



EAWML 47068

Received 15 Jan 2008

Paul Williams,
Environment Agency
Hafren House
Welshpool Road
Shelton
Shrewsbury
SY3 8BB

Our Ref:
ÅKS
080114
B2899

Dear Paul,

Re: Nant Fforch Closure Plan

I refer to your request for a Closure Plan for Nant Fforch Landfill at Nant Fforch, Cyfronydd, Welshpool, Montgomeryshire.

On behalf of our client, Mr Nigel Bowen, please find enclosed a Closure Plan for Nant Fforch Landfill Site.

I trust the report meets your requirements but should you have any further queries, please do not hesitate to contact me on email asa.strickland@egniol.com or on the telephone number given below.

Yours sincerely

Dr Åsa Kolmert Strickland MCIWM
Associate Environmental Scientist
Egniol Consulting Ltd.

Cc: Clare Walters, Ceri Environmental Consulting Ltd
Nigel Bowen, J. A. Bowen and Co.



Engineering & Environmental Consultancy Services

Egniol

J. A. Bowen and Co.

**NANT FFORCH LANDFILL SITE
Cyfronydd, Welshpool**

CLOSURE PLAN

January 2008



APPROVAL SHEET AND FOREWORD

Client: Nigel Bowen
Site: Nant Fforch Landfill Site
Project Title: Closure Plan
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FOREWORD

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2. This report is confidential to the Client and Egniol Consulting Ltd. accepts no responsibility whatsoever to third parties to whom this report, or any thereof, is made known. Any such party relies upon the report at their own risk.
3. This report shall not be used for engineering or contractual purposes unless signed by the author and approver, and unless the report status is FINAL.

**NANT FFORCH LANDFILL SITE
WASTE MANAGEMENT LICENCE NOW-605-L
CLOSURE AND AFTERCARE PLAN**

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OS map showing location of the Nant Fforch landfill area

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1.0 PRELIMINARIES

1.1 Site History

1.1.1 Nant Fforch Landfill Site (hereafter referred to as the Site) is a landfill site operated by Mr N J Bowen at Nant Fforch, Cyfronydd, Welshpool, Montgomeryshire. The waste management licence holder is J A Bowen and Co., and the local representative of the licence holder is Mr J N Bowen. The Site is located at Nant Fforch, at National Grid Reference ~~SF~~ 146 063. Access to the Site is gained via the B4385, approximately 5km east of village of Llanfair Caereinion, see Drawing No. 2899.01.

1.1.2 It is believed that this facility started operating in January 1976. The Site was originally operated by the council as a general highways waste and domestic waste disposal facility. The Site was essentially operated as an 'old style' inert site. In 1992, the council informed Mr D J A Bowen that they wished to prematurely terminate the lease for the Site. In 1993, the landowner (JA Bowen and Co.) applied for a WML to operate the Site. Waste Disposal Licence NOW-605-L was granted to JA Bowen and Co. on 8th June 1993 by Montgomeryshire DC. This Environment Agency licence reference is now EAWML 47068.

1.1.3 As shown on Drawing No. 2899.02, the Site included infilling of a valley feature starting from the south-easterly part of the site nearest the B4385 road with working progressing towards the north-west. The council operated tip is indicated on the drawing but is not considered part of the licence which this report relates to.

1.1.4 The landfill site occupies an area of approximately 2 hectares. The wastes permitted to be deposited at the Site were 'clean dry non-leachate producing materials'¹ from the following list (which are not mixed with any other materials):

- Natural Stone
- Topsoil
- Subsoil
- Hardcore

¹ ENVIRONMENT AGENCY, 1997. Waste Management Licence No. NOW-605-L: Licence Condition – MODIFICATION.

- Brickwork
- Set concrete
- Clay
- Sand
- Silica (excluding finely powdered types)
- Excavated road materials (excluding fresh tarmac and any other fresh bituminous materials)
- Glass
- Any solid or granular dry material free from any noxious poisonous or polluting substances and which do not decompose or for which the environmental impact of decomposition is less than or comparable to topsoil.

1.1.5 The licence restricts the permitted waste types to inert wastes up to 1000 tonnes per day. It is stated in the licence that the depth of the layer of waste shall not exceed 0.6m before compaction.

1.1.6 Topsoils were rarely deposited at the Site as they have a commercial value.

1.1.7 Prior to the deposition of waste, each phase was cleared of any trees, shrubs and bushes and, as outlined in the licence, all cleared material was to be taken for disposal at a suitable licensed facility.

