

Buckden North Landfill Permit Variation Application

Supporting Statement and Non-technical Summary

FCC Environment (UK) Limited

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1 Introduction

1.1 Report Purpose

This report has been prepared by Byrne Looby Partners (UK) Ltd (ByrneLooby) on behalf of FCC Environment (UK) Limited (FCC) in support of an application for a variation to the Buckden North Landfill Environmental Permit (EP) (EPR/RP3732SZ). The site is operated by Anti-Waste Limited, a wholly owned subsidiary of FCC Environment (UK) Limited, who hereafter referred to as the Operator.

1.2 Non-Technical Summary

Buckden North Landfill (the Site) is located approximately 4.2km to the south-west of Huntingdon, Cambridgeshire and 1.4km to the north-east of Buckden village. The Site is situated immediately to the south of Brampton village and is centred at National Grid Reference (NGR) TL 21000 69300 as illustrated on Figure 1.1.

Buckden South Landfill is positioned immediately to the south of the site. This historical landfill was operated under a separate licence (ref WML 70120 issued in July 1977) by Hunts Refuse Disposals Ltd and has been fully restored. Further to the south is the Huntingdon Southern Bypass (A14), Lodge Farm, agricultural land and a series of lakes.

To the north, the Site is bound by Brampton Park Golf Course and a large residential area (Brampton Park). Buckden Materials Recycling Facility is present to the south-west of the site and is operated by Acorn Transport and Plant Hire Limited. To the south-east of the site is the Buckden Effluent Treatment Plant which is operated under Permit No. GP3431LF. The great River Ouse flows south to north ~350m to the east of the site.

The site is operated under Environmental Permit EPR/RP3732SZ (last varied in June 2015 as part of an Environment Agency Sector Review) which allows the disposal of non-hazardous waste by landfilling and subsequent restoration. Directly associated activities include:

- A2 – pre-treatment and utilisation of landfill gas (LFG) for energy recovery in an appliance with a rated thermal input <50MW;
- A3 – temporary storage of leachate arising from the landfill;
- A4 – flaring of landfill gas for disposal in an appliance; and
- A5 – discharges of site drainage from the landfill.

