Natural Resources Wales permitting decisions

Bryn Posteg Landfill – Sundorne Products (Llanidloes) Limited

Decision Document

Application for Variation of a Bespoke Permit

The application number is: BU7766IC/V010

The Applicant / Operator is: Sundorne Products (Llanidloes) Ltd

The Installation is located at: Bryn Posteg Landfill, Twylch Road, Llanidloes

We have decided to issue in part the variation for Bryn Posteg Landfill operated by Sundorne Products (Llanidloes) Ltd. with part of the application being refused, as detailed below.

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

Structure of this document

- Table of contents
- Key issues

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Key issues of the decision

The applicant submitted a normal variation application to request that the permit be varied to allow eight changes to be made. During the determination process it was established that six of these proposals are acceptable but that for two proposals, the application did not demonstrate that they were acceptable. Each of these eight aspects of the permit variation application are detailed below, beginning with the two aspects being refused.

These two aspects of the permit variation application being refused are:

- the proposal to add a surface water treatment operation prior to discharging the treated surface water drainage into the Nant y Bradnant watercourse; and,
- The proposed increase in the compliance limits for the peripheral landfill gas monitoring boreholes

Surface water treatment

In order to reduce the suspended solids in the discharge of surface water from the site to the Nant Y Bradnant watercourse, the application proposed a new surface water treatment facility which would use Ferric Chloride plus sodium hydroxide as pH adjustment plus anionic polymer (aquatreat 156).

The applicant provided details of the environmental risks posed by the proposed water treatment in the document proposals in the supporting document “Surface Water Pollution Risk Assessment” dated 1 March 2021 (Doc ref 3400-CAU-XX-XX-RP-O-0302.A0.C3). The report identified that the new treatment system had the potential to add Iron to the existing composition of the discharge, but that other potential contaminants such as Ammoniacal Nitrogen, BOD and pH were already present and described in the existing permit, and that the permit limits for these would not need to change.

Therefore we looked at the proposed change to the discharge limits, this being the addition of Iron, for which the application proposed a limit in the discharge to the watercourse of 5 mg/l.

The report (see page 7) identified the Environmental Quality Standard (EQS) for Iron in the receiving watercourse is 1000 µg/l (this being 1 mg/l).

The report explains that the surface water discharge from the site forms the base flow within the Nant y Bradnant and proposes that to assess the impacts of the proposed discharge on the downstream water quality, the assessment has been undertaken on a theoretical assessment point for the Nant y Bradnant where the combined flow (including the surface water discharge from the site) is 60 litres per second. The report describes this point as an arbitrary and theoretical assessment point and assumes that the Nant y Bradnant increases in size along its course to the confluence with the River Severn.

Page 10 of the report goes on to calculate the predicted environmental concentration (PEC) for Iron in the Nant-y-Bradnant receiving watercourse at the theoretical downstream point. It calculates this using a “background” figure for the watercourse of 5180 µg/l. The source of this “background” figure is found in Table 3 on page 6 and the calculation can be found set out in Appendix 4 where a background figure of 5.181667 mg/l is given (subsequently rounded to 5.18 mg/l). However, this background figure was found not to be derived from data representative of the actual water quality of the watercourse and instead has been taken from data preceding the landfills existence (See table below, reproduced from Appendix 4 of the applicants report). The purpose of a background figure is to show the quality of the water as it is before the proposed change, so that an assessment of the potential impact on the watercourse can be made. This could easily be achieved by simply sampling the watercourse concerned and providing the results of the analysis.

The “average” figure used by the applicant was not even derived from sampling of the watercourse alone. Instead it included results from a variety of on site sources from a time when contamination from historic mining may have affected the results (the precise location of the sample locations and a description of the condition of these locations was not included). One of the results used in the average may have been from the stream discharge itself, this being “stream leaving the site” which had

a result of 0.63 mg/l. This figure is considerably below the “average” figure of 5.1 mg/l adopted in the report.

SURFACE WATER PRE LANDFILL

	pH	NH4-N (mg/l)	Fe (mg/l)	BOD
Mire Standig water	6.1	0.25	2.09	3.5
Bryn Posteg Stream	7.3	0.12	10.8	2
Bryn Posteg Spring	7	0.18	8.8	1
Bradnant Adit	6.8	0.2	1.17	3
Site Stream by road	6.9	0.16	7.6	2
Stream leaving the site	5.8	0.21	0.63	1.7
Average	6.65	0.186667	5.181667	2.2

The report states that by using the proposed new surface water treatment facility, the discharge concentration of Iron will be restricted to 5 mg/l. As this is below the reports stated background figure, it is concluded water quality will be improved.

