ASIANTAETH YR AMGYLCHEDD CYMRU
ENVIRONMENT AGENCY WALES

Cymrhydyceirw Landfill Site

Audit Report

August 2004

Contents

1 Executive Summary

1.1.1 Environment Agency Wales has recently completed a four-day audit of Cwmrhydyceirw landfill. The site is operated by SI Green UK Ltd. Officers from the Swansea Environment Management team were on site between 15 June 2004 and 18 June 2004. The prime objectives of the site audit were:

a To assess if the site is causing pollution of the environment, harm to human health, or serious detriment to the amenity value of the area.

b To secure compliance with the Waste Management Licence (WML) and relevant legislation.

c To drive improvements at the site to meet current 'best practice' standards.

d To assess the adequacy of the site licence.

e To provide the licence holder with a clear understanding of our expectations.

f To assess the effectiveness of previous Agency regulation of the site.

1.1.2 The site audit will be used as the basis for a compliance assessment plan and site improvement plan. These new regulatory tools have recently been adopted by the Agency. This change in regulatory approach at Cwmrhydyceirw will allow the Agency, and licence holder, to effectively prioritise issues, allocate resources and deliver environmental improvements in a co-ordinated manner.

1.1.3 The principal audit findings are listed below:

1.2 Summary of conclusions

1.2.1 The site, although not found to be currently causing pollution, has the potential to pollute from a number of sources. Remedial works are required for the leachate holding tanks and bunded areas near the main site entrance to ensure they conform to industry standards. Other operational issues that need to be regularised are site security at the point of discharge to foul sewer, the vulnerability of lay flat pipe located along site roads and the introduction of a structured monitoring regime for surface and ground waters, leachate and landfill gas. These aspects of the site operations should be regularised within a licence modification.

1.2.2 The continued requirement to pump contaminated waters to foul sewer to prevent the existing waste mass polluting ground waters is currently the main issue that needs to be resolved. SI Green UK Ltd need to submit further information to ensure that water levels are controlled and that adequate staffing / equipment are available in cases of mechanical breakdown or emergency.

1.2.3 The current site licence does not fulfil the OPRA criteria specified by the Agency. Out of the thirty-two OPRA criteria that the Agency inspects against, only seven can be enforced against due to the lack of a site working plan and a number of unenforceable and ambiguous licence conditions. The operator is compliant with the seven OPRA criteria that can be enforced against as outlined in the recommendations but improvements to working procedures can be made.

1.2.4 It is clear from the audit that the Agency must modify the existing waste management licence. As the site is no longer operational (i.e. accepting waste) the modification should focus on post closure monitoring, maintenance of site infrastructure and ensuring that water levels are controlled. Prior to an Agency modification being undertaken SI Green UK Ltd should be given the opportunity to produce a working plan detailing site monitoring requirements and procedures. In the event that the operator fails to submit such a working plan, the Agency should issue a modification detailing prescriptive licence conditions.

1.2.5 The current licence does prevent the operator depositing any waste at the site and the introduction of the Pollution Prevention and Control (PPC) Regulations issued in 2000 have meant that a new permit is required prior to the restarting of any landfilling operations.

1.2.6 All the respective remedial actions and recommendations for both the operator and the Agency have been tabulated in Section 41 of this report for ease of reference. The actions have been ranked by priority (high, medium and low) against the OPRA criteria. These actions will be presented to the site operator and deadlines discussed. The overarching action for the Agency is to modify the existing licence for post closure monitoring, maintenance of site infrastructure and ensuring that water levels are controlled. The site operator must concentrate on site infrastructure works to ensure potential pollution risks are minimised and site monitoring.

1.2.7 Previous regulation on site has been focussed on the management of the leachate and surface water-pumping regime. There has been reactive enforcement on site to issues identified as part of the routine inspection process and a limited number of enforcement notices have been served on the operator. These recommendations will now act as a focus for future inspections and greater dialogue with the company will be sought.

2 Scope of audit

2.1 Objectives

2.1.1 The objectives of this site audit were:

- **a** To assess if the site is causing pollution of the environment or harm to human health or serious detriment to the amenity.
- **b** To secure compliance with the waste management licence (WML) and relevant legislation.
- **c** To drive improvements at the site to meet best practice.
- **d** To assess the adequacy of the licence.
- **e** To provide a baseline of knowledge in regard to the current situation on site and any forthcoming Pollution Prevention and Control Permit Applications.
- **f** To capture the previous regulation of the site by the Agency.
- **g** To update the Agency's Health and Safety risk assessments for the site.

2.1.2 The legal context for undertaking site audits is demonstrated by the supervision requirements of licensed facilities in accordance with section 42 of the Environmental Protection Act 1990. There is further statutory guidance on this in Waste Management Paper 4 with reference to the checking of all aspects of the facility and operations. This audit report will be placed on the public register pursuant to Regulation 10 (1)(g) of the Waste Management Licensing Regulations 1994 (as amended).

2.1.3 This audit was based on the Operator Performance Risk Appraisal (OPRA) for Waste and the Licensed Waste Management Facility Site Inspection Methodology. The audit criteria are taken from the Inspection Methodology, which allows consistency in reporting and follow-up actions.

2.1.4 The site audit will lead to a programmed site improvement plan which will allow the Agency and the licence holder to identify, prioritise, resource and tackle issues in a co-ordinated manner. Any enforcement will be pursued in accordance with the Agency Enforcement and Prosecution Policy.

2.2 Audit Team

2.2.1 The audit was undertaken and documented by Paul Edmonds and Paul Gibson of the Swansea Environment Management Team. Linda Warrick of the Regulatory Waste department and Kim Jones an Environment Officer at the Agency's Lampeter office also provided assistance during the audit period.

2.3 Licence Adequacy

2.3.1 The site licence was audited for its adequacy in controlling operations and preventing pollution, harm and serious detriment in the following ways:

Do the licence conditions / working plan meet the relevant OPRA criteria requirements?

2.3.2 Operator and Pollution Risk Appraisal (OPRA) criteria detail information that should be covered by waste management licence conditions. The aim of this audit is to gain an understanding of any matters that will not be picked up on site compliance due to the absence of licence conditions that cover key OPRA requirements.

Is the wording of the condition enforceable?

2.3.3 Licence conditions can be of three basic types:

- **a** Prescriptive conditions which set absolute requirements or absolute environmental performance standards to an appropriate level of detail.
- **b** Working plan referenced conditions that require the operator to carry out an activity as described in a specifically referenced section of the working plan.
- **c** A combination of the above;

2.3.4 The site licence for Cwmrhydyceirw contains a number of prescriptive licence conditions that also refer to the working plan. No working plan has been agreed with SI Green UK Ltd and therefore some parts of certain licence conditions are unenforceable. In this instance the operator may be found not be compliant with the prescriptive part of the condition, whilst the remainder of the condition that refers to the working plan continues to be unenforceable. It is therefore possible not to be compliant with condition that is partly unenforceable.

2.4 OPRA Criterion

2.4.1 As part of the audit process, the OPRA criteria were mapped to the site licence conditions for the site and assessments were made as to whether the operation was compliant with the OPRA criteria or not.

2.5 Further Action Required

2.5.1 Failings in the site licence or in site operations have been classified in accordance with the risk to the environment. Areas of the site where the Agency has poor regulatory controls in place have also been highlighted using the same system.

2.5.2 They are colour coded as follows for ease of reference:

Classification	Impact
Major (3)	Significant and immediate risk of pollution or harm / no regulatory controls in place.
Moderate (2)	Some pollution or harm or possibility of long term impact. Limited regulatory controls.
Minor (1)	Administrative failing or no impact / Minor regulatory risk.

2.5.3 The audit team has not specified timescales by which any actions should be completed. The findings of this report should first be discussed with the operator and actions should be agreed and prioritised by both parties.

Licence inadequacies

2.5.4 Where the site licence has been shown to be inadequate, the corrective action regarding the licence may be one of the following:

a **Working Plan.** The licence holder may need to take action to amend the working plan. This may be due to a change in procedures, management systems etc that are not reflected in the working plan.

b **Licence.** The licence may need to be modified by the Agency to insert an appropriate condition.

c **Process.** Process refers to matters that should be changed by the Agency's Waste Process, such as the development of site licence conditions or criteria that are not in current Agency guidance. This is a means of providing best practice information to the process and policy managers of the Agency.

Not compliant with OPRA criterion

2.5.5 Where the audit has shown that the operator is not compliant with the OPRA criterion, the corrective action regarding the licence may be one of the following:

a Record on SIRF Only. To record non-compliance with the criterion.

b **Improvement Plan**. An improvement plan is a voluntary agreement with the operator to undertake improvements to site management and environmental systems to improve the performance of the site. It is suitable for enacting best practice at the site, and may result in actions without modification of the licence. It will require negotiation of timescales and actions for improvement with the operator. All improvements should be justifiable in such a manner that they could be inserted as licence conditions if no voluntary agreement was reached. Some matters may look more long term at requirements that are expected to be achieved at sites once re-permitted under PPC for example. Improvement plans can also cover aspects of the sites operation that are covered by an existing condition, where there is a risk that the condition may become in breach, if preventative action is not taken.

c **Warning letter.** A warning letter can be issued in accordance with the Enforcement and Prosecution Policy where an offence has been detected. Warning letters can be used to formalise some items agreed in an Improvement Plan, where the Agency would take enforcement action if the agreed improvements were not made.

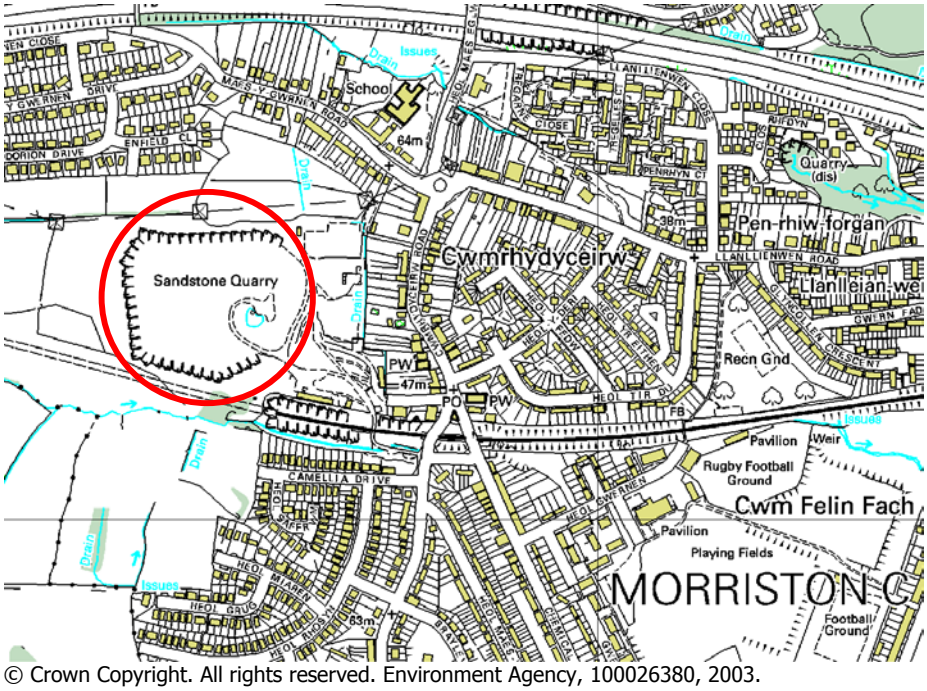
d **Enforcement notice.** A formal notice can be served on the licence holder in accordance with the Enforcement and Prosecution Policy, to undertake remedial action or prohibiting operations.

e **Emergency works.** Where the non-compliance is comparable to a category 1 incident under the Common Incident Classification Scheme emergency works may need to be undertaken, and formal action taken in accordance with the Enforcement and Prosecution Policy.

3 Site history

3.1.1 Cwmrhydyceirw quarry is located within the Morriston area of Swansea. The landfill site was previously a pennant sandstone quarry, worked from late in the last century up until 1979. The site is situated within a mixed area of industrial, residential and recreational use. To the north, east and south east lies residential housing. To the south there is a golf course and to the west pastureland. The nearest housing is located within 150m to the north, east and south east of the operational area of the site. A small tributary of the Tawe runs along the southern boundary of the site adjacent to the Llangyfellach Railway tunnel.