1.1.8 The Site was permitted to receive a maximum total volume of waste of 27,000m³ in its lifetime. Since landfilling activities commenced, approximately 16,000m³ of wastes have been deposited. The operational procedure during its operation was to separate out any non-inert wastes before deposit. The WML for the Site stated that 'the maximum width of the working face shall not exceed 10m and the faces and flanks shall be compacted to form gradients not steeper than 1 in 3'.

1.1.9 The site owner considered that further material will be required to be used at the Site as a method to stabilise and to restore the site. Planning permission for such extensions of the Site was granted by Powys County Council in October 2002 but the necessary licence or exemption does not yet exist.

1.1.10 The landfill was in the Environment Agency's (EA) tranche 7 for landfill re-permitting under the PPC regime. As the Site had nearly reached capacity, the site operator chose not to apply for a PPC Permit within the PPC application tranche and is now pursuing closure of the Site. As a result, in May 2006 the Site was served a closure notice preventing further deposits of waste for disposal.

1.1.11 As soon as restoration has been completed, the operator intends to pursue surrender of the licence.

1.1.12 This plan should be read in conjunction with the licence for the Site, licence number NOW-605-L, which is referenced in Section 8 of this document.

1.2 Surrounding land use

1.2.1 The Site is immediately bound by agricultural land, woodland and the B4385 road. The Site is at an elevation of approximately 195mAOD (meters Above Ordinance Datum). The topography of the Site is reasonably flat with a gentle downwards slope towards the north and west. The nearest residential building to the Site is Seven Oaks bungalow, located approximately 50m to the south. Nant Fforch Farm is situated approximately 200m south of the Site. The Welshpool and Llanfairfechan Light Railway passes the Site at a distance of approximately 200m to the northeast.

1.2.2 The Site is not within 2km of a European Site for Nature Conservation. According to Multi Agency Geographic Information for the Countryside, there are no Sites of Special Scientific Interest within 2km of the Site (the nearest being at least 6km to the southeast of the Site).

1.3 Geology

1.3.1 The 1:250 000 scale geological map of the area shows the site to be underlain by undifferentiated Wenlock and Ludlow rocks of Silurian age. This sequence of sedimentary rocks predominantly comprises siltstones and mudstones, however, due to the absence of any published geological data at smaller scales, the precise geology of the site is not known. The geological sequence of the Site is summarised in Table 1.1 below.

Table 1.1: Geological Sequence for Nant Fforch Landfill Site.

GEOLOGICAL AGE	DEPOSIT
419-423 Mya*	Ludlow
423-428 Mya	Wenlock

*Million years ago

1.4 Hydrogeology

- 1.4.1 The Site is not underlain by an aquifer, and the Site is not located within the total catchment area of a local public abstraction point.

1.5 Hydrology

- 1.5.1 The recorded average rainfall for the area is 655.7mm per annum².
- 1.5.2 As indicated on Drawing No. 2899.02, there is a drainage ditch has been excavated by Montgomeryshire DC along the entire length of the Site. According to the licence, a 700mm diameter storm drain was required to be constructed to ensure that it outfalls at least 5 meters beyond the working face at all times. The ditch is open at the top of the site and is then culverted along the north-western side of the Site. The stream emerges from the culvert at the toe of the waste deposit. The drainage ditch is ephemeral, i.e. it only flows during and after wet weather conditions.
- 1.5.3 There is a seepage from the waste mass of adequate flow that this can be sampled. Water has been observed flowing from this almost continuously, even when the drainage ditch alongside the Site is dry.
- 1.5.4 The Site lies within the catchment area of the River Banwy/Einion. The drainage ditch along the western boundary of the site flows in a north-easterly direction towards the

² MET OFFICE: Climate Averages, Long-term Averages, 1971 – 2000 for gauge station at Shawbury [online]. Available from: <http://www.metoffice.gov.uk/climate/uk/averages/index.html>

principal surface water feature in the area, River Banwy, which is approximately 1.7km to the northwest at its closest point.

1.6 Site Details

Site Address:	Nant Fforch Cyfronydd Welshpool Montgomeryshire SY21 9EY
NGR:	SJ 146 063
Waste Management Licence	NOW-605-L

1.7 Staffing/Certificate of Technically Competent Persons

- 1.7.1 The landfill falls outside the WAMITAB regime as it is an inert landfill of less than 50,000m³ capacity. Technically competent management will continue to be provided in the landfill closure phase by the current technically competent manager for the Site, Mr. Nigel Bowen.

1.8 Amendment Procedure

- 1.8.1 The licence holder shall give notice to the Environment Agency in writing of any changes to the Closure and Aftercare Plan. Implementation of any changes will only be put into effect and incorporated into the Closure and Aftercare Plan when approval of a risk assessed approach and subsequent approval of the proposal have been received in writing, where necessary, from the Environment Agency.
- 1.8.2 The procedure for changing items of text, appendices and drawings is described in Appendix A.