However, as discussed, this is not the correct background for the watercourse. The background for the watercourse which would be affected by this proposed variation would be the actual concentrations in the watercourse today. This could be established by the applicant by collecting water samples from appropriate locations and having these analysed.

In determining this application we identified records of NRW sampling results for the Nant y Bradnant watercourse at a point approximately 100 metres upstream of the point where the drainage from the landfill enters the stream. This would show the quality of the water into which the site drainage will flow. The records showed 70 samples taken between 1985 and 1995 from this location and the average iron concentration was 0.51mg/l. This averaged result is substantially lower than the 5.18 mg/l used to assess the risk posed by the proposal that has been used by the applicant. Discharging water with an iron concentration of up to 5 mg/l as proposed by this application, described in part 8.1.2 of the conclusion to the report shown below, when the correct background may be only 0.51 mg/l presents a real risk of increasing the concentration of iron in the watercourse (rather than diluting the non-existent contamination calculated by the applicant). Given that the applicant has

identified that the EQS for the watercourse is only 1 mg/l, the proposal would increase the concentration of iron at the theoretical assessment point for the Nant y Bradnant identified by the applicant to a concentration above the EQS rather than reducing the concentration.

8 CONCLUSION AND DISCUSSION

8.1.1 This surface water risk assessment has reviewed the potential pollution risk of the proposed surface water treatment system associated with Lagoon 3 at Bryn Posteg Landfill Site together with the existing limits on the surface water discharge in accordance with the permit requirements. This review has shown that the baseline quality (pre development of the landfill site) is inferior to the current environmental water quality standards through the natural concentrations of iron in both groundwater and surface water samples obtained in 1980.

8.1.2 The assessment of the risk as indicated that the net contribution of iron from the treatment system is limited to less than 10% of the EQS with a control limit of 5 mg/l.

8.1.3 The current Ammoniacal nitrogen concentrations and BOD criteria are considered to remain appropriate.

On the basis of this risk assessment, the background concentration in the receiving watercourse, is at fault. The applicant has failed to demonstrate that the proposed discharge will not adversely affect the water quality and this aspect of the variation application is therefore refused.

Note: The proposed surface water treatment also described the use of a product “Aquatreat 156”. However, insufficient information was provided on the content and potential environmental impact of any carry through of this product to the watercourse. Any future application would also be advised to provide additional information on this or any other proposed product, as well as addressing the above issues with the risk assessment.

Peripheral landfill gas monitoring boreholes compliance limits

The existing compliance limits for the peripheral landfill gas monitoring boreholes are in place to ensure that the site is operating effectively to control and manage the landfill gas produced at the site and prevent it migrating through the ground out from the site and into neighbouring areas. The applicant has proposed changes to the compliance limits because monitoring results are showing exceedances of the existing permit limits.

The existing limits for methane are 1% in all peripheral monitoring boreholes and for Carbon dioxide the limits are 1.5%. This application proposes to remove the methane limit completely for 12 of the peripheral boreholes. The application also proposes that the compliance limits for Carbon Dioxide are removed for all perimeter monitoring boreholes. The application does propose a series of action levels for both Methane and Carbon dioxide. The proposed action levels for Methane in the 12 peripheral boreholes for which the compliance limit would be removed range between 33% and 85.5% (for the remaining peripheral boreholes the proposed action levels are below the 1% compliance limit). For Carbon dioxide, action levels are proposed for all peripheral boreholes and range between 1.3% and 30%.

The request to increase compliance limits for methane in perimeter landfill gas monitoring boreholes is set out in the supporting document “Bryn Posteg Landfill Perimeter Gas Compliance Review 2021”.

The specific proposal to change the methane compliance limits to proposed new limits is detailed in section 5 of the report, with the proposed new compliance limits for methane being given in table 24.

Earlier in the report, in section 4.2.1 (see extract below) it is recognised that before compliance levels can be determined, the background or baseline gas concentrations must be understood. It defines the term further as “the data measurements within the monitoring network **prior to a gas migration event**”.

It then refers back to section 3.2 of the report, where “the complete dataset for each monitoring point is summarised”.

4.2 Background Concentrations and Action Levels

4.2.1 Dataset and Tmax

Before compliance and action levels can be determined, the background or baseline gas concentrations must first be understood, which in the context of this methodology are defined as the data measurements within the monitoring network prior to a gas migration event.

Proposals are based on the complete dataset for each monitoring point as summarised in Section 3.2. In order to adopt a conservative approach, the monitoring dataset for each point has been subjected to the identification and removal of any outliers as outlined in Agency R&D Document P1-471 (Environment Agency, 2011b).

