Cyfoeth Naturiol Cymru
Natural Resources Wales

Natural Resources Wales permitting decisions

Tata Steel UK Limited

Decision Document

(Morfa Non-Hazardous Landfill)

Contents

Variation

Variation number is: EPR/BV7311IE/V007

The Operator is: Tata Steel UK Limited

The Installation is located at: Morfa Non-Hazardous Landfill, Port Talbot Installation, Port Talbot Works, Port Talbot, West Glamorgan, SA13 2NG

We have decided to issue a variation for the Morfa Non-Hazardous Landfill Site operated by Tata Steel UK Limited.

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

Purpose of this document

This decision document:

- explains how the application has been determined;
- provides a record of the decision-making process;
- shows how all relevant factors have been taken into account; and
- justifies the specific conditions in the permit other than those in our generic permit template.

Key issues of the decision

Minior Non-technical Variation Application

In early 2020 NRW undertook a part review of the site's monitoring reports submitted over the 2019 period (CAR_NRW0036308). During this assessment it was noted that there was significant confusion over the monitoring requirements relating to this permit (including the monitoring for the adjacent Morfa landfills (Closed and Hazardous)).

The main issue appeared to be discrepancies in the monitoring requirements and emission limits specified within the landfill permits versus the current monitoring programme adopted by the Operator.

This situation has arisen over a number of years and for a number of reasons. Although historically informal agreements with the regulatory officer may have been provided, the Operator adopted some monitoring changes (including changes to emission limits) without the requisite permit variation (to reflect the changes agreed).

It is believed that the Environment Agency Wales (prior to the establishment of Natural Resources Wales) also agreed to changes to the groundwater emission limits, monitoring locations and parameters in response to the 2012 Hydrogeological Risk Assessment (HRA) review. However once again, this was never formalised.

The 2017 HRA (and 2017 Annual Monitoring Interpretation Report) has since made further changes to the permit's monitoring regime. These have been assessed by NRW and have been accepted in principle with the local Regulating Officer (CAR_NRW0036689).

During 2020 NRW and the Operator discussed the permit's monitoring tables. The purpose of these discussions was to clarify the changes and updates, followed by the

Operator applying to vary their permit. This would ensure that the permit's monitoring tables are clear and consistent in future, and reflect future monitoring.

The tables have since been agreed between the Operator and the local regulating officer. A permit variation application was submitted at the beginning of the year to regularise the permit with the newly agreed monitoring programme.

Following additional information provided by the Operator during the duly making stage, the application was duly made on 7 July 2021.

Consultation

No consultation has been carried out, as this is a minor non-technical variation, and the site is not registered as a Site of High Public Interest (HPI Site).

The Facility

The Facility in its entirety consists of the whole steel works including the Morfa non-hazardous and Morfa hazardous landfills. This permit is for the Morfa Non-Hazardous Landfill which is an existing in-house waste management facility which accepts waste produced exclusively by Tata Steel UK Ltd. The non-hazardous wastes mainly comprise of steel slag, with flue dusts, water treatment solids, office waste, canteen wastes and demolition rubble arising from steel production at Port Talbot Steel Works, South Wales. The maximum permitted input is 500,000 tonnes per annum. 12 of the Cells receive non-biodegradable waste, with 1 Cell designated for biodegradable wastes.

Only Cells 1, 2 and the Biodegradable cell are currently operational.

The western boundary comprises a series of coastal barrier dunes on the seaward edge, whilst the southern edge of the site is within 130 metres of the Kenfig National Nature Reserve, both of which are part of an EC protected nature reserve. The eastern boundary is defined by the low-lying Margam Moors which is a registered SSSI.

The permit was varied (KP3033MC) in December 2006 to accommodate an in-house waste treatment plant to sort and divert wastes from the landfill, and to include additional wastes to be accepted under the permit.

