

Emissions to Water Management Plan

Report Ref: ITM - EP001 - 011

Submitted to:

Environment Agency

In Support of Permit Application Ref:

EPR/HP3640QD/A001 & EPR/AP3225SE/P001

Author:

Tegan Pringle , Environmental Manager, ITM Power

Date: 14th September 2023

Date: 14-09-23	ITM Power Confidential	Report Ref: ITM – EP001 - 011	1 of 16
----------------	------------------------	-------------------------------	---------

Contents

1. Emissions to Water Management Plan	3
1.1 Introduction	3
2. Water Emissions to Drain.....	4
2.1 Emissions to Drain Inventory	4
2.2 Emissions to Drain Map	5
3. Water Emissions to IBC	6
3.1 Emissions to IBC Inventory	6
3.2 IBC Storage Location Map.....	7
Appendix 1: Trade Effluent Consent.....	8

Date: 14-09-23	ITM Power Confidential	Report Ref: ITM – EP001 - 011	2 of 16
----------------	------------------------	-------------------------------	---------

1. Emissions to Water Management Plan

1.1 Introduction

This document is the Emissions to Water Management Plan for the Environmental Permit application for ITM Power (Trading) Ltd, located in Sheffield, England. The National Grid Reference for the centre of the site is SK 39894 90515. ITM Power (Trading) Ltd operates a hydrogen electrolyser manufacturing facility which is located off Shepcote Lane in Sheffield. The main activity undertaken at the facility is the manufacture of hydrogen electrolysers.

The facility is required to apply for an Environmental Permit (EP) in order to ensure compliance with the Environmental Permitting (England and Wales) Regulations 2016, SI 2016/1154, as amended.

Table 1.1 below details the Regulated Activities that take place within the Installation boundary:

Table 1.1 – EPR Regulated Activities		
EPR Schedule 1 Ref	Description	ITM Process
S4.2 A(1)(c)	Unless falling within any other Section, any manufacturing activity (other than the application of a glaze or vitreous enamel) involving the use of, or the use or recovery of, any compound of any of the following elements— (i)antimony, (ii)arsenic, (iii)beryllium, (iv)gallium, (v)indium, (vi)lead, (vii)palladium, (viii)platinum, (ix)selenium, (x)tellurium,	The process using platinum-based electroplating solution for coating metal sinters.
S4.2 A(1)(c)	As above	Production of the catalyst coated membrane (CCM) using in-house formulated precious metal-based ink powders to print onto a non-metal substrate.
S4.2 A(1)(b)	Unless falling within any other Section, any manufacturing activity which is likely to result in the release into the air of any hydrogen halide (other than the manufacture of glass or the coating, plating or surface treatment of metal) or which is likely to result in the release into the air or water of any halogen or any of the compounds mentioned in paragraph (a)(vi) (other than the treatment of water).	The hydrochloric acid chemical milling process for removal of the metal oxide layer from titanium components.

2. Water Emissions to Drain

2.1 Emissions to Drain Inventory

The Installation generates domestic foul effluent, trade effluent and clean surface water which are all discharged to public drains. These different discharges are described in the table below.

Table 2.1 below provides details of the point source releases to drain from the Installation.

Table 2.1 – Point Source Emissions to Drain			
Emission Point Reference	Type of Release	Discharge Description	Discharges to
SW1*	Surface water	This is yard run off from roofs, car parks and clean yards.	Yorkshire Water combined sewer
FW1*	Foul water and trade effluent	This discharge point receives 2 distinct streams: 1. Discharge of the domestic foul sewage from the Installation 2. Trade effluent from the Installation**	Yorkshire Water combined sewer

** All trade effluent discharged into the foul sewer is covered by the Trade Effluent Consent in Appendix 1.

The two emission points in Table 2.1 are shown on a map of the Installation in Section 2.2 below.

