

Determination of an Application for a PPC Landfill Permit under the Pollution Prevention and Control (England and Wales) Regulations 2000 (SI 2000 No.1973) and the Landfill (England and Wales) Regulations 2002 (SI 2002 No. 1559)

Decision Document recording the decision-making process

Note: all references to the "PPC Regulations" are to the Pollution Prevention and Control (England and Wales) Regulations 2000 (SI 2000 No.1973), as amended and all references to the "Landfill Regulations" are to the Landfill (England and Wales) Regulations 2002 (SI 2002 No. 1559).

Administrative details

Application date and Agency reference ("the Permit Application")

Permit number (the "Permit") **GP3830BG**

Applicant (the "Applicant") **WRG Waste Services Limited**

Address/location of installation (the "Installation")

**Pen-Y-Bont Landfill Site
Pentre
Chirk
Wrexham
LL14 5AR**

Name of Account Officer **Maria Gibbons**

Signature of Account Officer:

Maria Gibbons.

Signature of Authorising Officer:

[Handwritten signature]

All relevant documents have been sent to the IPPC Public Registers

Purpose of this document

The Decision Document ("DD") explains how the Applicant's Permit Application has been determined and why the specific conditions in the Permit have been imposed. It is a record of the decision-making process to show how all relevant factors and legislative requirements have been taken into account.

It should be noted that the Permit contains many conditions taken from the Agency's standard Landfill PPC Permit template. These standard conditions were developed by the Agency having regard to the legal requirements of the PPC Regulations, the Landfill Regulations and other relevant legislation. This Decision Document does not include an explanation for these standard conditions, but does provide an explanation and justification for the emission and monitoring trigger levels, the choices made between optional standard conditions and for additional conditions which have been imposed in order to take installation-specific factors into account.

Summary of the decision

A Permit for the Applicant to operate the Installation has been granted by the Agency, subject to the conditions set out in the Permit. Where the Permit includes standard Agency Permit conditions (see above), these have been considered to be appropriate for the Installation, in particular in ensuring that all appropriate measures will be taken against pollution and that no significant pollution will be caused. The Agency considers that in its decision to issue the Permit and in the conditions included therein, it has taken into account all relevant considerations and legal requirements.

Description of the Permitted Installation

A non-technical summary of the activities covered by the Permit is contained within the Application. There is also a description of the Installation included in the Introductory Note to the Permit.

Glossary of terms used in this Decision Document -

"Account Officer" means the Agency officer that is allocated responsibility for ensuring the assessment and the determination of the application in accordance with legislation and Agency guidance. They will normally be the point of contact for the applicant.

"Applicant" means the person who made the application for the permit, being the person who will have control over the operation of the installation when it is put into operation.

"Application" means the application for this Permit, together with any response to a Notice served under Schedule 4 to the PPC Regulations, and any other written information provided by the Operator for consideration in the determination of the Permit.

"Authorising Officer" means the officer designated by the Agency non financial scheme of delegation with responsibility for final sign off of the decision in respect of the determination of the application.

"Deemed withdrawn" this applies where the Agency has given notice to the applicant under paragraph 4 of schedule 4 of the PPC Regulations, requiring further information; the applicant has failed to furnish the information and the Agency has given notice to the applicant that it treats such failure as a "deemed withdrawal" of the application.

"Duly made" this means that the Agency has determined that the application made by the applicant gives responses to all the necessary questions, is for an activity covered by the PPC Regulations, is submitted on the appropriate application form and is submitted with the correct fee. It is **not** a detailed technical evaluation of the responses provided to the questions.

"Improvement Programme" means the programme of works, improvements and monitoring agreed by the Agency with the Applicant and listed in the Permit. It will relate to specified actions by the applicant within a specified time scale.

"Multi-Operator Installations" this applies where some of the activities in the installation are carried out by different operators.

"Operator" means the person who has control over the operation of the installation or, if it has not been put into operation, will have such control when it is put into operation.

"OPRA" stands for Operator Performance Risk Assessment. In the context of this Decision Document it refers to the system that the Agency uses to establish the fee level for the site based on location, potential environmental impacts, emissions and Operator performance.

"Permit" this means the permit issued by the Agency to the applicant to operate the installation.

"Permitted activities" these are set out in Section B(1).

"Specified waste management activity" this means any one of the activities specified as such in Regulation 2(1) (interpretation: general) PPC Regulations (as amended).

PART A – ADMINISTRATIVE INFORMATION RELATING TO THE APPLICATION AND INFORMATION ABOUT THE APPLICANT

The Agency's determination procedure

A1 "Duly made" check on Application received

The Application was determined to be duly made as submitted on 9 November 2004.

A2 Consultation on the Application

The Application was advertised by the Applicant according to the requirements of Part 1 of Schedule 4 to the PPC Regulations on 10 December 2004 in the Evening Leader and on 16 December 2004 in the London Gazette.

The Agency sent copies of the Application to the following statutory consultees in accordance with Part 2 of Schedule 4 to the PPC Regulations:

- Wrexham Local Health Board
- Wrexham County Borough Council
- Food Standards Agency;
- Countryside Council for Wales;
- National Assembly for Wales

A3 Consideration of consultation responses

Responses were received from the following statutory consultees:

- Wrexham Local Health Board
- National Assembly for Wales

No responses were received from members of the public during the determination period.

All responses have been considered by the Agency in determining the Application. The ways in which material responses have been taken into account are summarised in the appendix to this document.

A4 Matters of commercial confidentiality or national security

The Operator made a claim for commercial confidentiality on the grounds that the inclusion of the expenditure plan for financial provision for the site would prejudice the Applicant's commercial interests to an unreasonable degree.

The Agency upheld the claim for commercial confidentiality, on the above grounds. A Notice of Determination confirming that the claim had been upheld was sent to the Operator on 18 November 2004.

A5 Further information requirements

The Application was deemed duly made by the Agency, but further information was required in order for the Agency to be able to determine the Application. Further information was requested from the Applicant by notice/letter as follows:

- Schedule 4 Notice dated 27 April 2005 - Stability Risk Assessment Information
- Schedule 4 Notice dated 27 April 2005 - Landfill Gas Risk Assessment Information
- Schedule 4 Notice dated 27 April 2005 - Hydrogeological Risk Assessment Information

Responses were received from the Applicant as follows:

- 9 July 2005
- 26 September 2005 additional information to support the Schedule 4 response dated 9 July 2005 from ENCIA (consultant to the Applicant)
- 27 September 2005 additional information to support the Schedule 4 response dated 9 July 2005 from Golders (consultant to the Applicant).

These were placed on the public register and have been taken into consideration by the Agency in making its determination.

A6 The Applicant

The Agency is satisfied that the Applicant (now the Operator) is the person who will have control over the operation of the Installation after the grant of the Permit, and that the Operator will be able to operate the Installation so as to comply with the conditions that have been included in the Permit

A6.1 OPRA profile

The EP OPRA profile score for the site is 132. The Agency is satisfied that the OPRA profile submitted with the Application remains accurate following the determination of the Application, and it will be used as the basis for subsistence and other charging, and for all other relevant purposes at the commencement of the Permit. In accordance with the Agency's OPRA Scheme however, the Operator's OPRA profile for the installation may change over time.

PART B – THE INSTALLATION AND ITS MANAGEMENT

B1 Permit Section 1.1.1 - The permitted activities

The principal listed activity at the Installation falls within the activity description in Section 5.2 Part A (1) (a) of Part 1 of Schedule 1 of the PPC Regulations. The Agency considers that this constitutes the "stationary technical unit".

The Agency considers that the following activities are directly associated with the stationary technical unit and therefore form part of the Installation:

- Combustion Activity - Section 1.1A(1)(b)(iii) – gas utilisation.
- Leachate management – storage and management of leachate pre discharge.

The stationary technical unit and its directly associated activities described above, together constitute the Installation.

The Applicant has confirmed that the appropriate planning permission for the landfill is in place, with permission being granted by the Welsh Office on Appeal on 5 August 1993. Further planning permission was issued by Wrexham County Borough on 8 July 2002 for the installation of a landfill gas flare and engine.

B2 Permit Condition 1.1.2 – Identification of exempt waste activities

This is a standard condition of all Permits but it is understood that it is not the Operator's intention to undertake any waste activities which are exempt from Waste Management Licensing (ie. activities listed in Schedule 3 of the Waste Management Licensing Regulations 1994) on the same site, which are not part of the Installation.

B3 Permit Section 1.2 - Site plan

The Applicant has provided a plan, which the Agency considers, is satisfactory for showing the site of the Installation and its extent. This plan is included in the Permit as Schedule 5, and the Operator is required to carry on the Permitted activities within the site boundary.

B4 Permit section 1.5 - Minor operational changes; (Changes allowed within the scope of this Permit)

The Permit constrains the Operator to operate the activities subject to the limits and conditions in the Permit. However the Operator may make minor changes as defined within the Application by notifying the Agency in writing under Conditions 1.5.1 -1.5.4.

B5 Permit section 2.11 - Aftercare closure and decommissioning; (Prevention of deterioration of the site)

The Applicant has provided a Site Report as required by paragraph 1 of Part 1 of Schedule 4 to the Regulations, in Annex 1 of the ESID Report provided within Volume 1 of the application Documents. The main elements of which are:

- Site location
- Details of the Installation
- Site Setting and Sources of Desk Study Information
- Site Reconnaissance
- Assessment of Land Pollution
- Conceptual site model

The Agency considers that this report adequately describes the condition of the site and in particular identifies any substance in, on or under the land that may constitute a pollution risk.

The activities authorised by this permit were previously carried out on the site of the installation under a waste management licence (NOW-508-L), which, by virtue of section 35(11A) Environmental Protection Act 1990 ceases to have effect on the date of granting of this permit.

B6 Permit Section 2.12 - Multiple Operator installations

This is not a multi-Operator installation.

