, including the reference measurement methods, to

use and calibrate continuous measurement systems in accordance with the appropriate CEN standards.

- 2.3.5 If CEN standards are not available, ISO standards, national or international standards which will ensure the provision of data of an equivalent scientific quality shall be used, as agreed in writing with the Environment Agency.
- 2.3.6 Where required by a condition of this permit to check the measurement equipment, the operator shall submit a report to the Environment Agency in writing, within 28 days of the completion of the check.
- 2.3.7 Where Continuous Emission Monitors are installed to comply with the monitoring requirements in Table E.2.4 the Continuous Emission Monitors shall be used such that:
- (a) for the continuous measurement systems fitted to the LCP release points defined in Table E.2.4 the validated hourly, monthly and daily averages shall be determined from the measured valid hourly average values after having subtracted the value of the 95% confidence interval;
 - (b) the 95% confidence interval for nitrogen oxides of a single measured result shall be taken to be 20%;
 - (c) the 95% confidence interval for carbon monoxide releases of a single measured result shall be taken to be 10%;
 - (d) an invalid hourly average means an hourly average period invalidated due to malfunction of, or maintenance work being carried out on, the continuous measurement system. However, to allow some discretion for zero and span gas checking, or cleaning (by flushing), an hourly average period will count as valid as long as data has been accumulated for at least two thirds of the period (40 minutes). Such discretionary periods are not to exceed more than 5 in any one 24-hour period unless agreed in writing. Where plant may be operating for less than the 24-hour period, such discretionary periods are not to exceed more than one quarter of the overall valid hourly average periods unless agreed in writing; and
 - (e) any day, in which more than three hourly average values are invalid shall be invalidated.

Annex E: Schedule E(1) – Reporting of monitoring data: Power Services

Parameters for which reports shall be made, in accordance with conditions 4.1.2 and 4.1.3 of the Core part of this Permit, are listed below.

| Table SE(1): Reporting of monitoring data | | | |
|--|------------------------|-------------------------|---------------------------------------|
| Parameter | Emission point | Reporting period | Periods begin |
| pH, temperature, suspended solids, visible oil and grease. | W22, W24, W27 | Quarterly | 1 January, 1 April, 1 July, 1 October |
| Oxides of nitrogen | RBP-01, RBP-02, RBP-03 | | |
| Carbon Monoxide | RBP-01, RBP-02, RBP-03 | | |
| Operating hours | RBP-01, RBP-02, RBP-03 | | |
| Sulphur dioxide | RBP-01, RBP-02, RBP-03 | Every 6 months | 1 January, 1 July |
| Dust | RBP-01, RBP-02, RBP-03 | | |
| Waste disposal and recovery | Power Services | Annual | 1 January |
| Mercury to air (with respect to lifetime reduction plan) | RBP-01, RBP-02, RBP-03 | | |

Annex E: Schedule E(2) - Reporting of performance data: Power Services

Data required to be recorded and reported by Condition 4.1.3 of the Core part of this permit. The data should be assessed at the frequency given and reported annually to the Agency.

| Table SE(2.1): Annual production/treatment | |
|---|--------------|
| Parameter | Units |
| Thermal output | GWh |

| Table SE(2.2)(a): Performance parameters | | |
|--|--------------------------------|------------------------------|
| Parameter | Frequency of assessment | Performance indicator |
| Time constraints for exceedances of indicative targets (in respect of condition 2.2.2.3) | Quarter | No breaches of condition |

| Table SE(2.2)(b): Performance parameters for reporting to DEFRA | | |
|--|--------------------------------|--------------|
| Parameter | Frequency of assessment | Units |
| Thermal Input Capacity for each LCP | Annually | MW |
| Annual Fuel Usage for each LCP | Annually | TJ |
| Total Emissions to Air of NO _x for each LCP | Annually | t |
| Total Emissions to Air of SO ₂ for each LCP [1] | Annually | t |
| Total Emissions to Air of dust for each LCP [1] | Annually | t |
| Operating Hours for each LCP | Annually | hr |

Note [1] emissions determined by calculation or factor

Annex E: Schedule E(3) - Reporting Forms: Power Plant

| Table SE(3) Reporting forms | | | | |
|------------------------------------|---|-----------------------|-------------------------|---------------------|
| Media/parameter | Reporting format | Starting Point | Agency recipient | Date of form |
| Air & Energy [1] | Form IED AR1 – SO ₂ , NO _x and dust mass emission and energy | 01/01/16 | National | 31/12/15 |
| LCP [1] | Form IED HR1 – operating hours | 01/01/16 | National | 31/12/15 |
| Air [1] | Form IED CON 1 - SO ₂ , NO _x and dust concentration emissions. | 01/01/16 | Area Office | 31/12/15 |
| CEMs [1] | Form IED CEM – Invalidation Log | 01/01/16 | Area Office | 31/12/15 |
| Air [1] | Form IED PM1 - discontinuous monitoring and load. | 01/01/16 | Area Office | 31/12/15 |
| Other performance indicators [2] | Form Power_Annual1 or other form as agreed in writing by the Environment Agency – thermal output (GWh) | 01/01/16 | Area Office | Undated |
| Water [2] | Form Power/Water1 or other form as agreed in writing by the Environment Agency | 01/01/16 | Area Office | Undated |
| | Form Power_Annual1 or other form as agreed in writing by the Environment Agency | 01/01/16 | Area Office | Undated |
| Waste [2] | Form Power_Annual1 or other form as agreed in writing by the Environment Agency | 01/01/16 | Area Office | Undated |
| Air [2] | Form Power/Air1 or other form as agreed in writing by the Environment Agency - CO concentration emissions | 01/01/16 | Area Office | Undated |
| | Form Power_Annual1 or other form as agreed in writing by the Environment Agency – mercury mass emissions | 01/01/16 | Area Office | Undated |

Note [1]: Forms relating to LCP operation; these are standardised forms and not all parameters may be applicable to this permit.

Note [2]: Forms relating to non-LCP or whole Power Services operation.

END OF PERMIT