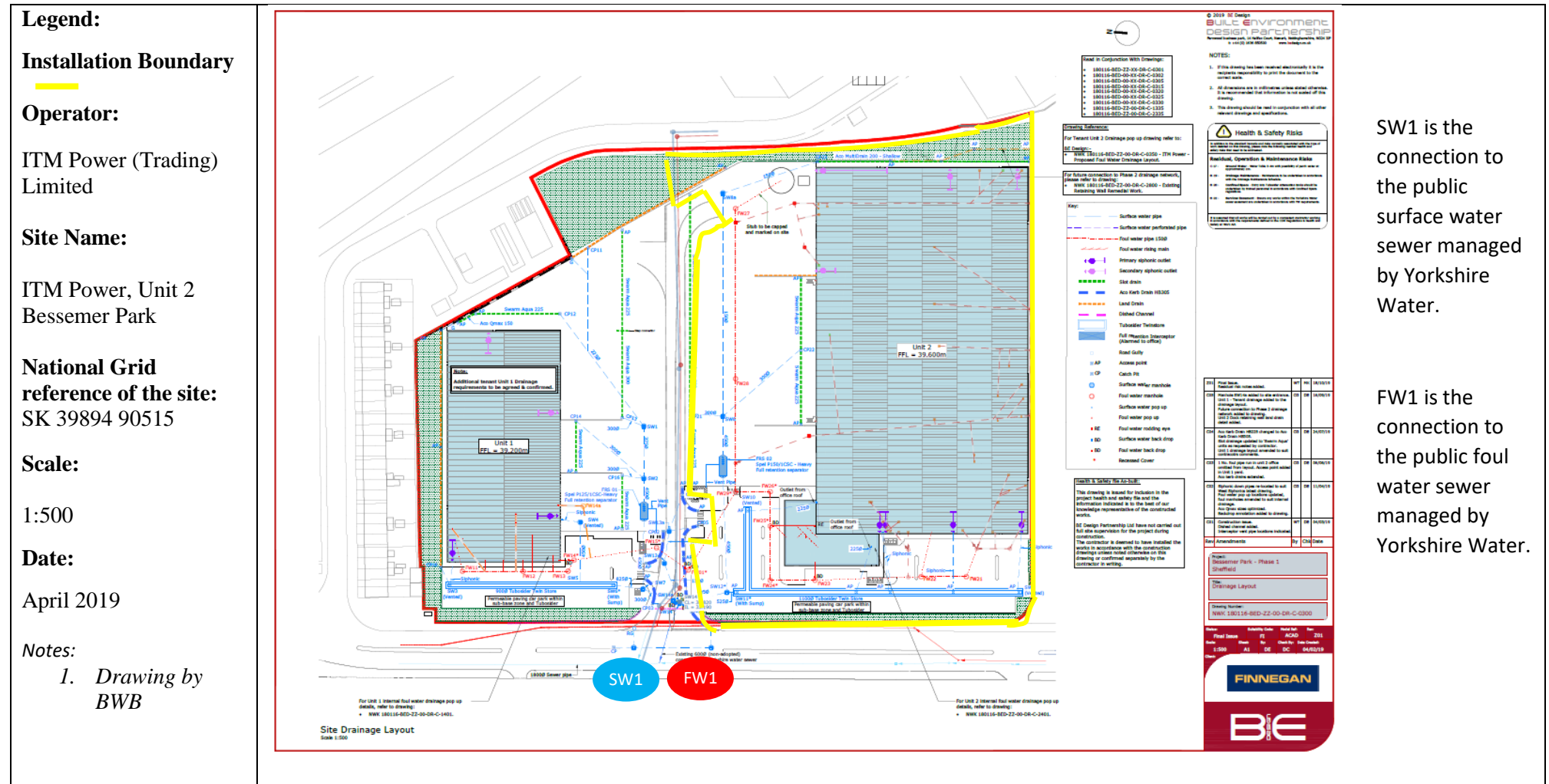
Environmental Permit Application

Reference Number: EPR/HP3640QD/A001 & EPR/AP3225SE/P001



2.2 Emissions to Drain Map

The image below shows the location of the point source emissions listed in Table 2.1.



Date: 14-09-23	ITM Power Confidential	Report Ref: ITM – EP001 - 011	5 of 16
----------------	------------------------	-------------------------------	---------

3. Water Emissions to IBC

3.1 Emissions to IBC Inventory

All process effluent from the Installation that is not covered by Trade Effluent Consent Y/5016/23C (see Appendix 1) is collected within intermediate bulk containers (IBC's). IBC's are filled at stations inside the building and then moved to the outside storage location ready for collection.

Table 3.1 below provides details of the storage locations of IBC's at the Installation.

Table 3.1 – IBC Storage Areas					
IBC Area Name	IBC Area ref No.	Capacity	Type of substance captured/stored	Discharge Description	Disposal Route
IBC Area 1	IBC-1	6 IBC's All with secondary containment	Chemical effluent from production of CCM's.	A mixture of suspended platinum powder, suspended Iridium powder, solvents including Nafion PFAS 20% dispersion, Dipropylene Glycol, propylene glycol and isopropyl alcohol.	IBCs & removed from site as hazardous waste and goes to a recovery plant to recover the precious metals.
IBC Area 2	IBC-2	6 IBC's All with secondary containment	Chemical effluent from production of CCM's and R&D activities within the technical laboratories.	This discharge point receives 3 distinct streams: 1. Sulphuric Acid rinse & deionised water 2. XXXXXX 3. A mix of chemicals from R&D labs	Removed from site as hazardous waste for disposal.
External IBC storage area	IBC-E	4 IBC's All with secondary containment in a secure locked banded IBC cabinet.	All of the above stored	XXXXXXXX	Removed from site as hazardous waste for disposal.