However, on examining this “complete dataset” it is found that the data is made up of monitoring results for the period between January 2019 and November 2021. This data represents a period when the landfill had been fully active, producing gas for many years and when landfill gas migration was already occurring. No justification for considering that the gas monitored during this time was not migrating from the landfill was supplied. It seems therefore that the gas detected is indeed likely to be from the landfill itself and is therefore not baseline/background landfill gas. The background data used in this application is therefore invalid. As outlined above, background levels should be the concentrations that are present before gas migration occurs.

The proposed action levels for both Methane and for Carbon Dioxide are based on the same invalid “background” data.

Therefore, this data is not considered to represent background data and the proposal for compliance limits to be removed, and for the replacement action levels to be used has not been justified.. The requested variation of the landfill gas compliance limits is therefore refused.

The six aspects of the permit variation application being are approved are:

1. G1/W1 Chloride limit 69 to 500mg/l, in Table S3.5.

This proposal relates to groundwater monitoring point G1/W1. The purpose for this monitoring is to identify if leachate is polluting the groundwater and not to identify contamination from road salt. This variation removes the Chloride parameter, which

has been found to be elevated due to the road salt. The existing limit for the key leachate contamination parameter (Ammonia) will remain in place.

2. Add waste code 20 03 01 mixed municipal waste to table S2.4.
This being for activity Section 5.4 Part A(1)(a)(ii) - Disposal of non-hazardous waste in a facility with a capacity exceeding 50 tonnes per day by physico-chemical treatment. This code is non-hazardous and is already permitted in tables S2.2 for landfill and S2.3 for biological treatment. This waste is therefore already accepted processed and disposed of on the site. Allowing for this additional activity does not represent an increased risk.

3. Add waste codes 19 08 05 and 19 08 12 to table S2.3 for leachate treatment activity
Table S2.3 is for a different purpose, however table S2.6 has now been added to allow re-seeding of the leachate treatment plant. The applicant provided additional information on the measures to prevent odour pollution and assessed the odour risk as low. This assessment was acceptable, and the measures are contained within the operating techniques.

4. Add waste code 19 05 99 to table S2.3 for composting liquor from the site to be disposed of in the onsite leachate treatment plant.
19 05 wastes from aerobic treatment of solid wastes
19 05 99 wastes not otherwise specified
As for the previous element of the variation above, this would need to be added to the new table S2.6 because S2.3 is for a different purpose. No change to emission limits or odour conditions in permit.

The applicant specified that the intended waste was Limited to composting liquor from Bryn Posteg on site composting activities and so in the permit, this restriction is specified in the table of wastes S2.6.

A pre-operational condition (number 5) has been added to ensure that the discharge from the effluent treatment plant will continue to meet the requirements of the sewerage undertaker prior to this activity being undertaken (see Annex 1 of this report).

5. Add waste codes 02 01 03 and 02 01 06 to table S1.1 for incineration of straw wastes in the biomass boiler.

02 01 03 plant-tissue waste

02 01 06 animal faeces, urine and manure (including spoiled straw), effluent, collected separately and treated off-site.

The applicant provided additional information on the quality, delivery and storage of these wastes. The emission limits for the biomass boiler remain unchanged.

6. Updated plan showing the permit monitoring points.

An updated plan “Environmental Monitoring Plan 4299-CAU-XX-XX-DR-V-1801” dated 24.11.2021 (received on 1/12/2021) has now been referenced in the permit, replacing the previously referenced “Environmental Monitoring Plan 2601.EMP.01 revision P1” dated 12.02.2016 (received on 12/04/2018).

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
- justifies the specific conditions in the permit other than those in our generic permit template.

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

1 Our decision

As detailed above, based on the information currently available to us we are currently minded to part refuse and part issue the applied for permit variation to the Applicant.

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

The permit contains many conditions taken from our standard Environmental Permit template including the relevant Annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting Regulations and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the permit, we have considered the Application and accepted the details are sufficient and satisfactory to make the standard conditions appropriate.

This document should be read in conjunction with the application and supporting information and permit.

2 How we reached our decision

2.1 Receipt of Application

The applicant requested that the scope of the variation be extended to include proposed changes to the compliance limits for the peripheral gas monitoring boreholes by submitting additional information on 01/12/2021. This request was agreed by Natural Resources Wales. The Application was accepted as duly made on 01 December 2021. This means we considered it was in the correct form and contained sufficient information for us to begin our determination, but not that it necessarily contained all the information we would need to complete that determination.

