

Variation Notice with introductory note

Pollution Prevention and Control (England & Wales) Regulations 2000

Llanddulas Landfill Site

3C Waste Limited
Llanddulas Landfill Site
Abergele Road
Llanddulas
Conwy
North Wales
LL22 8HP

**Variation Notice Number
BP3734XX**

**Permit number
BU0800IZ**

Introductory note

This introductory note does not form a part of the permit

The following notice is issued under regulation 17 of The Pollution Prevention and Control (England and Wales) Regulations 2000 (S.I.2000 No. 1973 (as amended) (the Regulations) to vary the conditions of a permit issued under the Regulations to operate part of an installation. Schedule 1 of this notice lists any deleted conditions, Schedule 2 lists any amended conditions and Schedule 3 lists any conditions that have been added.

This permit has been issued following a variation application by the permit holder to install an additional landfill gas engine as well as 2 flares to replace 1 existing flare. A number of minor changes have been included due to errors in the recent permit review variation (CP3332LG) All of these conditions have been amended in Schedule 2 of this. As such there are no conditions in Schedule 3 of this Variation Notice.

The installation as shown on Drawing Number LL1 dated December 2003 entitled "Installation Boundaries" is at Llanddulas, Conwy, North Wales. The installation comprises of a biological leachate treatment plant with a treatment capacity greater than 50 cubic metres per day, 4 gas engines with a total combined thermal input capacity greater than 3 megawatts together with three main areas for landfilling as follows:

Phase 1 and 3 previously operated in accordance with waste management licence CBC06.

Phase 2 previously operated in accordance with waste management licence CBC08.

Phase 3a is included in the Permitted Installation of the site. This area was not previously licensed.

The wastes authorised to be deposited within the installation consist of a specified range of household and non-hazardous industrial and commercial waste with a total quantity of approximately 5.2 million tonnes, including previously deposited waste under the superseded waste management licences. The quantity of waste that is deposited in the landfill in any year shall not exceed 600,000 as detailed in Table S1.5.

The main potential sources of emissions are:

- leachate with the implications of pollution to surface and groundwater and nuisance from malodour and
- migration of landfill gas causing malodorous nuisance and the potential in exceptional circumstances to cause an explosion in an enclosed space and
- fugitive emissions of landfill gas causing a reduction in the local air quality and contributing to greenhouse gases globally and
- point source emissions of exhaust gases from flares and the gas engines produce exhaust gases that have been subject to a risk assessment in accordance with "Horizontal Guidance Note IPPC H1, Integrated Pollution Prevention and Control (IPPC), Environmental Assessment and Appraisal of BAT" and dispersion modelling.

A hydrogeological risk assessment has been completed to assess the risk of polluting substances discharging to groundwater from the waste.

The base of the landfill is above the groundwater table.

The design and standards of construction of the engineered protection measures for the installation are based on the results of this groundwater risk assessment.

The new area for engineering ie: phase 3A will be engineered to encapsulate the waste in low permeability engineered clay and plastic liners on the base and outer sides of the site with additional and engineered fill beneath the lining system. Engineered systems are installed to collect, control and monitor leachate and landfill gas produced by the degradation of the waste. The integrity of the engineered liner and its ability or otherwise to prevent leachate migration into the groundwater, is monitored and assessed by carrying out sampling and chemical testing of groundwater and leachate quality respectively from the external groundwater monitoring boreholes and internal leachate monitoring wells. Gauging of leachate and groundwater heads are also part of the monitoring regime. On site leachate is treated in an on site biological treatment plant prior to disposal to sewer.

Landfill gas is actively controlled by pumping, extraction, flaring and or utilisation by combustion in gas engines. Monitoring boreholes outside the liner systems are sampled and analysed to check for the presence of landfill gas. This enables a check to be kept on the containment / liner integrity and its ability or otherwise to prevent landfill gas migration. Landfill gas is sampled and analysed within the waste mass.

Landfilling significant quantities of waste can cause additional environmental pollution due to the release or escape of dust, odour, litter and noise and other environmental nuisances such as flies, rodents, gulls or other pests. The Permit conditions require specific mitigation measures and monitoring to be carried out which are documented by the Permit holder.

Note that the Permit requires the submission of certain information to the Agency (Sections 4 and 5). In addition, the Agency has the power to seek further information at any time under regulation 28 to the PPC Regulations provided that it acts reasonably.