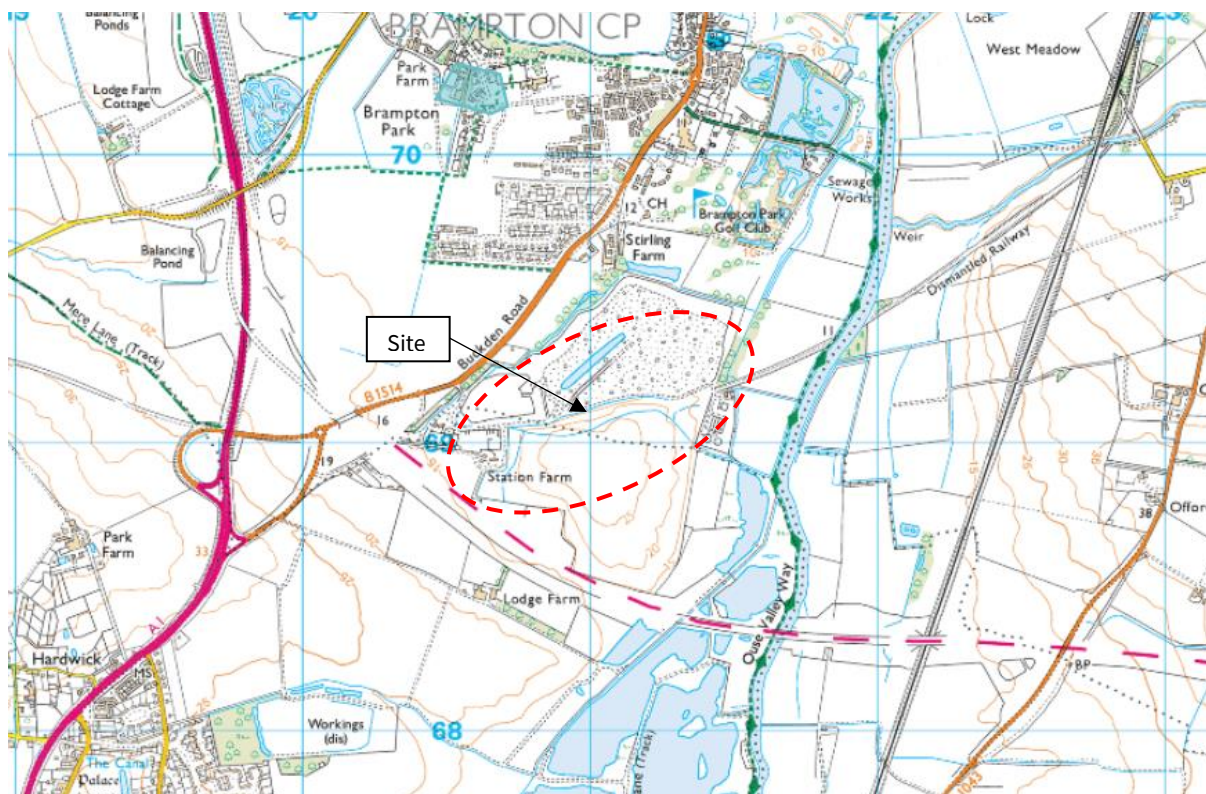


Figure 1.1 – Site Location

A Permit Variation Application is required to address the actions set out in CAR Form RP3732SZ/0401677. Two additional “temporary” flares are to be added to the gas management system to improve gas collection at the site. Landfill gas extracted from the operational area is currently being treated separately through a temporary flare (referred to as Flare 2) due to high hydrogen sulphide levels which was causing problems with the gas generation equipment (gas engines). The use of this temporary flare has been regulated via a Local Enforcement Position (LEP) agreement, however this due to expire on 30th November 2021 and consequently a variation of the permit is required.

A Permit Variation Application is required to regularise the continued use of this temporary flare (Flare 2). An additional contingency flare (Flare 3) has also been proposed to provide a continued treatment in the event that Flare 2 is not available and also to address Step 1 of the Regulation 36 Notice dated 24th September 2021.

The revised Gas Management Plan for the site dated 22nd October 2021 confirms the proposed arrangement:

Gas collected from primarily older capped and restored areas of the site is utilised within the GUP by 2 landfill gas engines. In the event of engine maintenance or shutdown, residual gas is flared through the GUP flare (Flare 1)

And

Gas collected from the operational areas of the site is currently directed to a temporary landfill gas flare (Flare 2) to provide additional flexibility of managing environmental control systems in the operational area. This flare allows the management of flow /suctions more suitable to the infrastructure attached to it and therefore not be potentially impacted by reduced suction / flows caused by poor gas going to the main gas utilisation plant. In the event of the failure of the temporary flare a secondary temporary flare (Flare 3) is utilised.

Table 1 – Proposed Gas Plan Configuration

Name	Engine/ Flare	Co-ordinates (X, Y)	Commissioned	Capacity (m ³ /hr)
Unit 969 (Caterpillar 3516)	Engine	521476, 269166	April 2003	300 - 830
Unit 997 (Perkins 4006)	Engine	521478, 269167	June 1999	200 - 300
Flare 1 (Biogas Flare)	Flare	521498, 269161	June 1999	150 – 1,500
Flare 2 (Uniflare UF10)	Flare	521424, 269234	June 2021	200 – 2,000
Flare 3 (LFS Enclosed Flare)	Flare	521425, 269220		330 – 2,000

The current arrangement and location of landfill gas treatment infrastructure is shown on Drawing No. 30B titled “*Composite As-Built Gas Collection System*” dated 25/11/21. In the longer term, these temporary flares will be moved to the Gas Utilisation Compound (GUP). The current layout of the GUP is illustrated on Drawing No. 1 titled “*Existing Generator Compound & Safety Plan*” dated 25/11/21. The proposed long-term layout of the GUP is illustrated on Drawing No. 1 titled “*Generator Compound Proposed Flares*” dated 25/11/21.