Management

B7 Permit Section 1.3 - Overarching Management Condition

Condition 1.3.1 in the Permit is a standard condition but, based upon the information submitted in the Application the Agency is satisfied that appropriate management systems and management structures are in place for this Installation, and that sufficient financial, technical and manpower resource is available to the Operator to ensure compliance with all the Permit conditions.

B8 Permit Section 4.1 - Management and 'Fit And Proper Person' (FAPP)

B8.1 Staffing and Training

The information provided in response to Question B2.2.3 of the Application indicates that the installation is operated by an adequate number of staff, who are suitably trained and supervised. Appropriate written operating instructions are available, and a system is in place for the recording of staff training.

B8.2 Operation and Maintenance

The information provided in response to Question B2.3.2 of the Application indicates that the installation is operated and maintained in compliance with the Conditions in the Permit.

The Operator has a formal maintenance system that includes maintenance planning, programmed preventative maintenance, breakdown history and recording of all maintenance done.

B8.3 Incidents and Complaints

The information provided in response to Question B2.3.4 of the Application indicates that there is a suitable incident/complaint logging and response system in place.

B8.4 Fit and Proper Person

The Applicant has been able to demonstrate that it is a Fit and Proper Person (as required by the PPC Regulations) to carry out the Specified Waste Management Activities that are part of the permitted activities in the Installation.

Relevant Offences

The applicant indicated that the company and other relevant persons had been convicted of relevant offences. Records of relevant offences have been identified on the Agency's records.

The Agency has assessed the relevant convictions declared in the application during the determination of the above application, and those identified through its own records, in accordance with Work Instruction 194-03 (Waste PPC, Waste Management Licensing and Waste Registration Processes: Assessment of Relevant Convictions – Refusal and Revocation). In this case the Agency has determined that the convictions against the Applicant, although of concern, are not so serious that the application has to be rejected on the grounds of relevant convictions.

Technical Competence

Pen-y-Bont Landfill is a specified waste management activity. Schedule 1A of the Waste Management Licensing (Amendment) (England) Regulations 2003 contains details of the Certificates of Technical Competence (CoTC) which a person is required to hold if they are to be regarded as technically competent for the purpose of the Waste Management Licensing regime. These requirements shall be treated as being the qualifications required for the purposes of Regulation 4(3)(b) of the PPC Regulations.

The applicant has put forward two Technically Competent Managers.

Both the proposed Technical Competent Managers hold a WAMITAB level 4 certificate for managing hazardous waste landfills (4LH).

The Agency accepts that adequate technical competent management will be provided.

Financial Provision

Financial provision is provided as demonstrated by the Deed of Performance between WRG Waste Services Limited and the Agency.

PART C: DETERMINATION OF PERMIT CONDITIONS

C1. Operating conditions and determination of the appropriate measures to be taken against pollution.

C1.1 Permit Section 2.1 Landfilling controls – the Applicant's proposed measures

Table 2.1.1

Description	Parts omitted	Justification
The responses to questions 1.2, 2.1, 2.2, 2.3, 2.4 and 2.5 in Part B of the Application Form dated 8 November 2004	No omissions	No omissions are deemed necessary when the responses to the Schedule 4 notices served 27 April 2004 are considered with the information provided as part of the Application.

Waste Types Accepted

Condition 2.1.2 controls the waste types to be accepted at the landfill. The site is a non-hazardous landfill and does not take asbestos or stabilised non-reactive hazardous waste. The list of waste types to be accepted is the list submitted by the Applicant subject to the following controls that have been imposed in Table 2.1.2:

Not permitted: wastes with EWC codes 18 01 08, 18 01 09, 18 02 07, 18 02 08, 20 01 31, and 20 01 32. This covers pharmaceutical wastes and has been removed in line with the Agency's position regarding the disposal of medicines (Group D clinical wastes). The guidance document 'Safe Disposal of Clinical Waste' (published 1999) identifies that the sole disposal option for pharmaceutical waste is clinical waste incineration. This guidance is agreed jointly by DETR, HSE, EA and NHS under the auspices of the Health Services Advisory Committee.

Not permitted: wastes with EWC codes 06 13 04, 16 01 11, 17 06 01, and 17 06 05. These codes cover asbestos contaminated wastes that have the potential to be classed as 'hazardous' under the Hazardous Waste Regulations. They have been removed in line with the Agency's position regarding the disposal of asbestos and asbestos contaminated wastes.

Wastes with EWC codes 07 05 xx and 16 03 xx are permitted, with the exception of waste medicinal products and pharmaceutically active waste materials arising from their manufacture for the reasons given above.

The Applicant has requested waste code 20 01 99 which is described as feminine hygiene waste with some Group E clinical wastes. The Agency cannot permit wastes which have a code ending in '99' unless the waste has been given a definition. The Operator did not provide further clarification of the meaning of 'some Group E clinical wastes', therefore only the feminine hygiene waste fraction has been permitted for acceptance under this waste code.

C1.2 General summary of the aspects considered in determining the appropriate measures to be taken against pollution for the installation

Regulation 8 of the Landfill Regulations provides that a permit shall include conditions specifying the list of defined wastes and the total quantity of waste authorised to be deposited.

There will be further appropriate conditions to ensure that:

- The requirements in respect of the prohibition of certain wastes;
- The waste that may be accepted in the different classes of landfill;
- Waste Acceptance criteria; and
- At least annual reporting on the types and quantities of waste disposed of are met.

In addition, it requires a Permit to contain appropriate conditions to comply with a range of requirements including the following:

- Specifying preparations for, and the carrying on of landfilling operations. This will include the requirement for and initial site inspection; the engineering requirements, including the geological barriers and liners, leachate drainage and collection and stability identified in Schedule 2; the measures to deal with landfill gas; the closure and aftercare procedures and, where appropriate, the off-site conditions identified in Regulations 12(12) and (13) of the PPC Regulations;
- Specifying monitoring and control procedures including contingency plans and reporting on the results of monitoring programmes;
- Ensuring that financial provision is maintained until the Permit is surrendered;
- Ensuring that accidents are prevented and their consequences limited;
- Ensuring that dirt is not dispersed onto public roads;
- Ensuring that nuisances are minimised from dust, odour, wind blown materials, noise and traffic, birds, vermin and insects, formation of aerosols and fires;
- Ensuring that any requirement of community or domestic legislation is given effect. This will include the requirements of the Groundwater Regulations;
- The principle that energy is used efficiently.

There are also a number of other regulatory requirements beyond those in the PPC and Landfill Regulations described above which may affect the operating conditions that are required to be included in the Permit, and these are dealt with in part C4 of this document.

Review of Risk Assessments

STABILITY RISK ASSESSMENT

It is considered that the engineering design of the site and the stability report that has been provided confirms that the site will achieve the requirements of both the Landfill and Groundwater Regulations in the long term. However, further information was requested by Schedule 4 notice dated 27 April 2005 in relation to the following:

Basal Subgrade

In relation to basal sub-grade, information was requested in relation to details of investigations and laboratory tests, which were not included within the Stability Risk Assessment (SRA). Clarification was required in relation to basal settlement within the SRA and the report required amendments, including provision of settlement calculations which were referenced in the SRA but not provided.

Side Slope Sub-grade

The Applicant was requested to provide reports detailing the evaluation, remediation and monitoring work associated with these slopes, and to submit the Graphical output sheets which were referenced within the SRA.

Basal Lining System

The Applicant was required to justify the conclusions, and to demonstrate the adequacy of the design configuration of the wells, providing calculations where necessary.

A request was also made to the Applicant to review the interpretations based on the above comments, providing considerable further justification or amendments to the report as necessary, and to provide the details of the plasticity tests which were referenced in the report.

Side Slope Lining System

The Applicant was asked to Justify and provide the source of the parameter values for the mineral component of the lining system. In addition, details were requested in relation to the liner component interface shear strength values given in the report with respect to geosynthetic/geosynthetic, geosynthetic/soil interfaces, and mobilisation (residual) post peak values

Waste Mass

The Applicant was asked to provide an assessment of leachate recirculation, using the assumption that the waste mass would be fully saturated. A request was also made to provide interface shear strength valued (peak, post peak and residual) and identify the actual failure surface examined, together with clarification and full justification of all the above issues, supported by appropriate calculations where necessary.

Capping System

A request was made for the Applicant to carry out a valid assessment of the capping, taking account of the effect of seepage forces, the residual shear strength, and the protection geotextile in the calculations, to provide confirmation of the correct values to be used in the report calculations, and to demonstrate that the proposed cap design will be stable throughout all stages in the life of the site.

Applicants Response

The Applicant responded to the above requests for further information by providing a report dated 9 July 2005. A technical assessment of the report was undertaken and the following comments were made.

Generally, sufficient information was received from the Applicant to enable the Permit to be issued and the Agency is satisfied that the site will be able to comply with the requirements of the Groundwater Regulations. However, the following issues remain outstanding:

- The risk for Pen-Y-Bont landfill is generally considered to be low. However given that there still appears to be movement within the outer perimeter slope known locally as Slope 2 and Slope 3, monitoring of slope movement should be undertaken.
- In addition, the detailed design of the side-slope lining system on the landfill side of Slope 4 (engineered fill adjacent to the existing slope) should ensure that a sufficient stand-off is maintained, in accordance with the section analysed. This is required to ensure that the existing tree covered outer slope is not adversely affected by the landfill proposals, and that any future (long term) signs of instability (adjacent to the road) can be remedied without the risk of damage to the integrity of the adjacent engineered containment systems.

The requirements of these issues have been dealt with in the Permit by the inclusion of improvement conditions 1.4.1.11 and 1.4.1.12, together with condition 2.1.9 to 2.1.9.4.