3.1.2 The site is highlighted in red on the map below.[1]



3.1.3 Aspinwall and Company working on behalf of Arc (Western) Ltd undertook a feasibility study on the disposal of municipal waste at Cwmrhydyceirw Quarry in January 1980. The report stated that there are '*very severe constraints on waste disposal in Cwmrhydyceirw Quarry'*. The main constraint highlighted being the proven inflow of groundwater in to the quarry. The report also concluded that in the absence of any work to modify the natural equilibrium, a rise in groundwater levels to +50 mAOD[2] could not be ruled out and any future landfill design must take in to account this possibility.

[1] National Grid Reference SS 664, 992.
[2] Land levels are measured relative to the average sea level at Newlyn in Cornwall. This average level is referred to as 'Ordnance Datum'. Contours on Ordnance Survey maps of the UK show heights above Ordnance Datum in metres, hence mAOD.

3.1.4 Arc (Western) Ltd were granted conditional planning permission on 25 June 1981 for the restoration of the quarry workings with inert fill and waste from the construction industry. A waste disposal licence was issued on 27 November 1981, which in addition to controlling the tipping operations, also restricted the type of waste material to be deposited in the quarry to that of inert solid wastes consisting of soil, subsoil, general excavated material, hardcore and construction wastes. No wastes were deposited under the terms of this licence.

3.1.5 The quarry was sold to Max Recovery Ltd and a planning application[3] for the restoration of quarry workings by the importation of non toxic dry solid wastes was submitted to Swansea City Council on 9 March 1984. Swansea City council refused the application for the following reasons:

a The proposed development would be detrimental to the amenities of those living nearby by reason of dust, smell noise, insects

b The nature and volume of likely traffic flows would be likely to detract from amenity

c The conditions that would be necessary to adequately safeguard the amenities, which the residents of the area could reasonably expect to enjoy, are not such as legally attached to any planning permission, and it would therefore by imprudent to a issue a permission for the development proposed.

3.1.6 Max Recovery Ltd successfully appealed to the Secretary of State for Wales (SoS) and planning permission was granted, subject to conditions, on 11 March 1985. The planning inspector appointed by the SoS was of the opinion '*that it would be in the best interests of the local inhabitants for the permitted range of materials for filling the quarry to be extended, as proposed, to enable the quarry to be filled in more rapidly and restored as soon as possible'.* Max Recovery Ltd subsequently applied for a waste disposal licence on the 2 April 1985. The licence was granted three months later by Swansea City Council on 5 July.

3.1.7 The licence conditions allowed domestic, commercial and construction wastes to be deposited at the site. Industrial wastes could only be deposited at the site following approval of the Council in respect of each type of waste. The site operated for a number of years, receiving wastes of varying types, including biodegradable municipal wastes and industrial wastes such as filter cakes and ashes.

3.1.8 During the landfilling operations, the water table at the quarry was maintained below the waste mass by a pumping regime operated by the licence holder. A pump failure during heavy rainfall in 1987 resulted in the water level in the clean water sump rising and coming in to contact with deposited waste. This led to a series of odour complaints and an action group was formed to stop the disposal of 'chemical' and municipal waste at the site. As a result of the flooding Max Recovery Ltd were instructed that all water from the sump must be disposed of to foul sewer until such time that they were informed in writing that the quality was sufficient to recommence discharge to the stream.

[3] Planning Application Reference 2/1/84/0381/03

3.1.9 On 23 December 1987 a number of statutory notices were served on Max Recovery Ltd requiring compliance with licence conditions. Max Recovery Ltd failed to comply with these notices and on 25 February 1988 Swansea City Council revoked the site waste disposal licence with effect from 10 March 1988. On the effective date of the revocation Max Recovery Ltd lodged an appeal with the Welsh Office. By lodging an appeal, operations were able to continue until the appeal was heard. During July 1988, Max Recovery Ltd agreed that municipal waste, wastes with a high organic content and sludges would no longer be accepted at the site. Swansea City Council modified the site licence conditions and on the 19 December 1988 informed the Welsh Office that they wish to withdraw the revocation notice.

3.1.10 Following the licence review, the permit authorised the deposit of construction debris, soil, industrial waste, high solid filter cakes and imported European wastes. Municipal, special and liquid wastes were excluded. Wastes imported from Europe included bulk deposits of incinerator fly ash (from Zurich and Hamlyn), sandy soils (from Stuttgart), shot blasting residues and chimney ash (from West Germany) and finally sand blasting residues (from France).

3.1.11 During 1989 Swansea County Council served further statutory notices requiring the licence holder to produce a working plan and undertake various engineering works at the site. These notices were not complied with. On 16 February 1990 a revocation notice was served on the operator with effect from 13 March 1990. Max Recovery Ltd again lodged an appeal with the Welsh Office. The SoS dismissed the appeal on the 3 December 1991 and the licence was revoked with immediate effect. It is estimated that 85,000 tonnes of waste were deposited at the site.

3.1.12 Caerleon Company Ltd took over operations and on the 6 July 1992 a new waste disposal licence was issued. The licence included a condition that no further wastes could be deposited at the site until the licence holder demonstrated that the site could be operated without causing an unacceptable risk to the aquatic environment.

3.1.13 Caerleon commissioned a groundwater / leachate trial to determine the performance of the original HDPE liner installed at the site. The trial concluded that there was no evidence to show that the HDPE membrane within the original cell was leaking and that external boreholes do not indicate contamination outside the quarry. The National Rivers Authority[4] (NRA) interpreted the findings differently. The data suggested that the ammonia concentration in the fresh water sump was related to the leachate driving head, with greater driving head resulting in greater concentrations. It was therefore a reasonable conclusion that the source of ammonia was from the landfill indicating that the landfill was leaking.

[4] The National Rivers Authority was a UK government agency launched in 1989. It had responsibility for managing water resources, investigating and regulating pollution, and taking over flood controls and land drainage from the former ten regional water authorities of England and Wales. In April 1996, the NRA was replaced by the Environment Agency.

3.1.14 The NRA also had concerns that without a detailed understanding of the complex geology of the quarry and details of the rational behind the siting of external boreholes it was not possible to state that no contamination was occurring. The NRA requested that the operator install additional monitoring boreholes to facilitate an enhanced monitoring network around the site to establish whether groundwater was being contaminated off site. Records indicate that no further boreholes were installed.

3.1.15 During 1993 the quarry became the focus of considerable attention from the public, local media and pressure groups including the 'Morriston Action Group' and 'Friends of the Earth'. There was concern that fly ash wastes imported from Refonda in Switzerland during 1991 contained high concentrations of Polychlorinated Biphenyl's[5] (PCBs), Polyaromatic Hydrocarbons[6] (PAH's) and Dioxins[7]. The NRA took two sets of samples during July and December 1993 from both the leachate and surface water sumps and subjected to a GCMS scan. The analysis indicated that there was no evidence of dioxins or derivative compounds in the samples.

3.1.16 On 1 April 1996 the regulation of operations became the responsibility of the Environment Agency. Caerleon Company Ltd was placed in administration on the 17 June 1996. Later in the year a new company called 'Legislator 1171 Ltd' began discussions with the Environment Agency to transfer the existing waste management licence pending the sale of the quarry.

3.1.17 In November 1997 the Agency undertook an independent internal project to assess the potential for pollutants to escape from the quarry and determine the flow of water across the site. Seven new boreholes were installed at the site to gather data for this desktop study.

[5] Polychlorinated Biphenyl's form a group of compounds which were developed in the 1930s and were mainly used in the electricity supply industry and mining. Due to their accumulation in the food chain, production of PCBs was halted world-wide at the beginning of the 1980s and in 1996 an EC Directive was agreed requiring a phase-out of continuing uses (mainly in ageing electrical equipment). PCBs were frequently found in industrial wastes, and subsequently found their way into surface and ground waters. As a result of their persistence, they tend to accumulate in the environment. In terms of streams and rivers, PCBs are drawn to sediment, to which they attach and can remain virtually indefinitely.

[6] Polyaromatic Hydrocarbons are a group of chemicals that are formed during the incomplete burning of coal, oil, gas, wood and other organic substances. There are more than 100 different PAHs. PAHs generally occur as complex mixtures (for example, as part of combustion products such as soot), not as single compounds. PAHs are ubiquitous in the environment

[7] Dioxin is the general name given to 210 organic compounds containing carbon, oxygen and hydrogen with one to eight chlorine atoms. Only 17 of the 210 dioxins are known to be toxic. Dioxins in trace quantities are created naturally and as unwanted by-products by certain industrial chemical processes and the incomplete incineration of chlorinated hydrocarbon compounds. Dioxins can be persistent in the environment for many years.

3.1.18 The report concluded that there was some evidence that leachate is leaking from the landfill, but under pumped conditions this did not pose a significant risk to the aquatic environment, as there is an inward hydraulic gradient towards the site. If pumping ceased and groundwater levels allowed to recover, the natural hydraulic gradient to the south /south east would be restored. Under these circumstances, the railway drain, which discharges to the River Tawe would become a potential target. It is estimated that water levels will rise to at least the top of the landfill cell within a minimum of 100 to 200 days should pumping stop.

3.1.19 On the 5 August 1999 Legislator 1171 Ltd made a formal application to the Agency to transfer the licence from Caerleon Ltd. The application was approved and the licence transferred on the 31 March 1999. An Agency initiated licence modification was issued on 25 May 2000 to formalise the financial provision requirements and require the company to notify the Agency of any change in the technically competent management at the site. Since that time the primary site activities have been limited to maintenance and monitoring.

3.1.20 Legislator 1171 Ltd changed its company name on the 17 April 2002 to SI Green UK Ltd. To recommence disposal operations SI Green UK Ltd are required to apply for a Pollution Prevention Control Permit (PPC) as no waste was deposited at the site under the terms of the licence that was transferred to the company. All previous deposited were authorised by the licence issued to Max Recovery Ltd that was subsequently revoked.

3.1.21 An application for a PPC permit was made on 27 August 2002. SI Green UK Ltd applied to operate a landfill disposal facility for selected non-hazardous wastes that may arise from commercial and industrial premises. There were no proposals in the application to dispose of any readily biodegradable waste that had caused the odour problems in the past.

3.1.22 The Application received from the applicant on 27 August 2002 was considered duly made. This application did not contain enough information on some key areas of concern. As a result a Schedule 4 Notice[8] was issued on 7 November 2002 to ask for a much more detailed and thorough assessment of the environmental impacts and engineering proposals to be provided by 10 March 2003.

3.1.23 The applicant indicated that the provision of this information would take some time and informed the Agency of some changes to their original proposals. The additional information was originally expected to be ready by 31 May 2003 but there were further delays throughout the summer and at the request of the applicant the deadline was extended until 31 August.

[8] A Schedule 4 can be served by the Environment Agency on an applicant, to request further information for the purpose of determining an application for a Pollution Prevention and Control permit.

3.1.24 The applicant provided additional information to the Agency on 29 August 2003 but this response still did not provide sufficient information about the proposed site engineering and operations. The Agency determined that the application is ‘deemed withdrawn’. The deemed withdrawal does not preclude the applicant from making another application to the Agency in the future.

3.1.25 During the determination the Agency formed a Liaison Group comprising of local political representatives, the Morriston Action Group and Swansea Friends of the Earth to ensure effective communication channels with the local community. The Agency intends to continue with meetings of this group if and when a further application is received.

4 Regulation by Environment Agency

4.1.1 The site is currently non-operational and this is reflected in the number of inspections undertaken by the Environment Agency. Approximately 20 inspections are undertaken per annum.

4.1.2 Inspections have focussed primarily on the management of leachate/surface waters and also ensuring the site remains secure to unauthorised personnel. A number of notices have been served on the licence holder to ensure the pumping regime is maintained in order to protect ground and surface waters and prevent he site flooding.

4.2 History of Enforcement Notices served on site

4.2.1 Section 42 of the Environment Protection Act 1990 (EPA) outlines powers that are available to the Environment Agency to serve notice upon a site operator requiring compliance with licence conditions within a specified time. Since the transfer of the licence to SI Green UK Ltd two notices have been served.