Proposed changes

The changes proposed are summarised below:

- On 1 April 2021 the registered office address for Tata Steel UK Ltd was changed from 30 Millbank London SW1P 4WY to 18 Grosvenor Place London SW1X 7HS. The permit has been updated to reflect the new address;
- The Operator has produced an updated Site Monitoring Plan, illustrating the locations of all current monitoring points associated with the sites on-going monitoring programme. Monitoring wells referenced on the original permit that were never installed have been removed from the plan, whilst new monitoring point locations (as agreed with the NRW) have been added to reflect the existing monitoring regime. The new Site Monitoring Plan referenced "2110r1v1d1220 MNHL Monitoring Network December 2020" is now referenced within Schedule 3 of the permit;
- This variation also looks to correct typographical errors within the permit, including errors within Tables S1.4, S3.1 and S3.2, and to update the formatting of each Table to reflect NRWs modern style template;
- Additional wording has been added to Table S1.4 to reflect changes made to Table S3.2 and point source surface water emissions;
- Monitoring location points have been updated within Table S3.1;
- The monitoring frequency of "continuous" has been removed from Table S3.2 and replaced with reference to POC 3;
- Monitoring Points have been updated, and Chloride and Arsenic added to groundwater limits specified within Table S3.3, whilst redundant limits have been removed;

- Carbon dioxide landfill gas limits have been removed from Table S3.4, whilst methane limits remain unaltered;
- Landfill gas limit monitoring frequencies have been adjusted from monthly to quarterly within Table S3.4;
- All references to landfill gas emissions monitoring with Table S3.6 has been removed. The Table has been deleted;
- Leachate monitoring points and monitoring suites have been updated within Table S3.7 (Table now numbered Table S3.6);
- Surface water monitoring points and monitoring suites have been updated within Table S3.8 (Table now numbered Table S3.7);
- Groundwater monitoring points and monitoring suites have been updated within Table S3.9 (Table now numbered Table S3.8), with some parameters have been moved from the annual suite into the quarterly suite;
- Table S3.10 has been removed;
- Table S4.1 has been updated to reflect updated emission point references and changes to reporting periods updated within Schedule 3; and finally
- Table S4.4 has been updated to reflect updated reporting forms.

Leachate Levels

Table S3.1 which describes Leachate level limits and monitoring requirements has been updated to reference the new Site Monitoring Plan, detailing leachate monitoring points as per the agreed on-going monitoring programme. Typographical errors have also been corrected within the Table.

Table S3.1 Leachate level limits and monitoring requirements			
Monitoring point reference/ Description	Limit	Monitoring frequency	Monitoring method
L1, L2, L3, L4, L5 W10, W11, L6, L7 and L8 as shown on as shown on Drawing "2110r1v1d1220 MNHL Monitoring Network December 2020" and all subsequent new leachate monitoring points installed within cells (at least one monitoring point per cell).	1m above base of leachate monitoring point	Weekly (reducing to monthly when landfill is fully capped)	Accurate to ±0.01m relative to Ordnance Datum. Unless otherwise agreed in writing with Natural Resources Wales, monitoring methods used shall be in accordance with Environment Agency document 'Guidance on monitoring of landfill leachate, groundwater and surface water' (LFTGN02)

Surface Water Monitoring

Some typographical errors contained within Tables S3.2 have been corrected. Due to changes in how the Recharge trench system works across the Morfa landfills, the monitoring frequency in the recharge chambers has been altered. Due to the change from an active to a passive system it is no longer possible to monitoring on a continual basis as there is no power available on the site. Thus the monitoring frequency of "continuous" has been removed from this table and replaced with reference to the future pre-operational condition 3, in order to establish appropriate referencing periods in due course. The non-hazardous landfill is not currently capped and therefore this system is not currently active. Once capping has been completed, the requirements in Table S3.2 will be agreed within NRW and put into operation. Tata Steel will propose updated targets and monitoring frequency prior to commissioning the system. Once this has been done and the Operator has consistent monitoring data, surface water monitoring frequencies will be agreed.