HYDROGEOLOGICAL RISK ASSESSMENT

The HRA supported by information in the ESID was considered acceptable by the Agency. However further information was required in relation to the following:

- A more appropriate set of List I determinands and indication of how they will be used to demonstrate compliance with the relevant legislation at all stages in the lifecycle of the site.
- Justification for use of existing List II determinands, including a description of their chemical properties and any limitations that may affect their ability to give an early warning of contamination entering groundwater from a leachate source.
- Consideration of long-term changes in groundwater levels within the risk assessment.
- Provision of adequate justification for proposed List II control and trigger levels in groundwater was also requested
- Provision of clear demonstration that the Applicant will be able to control leachate heads to less than 1m above base of site at all times

Applicants Response

The Applicant responded to the above requests for further information by providing a report dated 9 July 2005. A technical assessment of the report was undertaken and the following comments were made.

From the data and information provided, it cannot be demonstrated that a discharge of List I's or pollution by List II's has occurred as a result of landfill activities at Pen-Y-Bont. Where a List I species (i.e. cadmium) was recorded in groundwater, this was noted to occur at the highest concentration in borehole BH1 (0.05 mg/l) in September 1996 prior to the first waste being accepted on site. It is noted that neither mercury or phosalone (the other List I's recorded in groundwater) have been detected in the leachate and could not therefore have originated from landfill activities.

From a groundwater perspective there are no clear grounds for refusal and it is therefore recommended that a PPC permit be granted to the Applicant, subject to suitable improvement conditions that require adequate monitoring be undertaken to ensure continued compliance with the Groundwater Regulations (1998) and protect key identified receptors.

The requirement of this issue has been dealt with in the Permit by the inclusion of improvement conditions 1.4.1.1 to 1.4.1.5.

LANDFILL GAS RISK ASSESSMENT

The Landfill Gas Risk Assessment report identifies the risk associated with the landfill gas that will be generated during at Pen-Y-Bont Landfill. Waste disposal commenced at the installation in 1997. The Installation consists of 3 engineered disposal cells, all of which are fully contained. Landfilling is currently taking place in Cell 3. The report establishes the profile and nature of the Landfill Gas generated, potential pathways for release, and nearby sensitive receptors.

The generation rates have been predicted using the GasSim model (v1.51). The model predicts the highest landfill gas generation rate will occur in the year 2016 with the peak landfill gas generation rates of bulk gas being approximately 2,230 m³/hr (presented as the 95%ile value). A methane content of 60% within the landfill gas at the point of production within the landfill has been included in this risk assessment.

Landfill gas is collected by a series of gas extraction wells distributed across the body of waste. Gas wells in existing waste deposition areas are distributed at a spacing of approximately 25-30 metres. A spacing of 30m to 40m is anticipated for future cells. The extraction wells comprise HDPE pipe surrounded by a non-calcareous gravel annulus to reduce the restriction of flow into the pipe. The pipe is slotted thereafter to extract landfill gas. Each pipe is installed to depth of a few metres above the basal liner to ensure leachate and gas phases are kept separate, and to prevent accidental breach of basal lining systems.

Collected gas is extracted to the gas engines for utilisation or the back-up flare, which will have the capacity to fully treat the anticipated rate of landfill gas generation. The current utilisation scheme comprises two gas engines with an output of up to 2.3Mw and will be progressively expanded, if necessary to meet landfill gas generation rates. At full load, an electrical generation of 40% of the energy content of fuel is expected.

The Landfill Gas Risk Assessment provided as part of the Application in Volume 2, Section C was considered to be inadequate in certain areas and a Schedule 4 notice was served upon the Applicant on 27 April 2005, requesting the following information.

- Confirmation of technical details of the landfill gas flaring system including where each flare will be located, its specification, and whether it is currently operational or when it is proposed to be installed on site, as required by question B2.2.44 of the application.
- Justification of the collection efficiency input values used to demonstrate the values are representative of site conditions
- Submission of a Sampling and Monitoring design plan to be implemented for in-waste, collection wells, collection system, perimeter wells, surface, flares and utilisation plant emissions for the operational and after care phase in accordance with sections 5 and 8 of the Agency's Guidance on the Management of landfill gas (LFTGN03), Guidance for monitoring trace components in landfill gas (LFTGN04) and Guidance on monitoring landfill gas surface emissions (LFTGN04).
- Provision of a plan of appropriate scale, showing the correct number and location of perimeter gas monitoring boreholes.

- Summarise and discuss results from GasSim modelling in terms of identified risk to individual receptors and justify conclusions reached in the absence of reported model outputs, and to carry out screening based on aerial emissions from all sources in accordance with the Agency's published guidance.

Applicants Response

A response was received from the Applicant on 9 July 2005 and whilst some of the issues raised were addressed, it was considered necessary to set improvement conditions for the following:

- Provision of an air impact assessment report
- Proposed trigger levels for the monitoring of landfill gas in external monitoring boreholes
- Provision of a landfill gas management, monitoring and action plan

These have been set as improvement conditions 1.4.1.8, 1.4.1.9, 1.4.1.10 and 1.4.1.11.

Amenity Risk Assessment

The Amenity risk assessment (ARA) has been assessed against the appropriate work instruction. The risk assessment identified the potential sources arising from the installation as being noise and vibration; odour; particulate matter; and litter.

Noise

In response to questions 2.3.85, 2.3.86 and 2.3.87 the Operator has indicated that noise and vibration management is undertaken in accordance with Agency best practice. There have been no complaints received by the Agency concerning noise or vibration and no representation highlighted this as an area of significant concern. The Operator's proposals concerning the management of noise and vibration is therefore considered to be adequate.

Odour

The Operator has recognised that there is potential for odours to be generated on site from gas generation, leachate generation and waste acceptance. The Amenity Risk Assessment outlines the methods used (gas management, leachate management and waste acceptance criteria, together with waste handling/placement procedures) to minimise the potential for nuisance from odours generated on site.

The methods specified include waste handling procedures for identified waste types, restrictions on deposit of identified waste types under certain wind directions, relevant measures from the landfill gas management plan, relevant measures from the leachate management plan - including enclosed leachate treatment, phased infilling and capping etc.

In the event that significant odour arose from one of the identified sources, and also in the case of a complaint being received, an odour monitoring action plan will be triggered and implemented.

Improvement condition 1.4.1.8 requires the Operator to submit an air impact assessment report in accordance with the most recent dispersion modelling techniques, which will minimise the potential for landfill gas to cause an odour nuisance.

Particulate Matter

The sources of potential pollution by particulate matter that have been identified by the Operator are from vehicular movements; working area; engineering/waste surfaces; uncapped/unrestored areas; waste deposition and dusty wastes.

In order to minimise the potential for pollution by particulate matter, the following methods will be employed:

- a tractor and bowser will be utilised to suppress dust;
- waste will be thoroughly compacted and levelled and covered with a suitable amount of daily cover;
- on completion of filling to final levels, phases will be capped;
- Vehicles carrying waste to the site will be appropriately covered until at their final disposal point at the tipping face;
- Speed limits will be enforced and operations undertaken with consideration to particulate matter production;
- Internal haul roads will be kept clean and maintained on a regular basis.

The Operator has proposed daily visual monitoring and the Agency considers that the Permit provides adequate control to minimise the release of dust and particulates.

Litter

Windblown waste is likely to arise from waste deposition at the active tipping face and from areas where it accumulates prior to collection. There is also the potential for litter to arise from uncapped/unrestored areas.

The Risk Assessment identifies the following methods for litter/windblown waste control:

- 'light' wastes will not be accepted during unsuitably windy conditions
- incoming loads will be netted or covered until transported to the working area
- susceptible wastes will be immediately covered upon deposition and the effectiveness of the cover will be monitored.
- Use of daily cover on all tipped waste - reapplication of cover to areas where covering has deteriorated.

The Operator proposed daily litter collection and the Agency considers that the Permit provides adequate control to minimise the release of litter/windblown waste from the site.

Landfill Engineering

The landfill has been developed, from its inception, as an engineered containment facility, under the principle of hydraulic containment. Cells 1 to 3 were constructed with basal lining systems comprising:

- **Artificial Sealing Liner** on the base of the site comprising a 1m minimum thickness engineered clay liner with $k=5.5 \times 10^{-10} \text{ ms}^{-1}$. (The exception to this is cell 3, where a 2mm HDPE flexible membrane liner (FML) and protection geo-textile was also used across the base).
- **Artificially established geological barrier** on the side-slopes of the site comprising a 1m minimum thickness (perpendicular to the side-slope) engineered compacted clay liner (CCL) with $k=5.5 \times 10^{-10} \text{ ms}^{-1}$ and, above 45mAOD (or 1m below upper surface of Ruabon Marl) a 2mm HDPE flexible membrane liner (FML) with protection geo-textile. The exception to this is the majority of the side slopes to Cell 1, where only a CCL was used. The extent of the DHPE FML side-slope liner is shown on drawing ESID 6A.

- **Geological barrier** below the artificial sealing liner on the base comprising in excess of 40m of Ruabon Marl.

Leachate

Each containment cell incorporates a leachate collection/drainage system. In Cell 1, the leachate collection system comprises a herringbone pattern of leachate collection pipes falling at a gradient of no less than 1:50 to individual vertically extended leachate collection sumps/extraction chambers.

The leachate collection/drainage system within Cell 2 comprises a continuous blanket of 20mm clean-graded non-calcareous drainage stone within which are lain 160mm diameter drainage pipes falling at a gradient of no less than 1:50 to vertically extended leachate collection sumps/extraction chambers.

In Cell 3 the leachate collection system comprises a 300mm thick continuous drainage blanket constructed out of 20mm clean-graded non calcareous drainage stone within which 160mm diameter leachate collection pipes have been lain falling at a gradient of 1:50 to 2No. individual Sidewall riser leachate extraction pipes; two vertically extended individual leachate monitoring sumps/extraction chambers have been provided as additional components of the leachate control system. The basal composite lining system in Cell 3 is protected by means of heavy gauge geotextile which has been selected based on cylinder test results.