22 February 2001

4.2.2 A notice was served on Legislator 1171 Ltd to restore the leachate pump and associated equipment to ensure that leachate pumping can be undertaken at any time in order to comply with the Waste Management Licence. The notice was complied with in full.

17 July 2002

4.2.3 A second notice was served on SI Green UK Ltd to restore the leachate pump and associated equipment to ensure that leachate pumping can be undertaken at any time in order to comply with the Waste Management Licence. The notice was complied with.

Un-Authorised activities

4.2.4 No un-authorised activities have been recorded on the Agency inspections for the site, other than those relating to the Notices above and minor breaches of site infrastructure.

4.3 Agency Monitoring

4.3.1 The audit undertook Gas, Ground Water and Leachate borehole random sampling as part of the Agency Enhanced landfill monitoring project.

5 Audit findings by OPRA criteria

5.1.1 Since July 2000 the Agency has been using OPRA (Operator and Pollution Risk Appraisal) for Waste to assess the risk associated with waste management activities. By this method, a site is scored for both the risk it poses to their environment and also for the management systems that are in place to control that risk. The totals of these scores make up the site's OPRA score that indicates the overall risk it poses to the environment.

5.1.2 By comparing OPRA scores the Agency is able to take a risk-based approach to prioritising the regulation and monitoring of sites. Waste OPRA scores also has a bearing on the site waste management licence charges. The Agency has produced a site inspection methodology and a set of forms to record details of inspections of Licensed Waste Facilities. A site inspection from has been reproduced below:

WME 1 Site inspection report for licensed landfill waste management facilities Report ID number

Agency copy = *top* Operator copy = *middle* Public register copy = *bottom*

ENVIRONMENT AGENCY

Site inspection report *page of*
for licensed landfill waste management facilities
Environmental Protection Act 1990
Pollution Prevention and Control Regulations (England and Wales) 2000

Name of site | Name of site operator/licence holder | WML number

Name of officer(s) | Date | Time in out

Area office | Weather conditions

Type of site: ☐ Co-disposal ☐ HCI ☐ Household ☐ Industrial (factory curtilage) ☐ Inert ☐ Other

Type of inspection: ☐ Routine ☐ Audit ☐ Out of hours ☐ Monitoring ☐ Incident response ☐ Engineering

Site operational status: ☐ Receiving waste ☐ Not receiving waste **Site life status:** ☐ Operational ☐ Pre-operational ☐ Post-operational

Site areas/phase inspected | **Report to Environment Agency manager**

Inspection results NI not inspected NA not applicable 0=compliant 1–15=non-compliant

1	Specified operations	19	Landfill gas monitoring and reporting systems
2	Waste types and quantities	20	Monitoring of landfill gas within the site
3	Staff understanding of licence/working plan	21	Leachate monitoring reporting
4	Surface preparation-unengineered sites	22	Groundwater quality monitoring and reporting
5	Engineered landfill containment systems	23	Surface water quality monitoring & reporting
6	Leachate management and monitoring systems	24	Control, monitoring and reporting of dusts, fibres and particulates
7	Landfill gas management systems	25	Control of odours
8	Surface water management system	26	Control and monitoring of noise
9	Installation, maintenance and protection of final cap	27	Control of pests
10	Site identification board	28	Control of birds and other scavengers
11	Site security	29	Control of litter
12	Mud and debris on the road	30	Record of specified events
13	Potentially polluting leaks and spillages	32	Engineered containment for storage of liquids, sludges or powders in above-ground tanks
14	Fires on site		
15	Waste acceptance and control systems procedures	36	Acceptance of wastes banned under the Landfill Regulations
16	Phasing & methods of waste discharge & emplacement	37	Acceptance of wastes banned under this class of landfill
17	Use of daily and intermediate cover		
18	Special wastes		

WME1v042

Samples/measurements/photos taken
☐ Surface water ☐ Groundwater ☐ Leachate ☐ Gas ☐ Waste ☐ Other non-compliance ☐ Engineering

Comments/actions

☐ Letter requested ☐ Continuation sheet?

I issued a site warning to the
☐ permit/licence holder/operator *or*
☐ their authorised representative.

I said that the ☐ non-compliance(s) listed above constitute an offence under section 33(6) of the Environmental Protection Act 1990/Regulation 32(1)(b) of the Pollution Prevention and Control Regulations (England and Wales) 2000. No further criminal sanction will be given/taken by us now regarding the non-compliance(s) this time. However if further non-compliances occur we may take more formal action, including legal proceedings.

Officer's signature | **Operator/licence holder's signature** Name & position

please sign each page to confirm you have received a copy of this form

5.1.3 The inspection form details 33 different criteria by which the site can be assessed. The lists of criteria are condition titles taken from Volume 1 of the Agency's Library of Licence Conditions. These condition titles are intended as pointers to direct an officer, who is conducting a routine inspection, to inspect these aspects of the operation at this type of facility. The site licence conditions were mapped against these criteria.

5.1.4 For ease of reference the findings of this audit have been placed under the same headings as the criteria inspected at the site on a routine basis. Each section of the audit report also details the OPRA criteria that should be covered by the site licence conditions and therefore assessed against during each site inspection.

6 Specified waste management operations

6.1 OPRA Criterion 1

6.1.1 The purpose of this criterion is to ensure that the operator is carrying out only specified operations.

a Only authorised activities should be undertaken at the site. Authorised activities should be clearly specified in the licence, preferably using the Recovery and Disposal codes, and is in accordance with the permitted activity on the front sheet. Exempt activities undertaken should be clearly segregated from the authorised activities.

b Any operational limits such as licensed area, waste types permitted to be subject to certain operations, storage capacities and defined areas, should be observed.

c Hours of operation should only be conditioned in the licence where justified by the Agency on the basis of site-specific need and after active consultation with the local planning authority. Where condition is justified, the operator should observe the limits.

d Dated and referenced site boundary and layout plans should be available.

6.2 Audit Findings

6.2.1 The site waste management licence authorises the landfilling of household, commercial and demolition wastes as well as certain industrial wastes that have been approved in advance by the Agency. No waste has been deposited at the site under the current waste management licence (all previous deposits were made under the terms of the licence that was revoked). The introduction of the Pollution Prevention and Control (PPC) Regulations issued in 2000 have meant that a new permit is required prior to the restarting of any landfilling operations.

6.2.2 The current site licence holds the operator to maintenance and ongoing environmental monitoring. The site licence is in need of a review to update the closure and aftercare provisions. Prior to the licence review being undertaken, the operator should produce a revised working plan detailing proposed monitoring and maintenance programmes.

Relevant Licence Conditions:		
B1A, B2, B11, C1a to C1l, D1, D2, D3, D6, D7, D28, D44, D45 & D49		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
None	B11	Site Compliance

Actions:
SI Green UK Ltd to submit a revised working plan detailing the aftercare and monitoring programmes for agreement with Environment Agency Wales.
Environment Agency Wales to review the site licence to update as a minimum the monitoring and aftercare requirements.

7 Waste types and quantities

7.1 OPRA Criterion 2

7.1.1 The purpose of this criterion is to ensure that the operator accepts only suitable waste types.

a Only permitted waste types should be accepted at the site. The waste types should be clearly specified in the licence preferably using the European Waste Catalogue[9] (EWC) and be in accordance with the details on the front sheet on the licence. The working plan should further categorise the waste types if not detailed other than by categories such as inert, biodegradable or hazardous.

b For sites that are permitted to accept hazardous wastes the permitted hazardous properties should be suitable and clearly stated in the licence. Sites should not accept waste types outside of these hazardous properties.

c Maximum waste quantities should be specified in the licence against each permitted waste category to confirm charging bands, to comply with Landfill Regulations, and to ensure that the site can handle the throughput.

7.2 Audit Findings

7.2.1 The site is not accepting waste. The introduction of the Pollution Prevention and Control (PPC) Regulations also mean that a new permit would be required should the operator wish to commence disposal operations at the site. All conditions would then superseded by a new permit.

Relevant Licence Conditions:		
C1a to C1l, C2, C3, D4, D27		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
None	None	Site Compliance

Actions:
None

[9] The European Waste Catalogue (EWC) is a classification system for waste materials. It categorises wastes based on a combination of what they are and the process or activity which produced them.

8 Staff understanding of requirements of licence / working plan

8.1 OPRA Criterion 3

8.1.1 The purpose of this criterion is to ensure that supervision of the site is by technically competent managers (TCM) and staff are aware of the requirements of the licence and operating procedures, and their role in meeting the objectives.

a Technical competence:

- **i** The appropriate level and type of technical competent awards should be held.
- **ii** Technically competent managers (TCMs) relying on provisional certificates should be working towards completing units if licence granted less than 2 years ago.
- **iii** TCMs should be in attendance of the site in accordance with agreed minimum attendance times. Records of attendance should be kept in the site diary.
- **iv** Updates of details of technically competent managers should be submitted to the Agency within a reasonable time scale (5 working days).

b Staffing levels should be appropriate in numbers and competence to undertake the tasks on site (e.g. waste checking, records, monitoring, waste segregation).

c The operator should demonstrate adequate management systems in place to control the authorised activities, through up to date working plans, records, training, monitoring and review.

8.2 Audit Findings

8.2.1 The Waste Management Licensing Regulations 1994 (as amended) provide that a person is technically competent if, and only if, he is the holder of one of the certificates (CoTC) awarded by the Waste Management Industry Training and Advisory Board (WAMITAB). The site is currently without a technically competent manager; this needs to be urgently addressed by the licence holder.

8.2.2 The landfill is regularly attended by a member of staff who controls the surface water/leachate pumping regime and he also undertakes maintenance and environmental monitoring. The Agency does not have any details of other staff employed by SI Green UK Ltd who can undertake this role in the event of an emergency. Full details of site staff including their role, responsibilities, contact numbers and availability in case of emergency / holiday absence / illness etc must be supplied by the licence holder. This is especially important due to the current pumping arrangements to control water levels at the site to prevent flooding of the waste mass.

8.2.3 The current licence conditions do not fulfil the OPRA criterion. Records of attendance of technically competent management should be recorded in the site diary. This reporting requirement will be encompassed within the licence modification recommended in chapter 35 of this report.

Relevant Licence Conditions:		
D8, D47		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
D8, D47	D8, D47	No

Actions:
SI Green UK Ltd to supply details of the proposed technically competent manager. The appropriate level and type of technical competent award should be held and a copy of the relevant certificate should be supplied as evidence.
SI Green UK Ltd to provide details of site staff including details of their roles, responsibilities, contact numbers and availability in case of emergency / holiday absence / illness etc.

9 Surface preparation – unengineered sites

9.1 OPRA Criterion 4

9.1.1 The purpose of this criterion is to ensure that risk management system is preserved for uncontained sites to prevent the production of leachate and landfill gas.

9.2 Audit Findings

9.2.1 Not applicable for this site.

10 Engineered landfill containment systems

10.1 OPRA Criterion 5

10.1.1 The purpose of this criterion is to ensure that the engineered system is in accordance with technical guidance and is providing suitable protection of the environment.

- **a Regulation 15 Groundwater protection:** The licence should require investigation and risk assessment of actual and potential discharges of List 1 and List 2 substances, with review every 4 years. Discharge of List 1 should be prohibited and List 2 should be limited if the groundwater is suitable for use.
- **b Specification and agreements:** The landfill should be engineered to meet the requirements of technical guidance. Deviation from specification should be agreed with the Agency. The operator should notify the Agency of the date of intention to undertake preparatory works.
- **c Construction Quality Assurance:** The site should have a CQA plan for each cell being installed, with details of third party Quality Assurance personnel. Updates to the plan should be submitted to the Agency together with detailed method statements. Construction should be in accordance with the plan and prior to waste deposit and a validation report should be submitted and acknowledged by the Agency. Documentation for the CQA should be made available.
- **d Operational standard:** Waste should only be deposited in areas of engineered containment. Any damage to the engineering system should be remediated and reported in CQA documents. Failure to do so could require emergency action.
- **e Monitoring:** Engineering surveys should be completed prior to filling cells, annually thereafter and on completion. Void space should be calculated annually. (Refer to Library condition 2.111 for levels of accuracy, number of monitoring points, etc required.)
- **f Site Completion:** The licence should require on cessation of waste deposit that cells are provided with leachate and landfill gas collection and extraction systems, final cap and cap protection. Standards for the final landform should be specified in terms of final gradients to protect the completed landfill.