Detail	Date	Response Date
Application BU2853IS	Received 27/02/2003	Applicant agrees that separate applications should be conjoined – see letter dated 30 January 2004 Ref: 4D-197-126
Application BU0800IZ	Received 9 June 2003	
Permit BU0800IZ determined	6 February 2004	
Variation Application BX7789IS	Received 8 April 2004	
Variation BX7789IS determined	28 April 2004	
Variation CP3332LG determined	30 May 2008	
Variation BP3734XX determined	25 July 2008	

Permit holder	Permit Number	Date of Issue
Not applicable		

Holder	Reference Number	Date of Issue
3C Waste Ltd	EAWML/ (CBC06) (Landfill Phases 1 and 3, Landfill Gas Plant and Leachate Plant)	15/01/1992
3C Waste Ltd	EAWML/ (CBC08) (Landfill Phase 2)	03/11/1992
Waste Recycling Group	CG0136801 (surface water discharge consent)	23/11/1992

End of Introductory Note

Variation Notice

Permit number

BU0800IZ

Variation number

BP3734XX

The Environment Agency (the Agency) in exercise of its powers under Regulation 17 of the Pollution Prevention and Control (England and Wales) Regulations 2000 (SI 2000 No 1973) hereby varies the permit held by you

3C Waste Limited ("the operator"),

whose registered office is

Ground Floor West

900 Pavilion Drive

Northampton Business Park

Northampton

NN4 7RG

company registration number 02632581

to operate part of an installation at

Llanddulas Landfill Site

Abergele Road

Llanddulas

Conwy

North Wales

LL22 8HP

to the extent set out in schedules 1, 2 and 3 of this variation notice .

The notice shall take effect from 25th July 2008

Signed	Date
	25 th July 2008

Ann Weedy

Authorised to sign on behalf of the Agency

SCHEDULE 1 – CONDITIONS AND SCHEDULES TO BE DELETED

None

SCHEDULE 2 – CONDITIONS AND SCHEDULES TO BE AMENDED

The following conditions are amended as follows:

2.5 Improvement programme

- 2.5.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Agency.

Table S1.3 shall be amended to read:

Reference	Requirement	Date
5a	Unless otherwise agreed with the Agency in writing - the operator shall install a minimum of 3 landfill gas monitoring boreholes within each of the designated phases 1A, 1B, 1C, 2, 3, and 3A. These boreholes shall be installed to a depth to ensure that the concentration and pressure of landfill gas within the waste body can be determined whilst not affecting the integrity of the containment within those phases. Each borehole shall be located in a position as far as practically possible from the installed landfill gas collection wells to minimise the effect from those wells, and incorporated in to the monitoring programme once installed.	2 March 2009
5b	Following installation of the boreholes installed in accordance with Improvement Condition 5a above as approved by the Agency the operator shall undertake monitoring in accordance with Table S4.7 from the date of that approval.	Within 1 month following approval of the monitoring borehole installed in accordance with Condition 5a above.
6	The operator shall carry out an air quality monitoring survey at the site to include VOC, NO ₂ , PM ₁₀ and PM _{2.5} and provide a report containing the results obtained and the interpretation to the Agency. A further survey utilising a diffusion tube matrix shall determine the ground level concentrations of NO ₂ at all the sensitive receptors identified within table LFGRA 1 of the Landfill Gas Risk Assessment in application No BU2853IS dated February 2003 The survey shall be carried out at a time and at the locations, which are likely to result in a conservative worst case scenario. The interpretation shall consider the results in comparison to the relevant air quality standards both in the short and the long term. The details of the method for carrying out the survey shall be agreed in writing with the Agency prior to the commencement of the survey.	30 June 2009
14	The operator shall review the design of the capping layer for this Phase 3A, to incorporate a leachate drainage layer and system below the flexible membrane liner along the northern flank adjacent to the Llysfaen Fault. The system should be designed to a capacity and extent sufficient to ensure that leachate within this area will not build up below the Flexible Membrane Liner.	30 November 2008

3.1 Emissions to water, air or land

- 3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 4 tables S4.2, S4.3 and S4.4.