Groundwater

The installation has no pumped groundwater management system. However, groundwater inflows into the installation are minimised by the presence of a 1m thick mineral basal and side slope liner as specified above.

Capping System

The installation will have a low permeability capping system that will be designed and constructed under an approved CQA regime. The surface of the wastes will be compacted and prepared by means of a covering of mineral soils as a suitable sub base for the artificial geomembrane cap. The low permeability cap will comprise a very low density or linear low density polyethylene (VDLPE or LLDPE) welded geomembrane liner of minimum 1mm thickness. The geomembrane will be protected from physical damage and environmental stresses by a combination of a 300mm thick blinding layer and selected subsoils placed to a thickness of 1000mm.

C2. Justification for emission levels or equivalent technical parameters set for specific emissions

The following emission levels (or "equivalent measures" or "technical parameters") have been included in the Permit for the reasons described:

C2.1 Permit section 2.2.1 - Emissions to air

Condition 2.2.1.2 restricts the point source emissions to atmosphere to those arising from a landfill gas flare (A1) and landfill gas engines (A2). Emission limits for the releases relating to flares and engines are set out in Table 2.2.2 of the Permit and are based on current Agency guidance for landfill gas flaring and landfill gas engines.

C2.2 Permit Conditions 2.2.2.3 - 2.2.2.6 - Emissions to water (other than sewer)

Condition 2.2.2.3 restricts the emissions to surface water to those arising from the Installation. These systems discharge via surface water run-off to Grass Plots (soakaway) and into the River Dee. The consent limits in Table 2.2.5 are based on the installation's existing surface water discharge consents, issued by the Agency and are considered appropriate to be included in the Permit.

C2.3 Permit section 2.2.2.7 - 2.2.2.10 - Emissions to sewer

There is currently no discharge to sewer from the installation and the Operator has not applied for any such discharge.

C2.4 Permit section 2.2.3 - Emissions to groundwater

The Groundwater Regulations require that there is no emission of List I Substances, and no pollution by List II substances. Tables 2.2.8 and 2.2.8A set the proposed control and trigger levels for groundwater as required by the Landfill Regulations.

Trigger levels are not to be exceeded. If control levels are reached this is an early warning of a potential problem and action is required to be undertaken to prevent the trigger levels being exceeded.

The groundwater control and trigger levels are a combination of those proposed by the Applicant, and those considered necessary by the Agency in order to provide adequate groundwater protection.

Additional groundwater monitoring points are required to be installed and monitoring to be undertaken in accordance with condition 2.2.3.6 and improvement conditions 1.4.1.1 and 1.4.1.4.

C2.5 Permit section 2.2.6 - Odour

On consideration of the Application, the Agency considers that the activities carried out at the installation have the potential to cause odour, but that such is not likely to cause annoyance, and that the Applicant's proposals in respect of odour control represent BAT. The Agency therefore considers that the standard Condition 2.2.6.1 is appropriate and sufficient.

C2.6 Permit section 2.2.7 - Emissions to land

This condition does not apply to emissions to groundwater. The standard permit conditions have been used in this section.

C2.7 Permit section 2.9 - Noise (and vibration)

On consideration of the Application, the Agency considers that the activities carried out at the installation have the potential to cause noise or vibration, but that such noise or vibration is not likely to cause annoyance and that the Applicant's proposals in respect of noise and vibration control represent the appropriate measures. Agency therefore considers that the standard condition 2.9.1 is appropriate and sufficient.

C2.8 Permit section 2.13 - Transfer to effluent treatment plant

There is no on-site effluent treatment plant.

C3. Other considerations – (where not covered in general section above)

C3.1 Permit section 2.4 - Efficient use of raw materials

The Agency has assessed the proposals set out in the Application in Appendix ESID9 of Volume 3 of the application documents, and has concluded that they are consistent with the taking of appropriate measures against pollution and that the standard Conditions 2.4.1.1-3 are sufficient and appropriate.

C3.2 Permit section 2.5 - Waste storage and handling

The Agency considers that the Applicant has appropriate measures in place for the storage and handling of waste to prevent releases during normal operations and to minimise the potential for accidental releases. The standard Permit Conditions 2.5.1 is considered to be appropriate and sufficient

C3.3 Permit section 2.6 - Waste recovery or disposal

The Agency has considered the proposals in the Application for the avoidance of waste production and in respect of such waste as is produced, its potential recovery. The Agency is satisfied that the proposals show that waste production will be avoided as far as possible, and where produced will be recovered insofar as that is technically and economically possible. The Agency is further satisfied that the proposals show that the installation will be operated in such a way that waste which is unable to be recovered can be disposed of so as to avoid or reduce impact on the environment. Standard Conditions 2.6.1 – 2.6.3 are considered to be appropriate.

C3.4 Permit section 2.7 - Energy efficiency

The Agency has considered the information in the Application in respect of energy efficiency. The Agency is satisfied that at the commencement of the Permit, the installation should be operated in an energy efficient manner, and that Standard Conditions 2.7.1 – 2.7.3 are appropriate and sufficient.

C3.5 Permit section 2.8 - Accident prevention and control

The Agency has considered the accident management plan submitted under Section 2.8 of the Application and considers that the Applicant has a suitable system in place to identify, assess and minimise the environmental risks and hazards of accidents and their consequences. Standard Condition 2.8.1 in the Permit is appropriate and sufficient to ensure that the necessary measures will be taken to prevent accidents and to limit their consequences.

C4. Other legal requirements relevant to the determination of the Application and to the setting of emission levels and other conditions of the Permit

C4.1 Waste Management Licensing Regulations 1994

This site has no waste management licensed activities that are not already covered by this permit.

C4.2 The Conservation (Natural Habitats etc) Regulations 1994

The site is within the Stage 1 Habitats Risk Assessment Criteria of the River Dee and Llyn Tegid SAC, and in order to progress the PPC application, a Stage 2 assessment and consultation with the Countryside Commission for Wales was required.

Brief description of the proposal

Pen-Y-Bont landfill is located within a former mineral extraction quarry (Pen-Y-Bont Quarry) situated within a meander of the easterly flowing River Dee. The installation is bounded to the North, East and South by the River and is bounded to the West by the B5605 road. Residential properties are located within 250m to the West and South-West of the landfill.

List of Interest Features: River Dee and Llyn Tegid

1.3 Riverine habitats & running waters (floating vegetation of Ranunculus of plain and submountainous rivers.

2.1 Vascular plants of aquatic habitats (Floating Water Plantain)

2.5 Anadromous fish (Atlantic salmon, River Lamprey, Sea lamprey)

2.6 Non-migratory fish and invertebrates of rivers (Brook lamprey, Bullhead)

2.9 Mammals of riverine habitats (Otter)

1.3 Riverine habitats & running waters (floating vegetation of Ranunculus of plain and submountainous rivers.

Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if know:
Nutrient Enrichment	Discharge to Groundwater The landfill would be expected to slightly influence the local pattern of groundwater flow as the former clay pit has been excavated to depths below the groundwater table. Groundwater levels recorded at the site would imply a slight hydraulic gradient towards the landfill area, though it is possible that a shallow hydraulic gradient could exist between the site and the River Dee. It is considered that there are currently insufficient monitoring boreholes installed at the installation between the site and the River. This would be addressed through permit conditions, should a permit be granted. A leachate abstraction system has been installed within the existing cells of the site. Leachate generated is collected in sumps located at the lower end of each cell and pumped to bunded storage tanks. The leachate is then collected by tanker and taken for treatment off site The Risk Assessments submitted with the PPC application have been unable to demonstrate that the landfill is Landfill and Groundwater Regs compliant. Further information has been requested from the applicant which will be used to complete an appropriate assessment to determine if a risk from landfill leachate exists at the SAC Discharge to Surface Water A surface water drainage system takes all surface water run off from the site to settlement lagoons located on the northeast edge of the site which are lined and bunded. Discharge from the lagoons to bunded grass plots takes place under a discharge consent, which currently states that discharge shall not contain more than 100 milligrams per litre of suspended solids 3 milligrams per litre of ammoniacle nitrogen 250 milligrams per litre of total chloride Surface water samples are taken periodically from the River Dee. Monitoring boreholes are remote from the River Dee and any sites of nature conservation importance, and have not resulted in habitat loss.
Siltation	The site access roads are surfaced and all internal haul roads are kept clean and maintained on a regular basis. Dust management techniques are provided within the application and are considered to be adequate. Surface water is directed to settlement lagoons prior to consented discharge.

Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if know:
Toxic Contamination	Leachate The landfill would be expected to slightly influence the local pattern of groundwater flow as the former clay pit has been excavated to depths below the groundwater table. Groundwater levels recorded at the site would imply a slight hydraulic gradient towards the landfill area, though it is possible that a shallow hydraulic gradient could exist between the site and the River Dee. It is considered that there are currently insufficient monitoring boreholes installed at the installation between the site and the River. This would be addressed through permit conditions, should a permit be granted. A leachate abstraction system has been installed within the existing cells of the site. Leachate generated is collected in sumps located at the lower end of each cell and pumped to bunded storage tanks. The leachate is then collected by tanker and taken for treatment off site. The Risk Assessments submitted with the PPC application have been unable to demonstrate that the landfill is Landfill and Groundwater Regs compliant. Further information has been requested from the applicant which will be used to complete an appropriate assessment to determine if a risk from landfill leachate exists at the SAC Landfill Gas There is a landfill gas management system on site whereby the gas is abstracted from the waste mass. Collected gas is extracted to the gas engines for utilisation or the back-up flare, which will have the capacity to fully treat the anticipated rate of landfill gas generation rates. There is not expected to be a significant effect from the operation of a GUP at the site gas engines with a thermal input <5MW do not have the potential to effect habitats sites, see table below

2.1 Vascular plants of aquatic habitats (Floating Water Plantain)

Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if know:
Nutrient enrichment	As above
Toxic contamination	As above

2.5 Anadromous fish (Atlantic salmon, River Lamprey, Sea Lamprey)

Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if know:
Nutrient enrichment	As above
Siltation	As above
Toxic Contamination	As above

2.6 Non-migratory fish & invertebrates of rivers (Brook Lamprey, Bullhead)

Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if know:
Nutrient enrichment	As above
Siltation	As above
Toxic contamination	As above
Habitat Loss	Exposure The application is a minimum of 40m from the River Dee and is separated from it by pastureland. There are no plans to extend the landfill installation beyond its current boundaries. No physical habitats or buffer zones are affected by direct land take associated with the landfill site or monitoring facilities. Surface water samples are taken periodically from the River Dee using sample bottles. Monitoring boreholes are remote from the River Dee and any sites of nature conservation importance, and have not resulted in habitat loss.
Smothering	In consideration of the dust mitigation measures currently in place and the local topography it is unlikely that dust will have a significant effect on the features of interest of the European Site.