10.2 Audit Findings

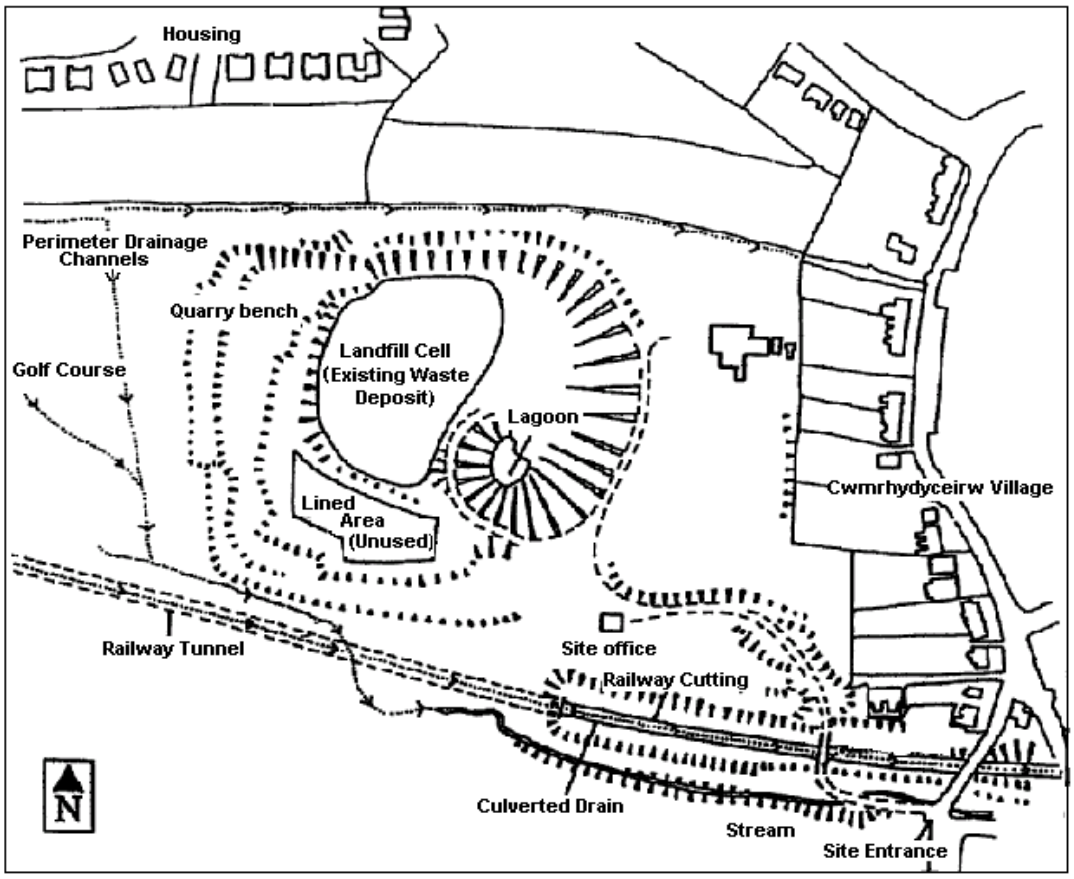
10.2.1 One engineered landfill cell of approximately 10,000m^2 has been constructed at the site. Prior to construction of the cell a stone filled under-drainage system to facilitate groundwater drainage was placed on the quarry base. Stone filled gabions were then placed against the quarry walls to act as vertical drains linking in to the underlying drainage system to drain seepages from the quarry walls.

10.2.2 Approximately one metre thickness of imported clay and a 2.5mm thick high-density polyethylene (HDPE) sheet liner was then constructed on top of the under-drainage system. Another layer of clay of an unknown depth was then placed on to of the HDPE liner. It is believed that this secondary clay layer carried up the sides of the walls of the quarry to a maximum height of up to two metres. A sandy gravel bedding layer was then used outside of the liner for the remaining side wall engineering.

10.2.3 Max Recovery Ltd developed a working method to line the vertical walls of the quarry due to the difficulties in using soils to hold the liner during construction. The method involved the temporary attachment of 10m by 3m HDPE liner to timber panels that were then welded together. The inside face of the liner was then supported using bagged Pulverised Fuel Ash (PFA). The voids between each bag were filled by hand using clay. It is believed that only inert wastes were placed within 10 metres of the vertical liner to help mitigate against differential settlement and uneven lateral loading. Leachate and clean water sumps were also constructed.

10.2.4 The Agency has no details of any quality assurance undertaken during the cell construction or the permeability of the clay used. Documentary evidence on file states that some quality control was exercised during important stages of the containment works, but all welds were only visually inspected and not subject to any physical testing employing any recognised technique.

10.2.5 The main features of the site are shown below:



10.2.6 A second landfill cell was constructed at the site but no waste was ever deposited within it. The liner is not fit for purpose and could never be used as the basis for any engineered containment at the site.




Relevant Licence Conditions:		
B17, B18, B19, B21, B22, B23, B24		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
N/A	N/A	No

Actions:
None

11 Leachate management

11.1 OPRA Criterion 6

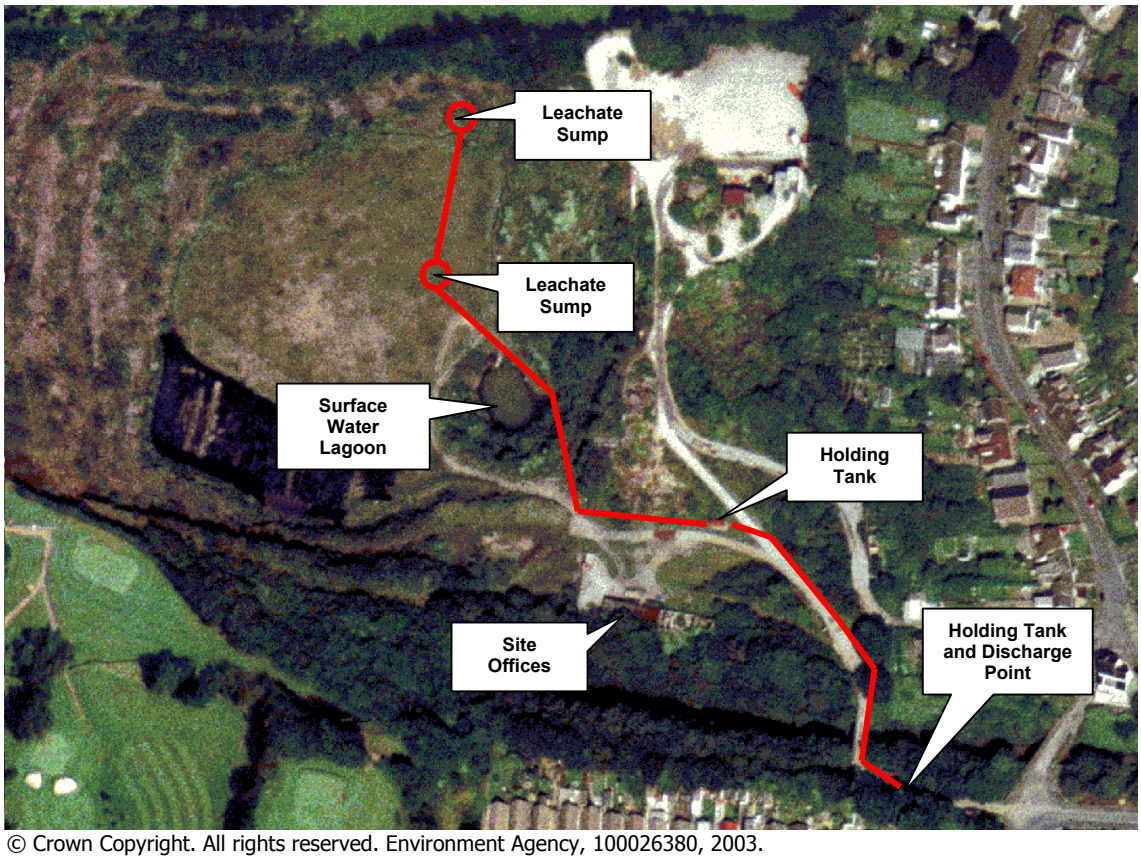
11.1.1 The purpose of this criterion is to ensure that leachate is managed (monitored, collected and disposed of) to prevent pollution of surface water or groundwater.

- **a** **Specification**: Leachate collection and drainage and treatment systems should meet appropriate technical standards. Leachate treatment systems may not have been specified at licence application stage, however any treatment process on site should have a suitable specification and be permitted by the licence.
- **b** **CQA:** The leachate management system should be constructed in accordance with a CQA plan, including details of personnel, methods, and recording. Construction should be in accordance with the plan and prior to waste deposit a Validation Report should be submitted and acknowledged by the Agency. Documentation for the CQA should be made available.
- **c** **Operation**: Leachate collection, extraction and treatment equipment should be inspected and maintained regularly to ensure leachate is controlled and trigger levels (e.g. depth, contaminant levels) are not breached.
- **d** **Monitoring and records:** Inspection and maintenance records should be available, together with explanation for any downtime in leachate management equipment. The management system should ensure that any breach of trigger levels results in action. Appropriate action plans should be available at the site.

11.2 Audit Findings

11.2.1 Leachate is collected at the base of the cell and directed by a series of leachate drains to one of two leachate collection sumps constructed at the site. Leachate drains in to the first leachate collection sump located close to the northern precipice of the quarry[10] from where it is pumped to a second leachate sump[11]. Leachate is then pumped from the quarry base via a lay flat hose to a dedicated un-bunded holding tank. This tank is supplied with a flow meter to monitor the rate of discharge. Leachate is then gravity fed, again via lay flat pipe, along the site access road and discharged within the bund of a secondary holding tank that discharges under trade effluent consent[12] to the foul sewer. There are two Dwr Cymru Welsh Water combined sewer overflows on the foul sewer 2km downstream of the Cwmrhydyceirw Leachate discharge [13]. No Environment Quality Standard breach has been found by the Agency during routine monitoring[14] of the River Tawe, nor any recorded problems with the operation of the combined sewer overflows.

11.2.2 A schematic diagram of the site leachate drainage system is detailed below:



[10] National Grid Reference SS 66525 99372
[11] National Grid Reference 66515 99307
[12] Under the Water Industry Act 1991, discharges into the sewerage system produced in the course of a trade or industry require a trade effluent consent.
[13] Consent Numbers BW4105001 and BP0244001
[14] Environmental Quality Standards: the concentration for example of a substance in the environment, which should not be exceeded in order to protect natural or human uses, prescribed by the Secretary of State.

11.2.3 There are no records on the Agency file detailing the configuration and design of the leachate drainage system within the existing cell.

11.2.4 The leachate holding tank has not been constructed within a bund wall. A bund will provide containment for any loss of leachate from the storage tank should the tank be punctured or subject to vandalism. The bund should consist of a base and four surrounding walls, which must be constructed or lined with a material impermeable to the leachate stored within the tank. The capacity of the bund should be calculated to give containment for 110% of the tanks total contents. All bunding should be designed and constructed in accordance with *CIRIA report 163: Construction of bunds for oils storage tanks*. The tank should also be marked with details of its contents (as required by licence condition B12) and also its maximum storage capacity.

11.2.5 The leachate holding tank is fitted with a valve that can be freely opened/closed using a hand wheel. All valves should be as resistant to unauthorised interference and vandalism as possible. This valve should therefore be fitted with a locking mechanism or provided with a removable hand wheel.

11.2.6 The majority of pipework used to pump leachate (and surface water) to the discharge point consists of lay flat pipe. The pipework runs underneath and alongside the site haul road. The site road is shared with RMC Readymix and is subject to frequent use by heavy plant. There is a significant risk of damage to the lay flat pipework from these vehicle movements. The operator must ensure that all pipework is located off the roadway, and where this is not possible all pipework must be protected from damage.

