Permitting Decisions- Variation

We have decided to grant the variation for Whinney Hill (Phase 2) Landfill operated by Suez Recycling and Recovery Lancashire Limited.

The variation number is EPR/BL9500IJ/V008.

This variation makes the following changes:

Leachate management:

- Increase leachate level compliance limits and introduction of supporting action levels; and
- updates to Table S3.1 of the permit and the Monitoring Management Plan to correctly reference the current leachate monitoring points

Gas management and monitoring:

- Addition of a further 2000m^3/hr high temperature enclosed flare to ensure appropriate flare capacity;
- Addition of a contingency gas engine. This is a contingency/back-up engine, only 6 engines will be operated at any one time; and
- Replacement of perimeter gas carbon dioxide compliance limits with action levels in line with the Industry Code of Practice (ICoP), 'Perimeter soil gas emissions criteria and associated management, January 2011'.

Groundwater:

- Amendments to groundwater quality parameters and compliance limits.

Surface water:

- Replacement of some surface water compliance limits with action levels.

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 provides a record of the decision-making process. It

- highlights key issues in the determination

- summarises the decision making process in the decision considerations section to show how the main relevant factors have been taken into account
- explains why we have also made an Environment Agency initiated variation
- summarises the engagement carried out because this is a site of high public interest
- shows how we have considered the consultation responses

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Read the permitting decisions in conjunction with the environmental permit and the variation notice.

Key issues of the decision

Leachate management
The proposed leachate management strategy at the site is biological treatment in a leachate treatment plant (LTP). It is predicted that this will cover 95% of future leachate production rates. Whilst the Operator has confirmed that the LTP will be subject to a separate permit variation, short-term volumes of leachate production exceeding the treatment capacity of the plant will need to be stored and managed following peak rainfall. To compliment treatment of leachate in the proposed LTP, this variation application proposes amending the leachate management at the site as follows:

- Increasing short term leachate storage within the base of the waste mass by increasing leachate level compliance limits.
- Updates to the leachate management infrastructure.

Under normal operating conditions leachate levels will be maintained below lower leachate action levels, however on the limited occasions that leachate production rates exceed leachate treatment capacity in the LTP, this increased storage capacity will be required. Leachate action levels are proposed at 0.5m below the compliance limit.

Recent leachate head data are summarised in the Hydrogeological Risk Assessment Review (HRAR), dated March 2021. It indicates that leachate levels at the site are routinely kept below the compliance level of 3m head above base, and that there is no general increasing trend in leachate heads across the site.

The Leachate Management Plan, dated February 2021, proposes revised compliance limits to provide the additional leachate storage capacity. This amounts to an increase of less than 1m in cells 7/1 and 7/2, an increase of approximately 1.5m in cell 7/3 and an increase of approximately 4.5m in cell 8/1. Calculations indicate that currently the site can store a total volume of 17,388m^3 of leachate in its base. This volume will increase by a further 2,225m^3 to a total of 19,613m^3. This additional leachate storage volume can be used to temporarily buffer any periodic excessive leachate generation volumes.

With the exception of Cells 8/1 and 8/2 we are satisfied with the proposals and the Operator's justification. We agree that the compliance limits can be changed in line with the proposals as set out in the February 2021 Leachate Management Plan.

The proposed leachate level limits for Cell 8/1 (143mAOD) and Cell 8/2 (137mAOD) may give rise to leachate migration into Cell 8/2 from Cell 8/1 over the intercell bund (139mAOD), which in turn could give rise to leachate levels above site breakout levels from Cell 8/2 to the north and east. We therefore asked the Operator to propose alternative levels or additional monitoring in

critical areas with contingency for pumping where appropriate in a Schedule 5 Notice dated 11/07/2022. In a response to the Schedule 5 Notice, the Operator proposed to reduce the leachate level action level in Cell 8/1 so that it is 0.5m above the height of the intercell bund between Cell 8/1 and Cell 8/2. In addition, they have proposed to increase the monitoring and mitigation measures that would be employed in the event of an exceedance of the action level in Cell 8/1 and Cell 8/2. We consider that these proposals are acceptable. The amended action levels and the increased monitoring and mitigation measures are included in the updated Monitoring Management Plan (MMP), dated August 2022.