2.9 Mammals of riverine habitats (Otter)

Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if know:
Nutrient enrichment	As above
Siltation	As above
Toxic contamination	As above
Habitat Loss	As above
Smothering	As above
Disturbance	The majority of noise generated by the operations of the landfill will be low frequency and low volume continuous noise relating to the operation of site plant, and in particular the power generation equipment. A quantitative noise survey was undertaken in April 2003 for the flare and engines. This report concluded that no noise impact was likely at noise sensitive receptors. It is very unlikely that human activity associated with the landfill would have any trampling, human-noise or physical presence effects upon the species associated with the River Dee.

Is the potential scale or magnitude of any effect likely to be significant?

At the time of completion of the HR01 for the site, it was considered that there is a risk to the River Dee from leachate breakout from the landfill. It was concluded that the Applicant had not demonstrated compliance with the Groundwater and Landfill Regulations.

Conclusion: Is the proposal likely to have a significant effect 'alone or in combination' on a European site?

It was thought that this Application is likely to have a significant effect on the River Dee and Llyn Tegid SAC both alone and in-combination with other plans/projects.

The PPC application was assessed by Technical Officers within the Agency and the technical report submitted were found to be deficient in certain areas as detailed above under the relevant sections for Stability, Hydrogeological and Landfill Gas risk assessments.

On 27 April 2005, notices were served upon the Operator in accordance with paragraph 4 of Schedule 4 of the PPC Regulations. These notices required the Operator to submit further information in relation to the hydrogeological, stability and landfill gas risk assessments provided as supporting documents to the PPC Application.

The information provided at the time of completion of the HRO1 form was not considered adequate to give confidence that the site will be in compliance with the Landfill Directive or the Groundwater Regulations. This in turn lead to a lack of confidence that the site will not have an impact upon the interested features of the European Site.

It was concluded that an appropriate assessment was required once the additional information specified above was received from the Applicant. The HRO1 form was submitted to the Countryside Commission for Wales and a response was received on 5 October 2005, agreeing that the appropriate assessment was required.

FORM HR02 - APPROPRIATE ASSESSMENT

Introduction

The Installation Engineering of the site can be described as follows:

Each landfill phase comprises hydraulically isolated containment cells utilising a 1m thick mineral basal and side slope liner constructed to a permeability of 5.5×10^{-10} m/s in addition to a 2mm HDPE membrane liner across the basal and side slope area in Cell 3 (and side slope area in Cell 2 and most of Cell 1). The base of the landfill is nominally 41.5mAOD in Cell 1 falling to approximately 38.5mAOD in Cell 3.

Each containment cell incorporates a leachate collection/drainage system. In Cell 1, the leachate collection system comprises a herringbone pattern of leachate collection pipes falling at a gradient of no less than 1:50 to individual vertically extended leachate collection sumps/extraction chambers. The leachate collection/drainage system within Cell 2 comprises a continuous 300mm blanket of 20mm drainage stone within which are laid 160mm diameter drainage pipes falling at a gradient of no less than 1:50 to vertically extended individual leachate collection sumps/extraction chambers.

In Cell 3 the leachate collection system comprises a 300mm continuous drainage blanket of 20mm drainage stone within which 160mm diameter leachate collection pipes have been laid falling at a gradient of 1:50 to 2 No. individual sidewall riser leachate extraction pipes; two vertically extended individual leachate monitoring sumps/extraction chambers have been provided as additional components of the leachate control system. The basal composite lining system in Cell 3 is protected by means of heavy gauge geotextile.

Landfill gas is collected by a series of gas extraction wells distributed across the body of the waste. Gas wells in existing waste deposition areas are distributed at a spacing of approximately 25 - 30 metres. A spacing of 30m to 40m is anticipated for future cells. Horizontal extraction systems are built into the waste mass at regular intervals, to assist in odour control and gas extraction as landfilling proceeds. The collection pipes feed into a gas ring main via a manifold chamber. Gas sampling points are installed for each line. The gas wells maintain the body of waste under negative pressure to prevent migration of landfill gas and fugitive emissions.

The facility will have a low permeability capping system, which will comprise a very low density or linear low density polythene welded geomembrane liner of a minimum 1mm thickness. The geomembrane cap will be protected from physical damage by a 300mm thick blinding layer and selected subsoils and soil forming materials placed to a combined thickness of 1000mm.

An assessment of likely significant effect was carried out on the permit application, which concluded that there was likely to be an effect both alone, and in-combination resulting in nutrient enrichment and toxic contamination of the River Dee and Llyn Tegid SAC.

2. Conservation Objectives

Conservation Objectives are not available for the River Dee and Bala Lake SAC. A Site Issues Briefing (SIB) has been produced which contains a list of factors and activities that could:

- a. result in the deterioration of habitats or significant disturbance of species, or otherwise prevent the maintenance or attainment of favourable condition
- b. help in the attainment and/or maintenance of favourable condition

Whole River

Chemical quality:	RE 1
Biological class:	GQA 'a'
Suspended solids:	25 mg/l ¹
Orthophosphate ¹ :	Guideline: 0.06mg/l Threshold: 0.10mg/l

Suggested values

Dissolved oxygen	>7mg/l ⁻¹	At all times
	>9mg/l ⁻¹	50% of the time
Temperature	<21.5°C	At all times*
pH	6-9	95% of the time
Suspended solids	25mg/l ⁻¹	Annual average
Dissolved oxygen	> 90%	Annual average
BOD	<3 mg/l ⁻¹	95% of the time
Unionised ammonia	<0.025 mg/l ⁻¹	95% of the time
PCBs.	Routine analysis of water samples for presence	
SPs	Routine analysis of water samples for presence/effect	

*may be less for critical species such as lamprey

The SIB states that *although the river is the most regulated in Europe it is important for a range of rare and threatened species and habitats. Its primary interest is its range of migratory fish, particularly salmon, and three species of lamprey. The Dee is also important for its population of otters, which live and breed in the river and tributaries throughout the catchment, and for the bullhead which are widespread throughout the river system. It is also noted for its communities of water crowfoot (Ranunculus) which flowers every summer mainly in the upper and middle stretches of the river. These water crowfoot beds support a range of fish and invertebrate communities in their own right.*

3. Technical Assessment of Permit Application

The assessment of likely significant effect identified a risk from toxic contamination and nutrient enrichment on the interest features of the River Dee and Bala Lake SAC. The mechanism of impact was identified as leachate breakout from the landfill.

The assessment needs to take account of the likelihood of an adverse effect both alone, and/or in-combination with prevailing environmental conditions and other plans/ projects.

'In-combination' effects can be additive, neutralistic or synergistic, and can be overlapping or discrete. In order for an in-combination effect to take place there must be a source and mechanism of impact from the installation. The removal of the source and mechanism will remove the potential for an in-combination effect.

The River Dee and Bala Lake SAC is a medium priority site, and is currently progressing through Stage 3 (Appropriate Assessment) of the Review of Consents.

Wrexham Borough Council were consulted on the 26 November 2004 as a relevant competent authority, but did not identify any relevant plans or projects for consideration within the in-combination assessment.

¹ WQTAG048. Guideline Phosphate Standards for SAC Rivers

3.1 Assessment under the Groundwater and Landfill Regulations

The TAG09² paper sets out the process that is taken when assessing a landfill for compliance with the Landfill and Groundwater Regulations, together with the stability of the landfill and waste mass, and how this can be used for assessment under the Habitats Regulations.

The Agency has to ensure an appropriate risk assessment is undertaken for each landfill site as part of the permitting process. A relevant, technically robust and auditable risk assessment should be submitted with the application that provides support and justification for the design of:

- Engineered containment measures (including Geotechnical justification as required);
- Environmental monitoring systems;
- Management control systems.

The Agency expects a tiered framework to be adopted in assessing environmental risks. This approach emphasises the:

- *Importance of developing a robust conceptual site model that is continually reviewed and updated as new information is collected;*
- *Need to screen and prioritise all actual and potential risks before quantification;*
- *Need to consider risks posed by the landfilling during post-closure, aftercare phases of its life as well as during its operational phase;*
- *Need to match effort and resources in evaluating potential risks to the magnitude of environmental damage that could result from each hazard;*
- *Need for appropriate level of essential and technical measures to manage risks;*
- *Iterative nature of the process, with Control and Trigger levels and the annual and 4-yearly reviews being an integral part of that process.*

According to TAG09, the risk assessment should be undertaken in a quantitative manner using stochastic (i.e. probabilistic) techniques to analytical solutions, or numerical solutions. With complex assessments, the use of more site-characterisation data is the key to a more detailed site-specific assessment for compliance with the Groundwater, Landfill and Habitats Directives.