In accordance with the proposed changes to the gas management system, this report and the attached appendices form a permit variation application which is seeking to make the following changes to the Permit:

- Update to Permit Table S3.2 (Point Source Emissions to Air) to include the additional flares;
- Update to Permit Table S3.9 (Landfill Gas – other monitoring requirements) to include the additional flares; and
- Update to Permit Table S1.2 (Operating Techniques) to include a revised Gas Management Plan.

The proposed changes to Permit Tables S3.2 and S3.9 are set out within Table 2 and Table 3 below respectively. It is proposed that Table S1.2 (Operating Techniques) is updated to include a reference to the updated Gas Management Plan for the site dated 22nd October 2021 which is appended to this Supporting Statement as Appendix E.

Table 2 - Proposed Amendments to Table S3.2 of Environmental Permit EPR/ RP3732SZ

Table S3.2 Point source emissions to air – emission limits and monitoring requirements						
Emission point Ref. & Location	Parameter	Source	Limit (including unit)	Reference Period	Monitoring Frequency	Monitoring Standard or Method
Engine 1 located in the Gas Compound shown on Drawing No.30B titled “Composite As-Built Gas Collection System” dated 25/11/21	Oxides of Nitrogen	Gas Utilisation Plant	650 mg/m ³	Hourly mean	Annually	As per M2 or such other subsequent guidance as may be agreed in writing with the Environment Agency
	Carbon Monoxide		1,500 mg/m ³			
	Total VOCs		1,750 mg/m ³			
Engine 2 located in the Gas Compound shown on Drawing No.30B titled “Composite As-Built Gas Collection System” dated 25/11/21	Oxides of Nitrogen	Gas Utilisation Plant	650 mg/m ³			
	Carbon Monoxide		1,500 mg/m ³			
	Total VOCs		1,750 mg/m ³			
Flare 1 located in the Gas Compound shown on Drawing No.30B titled “Composite As-Built Gas Collection System”	Oxides of Nitrogen	Landfill Gas Flare	150 mg/m ³			As per M2 or such other subsequent guidance as may be agreed in writing with the Environment Agency
	Carbon Monoxide		100 mg/m ³			
	Total VOCs		10 mg/m ³			

Table S3.2 Point source emissions to air – emission limits and monitoring requirements

Emission point Ref. & Location	Parameter	Source	Limit (including unit)	Reference Period	Monitoring Frequency	Monitoring Standard or Method
dated 25/11/21						Monitoring is unnecessary where the flare is active for <10% of the year.
Temp Flare 2 shown on Drawing No.30B titled “Composite As-Built Gas Collection System” dated 25/11/21	Oxides of Nitrogen	Landfill Gas Flare	150 mg/m ³			
	Carbon Monoxide		100 mg/m ³			
	Total VOCs		10 mg/m ³			
Temp Flare 3 shown on Drawing No.30B titled “Composite As-Built Gas Collection System” dated 25/11/21	Oxides of Nitrogen	Landfill Gas Flare	150 mg/m ³			
	Carbon Monoxide		100 mg/m ³			
	Total VOCs		10 mg/m ³			

Note: Temporary Flare 2 and 3 to be moved to the GUP as shown on Drawing No. 1 titled “Generator Compound Proposed Flares” dated 25/11/21 in the longer term.

Table 3 - Proposed Amendments to Table S3.9 of Environmental Permit EPR/ RP3732SZ