The three IBC storage areas in Table 3.1 are shown on a map of the Installation in Section 3.2 below.

3.2 IBC Storage Location Map

The image below shows the location of the IBC areas listed in Table 3.1.

Legend:

Installation Boundary

Operator:
 ITM Power (Trading) Limited

Site Name:
 ITM Power, Unit 2 Bessemer Park

National Grid reference of the site:
 SK 39894 90515

Scale:
 1:500

Date:
 April 2019

Notes:
 1. Drawing by BWB

Site Drainage Layout
Scale 1:500

NOTES:

- If the drawing has been received electronically it is the recipient's responsibility to print the document to the correct scale.
- All dimensions are in millimetres unless stated otherwise. It is recommended that information is not scaled off the drawing.
- This drawing should be read in conjunction with all other relevant drawings and specifications.

Health & Safety Risks

Revision Table:

Rev	Description	By	Date
001	Issue for construction	CH	08/04/19
002	Revised to include IBC locations	CH	08/04/19
003	Revised to include IBC locations	CH	08/04/19
004	Revised to include IBC locations	CH	08/04/19
005	Revised to include IBC locations	CH	08/04/19

Approval:
 By: CH Date: 08/04/19

IBC-1 and IBC-2 are both located inside the building.

IBC-E is in the goods-in yard and is a fully bunded, secure IBC cabinet that can hold up to 4 x 1000L IBC's ready for collection for recovery & disposal.

Emergency chemical spill kits are located next to all IBC stations and are to be used in the event of an emergency.

There are no drainage connections near to IBC-1 and IBC-2.

Registration Number: Y/5016/23C

YORKSHIRE WATER SERVICES LTD

The Water Industry Act 1991

CONSENT

to discharge trade effluent into a public sewer

To: ITM Power (Trading) Ltd
Unit 2
Bessemer Park
Shepcote Lane
Sheffield
S9 1DZ

On the 22nd March 2023 a Notice containing an application for a Trade Effluent Consent was served by you on Yorkshire Water Services Ltd (here called "YWS") in respect of the discharge of trade effluent (here called "the effluent") from the premises (here called "the premises") known as

Unit 2
Bessemer Park
Shepcote Lane
Sheffield
S9 1DZ

YWS now CONSENTS to the discharge of the effluent from the premises into a public sewer subject to the following Conditions:

1. Communication with the Sewer

(1) The public sewer into which the effluent may be discharged is marked 'Z' on the attached plan.

Date: 14-09-23	ITM Power Confidential	Report Ref: ITM – EP001 - 011	9 of 16
----------------	------------------------	-------------------------------	---------

DocuSign Envelope ID: AF7EB7D0-743B-4742-9C80-3090265A0A57

(2) The effluent shall be discharged to enter only into the public sewer shown on the attached plan, at the point so shown marked 'X'. No connection for the discharge of effluent shall be made to the connecting pipe between such point and any measurement facilities referred to in the following Condition without the prior approval in writing of YWS.

2. Inspection and Measurement

(1) There shall be provided and maintained at all times at your expense at the point shown or otherwise indicated and marked as 'Y' on the said plan an inspection chamber or manhole or sample tap such as will enable a person readily and safely to take at any time samples of what is passing into the said sewer from the premises, and that chamber or manhole shall be a minimum size of 1,200 millimetres internal diameter for pre-cast concrete sections or 1,200 millimetres x 800 millimetres for engineering brickwork construction or such other suitable sampling facility to be constructed and maintained to the satisfaction of YWS.

(2) You shall allow YWS a right of access without notice for the purpose of inspecting, testing any equipment required under Condition 5(3) below and for obtaining any sample of the effluent.

3. Information to be Given

You shall supply to YWS all information reasonably requested for the control of the effluent and for the assessment or calculation of the charges in accordance with Condition 8.

4. Discharge Quantity and Rate

The quantity of the effluent discharged shall not exceed 5 cubic metres in any period of twenty-four hours.

The rate of discharge of the effluent shall not exceed 1 litre per second.