The Regulatory Guidance Note 6 (RGN6) requires the following criteria to be met in order for a landfill to be Landfill and Groundwater Regulations compliant:

- A geological barrier is required for all landfills to provide the necessary environmental protection
- The geological barrier must extend over the base and sides of the landfill
- An artificial sealing liner is required for all landfills where there is a need to collect leachate
- A low permeability cap will be required to minimise the formation of leachate
- All landfills must meet the fundamental requirement of the Groundwater Regulations that there is no likelihood of unacceptable discharge from the site over the entire lifecycle of the landfill
- Landfill engineering must retain their stability and integrity over the entire lifecycle of the landfill

A complex risk assessment was submitted with the application, including modelling of emissions from the landfill and the potential for impact upon sensitive receptors, including the River Dee and Bala Lake SAC, over what is considered the complete life cycle of the installation:

² TAG09 Hydrogeology and Stability Risk Assessments – can they be relied on to ensure no likely significant effect?

- during operation (all management systems working as designed),
- at the point of closure
- 60-years post-closure (capping system working as designed but with some degradation of leachate control systems)
- 60-years post-closure (degradation of management systems, including artificial lining system).

The Hydrogeological and Stability Risk Assessments submitted with the application and the additional information requested to support the risk assessments, have undergone a full technical assessment, including an assessment on the potential for an adverse affect on the sensitive receptors within the European Site.

The installation is underlain by a significant thickness of low-permeability brick clay known as Ruabon Marl, which is classified as a non-aquifer³. It is not automatically assumed that a non-aquifer provides a natural geological barrier because of the potential presence of discontinuities. However, in determining compliance with the Groundwater Regulations, and the requirements of this appropriate assessment, the following considerations have been taken.

Following an appeal by the Applicant in 1997, the Secretary of State concluded that the Ruabon Marl present on site was adequate for the construction of a clay liner. Site investigation has since demonstrated that the Ruabon Marl possesses an average permeability of 1×10^{-8} m/s, as well as providing additional confidence that the site is not underlain by discontinuities, which could act as a pathway to the SAC.

Borehole logs submitted with the report indicate that in some cases water was encountered in the Ruabon Marl. Where this is not attributable to perched groundwater in the overlying drift deposits, water is noted to have risen slowly in the boreholes. The principle method of determining whether this is groundwater or pore-water from the clay released from drilling activities, is long-term level monitoring (pore water would be expected to show little variation over time). The level monitoring shows minimal variation and it is noted that no seepages of groundwater are known to have been observed from quarried exposures of the Ruabon Marl. This evidence supports the applicant's assumption that water present in the clay is pore-water and not strictly groundwater.

From the data provided by the applicant, it cannot be demonstrated that a discharge of List I or pollution by List II substances has occurred as a result of landfilling activities at Pen-y-Bont. Where a List I species (i.e. cadmium) was recorded in groundwater, this was noted to occur in the highest concentration in BH1 (0.05mg/l) in September 1996 prior to the first waste being accepted at the site. It is noted that neither mercury or phosalone (the other List I substance recorded in groundwater) have been detected in the leachate and could not therefore have originated from landfill activities.

Based on the above assumptions, the landfill has been assessed as Groundwater and Landfill Regulations compliant.

It is possible to conclude 'no adverse affect on site integrity' both alone and in-combination with other plans/projects.

3.2 Assessment Under the Habitats Regulations

The landfill has been assessed as Groundwater and Landfill Regulations compliant, which will ensure the protection of the River Dee and Bala Lake SAC which is in hydraulic continuity with the landfill via groundwater.

³ Policy and Practice for the Protection of Groundwater for Wales

The River Dee has been assessed under the Water Framework Directive as being at significant risk of failing its objectives. The overall risk assessment is based upon a combination of several risk assessments that are grouped into five categories:

- Point sources of pollution
- Diffuse sources of pollution
- Water abstraction and flow regime
- Physical or morphological alteration to the water body
- Alien species

The River Dee (conf. Bradley Brook - conf. Trefynant Brook) has been classified as 'probably at risk' from diffuse pollution and alien species, 'probably not at risk' from water abstraction and flow regime, and physical or morphological alteration to the water body, and 'not at risk' from point source pollution. An in-combination assessment for this landfill application will therefore need to consider the potential for an effect with sources of diffuse pollution.

The River Dee is RE1 compliant at the relevant stretch, and has been achieving a Grade A (very good) for chemistry river quality since 1988, prior to landfilling activities with no deterioration since landfilling activities started in 1996. Biological river quality is currently grade B (good), the table below shows the results of the general quality assessment for biology since 1990.

There is no direct evidence that the landfill is impacting upon water quality within the River Dee, however it is considered necessary to include improvement conditions within the permit, which would give greater confidence that the site would not impact upon the interested features of the European Site. The improvement conditions relate to the provision of the following to the Agency:

- a. Additional groundwater monitoring boreholes, including the installation of remote groundwater monitoring points to be located between the site and the River Dee.
- b. Submission of borehole specific groundwater control and trigger levels using the first 12 months data from the additional groundwater monitoring boreholes.
- c. Review of the groundwater monitoring data for all existing boreholes individually.
- d. Review of all the information gathered for the new and existing boreholes in order to clarify the hydrogeological conditions within the vicinity of the site, in order to revise the conceptual model for the site.
- e. Submit a leachate management plan for the storage and handling of leachate, which should detail all procedures from leachate extraction to the leachate leaving the site by tanker.

The setting of borehole specific groundwater control and trigger levels will allow for the protection of the SAC in the unlikely event that leachate contaminates the groundwater. Any pollution of the groundwater will be detected within the boreholes and remedial action taken.

It has been demonstrated that the landfill is not discharging List I substances, or causing unacceptable pollution of List II substances, this is supported by the quality of the River at the location of the landfill. The permitting of the landfill, coupled with the improvement conditions outlined above is unlikely to result in an effect on the River Dee. It is therefore possible to conclude no adverse effect on site integrity, both alone and in-combination with other plans/projects and prevailing environmental conditions.

C4.3 Countryside and Rights of Way Act 2000 (CROW)

The taking of appropriate measures against pollution by the Applicant in operating the installation will meet the requirements of this Act.

C4.4 Dangerous Substances Directive

The taking of appropriate measures against pollution by the Applicant in operating the installation will meet the requirements of this Directive.

C4.5 Solvent Emissions Directive

The taking of appropriate measures against pollution by the Applicant in operating the installation will meet the requirements of this Directive.

C4.6 Groundwater Regulations 1998

The taking of appropriate measures against pollution by the applicant in operating the Installation will meet the requirements of these Regulations.

The Operator has prepared a Hydrogeological Risk Assessment (HRA) and has submitted it with the Application. The permit contains additional conditions requiring the installation of additional monitoring boreholes, include additional monitoring points to be located between the site and the River Dee, in order to provide an early-warning protection mechanism for the river. An improvement condition is also required to ensure that control and trigger levels are derived in accordance with Agency guidance and the analysis of leachate and groundwater quality.

An improvement condition (1.4.1.5) also requires the Operator to carry out a re-appraisal of the actual and conceptual hydrogeological conditions at the site following the installation of the additional boreholes. The HRA, together with the Permit conditions show that the operation of the Installation will meet the requirements of these regulations.

C4.7 Environment Act 1995 – Section 4 (Pursuit of Sustainable Development)

The taking of appropriate measures against pollution by the Applicant in operating the installation will meet the requirements of this Act.

C4.8 Environment Act 1995 – Section 7 (Pursuit of Conservation Objectives)

The taking of appropriate measures against pollution by the Applicant in operating the installation will meet the requirements of this Act.

C4.9 Human Rights Act 1998

The taking of appropriate measures against pollution by the Applicant in operating the installation will meet the requirements of this Act.

C4.10 Relevant Secretary of State Directions

There are no Secretary of State Directions made under the Pollution Prevention and Control (England and Wales) Regulations 2000, as amended, which are relevant to the determination of this application.

C5 Other conditions included in the Permit

C5.1 Permit section 1.4 - The Improvement Programme

The Improvement Conditions described below have been imposed on the Operator for the reasons given in the table below.

Ref	Requirement	Due date	Justification
1.4.1.1	The Operator shall submit to the Agency proposals for the location, design and installation and monitoring of additional groundwater monitoring points. The proposals shall be in accordance with Agency guidance document LFTGN02 'Guidance on monitoring of landfill leachate, groundwater and surface water'. The additional boreholes should be at a minimum of 100m spacing around the perimeter of the installation. The Operator shall undertake any measures notified in writing by the Agency by the date indicated in the notification.	9 February 2006	In order to obtain a clearer picture of the actual hydrogeological conditions at the site.
1.4.1.2	The Operator shall submit to the Agency borehole specific groundwater control and trigger levels using the first 12 months data obtained from the boreholes installed in accordance with improvement condition 1.4.1.1. Trigger and control levels shall be derived in accordance with Agency guidance document LFTGN01 'Hydrogeological risk assessment for landfills'. The Operator shall undertake any measure notified in writing by the Agency by the date indicated in the notification.	9 July 2007.	Once the additional boreholes have been installed in accordance with 1.4.1.1 the monitoring results can be used to derive control and trigger levels for these boreholes. The control and trigger levels are to be submitted within 15 months of the installation of the additional boreholes. This is considered sufficient time in which to build up the necessary amount of monitoring results on which to derive accurate and appropriate trigger levels.
1.4.1.3	The Operator shall review the groundwater monitoring data for all existing boreholes individually and submit to the Agency revised borehole specific control and trigger levels derived in accordance with Agency guidance document LFTGN1 'Hydrogeological risk assessment for landfills'. The Operator shall undertake any measures notified in writing by the Agency by the date indicated in the notification.	9 February 2006	As above.
1.4.1.4	The Operator shall submit to the Agency proposals for the location, design, installation and monitoring of additional remote groundwater monitoring points to be located between the site and the River Dee. The proposals shall be in accordance with Agency guidance document LFTGN02 'Guidance on monitoring of landfill leachate, groundwater and surface water'. The additional boreholes should be located on a risk-based approach to provide an early warning protection mechanism for the River Dee. The Operator shall undertake any measures notified in writing by the Agency by the date indicated in the notification.	9 July 2006	Required in order to ensure protection of the River Dee which has been identified as a SAC, and to provide early warning of potentially polluting discharges to this river.