11.2.7 The leachate pipework discharges within the bund wall of the surface water tank located at the main site entrance. Depending on the rate of flow leachate can back up within the bund walls prior to entering the sewer. The bund walls are fractured in places and the bund floor is partially made out of unconsolidated ground. This can allow leachate to discharge through the bund wall and run in to a nearby stream. The bund walls and base are in need of urgent repair to ensure that they remain impermeable.

11.2.8 The practice of placing the lay flat pipe within the bund whilst it is discharging is not acceptable. The licence holder must ensure that the rate of discharge and the positioning of any pipework guarantees that leachate enters the foul sewer directly and prevents the bund filing up with contaminated waters. The discharge point also lies adjacent to the main site entrance. This entrance often remains open when the landfill is unattended (to allow traffic access to RMC Readymix). As a result the pipework is easily subject to vandalism and could result in a direct discharge to a tributary of the River Tawe.

11.2.9 The site licence requires all leachate generated at the site to be disposed of in accordance with the site working plan. No working plan has been agreed with the operator making the condition unenforceable. The licence holder currently disposes all leachate via the main foul sewer and this practice is unlikely to change for the foreseeable future. The licence should be modified by the Agency to ensure that this practice continues.

Relevant Licence Conditions:		
B1c, B3, B16, D38, D39, E5,E11 B12		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
B12	D38	All

Actions:
A bund wall should be constructed around the leachate holding tank. All bunding should be designed and constructed in accordance with *CIRIA report 163: Construction of bunds for oils storage tanks*. The tank should also be marked with details of its contents and its capacity.
The operator must ensure that all pipework is located off the roadway and where this is not possible all pipework must be shielded from damage.
The bund wall and base surrounding the surface water holding tank must be repaired to ensure it contains all liquids. All bunding should be designed and constructed in accordance with *CIRIA report 163: Construction of bunds for oils storage tanks*. The tank should also be marked with details of its contents and its capacity.
The leachate tank valve must be fitted with a locking mechanism or provided with a removable hand wheel to prevent unauthorised interference or vandalism.
Environment Agency Wales to modify the site licence to ensure that all leachate generated at the site is disposed of to foul sewer.

12 Landfill gas management systems

12.1 OPRA Criterion 7

12.1.1 The purpose of this criterion is to ensure that migration and release of landfill gas is effectively controlled to prevent explosion hazards, odour, amenity nuisance, harm to human health and to minimise contribution to global warming.

a **Specification:** the landfill gas management system should have a specification for design, construction and installation that has been agreed with the Agency. The system should be capable of collecting and extracting all landfill gas generated at the site, and be installed within a specified time after cell completion.

b **Construction quality assurance:** The landfill gas management system should be constructed in accordance with a CQA plan, including details of personnel, methods, and recording. Construction should be in accordance with the plan and a Validation Report should be submitted and acknowledged by the Agency. Documentation for the CQA should be made available.

c **Operation of landfill gas management system**: The effectiveness of the system should be demonstrated with reference to monitoring records, odour inspections and site diary and complaints records.

d **Monitoring and records:** Maintenance of the system is essential to ensure the effectiveness of the system. Inspection and maintenance records should be available, together with explanation for any downtime in landfill gas management equipment. The management system should ensure that any breach of trigger levels results in action. Appropriate action plans should be available at the site.

12.2 Audit Findings

12.2.1 Landfill gas is produced as a result of microbial decomposition of solid waste within the landfill. Wastes previously accepted at Cwmrhydyceirw Quarry include degradable municipal and organic industrial wastes and landfill gas is being generated.

12.2.2 Lateral migration of landfill gas is controlled by the composite lining system engineered across the base and part of the quarry side walls. Landfill gas generated from waste deposited at the site is currently passively vented[15] to atmosphere. There are ten landfill gas monitoring points within the existing waste mass.

[15] A passive venting system is used where it is expected that there will not be sufficient landfill gas generated at the landfill for an active management system (e.g. landfill gas flaring) to work. This type of venting typically uses isolated gas vents comprising of single pipes imbedded in the landfill, allowing gas to flow freely from the waste to the atmosphere.

12.2.3 The site licence requires the landfill gas control system to be progressively installed and completed to the specification detailed in the working plan and maintained at all times. No working plan has been agreed with the operator and therefore these conditions are unenforceable. The passive venting system does not require significant maintenance and its operation does not require day to day supervision. Condition E1 of the site licence does require the licence holder to inspect the gas control system daily. The operator has no records to demonstrate whether daily inspections of the gas control system are being undertaken. This frequency of inspection is considered far too high by the audit team.

12.2.4 The site licence does require landfill gas to be monitored at the site and monitoring undertaken during the audit demonstrated that gas is being collected and released to atmosphere by the current system.

12.2.5 It is recommended that a survey of the passive venting system is undertaken by the operator to as parts of gas management infrastructure may have been rendered ineffective by lateral movement of the waste mass caused by differential settlement of the existing waste deposits.

Relevant Licence Conditions:		
B1b, B3, D42, D43, D44		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
ALL	D44	No

Actions:
A Site survey to check the integrity of all gas wells on site, any remedial action should conform to Waste Management Paper 26B and all information be forwarded to the Agency.

13 Surface water management systems

13.1 OPRA Criterion 8

13.1.1 The purpose of this criterion is to ensure the effective collection of surface water from the landfill site to prevent flooding, uncontrolled production of leachate, contamination of water discharges and erosion of engineered and restored areas.

- **a Specification**: The landfill site should have a surface water management system capable of handling a 50-year storm event.
- **b Construction quality assurance:** The surface water management system should be constructed in accordance with a CQA plan, including details of personnel, methods, and recording of validation of surface water system.
- **c Operation:** The surface water management system should be operated in a manner that protects the integrity of the landfill and surrounding structures and reduces leachate production, flood risk and pollution potential. The effectiveness of the system should be demonstrated by the operator (e.g. monitoring records, compliance with limits in consent to discharge or licence).
- **d Monitoring and records:** The system should be inspected and maintained to continue effective operation. Records should demonstrate such inspection.

13.2 Audit Findings

13.2.1 Surface water is diverted away from the quarry by perimeter drainage channels that discharge to a tributary of the Tawe. These channels are currently overgrown and require some maintenance to ensure easy access in the event of a blockage.

13.2.2 During the audit a number of groundwater and surface water issues were discharging through the rock wall and falling to the quarry void. This water was then being directed to the main lagoon either by the drainage infrastructure or across the landfill cap.

13.2.3 Prior to construction of the existing cell, a stone filled under drainage system to facilitate groundwater drainage was constructed on the quarry base at 31mAOD. Stone filled gabions against the quarry faces act as vertical drains that link in to the under-drainage system. This drainage layer discharges into a lagoon that is routinely pumped (depending on the amount of rainfall) to maintain groundwater levels below the base of the waste cell.

13.2.4 Water from the lagoon is pumped via a green coloured lay flat hose (partially encased within a red steel pipe) than runs parallel to the leachate pipework. This hose runs adjacent to the leachate holding tank from where its is gravity fed, underneath and along the site access road and in to a holding tank near the site entrance. Water from this tank is then discharged under trade effluent consent to the foul sewer.

13.2.5 There is currently no engineered surface water management system to control site run off from the capped cell. The profile of the final cap does however allow the capped area to shed water towards stone drains that drain to the on-site lagoon.

13.2.6 A pump failure during heavy rainfall in 1987 resulted in the water level in the clean water sump rising and coming in to contact with deposited waste. As a result of the flooding the operator was instructed that all water from the sump must be disposed of to foul sewer until such time that they were informed in writing that the quality was sufficient to recommence discharge to the stream. Further studies since the incident have also suggested that the existing containment system is leaking and therefore all waters collected in the sump are pumped to foul sewer for disposal.

13.2.7 This event demonstrates the importance of regular pumping to ensure that groundwater's do not flood the existing waste mass. It is recommended that Environment Agency Wales draw up an internal emergency plan detailing the availability and cost of equipment required to continue pumping should an emergency situation arise and the licence holder is unavailable.

13.2.8 The bund surrounding the surface water holding tank bund is in need of repair (refer to chapter 11) and does not provide sufficient capacity to hold 110% of the total contents of the tank. All bunding should be designed and constructed in accordance with *CIRIA report 163: Construction of bunds for oils storage tanks*. The tank should also be marked with details of its contents (as required by licence condition B12) and also its capacity.

Relevant Licence Conditions:		
B3, D40, E1, B13, B14, D15 B12		
WML Conditions Operator Not Compliant With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
B12	None	No

Actions:
The bund wall and base surrounding the surface water holding tank must be repaired to ensure it contains all liquid. All bunding should be designed and constructed in accordance with *CIRIA report 163: Construction of bunds for oils storage tanks*. The tank should also be marked with details of its contents and its capacity.
Environment Agency Wales to draw up an internal emergency plan detailing the availability and cost of equipment required to continue pumping should an emergency situation arise and the licence holder is unavailable.
The perimeter surface water interception drains located on the site boundary require maintenance to ensure easy access in the event of a blockage.

14 Installation, maintenance and protection of final cap

14.1 OPRA Criterion 9

14.1.1 The purpose of this criterion is to ensure the timely installation and effectiveness of the cap to prevent liquid infiltration, gas release, surface water contamination and detriment to the amenity.

a **Specification:** The cap specification should meet the terms of the risk assessment and be agreed with the Agency, and include materials, time of installation, method of installation and suitability.

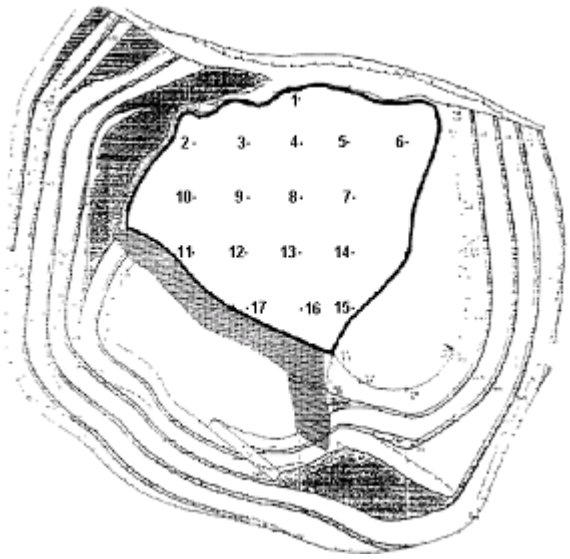
b **Construction quality assurance**: The cap should be constructed in accordance with a CQA plan. Construction should be in accordance with the plan and a Validation Report should be submitted and acknowledged by the Agency. Documentation for the CQA should be made available.

c **Operation:** The cells should be capped as soon as possible (usually within 6 months) from attainment of final levels at the cell. The operator should be able to demonstrate the effectiveness of the capping (integrity, materials, protection, monitoring, CQA records, inspection and maintenance records).

14.2 Audit Findings

14.2.1 The existing waste cell was capped between October 1992 to March 1993 with a clay layer believed to range in thickness of between 0.5 and 1 m. Waste Management Advisory Consultants Ltd undertook permeability testing on the cap during February 1993. The results are summarised below:

Permeability Results			
1	5.00 x10^{-9}	**10**	1.29 x10^{-9}
2	8.77 x10^{-9}	**11**	2.06 x10^{-9}
3	6.42 x10^{-9}	**12**	1.58 x10^{-9}
4	2.71 x10^{-9}	**13**	3.42 x10^{-9}
5	9.67 x10^{-9}	**14**	2.44 x10^{-9}
6	5.25 x10^{-9}	**15**	1.90 x10^{-9}
7	4.84 x10^{-9}	**16**	1.66 x10^{-9}
8	1.69 x10^{-9}	**17**	3.59 x10^{-9}
9	6.83 x10^{-9}		



14.2.2 The landfill cap is currently overgrown with grass and small shrubs.

14.2.3 Due to the overgrowth it is difficult to ascertain whether the integrity of the cap has been threatened due to differential settlement of the waste and/or plant roots penetrating through the clay layer. There is no visual evidence that the capping layer has been damaged and no leachate breakouts have been detected. This indicates that the cap is still fit for purpose. In the event that the cap was damaged and water was penetrating through the cap, these waters would be collected in the site drainage system and discharged to foul sewer. Surface water shed from the cap is also disposed of in this manner.