2.0 SITE INFRASTRUCTURE

2.1 General

2.1.1 The Site infrastructure comprises adequate stockproof fencing to prevent any livestock being kept on areas adjacent to the Site from entering the actual Site.

2.1.2 As the Site is a small inert landfill, infrastructure for the management of landfill gas and leachate is not necessary. There is currently no infrastructure for the monitoring of landfill gas, leachate or groundwater at the site. Please refer to section 5 for further details on the monitoring proposals for the site.

3.0 CLOSURE AND RESTORATION PLAN

3.1 Stability of the Landfill Site

3.1.1 Site development is detailed in Section 1.1.

3.1.2 The Site was infilled with compacted inert material which undergoes negligible settlement. The proposed restoration profile for the Site is elevated slightly above the natural ground level.

3.1.3 Correspondence to the EA from Clare Walters dated 14th July 2007 suggested that the Site is not considered stable by the operator as the northern and eastern faces are steep, and restoration works are required in order to complete the Site. To stabilise the steep faces and provide a gentler profile there is a need to place additional materials outside the licensed area butting up towards the flanks of the site. As the required restoration extends beyond the licensed area, a Paragraph 9A exemption was proposed. The operator is currently in discussion with the EA over the proposal to restore the Site using a paragraph 9A exemption. Following these discussions, the restoration scheme to improve the stability of the Site can be considered further.

3.2 Restoration and Aftercare

Restoration Objectives

3.2.1 There will be no further waste disposal at the Site under the terms of the licence. The landfill is seeking to restore the Site in a manner acceptable to the planning authority. The future use of the Site is not currently known although it is likely that the operator will seek for the lower part of the Site to be graded with restoration soils and grassed over. However, with the exception of the stability issues, detailed restoration proposals will not have implications for the pollution potential for this site in the closure phase.

3.2.2 The site owner considers that there will be the requirement for further material at Nant Fforch Landfill to be used to restore and stabilise the Site. For any use of waste materials

outside the licensed area to stabilise the site, the legal options for this will be discussed and agreed with the Environment Agency separately to this closure plan. Any restoration materials that will be required for the licensed area may be placed in accordance with the procedure set out below.

Material Resources and Handling

- 3.2.3 Waste and material acceptance procedures will ensure that imported restoration soils are uncontaminated and suitable for the purpose of the restoration. All restoration materials will either be sourced from uncontaminated excavations or will be sampled and tested to assess the suitability of the waste.
- 3.2.4 Soils will only be spread, levelled, ripped or loosened when the soils are in a dry and friable condition.

Soil Placement, Profiles and Ripping

- 3.2.5 According to the planning permission granted for the extension to the Site (dated 29th January 1975), soils will be placed over the surface of the landfill and then seeded to the satisfaction of the Chief Planning Officer. Uncompacted soils will be spread on the Site by 360° tracked excavator. Any areas that become compacted will be loosened by the excavator bucket to assist free drainage.

4.0 MONITORING OF RESTORATION

4.1 Engineering Surveys

4.1.1 A topographic survey was carried out in 2006³, which was provided to the Environment Agency, and no further waste deposits have taken place since this time.

4.1.2 Stable, permanent survey control stations shall be established and maintained for the control of all survey work around the Site. The stations shall be referenced to Ordnance Survey National Grid co-ordinates, the grid alignment to be within +/-1 metre and levels referenced to Ordnance Datum.

4.1.3 A topographic survey will be carried out on completion of the placement of restoration soils and at annual intervals (unless otherwise agreed in writing by the EA) throughout the post closure phase. The scale will adequately show surveyed features and be at least 1:2500. The surveys will be sufficient to produce plans that include all roads, structures, boundaries, monitoring points and all other relevant Site features. The results of the survey shall be presented as a plan. Plan positions of ground features will be shown to within 1m. Spot levels to 0.01 m shall be shown at significant landform changes to a density to adequately indicate the true landform, no greater than 50m intervals in open areas of even gradient, closer when indicating embankments, etc.

4.1.4 The results of the survey will be submitted to the EA within 2 months of the survey being carried out.

4.2 Site Inspection

4.2.1 After completion of restoration, the Site will be inspected on a six monthly basis to check the general condition of the Site and whether there is any evidence of illegal tipping or

³ Drawing No V1022/1 entitled "Survey of site showing tip levels as of 21/02/2006" and Drawing V1022/2 entitles "Sections"

vandalism. The findings of such inspections will be recorded in the Inspection Pro Forma located within Appendix C.