Ref	Requirement	Due date	Justification
1.4.1.5	The Operator shall review all the information gathered from existing and new groundwater monitoring boreholes in order to clarify the hydrogeological conditions in the vicinity of the site. The Operator shall carry out a re-appraisal of the actual and conceptual hydrogeological conditions at the site. The Operator shall submit to the Agency a report on the revised conceptual model by the date specified in this improvement condition. The Operator shall undertake any measures notified in writing by the Agency by the date indicated in the notification	9 November 2006	See comments for improvement condition 1.4.1.3
1.4.1.6	The Operator shall submit to the Agency a detailed leachate management plan. The plan shall be prepared in accordance with the Agency guidance document LFTGN02 'Guidance on monitoring of landfill leachate, groundwater and surface water'. The Operator shall undertake any measures notified in writing by the Agency by the date indicated in the notification.	9 May 2006.	The Applicant has provided details of leachate management in response to questions 2.2.16 and 2.2.17 of the Application. However, this information is considered deficient in terms of distribution of monitoring points, consideration of sphere of influence of each cell, full well design and specification and proposed pumping regime. This improvement condition will ensure that all the necessary details in relation to leachate management are provided.
1.4.1.7	The Operator shall submit a management plan for the storage and handling of leachate. The Plan should detail all procedures from leachate extraction to the leachate leaving the site by tanker. The Operator shall undertake any measures notified in writing by the Agency by the date indicated in the notification.	9 May 2006.	The Applicant has stated in the Application that leachate will be stored prior to being removed from site by tanker. The Application however, does not provide adequate detail regarding the handling and storage of leachate. This improvement condition will ensure that details of the storage tank are submitted to the Agency along with detail on leachate handling procedures including pollution prevention measures and emergency actions.

Ref	Requirement	Due date	Justification
1.4.1.8	The Operator shall submit to the Agency for approval an air impact assessment report incorporating detailed air dispersion modelling of emissions from the landfill gas flare and engines, using new generation air dispersion models. The report shall evaluate the potential impact of the emissions on potential receptors. Where the report indicates that the emissions breach an environmental benchmark*, a review with recommendations of landfill gas management options including an assessment of BAT in accordance with Agency guidance shall be submitted that includes the following: - engine design; - engine management systems; - stack height; - location; - emission location; - clean up pre and post combustion; and - alternative utilisation methods. The Operator shall undertake any measures notified in writing by the Agency to the timescales indicated in the notification. *Up until 2010, compliance with the N02 standard is only required at public exposure locations, as discussed within the LFGRA, but the stricter 2010 targets also need to be considered, which apply everywhere off-site.	9 July 2006.	An air impact assessment is required in order to determine the effect upon receptors of emissions from the landfill gas flare and engines. DEFRA have recently confirmed that the EU Air Quality Limit Values (which are numerically the same as the National Air Quality Objectives but have later compliance dates - 2005 for CO and 2010 for N02), apply everywhere beyond the site boundary, not merely at locations of relevant public exposure. It is therefore recommended that dispersion modelling carried out with a grid of receptors that only excludes locations on the site itself. Up until 2010, compliance with the N02 standard is only required at public exposure locations, as discussed within the LFGRA, but the stricter 2010 targets also need to be considered, which will apply everywhere off-site.
1.4.1.9	The Operator shall submit a report containing proposed trigger levels for the monitoring of landfill gas in external perimeter boreholes. The report shall relate to boreholes other than and additional to those specified in tables GRA10 and GRA11 of Application document reference WR/446/9/1. This report shall contain full justification for the selected trigger levels and any required amendments to the landfill contingency action plan to be followed in the event of trigger levels being exceeded. The Operator shall undertake any measures notified in writing by the Agency by the date indicated in the notification.	9 May 2006	Required as a result of the Landfill Gas Risk assessment review.
1.4.1.10	The Operator shall submit to the Agency a landfill gas management, monitoring and action plan. The plan shall be prepared in accordance with the Agency guidance document LFTGN03 'Guidance on the management of landfill gas'. The Operator shall undertake any measures notified in writing by the Agency by the date indicated in the notification	9 May 2006	The Landfill Gas Risk assessment does not include a landfill gas management plan.

Ref	Requirement	Due date	Justification
1.4.1.11	The Operator shall submit to the Agency for approval, a proposed slope monitoring plan to monitor the stability of the slopes referred to in the ENTEC Monitoring Data Review Report for Chirk Landfill, Slope 2, Stability Remedial Works dated 25 February 2004. The Operator shall also submit to the Agency for approval details and qualifications of the person(s) inspecting the slopes as part of this monitoring regime. The proposals shall include as a minimum, but not be limited to: - the location of the survey pegs and/or stations - spacing of pegs and/or stations - how the pegs and stations will be protected from vandalism/damage - a drawing showing the locations of the survey pegs and stations The Operator shall undertake any measures notified in writing by the Agency by the date indicated in the notification.	9 February 2006	This condition is considered necessary as the review of the Stability Risk Assessment shows there appears to be the potential movement within certain slopes at the site.
1.4.1.12	The Operator shall submit to the Agency an action plan for dealing with any movements detected by the slope monitoring plan submitted in accordance with condition 1.4.1.11 above. The action plan shall include measures to be taken in the event of any cumulative movement of 0.5 metres from the original position in three or more pegs. The Operator shall undertake any measures notified in writing by the Agency by the date indicated in the notification.	9 February 2006.	Justification as above.
1.4.1.13	The Operator shall submit to the Agency for approval, proposed timescales for reducing the leachate head to 1m as required by condition 2.10.12. Compliance with condition 2.10.12 shall be achieved, at the very latest, by the date of the first annual review following Permit issue.	9 December 2005	To enable the Operator to comply with condition 2.10.12 whilst preparing proposals for reducing leachate head levels.
1.4.1.14	The Operator shall submit a revised version of drawing reference WR4446/ESID6A, which shall provide individual identification references for the location of the sampling and discharge points for surface water to the Grass Plots and to the River Dee.	9 December 2005	To enable the sampling/discharge points to be properly identified.

C5.2 Permit section 1.6 - Pre-operational conditions

The Agency considers that the circumstances do not require the imposition of any pre-operational Conditions

C5.3 Permit section 1.7 - Off-site Conditions (including Off-site monitoring)

The Agency considers that it is not necessary to impose any off-site Conditions.

C5.4 Permit section 2.10 - On-site monitoring

The Agency has decided that emissions monitoring should be carried out for the parameters listed in Tables:

- 2.2.1 emission points to air
 - 2.2.2 emission limits to air and monitoring
 - 2.2.4 emission point to water
 - 2.2.5 emission limits to water and monitoring
 - 2.2.8 control levels for emissions into groundwater
 - 2.2.8A The trigger levels for emissions into groundwater
 - 2.2.8B Groundwater monitoring
 - 2.10.11 Emission monitoring frequency for perimeter landfill gas trigger levels
 - 2.10.11A Emissions monitoring frequency for in waste landfill gas
 - 2.10.11B Control levels for landfill gas monitoring
 - 2.10.12. Leachate monitoring
 - 2.10.12A Leachate Control levels
- using the methods and to the frequencies specified in those tables (See Condition 2.10.1).

These monitoring requirements have been imposed for the following reasons:

Emissions to Air

Tables 2.2.1 and 2.2.2 refer to the emissions standards for the landfill gas flare and the gas engines. These are taken from requirements in the Agency's Guidance for Monitoring Enclosed Landfill Gas Flares (LFTGN 05) and Guidance for Monitoring Landfill Gas Engine Emissions (LFTGN 08). Monitoring frequencies and techniques detailed in the table are taken from the guidance.

Emissions to Water (surface water)

Tables 2.2.4 and 2.2.5 refer to the limits for emissions to water. The discharge to surface water was controlled through a consent issued by the Agency under Section 88 of the Water Resources Act 1991. The limits from this consent has been assessed and are considered to be appropriate and have been incorporated into the Permit.

Groundwater

Condition 2.2.3 requires monitoring of groundwater from all locations detailed on Drawing Reference WR4446/ESID11. Detection limits are taken from the Agency's Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water (LFTGN 02).

Landfill Gas

Condition reference 2.10.11.1 requires monitoring from all landfill gas monitoring boreholes. Trigger levels have been set in line with the guidance and the Operator is required to carry out routine monitoring and take appropriate remedial action in the event that landfill gas migration from the permitted installation is detected at the site boundary.

Leachate

The Operator has submitted proposals for leachate quality monitoring within the Application. These proposals have been incorporated into the Permit in condition 2.10.12 and include sampling points, frequencies and analytical suites.

C5.5 Permit section 3. - Records

The Agency considers that the standard condition requirements are appropriate and sufficient for the Permit.

C5.6 Permit section 4. - Reporting

The Agency considers that the standard condition requirements are appropriate and sufficient for the Permit.

C5.7 Permit section 5. - Notifications

The Agency considers that the standard condition requirements are appropriate and sufficient for the Permit.

C6. Other principal considerations taken into account in the determination process

All considerations have been addressed in other sections of the Permit.