Table S3.2 Point source emissions to water (other than sewer) – emission limits and monitoring requirements						
Emission point Ref. & Location	Source	Parameter	Limit (incl. unit)	Reference Period	Monitoring Frequency	Monitoring Standard or Method
Recharge Chamber C as shown on drawing reference: Figure 8 Recharge Trench Alignment Revision 0, Dated 12.07	Surface Water Ponds	Water Level	In accordance with Pre-Operational Condition reference 1 of Table S1.4	In accordance with Pre-Operational Condition reference 3 of Table S1.4	In accordance with Pre-Operational Condition reference 3 of Table S1.4	In accordance with Pre-Operational Condition reference 3 of Table S1.4
Recharge Chamber D as shown on drawing reference: Figure 8 Recharge Trench Alignment Revision 0, Dated 12.07	Surface Water Ponds	Water Level	In accordance with Pre-Operational Condition reference 1 of Table S1.4	In accordance with Pre-Operational Condition reference 3 of Table S1.4	In accordance with Pre-Operational Condition reference 3 of Table S1.4	In accordance with Pre-Operational Condition reference 3 of Table S1.4
Recharge Chamber E, F1 and F2 as shown on drawing reference: Figure 8 Recharge Trench Alignment Revision 0, Dated 12.07	Surface Water Ponds	Water Level	In accordance with Pre-Operational Condition reference 2 of Table S1.4	In accordance with Pre-Operational Condition reference 3 of Table S1.4	In accordance with Pre-Operational Condition reference 3 of Table S1.4	In accordance with Pre-Operational Condition reference 3 of Table S1.4

Table S3.2 Point source emissions to water (other than sewer) – emission limits and monitoring requirements						
Emission point Ref. & Location	Source	Parameter	Limit (incl. unit)	Reference Period	Monitoring Frequency	Monitoring Standard or Method
Recharge Chamber C, D, E, F1 and F2 as shown on drawing reference: Figure 8 Recharge Trench Alignment Revision 0, Dated 12.07	Surface Water Ponds	Chemical Parameters as outlined with Pre-Operational Condition reference 2 of Table S1.4	In accordance with Pre-Operational Condition reference 3 of Table S1.4	In accordance with Pre-Operational Condition reference 2 of Table S1.4	In accordance with Pre-Operational Condition reference 2 of Table S1.4	In accordance with Pre-Operational Condition reference 3 of Table S1.4

Trigger Levels for Emissions into groundwater and monitoring requirements

Some of the emission limits for trigger levels set for groundwater have been altered. The changes were first suggested in 2017 as part of the Hydraulic Risk Assessment (HR)A and Annual Monitoring Report submitted to NRW at the time. Groundwater limits for both Chloride and Arsenic have been set for all of the shallow aquifer boreholes, with old/redundant limits having been removed as they were not representative of suitable triggers for identifying an issues with the landfill.

Table S3.3 Trigger levels for emissions into groundwater and monitoring requirements				
Monitoring point reference	Parameter	Limit (including unit)	Reference Period	Monitoring frequency
	Chloride	200 (µg/l)	Spot Sample	Quarterly

Table S3.3 Trigger levels for emissions into groundwater and monitoring requirements				
Monitoring point reference	Parameter	Limit (including unit)	Reference Period	Monitoring frequency
BH3S, BH4S, BH6S, BH30S (Shallow Aquifer) as shown on as shown on Drawing "2110r1v1d1220 MNHL Monitoring Network December 2020"	Arsenic	50 (µg/l)		

Landfill gas in external monitoring boreholes

Although the waste mass has a potential to produce landfill gas, monitoring has shown that gas levels are low and do not exceed trigger levels. This, coupled with the remote location and lack of nearby receptors, means the risk of gas is very low. The generic carbon dioxide emission limits have been removed from Table S3.4, with methane limits remaining within the Table. Monitoring frequency has also been adjusted from monthly to quarterly as agreed with the Local Regulating Officer.