The MMP and, where necessary, Table S3.1 of the permit have been updated to refence the current leachate infrastructure at the site. WH/LMP7A, WH/LMP7B, WH/LM7/1, WH/LM7/2, WH/LM7/3, WH/LM7/4 and WH/LM4/4R were previously called WH/7.1LEC, WH/7.2LEC, WH/7.1LMP1, WH/7.1LMP2, WH/7.2LMP1, WH/7.2LMP2 and WH/LM4/4 respectively.

We have made a correction to the permit to reference EN/BH14/1 rather than EN/BH14. The Operator confirms that monitoring point EN/BH14 is comprised of 4 separate multi-depth installations referenced as EN/BH14/1, EN/BH14/2, EN/BH14/3 and EN/BH14/4. Therefore, the permit should include EN/BH14/1 rather than EN/BH14.

The site was originally developed with 11 landfill phases/cells. As a result of the proposed increased leachate storage in the waste mass, some cells will become hydraulically linked, resulting in 4 hydraulic units under the proposed management strategy. Six leachate quality monitoring points have been identified as detailed in the updated MMP:

Proposed Linked Hydraulic Cells

Current Cells	Hydraulic Unit	Sumps	Leachate Level Compliance Points		Leachate Quality Sampling Points	
			ID	Number	ID	Number
4-1 4-2 6-1	A	LMP4.1 LMP6B	LM4/3R LM4/4R LM6/2	3	LMP4.1 LMP6B	2 retained (as Phase 6 is still operational)
5-1 5-2	B*	LMP5A LMP5B	LM5/1, LM5/2 LM5/3, LM5/4	4	LMP5B	1
7-1 7-2 7-3 8-1	C	LMP7A LMP7B LMP7C LMP8A	LM7/1, LM7/2 LM7/3, LM7/4, LM7/5, LM7/6, LM8/1, LM8/2	8	LMP7B LMP8A	2 retained (due to layout of sub-cells)
8-2	D	LMP8B	LM8/3, LM8/4	2	LMP8B	1

*in the event of loss of a monitoring well, provided two monitoring wells remain functional in the hydraulic unit then the lost/failed monitoring well would not be replaced

Gas management and monitoring:

Addition of a new flare and contingency gas engine

The most recent GasSim model predicts that peak landfill gas generation of approximately 5000m^3/hr will be achieved in 2022. Gas is managed in the gas utilisation compound in which there are currently 6 existing Jenbacher 320 (1MWe) gas engines and 1 high temperature enclosed flare (3000m^3/hr capacity).

The treatment capacity of the 6 existing engines is approximately 6600m^3/hr, sufficient to manage the peak gas production. However, to ensure that suitable flare capacity is available, a second flare with the capacity to treat 2000m^3/hr is proposed to be installed alongside the existing flare. This will ensure that sufficient treatment capacity is available for the full quantity of landfill gas extracted from the waste mass in the event that all engines are non-operational.

The addition of a 7th Jenbacher 2.64MWth (1MWe) gas engine is also proposed. This engine will be a spare/contingency engine. All 7 engines would not be run at the same time.

The new plant is a MCP as defined by Schedule 25A of the EPR 2018. This is because the engine has a rated thermal input equal to or greater than 1MWth but less than 50MWth. The engine is classed as 'new' MCP on the basis that the first operation will be post 20th December 2018.

An Air Emissions Risk Assessment was prepared in support of the addition of the new flare and landfill gas engine. As only a maximum of 6 engines would be run at any one time, the scenarios modelled in the report do not include the operation of all engines at the same time. The assessment considers four operating scenarios:

Scenario 1 – Six existing engines together with the 3,000m³/hr capacity flare (existing operating scenario);
Scenario 2 – 5 existing engines, engine 7 and 3,000m³/hr capacity HT flare;
Scenario 3 - 5 existing engines, engine 7 and 2,000m³/hr capacity HT flare;
Scenario 4 – Both flares, no engines.

Each model assumes that all modelled gas engines and flare units operated continuously through the year at their maximum operating capacities, with emission concentrations set at the relevant ELVs or other appropriate emission values. This is a conservative approach as the combined landfill gas treatment capacity is greater than the predicted peak rate of landfill gas generation at the landfill.

The Operator has assessed emissions to air against the relevant environmental standards and the potential impact upon local human health and ecological receptors using detailed air modelling assessment. A methodology for risk assessment of point source emissions to air is set out in our guidance:

https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit.