5. Nature of the Effluent

Date: 14-09-23	ITM Power Confidential	Report Ref: ITM – EP001 - 011	10 of 16
----------------	------------------------	-------------------------------	----------

DocuSign Envelope ID: AF7EB7D0-743B-4742-9C80-3090265A0A57

- (1) Subject to the provisions of Conditions 5(2), 5(3) and 6 below, the effluent shall not contain any substance or be of a character other than as listed in the attached Schedule of Conditions and any such substance or character shall not be in a proportion greater than that there stated.
- (2) No sample of the effluent taken from the point specified in 2.(1) shall contain prescribed substances in concentrations above background.
- (3) There shall be provided, operated and maintained at all times at your expense, such equipment and/or systems including but not limited to chemical dosing as shall be approved by YWS, as will prevent the effluent, either alone or in combination with any matter in any sewer or receiving sewage treatment works vested in and/or under the control of YWS from giving rise to any obnoxious, poisonous or inflammable gases or otherwise a statutory nuisance as defined by the Environmental Protection Act 1990 in such sewer or sewage treatment works which would be deleterious to such sewer or to the processes in use at such sewage treatment works or to the disposal of sludges produced by such sewage treatment works.

6. Matter to be Excluded

Save as permitted by this Consent the effluent shall not contain:

- (1) Any matter likely to injure any public sewer or any sewer or drain communicating with a public sewer, or to interfere with the free flow of its contents, or to affect prejudicially the treatment and disposal of its contents; or
- (2) Any matter which, either alone or in combination with the contents of any public sewer or any sewer or drain communicating with a public sewer, is dangerous, or the cause of a nuisance, or prejudicial to health; or
- (3) Any petroleum spirit. For this purpose 'petroleum spirit' means any such: -
 - (a) crude petroleum; or

Date: 14-09-23	ITM Power Confidential	Report Ref: ITM – EP001 - 011	11 of 16
----------------	------------------------	-------------------------------	----------

DocuSign Envelope ID: AF7EB7D0-743B-4742-9C8D-3090285A0A57

(b) oil made from petroleum, or from coal, shale, peat or other bituminous substances; or

(c) product of petroleum or mixture containing petroleum,

as when tested in the manner prescribed by or under the Petroleum (Consolidation) Act 1928 gives off an inflammable vapour at a temperature of less than 22.7 degrees Celsius.

7. Notification of Changed Effluent

You shall give to YWS prior written notice of any change in the process or the process materials or any other circumstances likely to alter the constituents of the effluent as set out in Condition 5 and the Schedule of Conditions. In such circumstances, no substance of which YWS has not had previous notice of may be discharged unless and until YWS has agreed to accept the substance at a limit imposed by YWS which shall then deemed to be incorporated in the said Schedule by agreement and shall not prejudice the right of YWS to serve a Direction earlier than two years from the date of such incorporation.

8. Charges

(1) Payment for the treatment and disposal of the effluent and the costs of sampling and analysis of the same for control purposes shall be made to YWS by way of charges determined separately as stated below for the effluent discharged.

(2) The charge under (1) above shall be calculated in accordance with the Yorkshire Water Services Limited Charges Schemes as from time to time amended.

(3) The charge shall be payable by any person who is or was the occupier of the premises during the period of discharge of the effluent or at the date payment is due.

Date: 14-09-23	ITM Power Confidential	Report Ref: ITM – EP001 - 011	12 of 16
----------------	------------------------	-------------------------------	----------

Environmental Permit Application

Reference Number: EPR/HP3640QD/A001 & EPR/AP3225SE/P001



DocuSign Envelope ID: AF7EB7D0-743B-4742-9C80-3090285A0A57

Y/5016/23C

DATED this 24th day of May 2023

Signed: 

YWS Authorised Signatory

I/We: ITM Power
.....
have received the Consent, of which this is a copy

Dated: 19 May 2023
.....

Signed: 

Print Name: Tegan Pringle
.....