Table S3.4 Landfill gas in external monitoring boreholes – limits and monitoring requirements				
Monitoring point Ref. /description	Parameter	Limit (including units)	Monitoring frequency	Monitoring standard or method
Boreholes GA 7 to 12 and 15 as shown Drawing "2110r1v1d1220 MNHL Monitoring Network December 2020"	Methane	1.0%	Quarterly	Monitoring to be carried out in accordance with Environment Agency Document 'LFTN03: Guidance on Management of Landfill Gas' unless otherwise agreed by Natural Resources Wales
Borehole GA 16 as shown on Drawing "2110r1v1d1220 MNHL Monitoring Network December 2020"	Methane	6%		
GA 7 to 12, 15 and 16 Boreholes as shown on Drawing "2110r1v1d1220 MNHL Monitoring Network December 2020"	Carbon Dioxide	No Limit		
	Oxygen	No Limit		
	Hydrogen Sulphide	No Limit		
	Atmospheric Pressure	No Limit		
	Differential Pressure	No Limit		
	Temperature	No Limit		
	Meteorological data	No Limit		

Landfill gas from capped surfaces

As part of the permit variation application, the Operator requested that changes were made to the Monitoring Standards and methodology stated within Table S3.5. The Operator stated that as written, it was not possible to comply with the methodology requirements using conventional technique, without incurring significant cost. The Operator advised that the standard technique for surveys of capped surfaces is a gazmat survey, which allows for specific detection of methane emitted from the surface of the landfill. The output of the survey gives a number of readings across the site in ppm of methane. It does not however give a flux value e.g. ppm per m^2 per second as currently stated by the permit. The only way to obtain a ppm per m^2 per second

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reading is through flux box monitoring. Tata steel requested that in place of flux box monitoring, the methodology was changed to a Gazmat/FID walkover survey.
The monitoring standard and methodology stated within Table S3.5 is current industry standard, and the same condition is applied across the landfill sector. Any changes agreed to this permit would not represent a consistent approach being applied by NRW, and could be deemed as placing other landfill Operators at a commercial disadvantage. Changes to standards of monitoring or metholodgy is a Policy issue which would affect the whole sector. NRW have thus not agreed to the Operators request for changes to this table, with the wording remaining as per the existing permit, in order to ensure a consistent regulatory approach is being applied.

Table S3.5 Landfill gas from capped surfaces – limits and monitoring requirements				
Monitoring point Ref. / description	Parameter	Monitoring frequency	Other specifications	Monitoring Standard or method
Permanently capped zone	Average methane flux and total methane emission	Annually*	Average zone emission rate of 0.001 $mg/m^2/second$	Flame ionisation detector walkover, flux box or as otherwise agreed in writing with Natural Resources Wales. Alternatively, as per LFTGN 07 Version 2, March 2011
Temporarily capped zone			Average zone emission rate of 0.1 $mg/m^2/second$	

Landfill gas - other monitoring requirements

As agreed with NRW, monitoring requirements stated within this table have been removed from the permit. Table S3.6 has been deleted from the Permit.

Leachate – other monitoring requirements

The leachate monitoring suite has been updated primarily to move some parameters from the annual suite into the quarterly suite, and vicea versa, to concentrate on the most important chemical parameters. Some monitoring wells referenced on the original permit plan that were never installed have been removed, whilst new

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monitoring points have been added to reflect the existing monitoring network. The Table has also been renumbered as Table S3.6 (previously Table S3.7).