Table S4.2 shall be amended to read:

Emission point Ref. & Location	Parameter	Source	Limit (including unit)	Reference Period	Monitoring Frequency	Monitoring Standard or Method
A2, A3, A4 and A5 Exhaust stack for each of the 4 gas engines as shown on Drawing ESID 08 UPDATE in the Variation Application BG3734XX dated February 2008	Oxides of Nitrogen	Gas utilisation plant	650 mg/m ³	Hourly mean	Annually	ISO 10849: 1996
	CO	Gas utilisation plant	1500mg/m ³	Hourly mean	Annually	ISO 12039: 2001
	Total VOCs	Gas utilisation plant	1750 mg/m ³	Hourly mean	Annually	BS EN 12619: 1999 or BS EN 13526: 2002
	NMVOC's	Gas utilisation plant	150mg/m ³	Hourly mean	Annually	BSEN1649:2002
A6 and A7 Landfill Gas Flare as shown on Drawing ESID 08 UPDATE in the Variation Application BG3734XX dated February 2008	Oxides of Nitrogen	Landfill	150 mg/m ³	Hourly mean	Annually	ISO 10849
	CO	Gas Flares	50 mg/m ³	Hourly mean	Annually	ISO 12039
	Total VOCs	Landfill	10 mg/m ³	Hourly mean	Annually	BS EN 12619 or BS EN 13526
		Gas Flares	5 mg/m ³			
	NMVOCs	Landfill Gas Flares	5 mg/m ³	Hourly mean	Annually	BS EN 13649

Footnote: Annual monitoring is only required when flares operate in excess of 10% of the time, taken on an annual assessment period.

3.2 Emissions to groundwater

- 3.2.3 The trigger levels for emissions into groundwater for the parameters and monitoring points set out in schedule 4 Table S4.4 shall not be exceeded.

Table S4.4 shall be amended to read:

Table S4.4 Trigger levels for emissions into groundwater and monitoring requirements					
Monitoring point reference	Parameter	Limit (including unit)	Reference Period	Monitoring frequency	Monitoring standard or method
GWBH4, GWBH7, GWBH23, GWBH25, GWBH34, GWBH35, GWBH36 as shown on the 2 drawings referenced ESID11 for Phases 1, 2, 3 and 3a parts of the Application	Ammoniacal Nitrogen	1mg/l	Spot Sample	Monthly	In accordance with the Agency's "Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water" (LFTGN02)
	Chloride	250mg/l	Spot Sample	Monthly	
	Mercury	0.01µg/l	Spot Sample	Monthly	
	Mecoprop	0.04 µg/l	Spot Sample	Monthly	
	Potassium	12mg/l	Spot Sample	Quarterly	
	Phenols	0.5µ/l	Spot Sample	Quarterly	
	Tributyl Tin	0.001µg/l	Spot Sample	Quarterly	
	Trifuralin	0.01 µg/l	Spot Sample	Quarterly	

3.6 Monitoring

3.6.1 The operator shall, unless otherwise agreed in writing by the Agency, undertake the monitoring specified in the following tables in schedule 4 to this permit:

- (a) Leachate specified in tables S4.1 and S4.8;
- (b) Point source emissions specified in tables S4.2 and S4.3;
- (c) Groundwater specified in tables S4.4 and S4.10;
- (d) Landfill gas specified in tables S4.5, S4.6, S4.7 and S4.11;
- (e) Surface water specified in table S4.9.

Table S4.10 shall be amended to read:

Table S4.10 Groundwater – other monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
<u>Upstream</u> GWBH32, GWGW1, GWBH33, GWBH34, GW2, GWBH35 <u>Downstream</u> GWBH25, GWBH26, GWBH27B, GWBH06R, GWBH36, GWBH28, GWBH24, GWBH22, GWBH23, GWBH07, GWBH04 as shown on the 2 drawings referenced ESID11 for Phases 1, 2, 3 and 3a parts of the Application	Water level	Monthly	In accordance with the Agency's "Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water" (LFTGN02)	None specified
	Electrical	Monthly		
	Conductivity (EC)	Monthly		
	pH	Monthly		
	Ammoniacal	Monthly		
	Nitrogen (NH4-N)	Monthly		
	Chloride (Cl)	Monthly		
GWBH27B, GWBH36 as shown on the 2 drawings referenced ESID11 for Phases 1, 2, 3 and 3a parts of the Application	Lead (Pb)	Monthly		
	Mecoprop	Monthly		
	Mercury (Hg)	Monthly		
<u>Upstream</u> GWBH32, GW1, GWBH33, GWBH34, GW2, GWBH35 <u>Downstream</u> GWBH25, GWBH26, GWBH27B, GWBH06R, GWBH36, GWBH28, GWBH24, GWBH22, GWBH23, GWBH07, GWBH04 as shown on the 2 drawings referenced	Total alkalinity (CaCO3) (tot alk)	Quarterly		
	Magnesium (Mg)	Quarterly		
	Potassium (K)	Quarterly		
	Zinc (Zn)	Quarterly		
	Copper (Cu)	Quarterly		
	Cadmium (Cd)	Quarterly		
	Nickel (Ni)	Quarterly		
	Iron (Fe)	Quarterly		
	Chromium (Cr)	Quarterly		
	Total sulphates (SO4)	Quarterly		