- 4.2.2 An additional inspection shall be carried out after any incident that may compromise the security of the Site. Damage to fencing and gates or perimeter barriers that are found to be in poor condition will be temporarily repaired as soon as practicable, and permanently repaired within two weeks of the inspection. A record of all inspections, damage and repairs will be maintained in the Site Inspection Pro Forma (Appendix C).

4.3 Inspection of Restored Surface

- 4.3.1 At least once a year, the entire Site will be inspected to check the condition of the restored surface. The inspection will follow the form presented in Appendix C. This will take the form of a visual (non intrusive) inspection to check for evidence of potential damage or wear to the restoration soils as a result of for example desiccation/cracking, soil erosion, excessive differential settlement or accidental damage.

5.0 MONITORING - POLLUTION CONTROL

5.1 Landfill Gas Monitoring and Reporting

Background

- 5.1.1 Landfill gas is produced by the breakdown of biodegradable waste and as such the composition of landfill gas will vary over time, but will typically consist of approximately 50-60% methane (CH₄), 40-50% carbon dioxide (CO₂) and a small amount of minor constituent gases as well. Landfill gas is a potential hazard due to its explosive and asphyxiating properties. Landfill gas can also cause problems of odour nuisance and 'dieback' of vegetation.
- 5.1.2 Due to the non-putrescible and non-biodegradable nature of the inert wastes and topsoils deposited at the Site it is predicted that minimal amounts of landfill gas will be generated at the Site.
- 5.1.3 There have been no issues regarding gas generation and/or problems with odour nuisances during the life of the Site, and there is no evidence of landfill gas generation or migration at the Site. As such, no landfill gas monitoring infrastructure (boreholes) have been installed at the Site as per the requirement in the WML (Condition P).
- 5.1.4 In order to verify that no landfill gas is generated at the Site, it is proposed that a gas spike survey is carried out to determine whether landfill gas generation will need to be monitored further during the post operational phase. The survey will be undertaken within a month of the closure report being approved. The purpose of this monitoring plan is to outline the monitoring methods and contingency plans for impacts arising from the generation of landfill gas.
- 5.1.5 The results of the monitoring exercise will be used to evaluate any further need for monitoring of landfill gas at the Site.

Monitoring Plan

- 5.1.6 It is proposed that monitoring at the Site is undertaken at locations where gas spikes can be installed towards the centre of the waste mass.
- 5.1.7 It is proposed to install gas spikes based on a heringbone grid of approximately 50m spacing of gas monitoring spikes hammered in to the waste at a depth of at least 1m. The spikes will then be left to equilibrate with the soil for a minimum period of 24 hours. They will be monitored on the next occasion when the atmospheric pressure is 1000mb or below and falling. The locations will then be sampled for bulk gases and atmospheric pressure: this included methane (stable), methane (peak), carbon dioxide, atmospheric pressure and relative pressure. This monitoring will be undertaken using portable real-time equipment which comprises an infra-red Gas Analyser GEM 2000.

Assessment Levels

- 5.1.8 All monitoring results obtained from the landfill gas monitoring points will be compared against the generic assessment levels included within the Guidance on Management of Landfill Gas (LFTGN03), issued by the EA. The assessment levels for the monitoring points are detailed in Table 5.1. The results obtained are to be compared to the assessment levels, and further monitoring actions recommended in the event of the assessment levels being exceeded. The EA will be informed of both the breach and any intended remedial action and the Landfill Gas Action Plan contained in Table 5.1 will be implemented if required.

Table 5.1: Landfill Gas Assessment Levels and Action Plan

Action Plan			
Gas	Monitoring point	Trigger level (% v/v)	Action
CH ₄	Temporary gas spike	>1%	Inform manager, report results. Inform EA. Review and assess whether there is a requirement for additional monitoring. Produce recommendations/proposals and forward to EA for approval.
CO ₂	Temporary gas spike	>3% *	Inform manager, report results.

* due to the nature of existing ground conditions

Reporting of results

5.1.9 All monitoring data will be stored in files kept at Nigel Bowen's offices.

5.1.10 The monitoring data shall include;

- Specified details such as date, time, location, personnel undertaking monitoring and equipment used;
- Determinants monitored;
- Results of measurements (with error limits);
- Interpretation and review of results;
- Validation of accuracy and validity of results.

5.1.11 A review of the gas spike survey data will be submitted to the EA and will include details of any proposed remedial actions in the event of any adverse data. The necessity for ongoing landfill gas monitoring will be assessed as part of the spike gas survey report.