Relevant Licence Conditions:		
B3, F3, F4		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
N/A	None	Yes

Actions:
SI Green UK Ltd to undertake works to ensure that the integrity of the cap is not compromised by plant growth

15 Site identification board

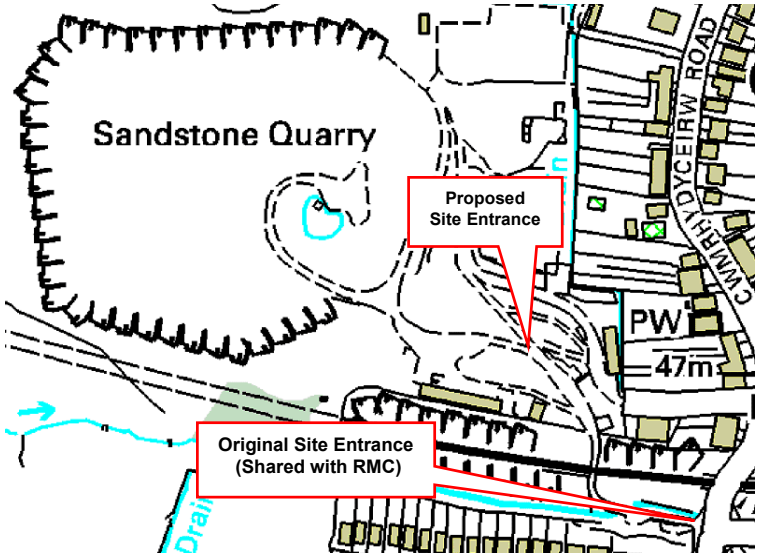
15.1 OPRA Criterion 10

15.1.1 The purpose of this criterion is to ensure that the site can be identified to provide information for emergencies, site specific enquiries or complaints and to help users comply with the Duty of Care.

a The site identification board should have the following details: current information on the operator (name, address, contact numbers), site licence number and Agency contact information (emergency number).

15.2 Audit Findings

15.2.1 The current licence conditions require '*an identification board of durable material and finish should be displayed at the entrance to the facility at the location of the working plan'.* A working plan has never been agreed and since the recent erection of new security fencing and gates within the site, the operator requested that the location of the site entrance be changed. SI Green UK Ltd wished to change the entrance as the roadway entering the quarry is shared with Ready Mixed Concrete Ltd. The Agency would not agree to this change for security reasons (see chapter 16).



15.2.2 As a result there are two site identification boards displayed at the site; one at the main gate leading on to Vicarage Road and a second on the inner fence that separates the original quarry area from the haul road and the RMC site.

15.2.3 The site licence[16] does not prescribe all the information currently required by the Agency. The licence holder should amend the site notice board to contain the following information:

a Site name and address;

b Licence Holder name (company name, not individual name unless justified as necessary);

c Operator name (company name, not individual name unless justified as necessary);

d Environment Agency waste management licence number 34048;

e Emergency contact name and telephone number (for security reasons, personal names and home phone numbers should not be used except where no alternative is practicable);

f Statement that the site is licensed by the Environment Agency;

g Agency national numbers: 08708 506506 and 0800 807060 or as subsequently notified in writing by the Agency;

h Days and hours site is open to receive waste.

Relevant Licence Conditions:		
B5		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
None	None	No

Actions:
Existing site notice boards should be amended to include all the information prescribed above.
Agency to modify licence should SI Green UK Ltd not voluntarily update the site identification boards

[16] The information that should be prescribed on the site identification board is specified by Condition 5, Schedule B of the site waste management licence.

16 Site security

16.1 OPRA Criterion 11

16.1.1 The purpose of this criterion is to prevent unauthorised access that might cause harm to health or environment through interference with waste and pollution control systems.

a **Specification:** The site security measures must be suitable on the basis of site location, likelihood of harm and consequence of disturbance. All of the site should be considered in the assessment. The licence should specify standards for design, operation and maintenance.

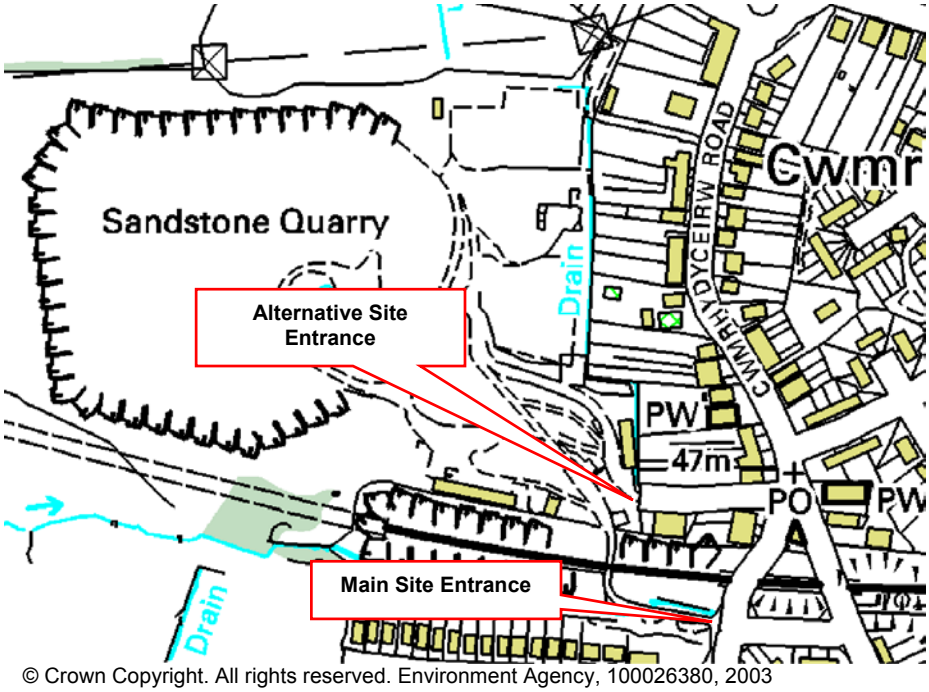
b **Operation:** The operator should be able to demonstrate the effectiveness of the security by reference to recording events of unauthorised access, inspection and maintenance.

16.2 Audit Findings

16.2.1 The audit team found an area of broken fencing at the top of site (near the RMC site) in breach of the site licence condition B4. Discussions with the site staff revealed that an RMC Readymix vehicle using the site road had caused the damage. The licence holder had already ordered replacement posts and chain link fencing. Hazard warning tape had also been placed across the fence line. No further action was taken by the Agency. The repairs had been completed by the end of the audit period.

16.2.2 A limited inspection of the north, west and south perimeter fencing was carried out and no breaches in security were detected. The perimeter was heavily overgrown making access to the site difficult.

16.2.3 The main access to the landfill site is via a shared entrance off Chemical Road. As the landfill is currently non-operational, the majority of traffic using the entrance is from Ready Mix Concrete Ltd. The main gate is often left open when the landfill site is unattended. This allows free access to the surface water holding tank and the discharge point to foul sewer.



16.2.4 A second gated entrance to the quarry leads on to Cwmrhydyceirw Road. Only smaller vehicles using the concrete batching plant use this access route. The erection of security fencing along the site road does prevent unauthorised access to the quarry, surface water lagoon and pump house from the site road. It will not prevent unauthorised access to the surface water holding tank or discharge point.

16.2.5 SI Green UK Ltd need to take steps to ensure that the surface water holding tank and discharge point cannot be tampered with when pumping to foul sewer. Until the discharge point and surface water storage tank is made secure site staff must undertake regular inspections of the discharge point when either of the site access points are open and the pumps are active. The time of each inspection and any remedial actions must be recorded in a site diary. All pumping must cease and the surface water tank must be empty of all contents if the site access gates remain open when the site is unattended.

Relevant Licence Conditions:		
B4		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
B4	All	All

Actions:

SI Green UK Ltd need to take steps to ensure that the surface water holding tank and discharge point cannot be tampered if the main access gate is to remain open. Until the discharge point and surface water storage tank is made secure site staff must undertake regular inspections of the discharge point when either of the site access points are open and the pumps are active. The time of each inspection and any remedial actions must be recorded in a site diary.

17 Mud and debris on the road

17.1 OPRA Criterion 12

17.1.1 The purpose of this criterion is to ensure that mud and debris are not deposited on the highway, to reduce traffic hazard and detriment to the amenity.

a The operator should be able to demonstrate effective measures to prevent mud and debris on the road – wheel wash, cleaning of site roads, sheeting of loads, etc.

b Where there is a breach of the preventative measures, remedial cleaning of public areas should be implemented and action plans should be available at the site.

17.2 Audit Findings

17.2.1 The site is not receiving wastes or undertaking engineering works that may result in mud and debris escaping from the site. The site road is shared with RMC Readymix and is the primary access route to the concrete batching plant. Due to this shared access, in the event that mud and debris were detected, it may be difficult to attribute any deposit to the licence holder.

17.2.2 The licence conditions do no currently meet the Agency's OPRA criteria. A licence review should be considered should the licence holder begin any works that may lead to mud and debris being tracked from the site on to the public highway.

Relevant Licence Conditions:		
B7, B9, D14, D30		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
none	4.1.1	No

Actions:
The licence conditions do currently meet the Agency's OPRA criteria. Environment Agency Wales should consider a licence review should the licence holder begin any works that may lead to mud and debris being tracked from the site on to the public highway.

18 Potentially polluting leaks and spillages of waste

18.1 OPRA Criterion 13

18.1.1 The purpose of this criterion is to minimise potentially polluting leaks and spillages of waste (or materials used in combination with those wastes), and ensure they are controlled to reduce environmental impact through the provision of appropriate equipment and procedures. Hazardous waste sites should have a leak and spillage plan.

a **Specification:** The licence/working plan should specify standards for prevention and control of leaks and spillages, which could include the use of absorbents, booms, etc. Attention should be paid to loading, unloading, filling and emptying of containers, and the inspection and maintenance of containers and equipment (such as pipe work and plant).

b **Operation:** The operator should demonstrate the effective use of the equipment and procedures.

c **Monitoring:** The operator should have a procedure to analyse the cause of leaks and spillages and should take preventative action to eliminate repetition of such an event.

18.2 Audit Findings

18.2.1 The site licence requires measures to be taken in accordance with the site working plan to prevent damage to pipework, valves, pumps and storage tanks. No working plan has been agreed with SI Green UK Ltd and therefore this condition remains unenforceable. There are no conditions within the licence detailing measures to be taken in event of a spillage that could cause pollution.

18.2.2 The audit also found evidence of recent and historical oil spillage when filling and servicing the pump. A minor oil sheen was also noted on waters within the lagoon. The operator should document site specific procedures for the filling and maintenance of the site pumps and equipment to minimise the risk of polluting spillages. All oil containers must be stored within a bunded area.

Relevant Licence Conditions:		
D15		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
All	All	All

Actions:
SI Green UK Ltd to document site specific procedures for the filling and maintenance of the site pumps and equipment to minimise the risk of polluting spillages. Staff must adhere to the procedures once they have been agreed with the Agency.
Environment Agency Wales to provide copies of relevant Pollution Prevention Guidance Notes to SI Green UK Ltd for information.

19 Fires on site

19.1 OPRA Criterion 14

19.1.1 The purpose of this criterion is to prevent fires on sites and to ensure effective procedures to prevent or minimise pollution of the environment.

a Unless waste is legally incinerated there should be no burning of waste on site. Procedures should state fire prevention and control procedures relevant to site risk from the waste types and permitted activities (e.g. delivery of burning/hot waste to site, waste burning in landfill cell, fires in quarantine area). Staff should be aware and understand these procedures.

19.2 Audit Findings

19.2.1 The site licence prohibits wastes to be burned on the site. No evidence of wastes being burned on the site was noted during the audit. The current licence requires SI Green UK Ltd to report any outbreaks of fire to the local fire brigade and also the Environment Agency.

19.2.2 Licence condition D12 requires the licence holder to provide fire fighting equipment and emergency water supplies. This equipment should be provided, maintained and identified in accordance the site working plan. No working plan has been agreed with SI Green UK Ltd and therefore part of this condition remains unenforceable.