Table S4.10 Groundwater – other monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
ESID11 for Phases 1, 2, 3 and 3a parts of the Application	Calcium (Ca)	Quarterly		
	Manganese (Mn)	Quarterly		
	Sodium (Na)	Quarterly		
	TOC	Quarterly		
	TON	Quarterly		
	Dissolved Methane	Quarterly		
GWBH27B, GWBH36 as shown on the 2 drawings referenced ESID11 for Phases 1, 2, 3 and 3a parts of the Application	List I Leachate Screen	Annually		

4.2 Reporting

- 4.2.2 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:
- (a) in respect of the parameters and emission points specified in schedule 5 Table S5.1;
 - (b) for the reporting periods specified in schedule 5 Table S5.1 and using the forms specified in schedule 5 Table S5.4; and
 - (c) giving the information from such results and assessments as may be required by the forms specified in those tables.

Table S5.1 shall be amended to read:

Table S5.1 Reporting of monitoring data			
Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Leachate levels As required by condition 3.6.1	Phase 1A and Phase1B – LCP1AR, LMP1, LMP2 Phase 1C – LCP1C, LMP3 Phase 2a – LCP2A, LMP4 Phase 2b – LCP2B Phase 2c – LCP2C1, LMP5 Phase 3(1)+Extension – LCP3, LMP3/1 Phase 3A – LCP3A, LMP3/2	Every 3 months	06/02/04
Emissions to air Parameters as required by condition 3.6.1	A2, A3, A4, A5, A6 and A7	Every 12 months	06/02/04
Emissions to water Parameters as required by condition 3.6.1	W1	Every 3 months	06/02/04
Groundwater Parameters as required by condition 3.6.1	<u>Upstream</u> GWBH32, GW1, GWBH33, GWBH34, GW2, GWBH35 <u>Downstream</u> GWBH25, GWBH26, GWBH27B, GWBH06R, GWBH36, GWBH28, GWBH24, GWBH22, GWBH23, GWBH07, GWBH04	Every 3 Months	06/02/04
List 1 Screen	GWBH27B, GWBH36	Every 12 months	

Table S5.1 Reporting of monitoring data

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Ambient air monitoring Parameters as required by condition 3.6.1	A full sweep of the site boundary at any points on the immediate site boundary and boundary of the gas plant. In the immediate vicinity of the gas and leachate well heads and monitoring points.	Every 3 months	06/02/04
Landfill gas surface emissions Parameters as required by condition 3.6.1	Permanently capped zone Temporarily capped zone	Every 12 months	06/02/04
Landfill gas lateral migration Parameters as required by condition 3.6.1	BH01 – 30, BH40 – 42, BH100-120	Every 3 months	06/02/04
	BH31-39, BH47-57, BH2003/1 and BH2003/2	Every 3 months	
Other Landfill gas monitoring Parameters as required by condition 3.6.1	In-waste landfill gas monitoring boreholes installed in accordance with Improvement Conditions 5a and 5b.	Every 3 months	06/02/04
	Landfill gas collection system at well control valve of gas collection wells (GCW) 1 – 1A to 28 (Phase 1) 1 – 39 (Phase 2)	Every 3 months	30/05/08
Trace gas analysis	Input to the LFG Utilisation Compound	Every 12 months	30/05/08
Other leachate monitoring Parameters as required by condition 3.6.1	Phase 1A and Phase 1B – LCP1AR Phase 1C – LCP1C	Every 3 months	06/02/04
For Zn, Cu, Cd, Ni, Fe, Cr, Mn	Phase 2a – LCP2A Phase 2b – LCP2B Phase 2c – LCP2C1 Phase 3(1)+Extension – LCP3 Phase 3A – LCP3A	Every 12 months	
Other surface water monitoring Parameters as required by condition 3.6.1	Dulas Groundwater Spring, W1 Afon Dulas – upstream	Every 3 months	06/02/04
List 1 Screen	Afon Dulas - downstream	Every 12 Months	

**SCHEDULE 3 – THE FOLLOWING CONDITIONS AND
SCHEDULES ARE ADDED TO THE PERMIT**

None