Table S3.9 Landfill Gas – other monitoring requirements				
Monitoring Point Ref./ Description	Parameter	Monitoring Frequency	Monitoring Standard or method	Other Specifications
In-waste gas monitoring boreholes or sealed leachate wells or sacrificial gas extraction system	Methane Carbon Dioxide Oxygen Carbon Monoxide Differential Pressure Atmospheric Pressure	Monthly until gas extraction commences	Calibrated handheld monitoring instrument	For cells or phases which have no active gas extraction. Gas extraction system shall be installed and extraction commenced once monitoring shows onset of methane production in waste at a rate that can be sustainably extracted. Once gas extraction has commenced in a particular cell or phase, there is no longer a requirement to carry out this monitoring.
	Hydrogen Sulphide	Quarterly	Calibrated handheld monitoring instrument or Tedlar Bag sample in accordance with LFTGN04 (V3, 2010) or other such subsequent guidance as may be agreed in writing with the Environment Agency or a method agreed with the Environment Agency	For cells or phases which have no active gas extraction. Once gas extraction has commenced in a particular cell or phase, there is no longer a requirement to carry out this monitoring. Concentrations of hydrogen sulphide shall be assessed in accordance with the gas and odour management plans.
Gas collection system at well control valve	Methane Carbon Dioxide Oxygen Carbon Monoxide	Monthly or at such other frequency as may be agreed in writing with the Environment Agency	Calibrated handheld monitoring instrument	Where the oxygen concentration exceeds 5% or the % balance gas is greater than 20%, an assessment of air ingress into the system shall be undertaken. Where the concentration of carbon monoxide exceeds 100ppm then further

Table S3.9 Landfill Gas – other monitoring requirements

Monitoring Point Ref./ Description	Parameter	Monitoring Frequency	Monitoring Standard or method	Other Specifications
	<p>Atmospheric Pressure</p> <p>Gas flow rate or suction</p> <p>% Balance Gas (calculated as the difference between the sum of measured gasses and 100%)</p>			<p>investigation shall be undertaken.</p> <p>Record the ambient air temperature and wither the ground is:</p> <ul style="list-style-type: none"> • Waterlogged • Frozen • Snow covered
Gas collection system at well control valve	Hydrogen sulphide	Six Monthly	Calibrated handheld monitoring instrument or Tedlar Bag sample in accordance with LFTGN04 (V3, 2010) or other such subsequent guidance as may be agreed in writing with the Environment Agency or a method agreed with the Environment Agency	Concentrations of hydrogen sulphide shall be assessed in accordance with the gas and odour management plans
Input to flare or LFG Utilisation Compound	Trace Gas	Annually	Calibrated handheld monitoring instrument or Tedlar Bag sample in accordance with LFTGN04 (V3, 2010) or other such subsequent guidance as may be agreed in writing with the Environment Agency or a method agreed with the Environment Agency	The concentration of trace gas components shall be assessed against the assumptions made in the Landfill gas risk assessment and dispersion modelling.

Table S3.9 Landfill Gas – other monitoring requirements

Monitoring Point Ref./ Description	Parameter	Monitoring Frequency	Monitoring Standard or method	Other Specifications
Input to flare or LFG Utilisation Compound	Methane Carbon Dioxide Oxygen Gas flow rate Suction % Balance Gas (calculated as the difference between the sum of measured gasses and 100%)	Weekly		Where the oxygen concentration exceeds 5% or the % balance gas is greater than 20%, an assessment of air ingress into the system shall be undertaken.
Flare 1 located in the Gas Compound shown on Drawing No.30B titled "Composite As-Built Gas Collection System" dated 25/11/21	Temperature	As per LFTGN05 (V2, March 2010) or such other subsequent guidance as may be agreed in writing with the Environment Agency	As per M2 or such other subsequent guidance as may be agreed in writing with the Environment Agency	
Temp Flare 2 shown on Drawing No.30B titled "Composite As-Built Gas Collection System" dated 25/11/21				
Temp Flare 3 shown on Drawing No.30B titled				

Table S3.9 Landfill Gas – other monitoring requirements

Monitoring Point Ref./ Description	Parameter	Monitoring Frequency	Monitoring Standard or method	Other Specifications
“Composite As-Built Gas Collection System” dated 25/11/21				
Engine 1 and Engine 2 gas engine, post turbo (engines located in the Gas Compound shown on Drawing No.30B titled “Composite As-Built Gas Collection System” dated 25/11/21	NOx and CO	Quarterly	In accordance with Appendix C of LFTGN08, version 2: 2010 or such other subsequent guidance as may be agreed in writing with the Environment Agency.	Where monitoring using hand-held, electrochemical equipment indicates an exceedance of the emissions standards specified in Table S3.2, these shall be used as action levels and the operator shall investigate the cause and take appropriate measures to reduce emissions.
Note: Temporary Flare 2 and 3 to be moved to the GUP as shown on Drawing No. 1 titled “Generator Compound Proposed Flares” dated 25/11/21 in the longer term.				