19.2.3 Condition's D13 and B29 of the site waste management licence refer to an emergency plan as required by licence condition B25. This condition reference is incorrect and should refer to licence condition B28. The licence requires the production of an emergency plan to be implemented in the event of the release of any hazardous material, liquid or gas. The plan must be reviewed on a six monthly basis. SI Green UK Ltd must submit an emergency plan (including a fire action plan) to the Agency for agreement. Once agreed the action plan will form part of the site working plan and the procedures adhered to.

Relevant Licence Conditions:		
B28, D12, D13		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
B28, D12	**D13**	**Yes**

Actions:
SI Green UK Ltd must submit an emergency plan (including a fire action plan detailing fire prevention control measures and equipment) to the Agency for agreement. Once agreed the action plan will form part of the site working plan and the procedures adhered to.

20 Waste acceptance and control procedures

20.1 OPRA Criterion 15

20.1.1 The purpose of this criterion is to ensure that only permitted and suitable wastes are accepted at the site, and that waste is stored in an appropriate manner. Incompatible wastes should be segregated safely.

a **Waste acceptance procedures:** The site must have procedures, suitable areas, equipment and personnel to ensure that waste is checked for compliance with the waste acceptance criteria in the licence. Depending on the type of site this could include:

- **i** ***Level 1 Basic Characterisation***: Thorough determination of leaching and/or other characteristic properties of the waste such as composition, hazardous properties and concentration of individual constituents. The characterisation should enable the correct handling and disposal of the waste at the site.
- **ii** ***Level 2 Compliance Testing****:* Periodic checking that waste has not changed since Level 1 characterisation. This should usually be carried at least once a year on each individual waste stream.
- **iii** ***Level 3 On-site Verification****:* Visual inspection before and after loading and documentation checking.
- **iv** (Further explanation of this can be found in the Agency's Regulatory Guidance Note 2: Interim Waste Acceptance Criteria and Procedures.)

b **Waste sampling and testing:** Standards for sampling and testing to confirm composition and characteristics should be available and suitable. Procedures should be in place to ensure that wastes are tested to assess reactions prior to electing an appropriate treatment method.

c **Waste rejection**: The site must have procedures to reject non-conforming and non-permitted wastes, with suitable quarantine areas and recording systems. Waste should be removed from here to a suitable site as soon as practicable, and preferably within 5 working days.

d **Waste identification:** Waste on arrival should be recorded and labelled such that its contents and characteristics are identified.

e **Records:** Records of waste received, rejected and despatched should be kept, together with relevant transfer and consignment notes. A waste inventory to track wastes at hazardous waste transfer stations and treatment plants should be used.

f **Waste quantity measurement systems:** All sites should have a procedure to enable the waste inputs and outputs to be quantified either by weighing or estimation from volume. Accurate volume/weight conversion factors should be used.

g **Waste storage:** Waste in storage should be segregated safely from incompatible wastes. Bays and storage areas should be labelled. Safe storage depends on adequate space, planning, suitable containment, segregation, visibility and identification. Duration of storage should be limited to prevent accumulation of waste and to minimise risk to the environment.

h **Waste treatment:** Treatment should be appropriate for the waste type. The treatment should be undertaken in accordance with a quality control system that defines inputs, the process, outputs, monitoring and supervision so that the there are clear objectives. Staff should be familiar with action plans for dealing with off-spec wastes/treatment. Treatment vessels should be enclosed and vented via appropriate abatement equipment.

20.2 Audit Findings

20.2.1 No wastes are being accepted at the site. A Pollution Prevention and Control (PPC) Permit will be required should SI Green UK Ltd wish to recommence the landfilling of waste at the site. Current site licence conditions also prevent any new waste deposits. This section is not applicable.

Relevant Licence Conditions:		
B8, D4, D5, D9, D10		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
None	All	All

Actions:
None

21 Phasing and methods of waste discharge and emplacement

21.1 OPRA Criterion 16

21.1.1 The purpose of this criterion is to ensure that waste is deposited in a manner that minimises short-term risks such as aerial emissions, and longer-term risks to the design performance of the site, such as damage to the engineered containment.

a Waste should be emplaced in a manner, which will not cause damage to the site containment or pollution management systems. Any damage should be rectified in accordance with current technical guidance and with CQA.

b Waste deposit methods that minimise aerial emissions should be used (e.g. limiting size of working face or areas), and there should be procedures to deal with difficult wastes (powders, odorous wastes, hazardous wastes etc).

c Methods of working should enable waste compaction, segregation of incompatible wastes, and waste checks at the deposit area.

21.2 Audit Findings

21.2.1 No wastes are being accepted at the site. A Pollution Prevention and Control (PPC) Permit would be required should SI Green UK Ltd wish to recommence the landfilling of waste at the site. This section is not applicable.

Relevant Licence Conditions:		
B3, B20, D11, D19, D20a, D20b, D20, D21, D22, D23, D24, D26, D27, D44, F1, F2		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
None	All	All

Actions:
None

22 Use of daily and intermediate cover

22.1 OPRA Criterion 17

22.1.1 The purpose of this criterion is to ensure that litter, odour, vermin and fire risk are minimised, to prevent longer term uncontrolled releases and to enhance the working of the pollution prevention systems.

a Waste should be covered by the end of the working day (unless the objectives can be achieved by other means or on the basis of the site specific risk assessment). Cover materials should be available and suitable for the task, and placed and removed appropriately. Intermediate cover should be maintained. Difficult wastes should be suitably covered.

b Procedures should specify materials (suitability, impermeability, contaminant levels), method of installation (depth, gradients), maintenance, and removal (so that no waste deposited on intermediate cover) should be included.

22.2 Audit Findings

22.2.1 No waste disposal operations are being undertaken at the site. This section is not applicable.

Relevant Licence Conditions:		
None		
WML Conditions Operator Not Compliant With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
None	None	None

Actions:
None

23 Special wastes

23.1 OPRA Criterion 18

23.1.1 The purpose of this criterion is to ensure that special wastes are handled and recorded in an appropriate manner, and that records are kept to enable the completion criteria to be met.

a Special wastes should be handled in an appropriate manner to meet specific storage or disposal requirements, for example to improve containment, segregation or security. Standards can be found in licences (shells), waste management papers and other technical guidance.

b The operator should keep correct records of special waste consignments and the deposit of special waste.

23.2 Audit Findings

23.2.1 No wastes are being accepted at the site or have been deposited under the terms of the current waste management licence. A Pollution Prevention and Control (PPC) Permit would be required should SI Green UK Ltd wish to recommence the landfilling of waste at the site. This section is not applicable.

Relevant Licence Conditions:		
None		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
None	None	None

Actions:
None

24 Landfill gas monitoring and reporting systems

24.1 OPRA Criterion 19

24.1.1 The purpose of this criterion is to ensure that landfill gas is monitored outside of the waste or containment to check on the effectiveness of the landfill gas controls.

a The licence should require standards for the landfill gas monitoring system in accordance with Agency guidance regarding design of the system (numbers, specification), CQA, inspection and maintenance, determinands, frequencies and trigger levels.

b The operator should provide evidence of appropriate monitoring (data) and analysis of the results through quality assurance of the system to include methodology, equipment, laboratories, personnel and records.

c Action plans should be available and followed in the event of a trigger level being exceeded.

24.2 Audit Findings

24.2.1 Monitoring undertaken by Jacobs Gibb in 1996 indicated that levels of Methane detected within four boreholes external to the waste mass were between 0.1-0.3%. These results indicated that gas was not migrating and the levels detected were considered to be background levels naturally occurring from the local strata.

24.2.2 The results of landfill gas monitoring undertaken during the audit demonstrates that anaerobic[17] conditions still exist within the waste mass leading to the production of Methane. Further gas monitoring of boreholes external to the waste mass is required to ensure that gas is not migrating from the site. To ensure representative monitoring further boreholes may be required.

24.2.3 SI Green UK Ltd to provide a monitoring plan detailing the construction and location of all external gas monitoring boreholes (existing and planned), proposed monitoring frequencies, determinands for analysis and also an action plan detailing actions to be taken in the event that set trigger levels are exceeded. The monitoring plan, once agreed, should be incorporated in to the site working plan. The Agency should consider modifying the site licence to ensure the report is submitted.

24.2.4 The site licence has a number of conditions that detail landfill gas monitoring requirements. The conditions are flawed and incorrectly reference other relevant conditions making the licence ambiguous and unenforceable. The Agency has not received any gas monitoring data from the operator since the transfer of the licence.

[17] The term used to describe an environment or a condition which is free of oxygen.

Relevant Licence Conditions:		
B3, B15, D13, E7, E8, E9, E10, E11, E12, E13		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
All	All	All

Actions:
SI Green UK Ltd to undertake further gas monitoring of all boreholes to ensure that gas is not migrating from the site. A monitoring regime should then be set up ensuring that reports are sent to the Agency on a monthly basis. The reports should include landfill gas concentrations from all wells on site and off site and include methane, oxygen, carbon dioxide and atmospheric pressure. SI Green UK Ltd to review the locations of all boreholes to ensure representative monitoring and provide details of their construction.
SI Green UK Ltd to provide a monitoring plan detailing the construction and location of all external gas monitoring boreholes (existing and planned), proposed monitoring frequencies, determinands for analysis and also an action plan detailing actions to be taken in the event that set trigger levels are exceeded. The monitoring plan should be incorporated in to the site working plan.

25 Monitoring of landfill gas within the site

25.1 OPRA Criterion 20

25.1.1 The purpose of this criterion is to ensure that the generation of landfill gas is monitored to manage the risks to environment/human health and that the design principles are adhered to.

- **a** The licence should set the standard for landfill gas monitoring within waste/engineered containment such that it meets Agency guidance with reference to determinands, units, frequencies and trigger levels. Meteorological conditions should be identified and measured as necessary to support environmental monitoring or operational controls.
- **b** The operator should provide evidence of appropriate monitoring (data) and analysis of the results through quality assurance of the system to include methodology, equipment, laboratories, personnel and records.
- **c** Action plans should be available and followed in the event of a trigger level being exceeded.
- **d** Trends in gas production should be analysed by the operator, and where necessary the operator should be designing/installing improvements to the gas management system.

25.2 Audit Findings

25.2.1 The site licence has a number of conditions that detail landfill gas monitoring requirements. The conditions are flawed and incorrectly reference other relevant conditions making the licence ambiguous and unenforceable.

25.2.2 The Agency has not received any gas monitoring data from the operator since the transfer of the licence. The Agency is aware that the licence holder is undertaking gas monitoring at the site but the data has not been submitted to the Agency on a routine basis.

25.2.3 During the audit the Agency undertook gas monitoring at seven monitoring locations including both landfill gas vents and leachate monitoring wells. No gas levels were found within the explosive limits. The results are tabulated overleaf:

Borehole	Gas Monitor results (%) : Air Pressure 1007mb			
Leachate Well	**CH4**	**CO2**	**O2**	**Bal**
CWM GLW01	71.4	14.6	00.9	13.2
CWM GLW05	00.2	00.0	20.8	79.0
Gas Vent				
CWM GV04	00.1	00.1	20.5	79.0
CWMGV05	00.8	02.6	15.2	81.5
CWM GV06	48.5	16.0	1.2	34.2
CWM GAV02 H2S: 11ppm	61.3	13.8	01.1	24.0

25.2.4 It is clear from the results that the site is actively producing landfill gas. It is therefore important that the SI Green UK Ltd undertake regular monitoring to determine the extent of these releases to atmosphere

25.2.5 SI Green UK Ltd must provide a monitoring plan detailing the construction and location of all gas monitoring boreholes (existing and planned), proposed monitoring frequencies, determinands for analysis and also an action plan detailing actions to be taken in the event that set trigger levels are exceeded. The monitoring plan, once agreed, should be incorporated in to the site working plan. The Agency should consider modifying the site licence to ensure the report is submitted.