Date: 14-09-23	ITM Power Confidential	Report Ref: ITM – EP001 - 011	13 of 16
----------------	------------------------	-------------------------------	----------

DocuSign Envelope ID: AF7EB7D0-743B-4742-9C80-3090265A0A57

SCHEDULE OF CONDITIONS

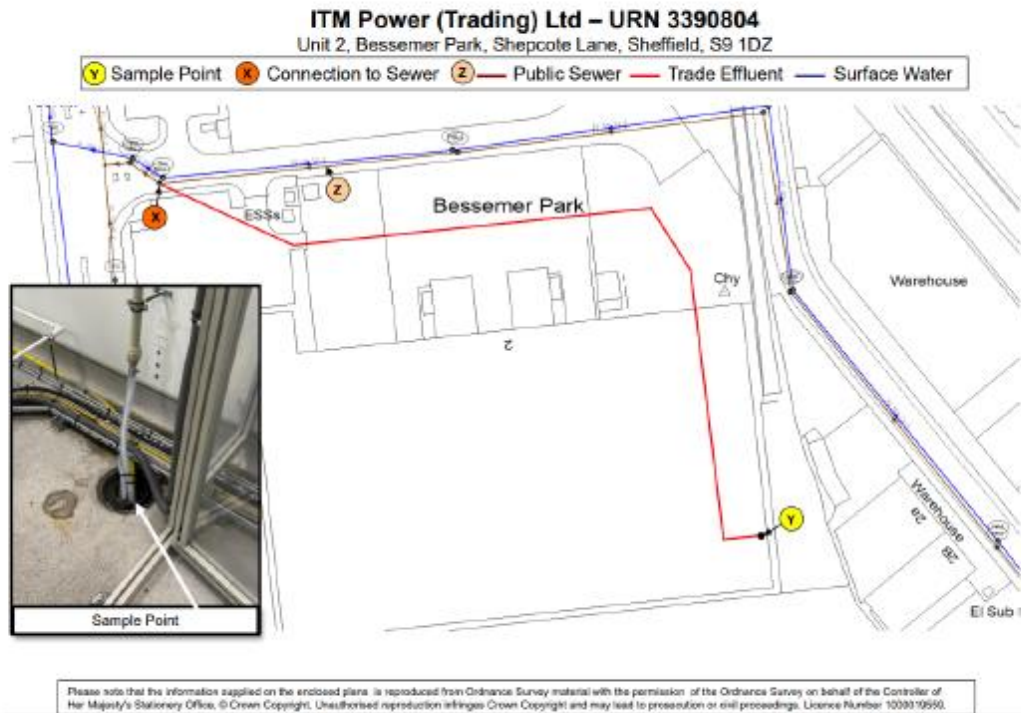
- 1 The temperature of the effluent shall not exceed 43.3 degrees Celsius at the time of discharge.
- 2 The pH value of the effluent shall not be less than 6 nor more than 10.5 at the approved measuring point.
- 3 Settled Chemical Oxygen Demand shall not exceed 2000 milligrams per litre.
- 4 Settleable Solids shall not exceed 500 milligrams per litre.

Date: 14-09-23	ITM Power Confidential	Report Ref: ITM – EP001 - 011	14 of 16
----------------	------------------------	-------------------------------	----------

Environmental Permit Application

Reference Number: EPR/HP3640QD/A001 & EPR/AP3225SE/P001

DocuSign Envelope ID: AF7EB7D0-743B-4742-9C80-3090265A0A57



Date: 14-09-23	ITM Power Confidential	Report Ref: ITM – EP001 - 011	15 of 16
----------------	------------------------	-------------------------------	----------

DocuSign Envelope ID: AF7EB7D0-743B-4742-9C8D-3090285A0A57

NOTES

1. Any person aggrieved by any condition contained in this Consent may appeal to the Water Services Regulatory Authority.
2. Compliance with these Conditions shall be ascertained by reference to the approved methods of analyses used, applied or adopted by YWS as from time to time amended.
3. For purposes of Condition 5 prescribed substances shall be taken as being those substances that are included in Schedule 1 of 'The Trade Effluents (Prescribed Processes and Substances) Regulations 1989' Statutory Instrument Number 1156 or any amendment or addition to the same.
4. For purposes of Condition 5 background shall assume the same meaning as defined in 'The Trade Effluent (Prescribed Processes and Substances) Regulations 1989' Statutory Instrument Number 1156 or any amendment or addition to the same.
5. Occupiers are reminded of their duty under the Health and Safety at Work etc Act 1974 to ensure that inspection and sampling of the effluent can be undertaken without risk to health or safety.
6. Entry to the premises by Officers of YWS for the purpose of inspecting and sampling the effluent is authorised under the Water Industry Act 1991.
7. If any condition of the Consent is contravened the occupier of the premises may be guilty of an offence and liable to conviction by a Magistrates' Court to a fine not exceeding the statutory maximum or on conviction by a Crown Court to an unlimited fine.

Date: 14-09-23	ITM Power Confidential	Report Ref: ITM – EP001 - 011	16 of 16
----------------	------------------------	-------------------------------	----------