Basic pre-application advice (Ref. EPR/RP3732SZ/V005) was sought prior to the submission of this application and a generic “basic advice document” was provided by the Environment Agency. Previous experience suggests that the above variation constitutes a normal variation. This normal permit variation application, as set out in this Supporting Statement, is supported by the following documents:

- Application Forms (Appendix A);
- Certificates of Technical Competence (Appendix B);
- Landfill Gas Risk Assessment (Appendix C);
- Management System Certificate (Appendix D);
- Gas Management Plan (Appendix E); and
- Flare Specification Information (Appendix F).

1.3 Application Structure

This report has been prepared in response to the following questions raised in Application Form A, Form C2 and Application Form C3, which have been completed in support of the permit variation application. These questions ask the Operator to provide the following:

3 Application Form C2 Questions

3.1 Question 1a – Discussions before your application

Basic pre-application advice (Ref. EPR/RP3732SZ/V005) was sought prior to the submission of this application and a generic “basic advice document” was provided by the Environment Agency.

3.2 Question 2b – Changes or additions to existing activities

The proposed changes are set out within the non-technical summary above (Section 1.2).

3.3 Question 3 – Your ability as an operator

3.3.1 Question 3b - Technical Competence

The proposed amendments will not influence the technical competency requirements for the operation of the site after issue of the proposed variation. A copy of the current Competence Management System Certificate is provided in Appendix B.

3.3.2 Question 3c – Finances

The relevant persons have not been subject to insolvency or bankruptcy. The proposed changes to the permit do not influence or change the current financial provision arrangements.

3.3.3 Question 3d – Management Systems

The site is operated by Anti-Waste Limited, a wholly owned subsidiary of FCC Environment (UK) Limited, and is operated in accordance with a site management system which complies with the requirements of ISO14001. A copy of the ISO14001 certificate is attached in Appendix D.

The Gas Management Plan for the site has been updated in accordance with the proposed changes and is attached as Appendix E.

3.4 Question 4 – Consultation

3.4.1 Question 4a – A sewer managed by a sewerage undertaker

No changes to leachate or surface water management have been proposed.

3.5 Question 5 – Supporting Information

3.5.1 Question 5a – Provide a plan or plans for the site

The Site Location is shown in Figure 1 and a drawing showing the existing Site Layout (Drawing No. 604A382) is attached within the drawings section of this document.

3.5.2 Question 5b – Provide a non-technical summary

Section 1.2 of this permit variation application Supporting Statement (Ref: K6054-ENV-R001) contains the ‘Non-Technical Summary’ as required by Question 5c of application form part C2.

3.5.3 Question 6 – Environmental Risk Assessment

This permit variation application is accompanied a Landfill Gas Risk Assessment (Appendix C) which provides supporting information.

4 Application Form C3 Questions

4.1 Question 1a – Activities being varied

The activities, waste types and capacities are to remain the same as the current permit (see Permit Table S1.1 ‘activities’) and no new activities are being applied for. The application is seeking to make changes to the arrangement of the landfill gas treatment infrastructure in use on site. This relates to the directly associated activity “A4 – flaring of landfill gas for disposal in an appliance” which is already permitted.

4.2 Question 1b– Types of Waste Accepted and Restrictions

The waste types are to remain the same as in the current permit and this variation is not seeking to make any changes to the permitted waste types.

4.3 Question 2 and Question 4– Emissions to Air, Water or Land

The proposed variation to the permit will result in two additional point sources to air as detailed in Table 3 below. The proposed changes to the activities on site have been assessed within the accompanying Landfill Gas Risk Assessment (Appendix C).

Emissions to water and land will remain the same as in the current permit.