The way in which the Operator used dispersion models, the selection of input data, use of background data and the assumptions made have been reviewed by the Environment Agency to establish the robustness of the Operator's air impact assessment. We have assessed the Operator's dispersion model using auditing tools developed by the Environment Agency and based on the US EPA AERMOD air dispersion model. Whilst we do not agree with the absolute numerical predictions, we agree with the overall conclusions that there will not be a significant impact on local air quality.

Long Term NOx:

The operation of the additional back-up engine (Engine 7, emission point A8) in place of one of the existing engines, under Scenario 2, predicted a maximum ground level concentration of 10.71 µg/m³. This is 2.17 µg/m³ higher than predicted under Scenario 1. This equates to 26.8% of the AQS, or 92.5% of the standard when added to the background concentration. A further, increase of 0.21 µg/m³ was subsequently predicted under Scenario 3 (10.92 µg/m³).

The operation of both flare units alone under Scenario 4 predicted a maximum PC to ground level NO_2 concentrations of 3.65 µg/m³, or 9.1% of the AQS. When combined with the selected background concentration the PEC equates to 74.9% of the standard.

The maximum annual mean ground level concentrations of NO_2 are predicted to occur in areas to the east of the landfill which are located a significant distance from the urban road networks in which the selected background NO_2 concentration has been derived. The application of the urban annual mean NO_2 background concentration is therefore considered a conservative representation of background concentrations in these areas. On this basis the PECs to the east of the landfill are likely to be lower than those calculated.

Short-term NOx:

The hourly mean ground level concentrations of NO_2 are predicted at 38.85 µg/m³, or 19.4% of the AQS under Scenario 1. Under the Scenarios 2 and 3 the contributions increase to respective concentrations of 44.1 µg/m³ and 45.5 µg/m³, or 22.1% and 22.8% of the AQS. Under Scenario 4, the contribution to ground level concentrations is 28.35 µg/m³, or 14.2% of the AQS. When combined with the selected background concentration the hourly mean PECs are predicted to be less than 50% of the AQS under all short-term model scenarios.

Other parameters modelled

The Operator also modelled the long-term emissions of particulates ($PM_{2.5}$ and PM_{10}) and VOCs (conservatively assessed as benzene and 1,3-butadienne) and the short-term emissions of carbon monoxide (CO), particulates (PM_{10}) and sulphur dioxide (SO_2).

The long term predicted environmental concentrations (PECs) for particulates and VOCs were less than 70% of the AQS in all scenarios. Therefore, we consider it unlikely that emissions would result in an exceedance in the corresponding AQSs as there is sufficient headroom.

Similarly, the short-term concentrations for carbon monoxide, particulates and sulphur dioxide were also predicted as presenting a low risk of exceeding the relevant AQSs.

Emission limits - Refer to Table S3.2 of Schedule 3 of the permit:

For the new engine, the Medium Combustion Plant Directive (MCPD) limit for NOx is 190mg/m^3 at 15% Oxygen (O_2). This is equivalent to 512mg/m^3 at 5% O_2. Therefore, the MCPD limit for NOx has not been included in the permit because the current NOx limit for landfill gas engines based on our LFTGN08 guidance is tighter (500mg/m^3 at 5% O_2). We follow the principle of no backsliding where if existing limits are already tighter than those specified in the MCPD, the existing permit limits are retained. Only the SO_2 limit from the MCPD is included in the permit. This limit has different oxygen reference conditions (15% O_2).

Limits have been set for the new flare in line with our LFTGN05 guidance, these mirror those already set for the existing flare.

Replacement of perimeter gas carbon dioxide compliance limits with action levels

The Operator has proposed to remove selected carbon dioxide (CO_2) limits from the permit and incorporate them into a site gas management plan in accordance with the Industry Code of Practice (ICoP), 'Perimeter soil gas emissions criteria and associated management, January 2011'.

The site has compliance limits for carbon dioxide in the 'Northern' perimeter gas monitoring points (WH/BH65 to WH/BH75). The Perimeter Gas Review (Appendix D of the application) recommends that CO_2 compliance limits are replaced with action levels. The contingency actions to be undertaken in the event of an exceedance of a perimeter gas compliance limit or action level have been updated in accordance with the Perimeter Gas Review. A comprehensive perimeter gas monitoring review in accordance with the ICoP has been provided to support the proposed changes. We are satisfied that the Operator will manage

their CO_2 emissions and associated monitoring in accordance with the ICoP and have therefore removed the requested emission level values from the permit.