5.2 Groundwater Monitoring and Reporting

5.2.1 Due to the nature of the waste deposited at the Site, it is anticipated that no List I substances and no discernable levels of List II substances will be released by the flushing of the waste mass. The Site was developed as a non-containment system. However, the waste accepted there was inert only and the risk of it containing and therefore releasing any List I or II substances from the waste mass is considered very low. Monitoring of seepage through the waste mass (as described in section 5.3/5.4) has showed no indication of any elevated concentrations of contaminants.

5.2.2 The site is located on a non-aquifer and there are no known permeable deposits which can be sampled for groundwater within the immediate vicinity of the site.

5.3 Surface Water Monitoring and Reporting

Background

- 5.3.1 As described in section 1.5, the partly culverted drainage ditch to the north-western side of the site is ephemeral. However, a discharge from the base of the waste mass is reported to occur almost continuously even during dry weather. It appears likely therefore that water emanating from the site during wet conditions will be a mixture of surface water and leachate, whereas during dry weather conditions the run-off will be leachate (i.e. rainwater which has infiltrated the waste mass).
- 5.3.2 In accordance with the licence for the Site, surface water has been monitored and analysed. Surface water samples were taken upstream and downstream of the site. The results from the two latest monitoring occasions in June 2005 and April 2006 are presented in Appendix B.
- 5.3.3 Analysis of water samples taken from both upstream and downstream of the Site indicate that the landfill is not presenting an environmental risk to the surface water. Since a sample of surface water was taken from water emanating from the toe of the tipping face, it can be assumed that this water is representative of leachate for the site. The water was not found to be significantly polluted, thus it can be presumed that the landfill is not significantly affecting surrounding surface waters. Such low levels of pollution indicate that the waste that was accepted at the site was indeed inert and that contamination of surrounding surface waters is not likely.

Monitoring plan

- 5.3.4 It is proposed that further monitoring of the surface water is carried out in the closure phase. The monitoring locations will be the drainage ditch upstream of the Site and downstream from the culvert below the tipping area (flow permitting) and another downstream sampling point will be of the water emanating from the toe of tipping face. This will enable the operator to verify that the concentrations of various parameters do not increase downstream of the Site, as a result of the landfilling activities that took place at Nant Fforch.

5.3.5 Surface water monitoring will be carried out as per Table 5.2 below. The monitoring will be done twice annually; once in the summer when there is no flow in the upstream ditch and once in the winter when the ephemeral stream is flowing.

5.3.6 The results of the surface water monitoring data will be submitted to the EA within six weeks of each monitoring event. Surface water monitoring results should be compared with the Environmental Water Quality Standards (EQS). In the event of any adverse data, the reporting of the results will include details of any proposed remedial actions.

Table 5.2. Surface water monitoring plan

Location	Monitoring Frequency	Parameters
Upstream; Downstream 1; Downstream 2	Twice annually – Summer and Winter	Alkalinity, ammoniacal nitrogen, biological oxygen demand, cadmium, chemical oxygen demand, chloride, chromium, copper, dissolved oxygen, electrical conductivity, iron, lead, nickel, nitrate, nitrite, pH, phosphate, suspended solids, total hardness (as CaCO ₃), total oxidised nitrogen, turbidity and zinc

5.4 Leachate Monitoring and Reporting

5.4.1 The waste types permitted within the licence represent a low risk to the environment and the licence did not require any containment or leachate infrastructure for the management of leachate.

5.4.2 It is considered that a seepage from the site represents leachate quality from the deposited waste. The proposed monitoring in the closure phase of this seepage is covered in section 5.3 as a downstream surface water sampling point.

6.0 MAINTAINING AND SUBMITTING RECORDS

6.1 Security and Availability of Records

6.1.1 The operator will make and keep records of a number of activities that form part of the operation of the Site. These records are summarised below:

- damage to fences and gates;
- survey of restored surface;
- monitoring results; and
- surveys during post-closure phase.

6.1.2 The records detailed above will be kept at the Nigel Bowen's offices during the Aftercare Management period for the Site. Records shall be kept until the waste management licence is surrendered.

7.0 REPORTING OF SIGNIFICANT EFFECTS

- 7.0.1 The definition of significant effects may be considered to be at concentrations where there is potential to cause pollution to the environment or the risk of significant harm. As such, trigger values have been defined solely for surface water and landfill gas, based on background environmental levels and/or the relevant regulatory standards.
- 7.0.2 In the event that the trigger values are breached, a set of procedures have been put in place to investigate the occurrence and procedures for reporting this to the Environment Agency. These procedures are discussed in detail in Section 5 above.