Table 4 – Additional Point Source Emissions to Air

Emission point Ref. & Location	Source	Parameter	Quantity (including unit)	Unit
Temp Flare 2 shown on Drawing No.30B titled “Composite As-Built Gas Collection System” dated 25/11/21	Landfill Gas Flare	Oxides of Nitrogen	150	mg/m ³
		Carbon Monoxide	100	mg/m ³
		Total VOCs	10	mg/m ³
Temp Flare 3 shown on Drawing No.30B titled “Composite As-Built Gas Collection System” dated 25/11/21	Landfill Gas Flare	Oxides of Nitrogen	150	mg/m ³
		Carbon Monoxide	100	mg/m ³
		Total VOCs	10	mg/m ³

Notes (as per LFTGN05¹): Limits are based on normal operating conditions and load. Temperature: 0°C (273K); pressure: 101.3 KPa; and oxygen: 3 percent (dry gas). Oxides of Nitrogen expressed as NO₂.

4.4 Question 3a – Technical Standards

The site is currently permitted and technical standards remain the same as those which are already listed in the permit. The proposed variation does not result in any changes to technical standards.

The technical aspects of the site are contained in the following guidance documents:

- Environment Agency, ‘*Landfill: how to comply with your environmental permit – additional guidance*’, (1st February 2009)

4.4.1 Question 3a1 – References to any of your own documents in Table S1.2 Operating Techniques

The Gas Management Plan for the site has been updated in accordance with the proposed changes and is attached as Appendix E. Table S1.2 will therefore require updating with a reference to the updated Gas Management Plan.

4.4.2 Question 3b – General Requirements

The changes proposed are assessed for environmental impact within the accompanying Landfill Gas Risk Assessment (Appendix C). The potential impact due to fugitive emissions (e.g. odour, dust,

¹ Environment Agency (2014) LFTGN05: guidance for monitoring enclosed landfill gas flares found at: <https://www.gov.uk/government/publications/monitoring-enclosed-landfill-gas-flares-lftgn-05>

noise, mud on the road etc.) are controlled by the management system and no changes have been proposed that would affect operational practices.

4.4.3 Question 3c – Types and Amounts of Raw Materials

No changes to the permit are being proposed which will affect types and amounts of raw materials.

4.4.4 Question 3d – Information for Specific Sectors (Appendix 4)

A Landfill Gas Risk Assessment for the site has been produced and is attached as Appendix C.

This variation is not seeking to change any parts of the permit which would influence other previously provided information relevant to the information for specific sectors (e.g. HRA). Therefore no further information is provided.

4.5 Question 4 – Monitoring

4.5.1 Question 4a – Describe the measures you use for monitoring emissions by referring to each emission point

Monitoring will continue to be carried out in accordance with the permit. The proposed changes are set out in Section 1.2 of this report and are supported by the Landfill Gas Risk Assessment (Appendix C).

The site will continue to be monitored in accordance with the Gas Management System. The proposed monitoring programme will be in line with that for the existing flare as set out within Section 1.2 of this report and Environment Agency Guidance LFTGN05: guidance for monitoring enclosed landfill gas flares. The monitoring will be carried out in accordance with the Environment Agency's electronic guidance on "*Collection Monitoring stack emissions: environmental permits*" which replaces the withdrawn Environment Agency guidance TGN M2 Monitoring of Stack Emissions to Air.

4.5.2 Question 4b – Point Source Emissions to Air Only

The sampling location for both flares will meet the requirements of specified in EA Guidance Note M1 and EN 15259.

The flare specification for the Landfill Systems Flare (Flare 3) is provided in Appendix F along with a recent emissions testing report for Flare 2 which confirms it is compliant with EA Guidance Note M1 and EN 15259.

4.6 Question 6a-e– Resource Efficiency and Climate Change

This application does not include landfill gas engines.

Drawings

Appendix A – Application Forms

Appendix B – Competence Management System Certificate

Appendix C – Landfill Gas Risk Assessment

Appendix D – Management System Certificate

Appendix E – Gas Management Plan

Appendix F – Flare Specification Information



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