Table S3.6 Leachate– other monitoring requirements			
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method
L1, L6, L7 and L8 as shown on Drawing "2110r1v1d1220 MNHL Monitoring Network December 2020"and all subsequent new leachate monitoring points installed within cells (at least one monitoring point per cell).	pH,	Quarterly	Unless otherwise agreed in writing by Natural Resources Wales, monitoring methods used shall be in accordance with Environment Agency document 'Guidance on monitoring of landfill leachate, groundwater and surface water (LFTN02)
	Electrical Conductivity,		
	Ammoniacal Nitrogen,		
	Arsenic		
	Boron		
	Copper,		
	Sodium		
	Fluoride		
	Nitrates and Nitrites		
	Cadmium,		
	Phosphates		
	Total Alkalinity,		
	Potassium		
	Molybdenum		
	Selenium		
	Vanadium		
	Chloride,		
	Calcium,		
	Chromium	Annual	
	Iron		
	Lead		
	Mercury		
	Zinc,		
	Magnesium,		
	Sulphate,		
	Organohalogens (volatile organic compounds),		
	Semi-Volatile Organic Compounds		

Surface water – other monitoring requirements

The surface water monitoring requirements as stated within Table S3.8 have been updated. The Table has also been renumbered as Table S3.7. Monitoring points that were referenced on the original permit plan but never installed have been removed, whilst new monitoring points have been added to reflect the existing monitoring network. Monitoring parameters have also been updated to reflect the agreed monitoring regime.

Table S3.7 Surface water – other monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
SW Gauge 1, SW Gauge 2, SW Gauge 5, SW Gauge 6 and SW Gauge 7 as shown on as shown on Drawing "2110r1v1d1220 MNHL Monitoring Network December 2020"	Water Level	Monthly (unless otherwise agreed in writing with Natural Resources Wales)	Unless otherwise agreed in writing with Natural Resources Wales, monitoring methods used shall be in accordance with Environment Agency document 'Guidance on monitoring of landfill leachate, groundwater and surface water' *(LFTGN02)*	-
Margam Moors: SW1, SW4, SW5 and SW6 as shown on as shown on Drawing "2110r1v1d1220 MNHL Monitoring Network December 2020"	pH	Quarterly		
	Electrical Conductivity			
	Ammoniacal Nitrogen			
	Cadmium			
	Calcium			
	Total Alkalinity			
	Chloride			
	Arsenic			
	Boron			
	Copper			
	Fluoride			
	Phosphate			
	Molybdenum			
	Selenium			

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Table S3.7 Surface water – other monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
	Vanadium			
	Nitrate			
	Nitrite			
	Sodium			
	Potassium			
Pond 1 as identified on drawing reference: Figure 6 Capping Construction Phasing (reference 629.1/0/1207, Revision 0) (specific sampling location to be agreed in writing with Natural Resources Wales on completion of construction) any additional monitoring points agreed in writing with Natural Resources Wales.	Water Levels	Quarterly		Note: These monitoring points will be constructed on a phased basis for example as part of the progressive restoration and capping at the facility and monitoring at these points will not commence until the relevant CQA report has been approved by Natural Resources Wales.
	Ammoniacal Nitrogen,			
	Arsenic			
	Boron			
	Copper			
	Cadmium			
	Calcium			
	Chloride			
	Electrical Conductivity,			
	Fluoride			
	Molybdenum			
	Nitrates and Nitrites			
	pH,			
	Phosphates			
	Potassium			
	Selenium			
	Sodium			
	Total Alkalinity			
	Vanadium			
	Ammoniacal Nitrogen			
Recharge Chambers C, D, E, F1 & F2 as shown on drawing reference: Figure 8 Recharge	pH	Monthly for first twelve months of operation. Quarterly thereafter		
	Electrical Conductivity			
	Ammoniacal Nitrogen			
	Arsenic			

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Table S3.7 Surface water – other monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Trench Alignment Revision 0, Dated 12.07	Boron			
	Sodium			
	Fluoride			
	Nitrates			
	Nitrites			
	Cadmium			
	Phosphates			
	Total Alkalinity			
	Potassium			
	Molybdenum			
	Selenium			
	Vanadium			
	Chloride			
	Calcium			

Groundwater – other monitoring requirements

The groundwater monitoring suite has been updated primarily to move some parameters from the annual suite into the quarterly suite to concentrate on the most important chemical parameters. Some monitoring wells were on the original permit plan but were never installed and therefore the monitoring points have been updated to reflect the existing monitoring network. The Table has also been renumbered as Table S3.8 (previously Table S3.9).