Perimeter gas compliance limits for methane and action levels for CO_2 for the 'Enfield Quarry/Area 6' gas monitoring points have been addressed in a separate report submitted as part of a response to Improvement Condition 1. The Improvement Condition submission has been assessed and agreed by the Environment Agency outside of this variation determination. We have taken this opportunity to incorporate the agreed changed into the permit, Table S3.5 has been updated accordingly.

Amendments to groundwater monitoring requirements

The HRAR recommends amendments to the groundwater quality monitoring programme to reflect the updated site conceptual model and the change in the hazardous/non-hazardous classification of some parameters:

- Remove compliance point for WHBH0203OLR which has been identified as up-gradient, as such groundwater quality compliance limits are not considered appropriate;
- Remove compliance points WH/0402AM, WH/BH87AM(A), WH/BH87AM(B) and WH/BH88AM. The only significant groundwater flow in the Accrington Mudstone (AM) Secondary A Aquifer appears to be in the Lower AM, therefore it is not considered necessary to include compliance points WH/0402AM, WH/BH87AM(A), WH/BH87AM(B) and WH/BH88AM in the monitoring schedule as they exclusively monitor the Upper AM which has no significant flow;
- Remove Cadmium as a compliance parameter as it has been re-classified as a non-hazardous pollutant;
- Amend compliance limits in the OLR Sandstone Formation (monitoring points WH/BH87OLR, WH/BH88OLR and WH/BH89OLR) for ammoniacal-nitrogen (increase to 4mg/l) and mecoprop (0.0006mg/l);
- A change in frequency of compliance monitoring of mecoprop, nickel and toluene is proposed form quarterly to annually to reflect the volume of data held; and
- Assign rounded values to some of the limits (chloride and mecoprop for monitoring points WH/BH89AM, WH/0203AMR and EQBHA2R, and mecoprop for monitoring points WH/BH87DKF, WH/BH88DKF, WH/BH89DKF, WH/0203DKFR, WH/0401DKF and EQBHA1R)

A detailed justification for the changes is provided in sections 4.3 and 4.4 of the HRAR, dated March 2021. We consider all changes to be acceptable.

In their Schedule 5 response, the Operator also confirmed that compliance limits for EQ/BHA1R and EQ/BHA2R should be reinstated in the permit. As it has been identified that some of the groundwater monitoring points in the extant permit are not appropriate for compliance monitoring (WHBH0203OLR has been identified as up-gradient, and WH402AM, BH87AM(A), BH87AM(B), BH88AM exclusively monitor the upper Accrington Mudstone, within which there is no significant flow). EQBHA2R and EQBHA1R are more appropriately located. We have updated Table S3.4 to reflect this.

Amendments to surface water monitoring requirements

Replacement of some surface water compliance limits with action levels.

Surface water quality is currently monitored at three locations (SW3a, SW4 and SW5). Section 4.5 of the HRAR recommends that the current compliance limits for mecoprop, cadmium and nickel in surface water are treated as action levels as surface water compliance limits are not commonly set for those substances. An amendment to Table S3.3 of the permit is therefore proposed. We agree with this approach. Action levels for mecoprop, cadmium and nickel in surface water will be detailed in the Monitoring Management Plan going forward.

Decision considerations

Confidential information

A claim for commercial or industrial confidentiality has not been made.

Identifying confidential information

We have not identified information provided as part of the application that we consider to be confidential.

The decision was taken in accordance with our guidance on confidentiality.

Consultation

The consultation requirements were identified in accordance with the Environmental Permitting (England and Wales) Regulations (2016) and our public participation statement.

The application was publicised on the GOV.UK website.

We consulted the following organisations:

Director of Public Health

The UK Health Security Agency (previously Public Health England)

Health and Safety Executive

Local Authority - Hyndburn Borough Council

The comments and our responses are summarised in the consultation responses section.

Nature conservation, landscape, heritage and protected species and habitat designations

We have checked the location of the application to assess if it is within the screening distances we consider relevant for impacts on nature conservation, landscape, heritage and protected species and habitat designations. The application is within our screening distances for these designations.

There are no SPAs, SACs, or Ramsar sites located within 10km of the site. There are also no SSSIs within 2km of the site. The only locally designated conservation area with 2km of the Gas Utilisation Plant is Altham Clough Wood (Designated Ancient Woodland), which is located approximately 1.4km to the northeast.