APPENDIX – Consultee responses

Summary of consultation responses received and the way in which they have been taken in to account in the determination process:

Response received from	Brief summary of issues raised	Summary of actions taken or show how this has been covered
Wrexham Local Health Board	1. Clarification is required as to how the applicant has carried out the air impact assessment for the emission of hydrogen fluoride from the site. 2. Monitoring of post-combustion products should be carried out to verify that actual emissions are consistent with those predicted. 3. Monitoring for trace organics at the boundary of the site should be undertaken at a frequency agreed with the Regulator. 4. An odour management plan should be produced and submitted to the Regulator. 5. A dust management plan should be produced and agreed with the Regulator, so as to minimise the migration of particulates off-site. All plant utilised on the site should be operated, so as to minimise the generation of particulates. 6. A noise survey should be carried out in accordance with BS4142 to identify whether noise levels are likely to be of nuisance to nearby residential receptors. The applicant should demonstrate BAT for noise control. 7. The EMS must be implemented in accordance with the timescale given. 8. Strict operational and maintenance procedures must be adhered to and spares for gas flares and engines must be kept on site.	The Applicant is required under improvement condition 1.4.8.1 to undertake a full air impact assessment, which will address this issue. As above Covered by permit condition 2.2.1 and its associated conditions and tables. Condition 2.2.6 of the permit is considered to be adequate to control/manage odour. The Amenity Risk Assessment provided with the application does not show odour to be a significant problem at this site. Odour management will be included within the EMS for the site. This is considered to be adequately covered by permit condition 2.2.4. The Amenity Risk Assessment also addresses potential problems in relation to dust/particulate matter emissions from the site. Noise and vibration is covered by permit condition 2.9. The Amenity Risk Assessment also addresses noise issues in relation to the site. However, in general it is not considered that noise is an issue at this site. Table 2.1.1 states the site should be operated using the techniques and in the manner described within the specified Application documentation. This will ensure that the Operator will implement the EMS within the time frame specified in the application form. Improvement condition 1.4.1.10 requires a landfill gas management plan. This will include details of engine/flare maintenance/monitoring programmes.

Response received from	Brief summary of issues raised	Summary of actions taken or show how this has been covered
Welsh Assembly Government	No comments to make.	N/A

Consultation Comments from Environment Agency Area Staff

Condition	Comment	Response
Table 1.1.1	Does this need the discharge point to be specified? There is a drawing reference but not a sample point number e.g. WP1, 2 and 3 (although I can't find a map that shows these points in the application). The monitoring point names are stated in ESID 21 Appendix D. However, these are monitoring points, not discharge points.	An improvement condition has been added to request a revised version of drawing reference WR4446/ESID6A, which will give an individual location reference for the sampling and discharge points for surface water to the soakaway and the River Dee.
Table 1.4.1	The condition does not state when the timescales date from – I assume this is date of issue of the permit. Is a date included when the permit is ready to be issued or can a statement be added into the condition as in "from the issue of the permit"	The dates for compliance with all improvement conditions will be more specific when the date the permit will be signed off is known. It will read something like 'by 25 December 2005,' for example.
Table 1.7	Would any conditions apply for litter or is this covered in Table 2.1.1 for complying with that part of the application?	Litter is covered by table 2.1.1 which will refer to the Amenity Risk Assessment, where this is covered. They are supposed to cover litter control within the EMS for the site too, but unfortunately we do not get to see this as they are not required to submit it as part of the application.
Table 2.1.2	Does not specify excluding all XX XX 99 codes (although this is included in the Appendices). In the decision document comments you included it states that a more specific definition is required to accept 20 01 99. Could this be included in the permit?	The xx.xx.99 code which was requested has been removed, as WRG did not want to categorise the wastes required other than by a vague description.*
2.1.9	Does not specify when they have to do this by (the improvement conditions ask for the plans within 1 month but this condition does not say when it needs to be implemented).	Amend to read 'Within 1 month following the installation of the survey pegs etc..'
2.2.3.4	Second line after Table 2.2.8 delete the word "in".	Amended as suggested.

Condition	Comment	Response
Section 2.2	There is no mention in Section 2.2 Emissions of the discharge from the site to the soakaway, which was an agreed part of the installation. There is only mention of the discharge to River Dee (which is rarely used due to the above and also reuse of water on site). Wendy Price (who was involved in the original discharge consent said that she is happy with the limits as these were the ones originally set on the discharge consent. The diameter of the pipe needs to be specified as this controls the maximum volume of site drainage that can be discharged, and it was that figure upon which the limits were originally based. She also queried regarding the discharge to the grass plots, which are included in the installation. This was (and is) the first option for disposal of surface water even if the quality was good enough to go to the Dee. We also put the same limits on that discharge - these were primarily to be used for sampling so we would know if there was any leachate getting into the site drainage, as this could percolate down into groundwater that may be in continuity with the Dee at that point. It was a bit of an unknown at the time, so we took the pragmatic, risk-based approach and went for the "just incase" scenario. This sampling would need to be included in the permit as well to ensure that it is taking place.	Table 2.2.2 will be amended to include the grass plots under the emission point reference and/or location description. Table 2.2.5 will amend to add the grass plots which will control the limits for the emissions. This table will also be amended to add reference to improvement condition 1.4.14.1, which requests a location plan for the sampling/discharge points.
2.2.2.7	This is the same condition number as the one below. When a condition states no condition applies could this not just be removed?	The numbering has been amended. I agree that it makes more sense to remove the condition, but this is the way we have been told to produce the permit.
Table 2.2.8	The boreholes are only guideline trigger levels rather than borehole specific. At the moment they are specific and a couple of the boreholes have much lower trigger levels that this due to pre-landfill monitoring. As the groundwater report is not required for 8 months after issue, could this reflect the present WML requirements until that time?	The WML requirements for trigger levels for emissions to groundwater cannot be inserted into the document unfortunately. This is because we cannot refer to a document that has not been submitted as part of the Application, as we cannot check its validity or assess it alongside the HRA report.
2.2.8	DO+-1 ⁵ – what does this mean?	This is a mis-type and should read +/- 1.0
2.2.4.3	When does such a report need to be submitted for the areas of the site that are already capped or temporarily capped?	This condition has been deleted as it was considered not to be necessary after the WRG review.
2.9	There is no mention of a noise management plan although it is mentioned for odour etc. Most of this appears in the application but is not stated in the permit. Is this an issue.	It was not considered that noise would be a major problem from this site, and the EMS for the site should contain a noise management plan. Noise was also addressed within the Amenity Risk Assessment and it did not appear to be an issue.
2.10.11.4	Second line "monitoring trace" not "trance".	Amended

Condition	Comment	Response
Table 2.10.11	At the moment there are no trigger levels for perimeter gas boreholes at all. Although there are issues with regards to readings/fluctuations at the perimeter boreholes and there are no trigger levels or action plans in place for 6 months after the permit is issued. As an interim would it be possible to have the WMP4 trigger levels of CH4 1% and CO2 1.5% in place so that there is a control.	WRG submitted additional gas monitoring information in relation to CH4 and CO2, which will now be inserted into the permit. The improvement condition will be amended to make reference to the specific section of the application document.
2.10.11.4	Does not specify when they have to monitor trace components i.e. Frequency.	Amended to state that the frequency is annual.
2.10.11.6 & 2.2.4.3	Conditions are identical.	Condition 2.2.4.3 deleted.
2.10.12	States leachate head cannot exceed 1m. Where has this figure come from? At present the leachate head is 2 metres. What will be the hydrogeological effect/leachate management effect of keeping the leachate head at 2m?	This has been amended to say that leachate head has to be kept to 1m unless otherwise agreed with the Agency. An improvement condition has been added as follows – 'The Operator shall submit to the Agency for approval, proposed timescales for reducing the leachate head to 1m as required by condition 2.10.12. Compliance with condition 2.10.12 shall be achieved, at the very latest, by the date of the first annual review following permit issue'.
Table 2.10.12	There is a requirement in Table 2.10.12 to monitor for Total phenols and then in the trigger levels table 2.10.12A there is a specific trigger level for monohydric phenol. Does the total phenols that is tested for differentiate the phenols?	It is considered that the List 1 screening requirement of this table will pick up the different Phenols. This table has been amended to add a couple of List 1 substances which had been omitted i.e. Mecoprop and Naphthalene.
2.10.14	Does not state an actual date when screening should take place.	The screening to take place annually from the date of permit issue. I agree that we could with an actual timeframe within the condition. Another one to feed back to process.
2.10.16	Why are the parameters were not included for surface water whereas they are for leachate, groundwater and LFG.	Table 2.2.5 lists the parameters for surface water monitoring.
4.1.4, 4.1.9	When you state annually do you mean ending in December, financial year, or date of permit issue as the start of the year? Could this be specified in the "Interpretation" section or specify them more clearly within the permit.	I agree, very confusing, but these are standard conditions and as such I cannot change them.
4.1.6	Does this require a provision of a report within 6 months of issue of the permit or is this just if the Agency see fit? It's a bit confusing.	It seems to read that they have to provide the report within 6 months of the date we ask them for one. Again, very confusing.
5.1.1	Could you include a definition in the 'Interpretation' section of 'without delay'? I know in previous permits this is around 1 hour of becoming aware of an incident.	This would have to be a formal amendment to the permit as a legal definition would be required. If you can find a permit it has been put into let me know and I will check the wording with our legal team.
5.1.2.1	There is no mention of Part B of the form anywhere.	This is because Part B is mentioned in table 2.1.1 which lists the bits of Part B which are relevant and we can refer to.

Condition	Comment	Response
Schedule 6	16 01 03 and 16 01 06 are included. Although 16 01 03 can be accepted up until July next year, why is the 06 for ELVs included? Is this to allow frag waste?	This is an issue we have had with other WRG sites where these wastes have been accepted and the decision has been taken to leave them in on other permits. I asked Jane Williams why these are in and she said it was part of the generic waste list but they in all probability will not accept them. In the near future there may be a major review of all permits issued by SPG as a result of the Biffa appeal and can be addressed at this stage.
Application Form 2.2.48	In application have to provide trigger levels for in-site LFG for oxygen, temperature and CO. Why aren't these included in the permit as well as the oxygen level?	See Email from Gary Edwards dated 09/11/05.