Table S3.8 Groundwater – other monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Piezometers: - P1 to P24, TPG, TPV as shown on Drawing "2110r1v1d1220 MNHL Monitoring Network December 2020"	Groundwater Level	Monthly	Unless otherwise agreed in writing with Natural Resources Wales, monitoring methods used shall be in accordance with Environment Agency document 'Guidance on monitoring of landfill leachate, groundwater and surface water' (LFTGN02)	-
Groundwater Boreholes: BH1, BH2, BH3S, BH4S, BH6S, GWT3a, BH17S, BH18S, BH19S, BH20S, BH30 (Shallow Aquifers) as shown on as shown on as shown on Drawing "2110r1v1d1220 MNHL Monitoring Network December 2020"	Groundwater Level	Quarterly		
	pH			
	Electrical Conductivity			
	Ammoniacal Nitrogen			
	Cadmium			
	Calcium			
	Total Alkalinity			
	Chloride			
	Arsenic			
	Sodium			
	Fluoride			
	Nitrate			
	Nitrite			
	Phosphate			
	Boron			
	Potassium			
	Molybdenum			
	Selenium			
	Vanadium			
Groundwater Boreholes:BH1, BH2S BH2D, BH3S, BH3D, BH4S, BH4D, BH6S, BH6D, BH10S, BH10D,	Chromium	Annually		
	Copper			
	Iron			
	Lead			
	Mercury			
	Zinc			

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Table S3.8 Groundwater – other monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
BH11S, BH11D, BH12S, BH12D, BH13S, BH13D, BH13S, BH14D, GWT3a, BH17S, BH17D BH18S, BH18D, BH19S, BH19D BH20S, BH20D, BH30 (Shallow Aquifers and Deep Aquifers) as shown on as shown on Drawing "2110r1v1d1220 MNHL Monitoring Network December 2020"	Magnesium Sulphate Organo-halogens (volatile organic compounds) Semi-volatile organic compounds			

Particulate matter in ambient air – limits and monitoring requirements

Table S3.10, along with all limits and monitoring requirements associated with particuate matter in ambient air has been removed from the permit. This is because dust deposits could not be linked directly to the landfill as there are other multilple potential sources of dust surrounding the landfill. The site is located in a very sandy area. NRW have agreeed that the monitoring stated within S3.10 did not provide any useful information and is thus no longer a requirement of the permit.

Legislation

The variation will be issued, under Regulation 20 of the EPR. The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope.

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We address the legal requirements directly where relevant in the body of this document. NRW is satisfied that this decision is consistent with its general purpose of pursuing the sustainable management of natural resources in relation to Wales and applying the principles of sustainable management of natural resources. In particular, NRW acknowledges that it is a principle of sustainable management to take action to prevent significant damage to ecosystems. We consider that, in issuing the variation a high level of protection will be delivered for the environment and human health through the operation of the facility in accordance with the permit conditions.
NRW is satisfied that this decision is compatible with its general purpose of pursuing the sustainable management of natural resources in relation to Wales and applying the principles of sustainable management of natural resources.

Reporting

Reporting requirements stated within Table S4.1 have been updated to reflect the new monitoring point references and reporting frequencies stated within Schedule 3.

Reporting forms as referenced within Table S4.4. have also been updated to reflect the updated monitoring regime.

OPRA

There are no changes to the Opra score for the site, as a result of this variation. The Opra score at permit issue remains 125.