8.0 ASSOCIATED DOCUMENTS

1. Environment Agency. August 2005 Landfill Directive Regulatory Guidance Note 7 Requirements for Landfills That Stop Operating: Closure and Aftercare. Version 2.
2. Waste Disposal Licence issued by Montgomeryshire DC, licence number NOW-605-L

Nant Fforch Landfill Site

Closure Plan

January 2008

Drawing No. 2899.01

- Site Location Plan

Egniol Consulting Limited
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DRAWINGS

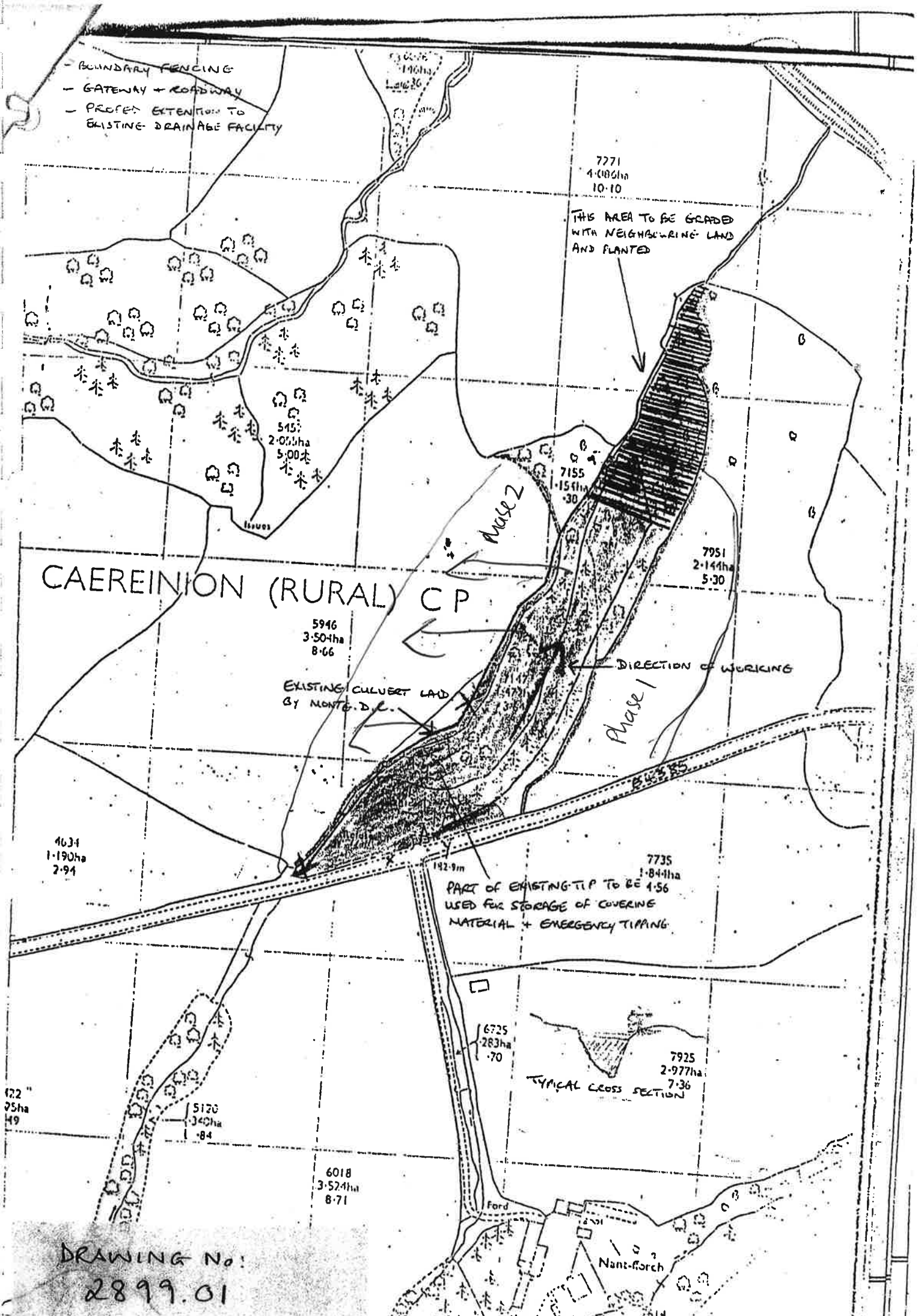
Drawing No. 2899. 01

Site Location Plan

Drawing No. 2899.02

OS map showing location of the Nant Fforch landfill area

- BOUNDARY FENCING
- GATEWAY + ROADWAY
- PROPOSED EXTENSION TO EXISTING DRAINAGE FACILITY



Nant Fforch Landfill Site

Closure Plan

January 2008

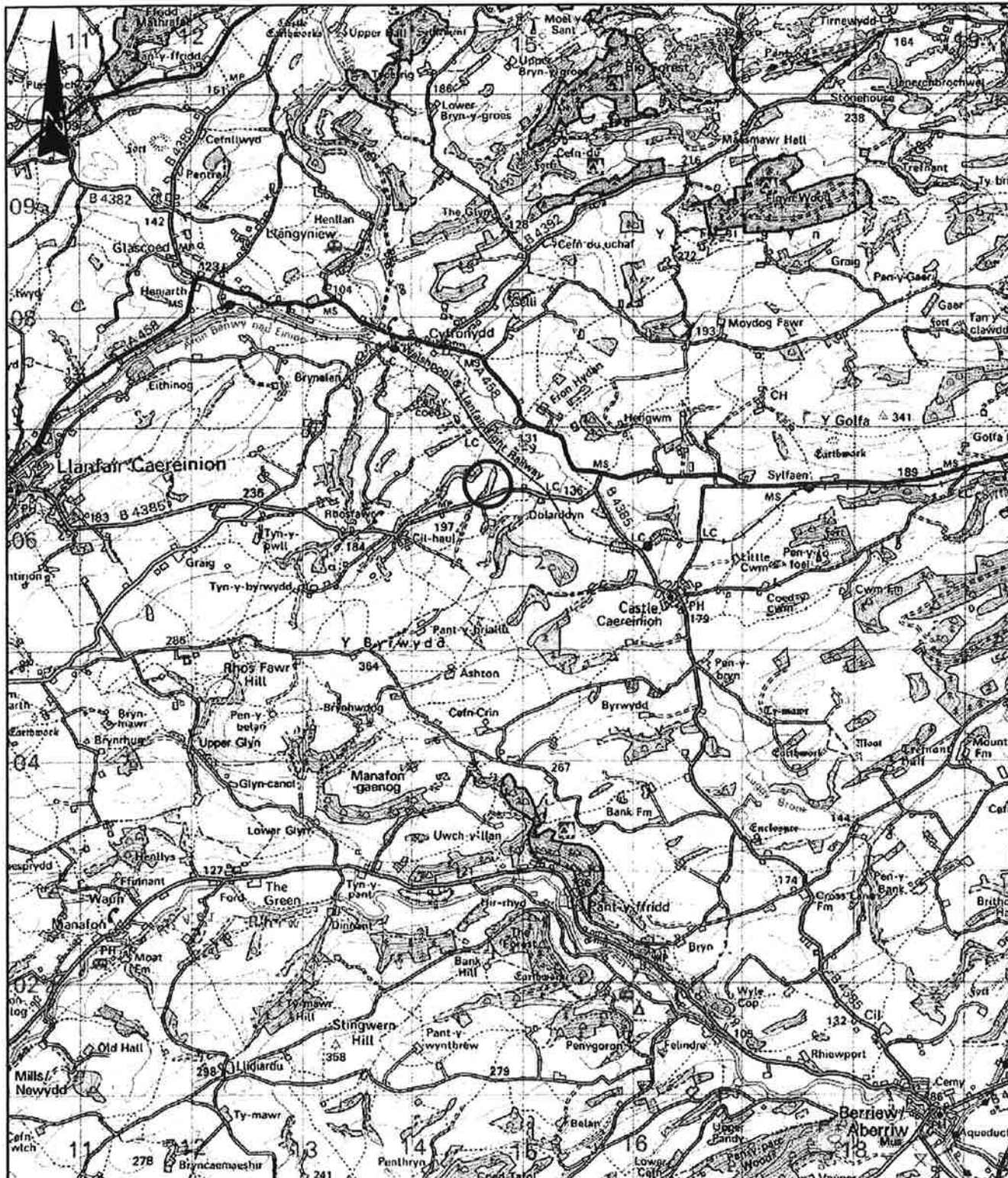
Drawing No. 2899.02

- **OS map showing location of the Nant Fforch landfill area**

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NOTES

1. THIS PLAN CONTAINS ORDNANCE SURVEY MAP DATA REPRODUCED WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONARY OFFICE, CROWN COPYRIGHT ©(LICENCE No AL100036676)

LEGEND

 SITE LOCATION

NIGEL BOWEN		NANT FFORCH LANDFILL		SITE LOCATION PLAN		Egnol Consulting Limited 2 Swanwick Court, Alfreton, Derbyshire DE55 7AS Tel: 01773 520200 Fax: 01773 835439 Website: www.egniol.co.uk		
DRAWN BY EW	CHECKED BY SR	APPROVED BY SR	DATE 09.01.2008	SCALE @ A4 1:50,000	ISSUING OFFICE ALFRETON	DRAWING NUMBER 2899.01	ISSUE Fn	REVISION -

Nant Fforch Landfill Site

Closure Plan

January 2008

Appendix A Procedure for Changing Text

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APPENDIX A – PROCEDURE FOR CHANGING TEXT**AMENDMENT PROCEDURES****GENERAL**

The licence holder shall maintain at their Site Office a list of approved copies of the Closure and Aftercare Plan in circulation and a schedule of all amendments. The approved list shall be used to ensure that all copies are updated as required.