We have assessed the application and its potential to affect sites of nature conservation, landscape, heritage and protected species and habitat designations identified in the nature conservation screening report as part of the permitting process.

An assessment of the potential impact on air quality and nutrient and acid deposition at Altham Clough Wood was carried out against all four model scenarios. The ground level concentrations of NOx and SO_2 predicted at the woodland under all scenarios were all <5% of the AQS and are therefore considered insignificant. Similarly, the predicted contributions to nutrient nitrogen and acid deposits were <1% of the Critical Load thresholds specified for this habitat.

We consider that the application will not affect any site of nature conservation, landscape and heritage, and/or protected species or habitats identified.

We have not consulted Natural England. The decision was taken in accordance with our guidance.

Environmental risk

We have carried out a risk assessment on behalf of the operator.

The assessment shows that, applying the conservative criteria in our guidance on environmental risk assessment, all emissions may be screened out as environmentally insignificant.

Operating techniques

We have reviewed the techniques proposed by the operator and compared these with the relevant technical guidance and we consider them to represent appropriate techniques for the facility.

The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.

National Air Pollution Control Programme

We have considered the National Air Pollution Control Programme as required by the National Emissions Ceilings Regulations 2018. By setting emission limit values in line with technical guidance we are minimising emissions to air. This will aid the delivery of national air quality targets. We do not consider that we need to include any additional conditions in this permit.

Updating permit conditions during consolidation

We have updated permit conditions to those in the current generic permit template as part of permit consolidation. The conditions will provide the same level of protection as those in the previous permit.

Improvement programme

We have updated Table S1.3 in the Permit to reflect that the existing Improvement Conditions have either been completed or are no longer applicable.

No new Improvement Conditions have been set as part of this variation.

Emission limits

Emission Limit Values (ELVs) based on BAT have been set for the new engine for the following substances:

Landfill Gas Engine 8 (New MCP)

- Oxides of nitrogen (NOx)
- Sulphur dioxide (SO_2)
- Carbon monoxide (CO)
- Total VOCs

Refer to Table S3.2 of Schedule 3 of the permit.

The MCPD limit for NOx is 190mg/m^3 at 15% Oxygen (O_2). This is equivalent to 512mg/m^3 at 5% O_2. Therefore, the MCPD limit for NOx has not been included in the permit because the current NOx limit for landfill gas engines based on our LFTGN08 guidance is tighter (500mg/m^3 at 5% O_2). We follow the principle of no backsliding where, if existing limits are already tighter than those specified in the MCPD, the existing permit limits are retained.

Only the SO_2 limit from the MCPD is included in the permit. This limit has different oxygen reference conditions (15% O_2), it is therefore on a separate row in Table S3.2.

Limits have been set for the new flare in line with our LFTGN05 guidance. Limits have been set for the following parameters: Oxides of Nitrogen, Carbon monoxide and total VOCs.

Monitoring

We have decided that monitoring should be carried out for the parameters listed in the permit for the new landfill gas engine and flare. These monitoring requirements have been imposed to demonstrate compliance with the conditions

of the permit requiring the management of emissions to air. We made these decisions in accordance with our guidance on Medium Combustion Plant, LFTGN05 and LFTGN08.

Based on the information in the application, we are satisfied that the operator's techniques, personnel and equipment have either MCERTS certification or MCERTS accreditation as appropriate.

Reporting

We have specified reporting in the permit under table S4.1.

Reporting will be required once within 4 months of the issue date of the permit or the date when the landfill gas engine is first put into operation, whichever is later and then annually in line with the annual emissions monitoring, ensuring the operator is complying with the limits in their permit. We made these decisions in accordance with our guidance on Medium Combustion Plant.

Management system

We are not aware of any reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.

The decision was taken in accordance with the guidance on operator competence and how to develop a management system for environmental permits.

Financial provision

We are satisfied that the operator has made the necessary financial provision.

Growth duty

We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit variation.

Paragraph 1.3 of the guidance says:

"The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation."

We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.

We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.

Consultation Responses

The following summarises the responses to consultation with other organisations, our notice on GOV.UK for the public, and the way in which we have considered these in the determination process.

Responses from organisations listed in the consultation section

Response received from The UK Health Security Agency (UKHSA) (previously Public Health England).

Brief summary of issues raised: Based on the information contained in the application, UKHSA has no significant concerns regarding the risk to the health of the local population from the installation.

Summary of actions taken: no further action required.

No other responses were received.