The Applicant made no claim for commercial confidentiality. We have not received information in relation to the Application that appears to be confidential in relation to any party.

2.2 Requests for Further Information

Further information, relating to the biomass boiler waste input, odour management for the leachate treatment plant and the trade effluent consent was also requested on 29 March 2022. The Applicants response to was provided on 30 March 2022.

2.3 Consultation on the application

No external consultation was carried out on the application in accordance with the Environment Permitting Regulations (EPR), our statutory Public Participation Statement (PPS) and our Regulatory Guidance.

3 The Legal Framework

The variation will be issued in part, 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. In particular, the regulated facility is:

- an *installation* as described by the IED;

- subject to aspects of the Well-Being of Future Generations (Wales) Act 2015 and the Environment (Wales) Act 2016 which also have to be considered.

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 (SMNR) in relation to Wales, and applying the principles of SMNR. 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 granting the Permit a high level of protection will be delivered for the environment and human health through the operation of the Installation 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

4 The Installation

4.1 Description of the Installation and related issues

4.1.1 The Site

The Applicant has provided an updated site monitoring plan showing monitoring locations. As discussed, the permit has been updated to reference this new plan.
The site perimeter plan remains unchanged.

4.1.2 What the Installation does

The permitted activities remain unchanged by this variation.

4.2 Operation of the Installation – general issues

4.2.1 Administrative issues

We are satisfied that the Applicant's submitted OPRA profile is accurate and the OPRA score remains unchanged at 162. The OPRA score will be used as the basis for subsistence and other charging, in accordance with our Charging Scheme. OPRA is Natural Resources Wales method of ensuring application and subsistence fees are appropriate and proportionate for the level of regulation required.

4.2.2 Financial Provision

The financial provision for the site is unaffected by this variation.

4.2.3 Operating techniques

We have reviewed the proposed additional techniques used by the operator. We consider these to represent appropriate techniques for the changes proposed.

We have specified that the applicant must operate the permit in accordance with descriptions in the application, including all additional information received as part of the determination process.

These are specified in the Operating Techniques table in the permit.

5 Minimising the Installation's environmental impact

5.1 Assessment of Impact on Air Quality

The emissions and emission limits remain unchanged by this variation.

5.2 Assessment of impact to surface and ground water

The proposal had the potential for adverse impact on surface water. However due to the flawed assessment of the potential impacts, as explained in the 'key issues' section of this decision document, that aspect of the variation has been refused.
There are no proposed changes to emissions to groundwater as a result of this variation.

5.3 Emissions to sewer

The emission limits to sewer in the permit remain unchanged, however the material being treated would change as a result of this variation, therefore a pre-operational condition has been included to ensure that the change is agreed by the sewerage undertaker (see annex 1 of this report).

Note: The operator supplied a copy of the existing trade effluent consent for the discharge on 30 March 2022 (consent dated 17 December 2012) which describes the discharge being composed of treated leachate and "contaminated site drainage". However this proposed change would add a process effluent produced by on site

composting activities. Therefore, additional information is needed from the sewerage undertaker.

5.4 Assessment of odour impact

Based upon the information in the application we are satisfied that the appropriate measures will be in place to prevent or where not practicable to minimise the effects of odour.

5.5 Impact on Habitats sites, SSSIs, non-statutory conservation sites etc

There are no changes to existing emission limits to either atmosphere or to surface water as a result of this variation, (the proposed change to the discharge to surface water being refused). Therefore a habitats risk assessment and Appendix 4 assessment are not needed as there is no impact source.

6 Setting ELVs and other Permit conditions

The existing emission limits remain unchanged (the groundwater monitoring for Chloride is not an emission, it is one of a series of parameters which are monitored to detect if a leak has occurred, and prompt investigation/remedial measures).

6.1 Monitoring

The proposed change to monitoring at G1/W1 has been detailed earlier in this document. It is a minor change and emissions remain unaffected.

Other proposed change to monitoring landfill gas in perimeter boreholes has been refused as detailed earlier in the key issues section of this document.

7 OPRA

The agreed OPRA score at the installation is 162. This will form the basis for ongoing subsistence fees.

ANNEX 1: Pre-Operational Conditions

One additional pre-operational condition has been added as part of this variation as described in the Key issues section of this report:

Reference	Operation	Pre-operational Measures
5	Deposit of waste codes 19 05 99 in the leachate treatment facility	The operator to provide NRW with evidence that the trade effluent consent permits discharge of this waste following treatment to the sewer and receive confirmation in writing of receipt of this evidence from NRW.

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