PROCEDURES FOR CHANGES IN TEXT

This will be done by inserting replacement pages. All replacement pages will specify:

- a) the serial number allotted to the amendment, with the number of replacement page;
- b) the number(s) of the page(s) it replaces and the date on the page(s) replaced;
- c) the date when the change takes effect, which will not necessarily be the date when the amending page is inserted.

Pages replaced will be transferred to a section following the Appendices, as a record for purposes of the eventual application for surrender of the licence.

New sections (i.e. additions, not replacements) will be allotted amendment serial number and each additional page will specify:

- a) the amendment serial number;
- b) the date when the additional section dates effect.

Copies of all replacement or additional pages will be forwarded to the Environment Agency, bearing the necessary information.

PROCEDURES FOR CHANGES IN APPENDICES

Changes made to Appendices will follow the same procedures as for changes to the pages of text.

Copies of any replacement or new Appendices will be forwarded to the Environment Agency, bearing the relevant information.

PROCEDURES FOR CHANGES IN DRAWINGS/PLANS

Copies of any new or amended drawings or plans will be forwarded to the Environment Agency

Drawings replaced will be transferred to the section following the appendices, as a record for the purposes of the eventual application for surrender of the Licence.

Nant Fforch Landfill Site

Closure Plan

January 2008

Appendix B Surface Water Monitoring Results

Egniol Consulting Limited
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APPENDIX B – SURFACE WATER MONITORING RESULTS

Nant Fforch Landfill
Closure and Aftercare Plan

NOW-605-L
Nigel Bowen

	14/06/2005			21/04/2006			DWS
	Upstream	Downstream (1)	Downstream (2)	Upstream (1)	Upstream (2)	Downstream (1)	
Alkalinity (mg/l)	118	120	122	57	56.4	57.8	-
Ammoniacal Nitrogen (mg/l)	<0.3	<0.3	<0.3	-	-	-	0.39
Biological Oxygen Demand (mg/l)	1	<1	<1	1	1	<1	-
Cadmium (mg/l)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	5
Chemical Oxygen Demand (mg/l)	45	37	38	<20	<20	<20	-
Chloride (mg/l)	44	17	14	40	14	11	250
Chromium (mg/l)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	50
Copper (mg/l)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	2000
Electrical Conductivity (µS/cm)	318	316	320	212	211	212	1500
Iron (mg/l)	0.92	1.01	1.07	0.11	0.11	0.09	0.2
Lead (mg/l)	0.006	0.005	0.01	0.008	0.008	0.005	10
Nickel (mg/l)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	20
Nitrate (mg/l)	2.9	2.8	2.7	5.1	4.5	3.5	50
pH	8	8.1	8.1	8	7.9	8.2	-
Phenols Mono (mg/l)	<0.1	<0.1	<0.1	<0.1	-	<0.1	0.5
Phosphate (mg/l)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Suspended Solids (mg/l)	64	60	62	6	<2	<2	-
Total hardness as CaCO3 (mg/l)	187	175	179	99	98	94	-
Total Oxidised Nitrogen (mg/l)	2.9	2.8	2.7	5.5	5.2	4.7	-
Turbidity	139	25.3	29.6	2.98	3.03	1.35	-
Zinc (mg/l)	0.012	0.013	0.012	0.019	0.009	0.01	5000

Key:  DWS exceeded

Nant Fforch Landfill Site

Closure Plan

January 2008

Appendix C
Closed Site Inspection Pro-Forms

Egniol Consulting Limited
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APPENDIX C – SITE INSPECTION FORM**Nant Fforch Landfill Site – Six Monthly Closed Site Inspection Pro Forma**

Site:	Nant Fforch Landfill Site	
Date:		
Arrival Time:		Departure Time:
Inspection by:		
Weather:		

Site Status

Access Gates:	
Perimeter Fencing:	
Site Sign Board:	
Evidence of Fly Tipping:	
Evidence of Trespassing:	
Evidence of Vandalism:	

Compound Area:

Other Relevant Information:

Nant Fforch Landfill Site – Annual Closed Site Restored Surface Inspection Pro Forma

Site:

Date:

Arrival Time:

Departure Time:

Inspection by:

Weather:

Progress of Restoration:

Site Status