Relevant Licence Conditions:		
D15, B25, B26, D13, E7, E8, E9, E10, E11, E12, E13		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
All	all	partial

Actions:
SI Green UK Ltd must provide a monitoring plan detailing the construction and location of all gas monitoring boreholes (existing and planned), proposed monitoring frequencies, determinands for analysis and also an action plan detailing actions to be taken in the event that set trigger levels are exceeded. The monitoring plan, once agreed, should be incorporated in to the site working plan. The Agency should consider modifying the site licence to ensure the report is submitted.

26 Leachate monitoring and reporting

26.1 OPRA Criterion 21

26.1.1 The purpose of this criterion is to ensure that leachate is monitored to test the effectiveness of the engineering system, leachate quality and impact on the environment.

a The licence should set standards for leachate monitoring and sampling for concentrations, depths, frequencies and records.

b The operator should provide evidence of appropriate monitoring (data) and analysis of the results through quality assurance of the system to include methodology, equipment, laboratories, personnel and records.

c Action plans should be available and followed in the event of a trigger level being exceeded.

d Trends in leachate production should be analysed by the operator, and where necessary the operator should be designing/installing improvements to the leachate management system.

26.2 Audit Findings

26.2.1 There are currently five boreholes[18] and two sumps[19] from which leachate can be sampled and analysed. The site licence requires leachate wells to be installed at locations specified within the site working plan. No working plan has been agreed with the Agency and this condition is unenforceable. The number and location of boreholes installed at the site is currently considered to be adequate for monitoring during the post closure phase. This may be reviewed subject to available monitoring data.

26.2.2 The site licence does require leachate head levels to be kept to a minimum and under no circumstances be allowed to rise above one metre as measured from the base of the leachate sump at any of the monitoring locations. Although the audit team found that there was minimal leachate available for sampling at the monitoring points within the landfill it is recommended that that the operator consider further boreholes to be drilled to determine the leachate head within the site as the integrity on current boreholes is unclear.

26.2.3 The site licence requires samples of leachate to be taken from each leachate monitoring well at three month intervals. The samples should be analysed in-accordance with the working plan and the results forwarded to the Agency. No working plan has been agreed and therefore no determinands for analysis are specified.

[18] Borehole Numbers CWMGLW01 to CWMGLW05 (inclusive)
[19] CWMLS01 and CWMLS02

26.2.4 The Agency has received a limited amount of leachate data and there is no evidence that the three month sampling regime is being adhered to in full. SI Green UK Ltd must therefore undertake a three monthly leachate sampling regime for those determinands specified with Waste Management Paper 4 unless otherwise agreed with the Agency.

26.2.5 A number of boreholes were sampled by the Agency during the period of the audit. Only two boreholes[20] contained sufficient leachate to take a representative sample. Three boreholes were of "shallow depth" when compared to other boreholes on site[21]. There may be a possibility of borehole collapse at these boreholes. A survey of all existing boreholes should be undertaken by SI Green UK Ltd to determine that they remain fit for purpose. The final leachate chamber, which is pumped by the leachate management system on site and then eventually to sewer was also sampled. All monitoring results can be found in Appendix B.

26.2.6 The analysis of the Agency samples shows typical results overall for industrial type leachate with high reading found for BOD, COD, Ammonia, Mercury, Chloride, Potassium, Sodium and Magnesium and so on. The borehole CWM GLW01 had the highest concentrations of contaminants and was located in the centre of the waste deposit.

26.2.7 The Leachate sump CWMSW02 had far lower levels of contaminants compared to the others where as this sump should be collecting all leachate flow from the landfill. There could be a number of reasons for this as groundwater and surface water may be ingressing into this sump and thus diluting the leachate. This will require thorough investigation by the site operator.

26.2.8 The leachate quality from the leachate sump is of sufficient dilution not breach the respective Environment Quality Standards if the Afon Tawe, with the exception of the Chemical Oxygen Demand result, 12 mg/l. However, it is not this reports recommendation to allow any discharge of this water to the riverine environment as it is plainly seen that contamination levels of leachate within the waste mass are far in excess of any EQS. It also must be noted that these samples collected are not representative of the leachate quality and only provided a "snapshot".

Relevant Licence Conditions:		
B3, B25, B26, D13, E3, E4, E5, D15 , D39, D40		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
partial	ALL	partial

Actions:

[20] CWMLS02 and CWMGLW01
[21] CWMGV04, CWMGV05 and CWMGLW05

Actions:
SI Green UK Ltd to consider the installation of further boreholes to determine the leachate head within the site.
SI Green UK Ltd must undertake a three monthly leachate sampling regime for those determinands specified with Waste Management Paper 4 unless otherwise agreed with the Agency.
The operator should undertake a review of all monitoring information and re-align the monitoring regime with current Agency standards. All leachate sumps should be surveyed to ensure that they are collecting leachate from the landfill. Groundwater and surface water may be ingressing into these sumps and thus diluting the contamination levels. This will require thorough investigation by the site operator. The operator should undertake a comprehensive survey of all monitoring locations to check the integrity of the borehole structure, leachate sumps and submit borehole logs to the Agency

27 Groundwater quality monitoring and reporting

27.1 OPRA Criterion 22

27.1.1 The purpose of this criterion is to ensure that the engineered containment is meeting the performance standard and to enable assessment of the impact of the site on groundwater quality.

- **a** The licence should set standards for groundwater monitoring and sampling for determinands, frequencies, monitoring points (number, design and CQA) and records. Validation reports should be submitted to the Agency and other CQA documentation should be made available. Monitoring systems should be inspected and maintained.
- **b** The operator should provide evidence of appropriate monitoring (data) and analysis of the results through quality assurance of the system to include methodology, equipment, laboratories, personnel and records.
- **c** Action plans should be available and followed in the event of a trigger level being exceeded. Action plans should include procedures for checking results, action to be taken and analysis of the remedial action.
- **d** Trends in groundwater data should be analysed by the operator, and where necessary the operator should be designing/installing improvements to the containment system.

27.2 Audit Findings

27.2.1 The site licence requires samples of groundwater to be taken at three-month intervals. The samples should be analysed in-accordance with the working plan and the results forwarded to the Agency. No working plan has been agreed and therefore no determinands for analysis are specified.

27.2.2 The Agency has received a limited amount of groundwater data and there is no evidence that the three month sampling regime is being adhered to. SI Green UK Ltd must therefore undertake a three monthly groundwater sampling regime for those determinands specified with Waste Management Paper 4 unless otherwise agreed with the Agency.

27.2.3 SI Green UK Ltd must also provide a monitoring plan detailing the construction and location of all groundwater monitoring boreholes (existing and planned), proposed monitoring frequencies, determinands for analysis and also an action plan detailing actions to be taken in the event that set trigger levels are exceeded. The monitoring plan, once agreed, should be incorporated in to the site working plan. SI Green UK Ltd must take in to consideration the requirements of Regulation 15 of the Waste Management Licensing Regulations when developing the monitoring strategy .The Agency should consider modifying the site licence to ensure the report is submitted.

27.2.4 The operator had forwarded limited groundwater monitoring to the Agency. However the operator has not undertaken any reviews or trend analysis of the data and has in fact relied on monitoring results from the Environmental Health Department of City and Council of Swansea.

27.2.5 The Environmental Health Department of City and Council of Swansea does monitor private drinking wells scattered around the Cwmrhydyceirw site

Relevant Licence Conditions:		
B3, B15, B25, B26, E2, D13, E4, D41		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
Partial	All	All

Actions:

Operator should review and interpretate all available monitoring data and implement a monitoring programme in line with Regulation 15 Groundwater Protection. The review should also investigate all existing groundwater wells integrity and hydrological information to ensure the locations are correctly placed. The Agency and Operator should investigate the need for offsite wells.

28 Surface water monitoring and reporting

28.1 OPRA Criterion 23

28.1.1 The purpose of this criterion is to ensure that the site is not adversely affecting surface water quality.

a The licence should set standards for surface water monitoring and sampling for determinands, frequencies, monitoring points (number, design), records.

b The operator should provide evidence of appropriate monitoring (data) and analysis of the results through records, equipment (including maintenance), use of laboratories, etc.

c Action plans should be available and adhered to in the event of a trigger level being exceeded. Action plans should include procedures for checking results, action to be taken and analysis of the remedial action.

d Trends in surface water data should be analysed by the operator, and where necessary the operator should be designing/installing improvements to the site containment system.

28.2 Audit Findings

28.2.1 The site licence requires samples of surface water to be taken at three month intervals at locations specified in the working plan. No working plan has been agreed and therefore this condition is unenforceable. SI Green UK ltd have not submitted any surface water monitoring data to the Agency No monitoring data for surface water has been forwarded to the Agency.

28.2.2 SI Green UK Ltd must provide a surface water monitoring and action plan. The plan must detail the and location of all surface water monitoring points proposed monitoring frequencies, determinands for analysis and also an action plan detailing actions to be taken in the event that set trigger levels are exceeded. The monitoring plan, once agreed, should be incorporated in to the site working plan. The Agency should consider modifying the site licence to ensure the report is submitted.

Relevant Licence Conditions:		
B3, B25, B26, D13, E6, E1		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
Un Agreed Working Plan	All	None

Actions:
SI Green UK Ltd must provide a surface water monitoring and action plan. The plan must detail the and location of all surface water monitoring points proposed monitoring frequencies, determinands for analysis and also an action plan detailing actions to be taken in the event that set trigger levels are exceeded. The monitoring plan, once agreed, should be incorporated in to the site working plan. The Agency should consider modifying the site licence to ensure the report is submitted

29 Control, monitoring and reporting of dusts, fibres and particulates

29.1 OPRA Criterion 24

29.1.1 The purpose of this criterion is to ensure that the generation and emission of dusts, fibres and particulates is controlled to prevent pollution of the environment.

a The licence should set standards for monitoring and control of aerial emissions of dusts, fibres and particulates to include procedures and an action plan for the suppression of aerial emissions (e.g. water curtains or cease waste handling).

b The operator should ensure that effective methods are used to control dust, fibre, particulates and other aerial pollutants. Evidence should be provided on site of those procedures.

29.2 Audit Findings

29.2.1 There are no activities being undertaken at the site that would lead to the aerial release of dust, fibres or particulates.

29.2.2 Licence condition D37 requires the licence holder to take measures in accordance with the working plan to effectively suppress any releases of dust that may be detrimental to the amenities of the locality. No working plan has been agreed with the operator and therefore this condition remains unenforceable. The site licence conditions do not meet the Agency's OPRA criteria outlined above.

29.2.3 A licence review should be undertaken prior to the licence holder undertaking works that may lead to the release of dust and particulates. Alternatively SI Green UK Ltd could provide a dust and particulate monitoring and action plan for agreement with the Agency.

Relevant Licence Conditions:		
B25, B26, D13, D18, D29, D37, D48		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
D37	All	None

Actions:
Environment Agency Wales to modify the site licence should the operator wish to undertake works that may lead to the release of dust and particulates. Alternatively SI Green UK Ltd could provide a dust and particulate monitoring and action plan for agreement with the Agency. Once agreed the action plan will form part of the site working plan and the procedures adhered to. The licence condition and/or action plan must set standards for monitoring and control of aerial emissions of dusts; fibres and particulates include procedures for the suppression of aerial emissions.

30 Control of odours

30.1 OPRA Criterion 25

30.1.1 The purpose of this criterion is to prevent and minimise the release of odours beyond the site boundary (which may cause pollution of the environment, harm to human health or serious detriment to the amenity).

a The licence should set standards for simple olfactory monitoring (location and frequency) and control of odours to include procedures and an action plan for the suppression of odours.

b The operator should ensure that effective methods to control odours are used and provide evidence on site of those procedures together with action plans to trace source and to require improvements in containment, waste acceptance, methods of working, gas management systems, etc, as appropriate.

c The operator should provide evidence of using suitable odour control and monitoring measures for the site. Reference should be made to the complaints book, site logbook and the site risk assessment.

30.2 Audit Findings

30.2.1 Licence condition D37 requires the licence holder to take measures in accordance with the working plan to effectively suppress any malodorous releases that may be detrimental to the amenities of the locality. No working plan has been agreed with the operator and therefore this condition remains unenforceable. The site licence conditions also do not meet the Agency's OPRA criteria.

30.2.2 The site has previously accepted biodegradable and industrial wastes that are generating landfill gas which is passively vented to atmosphere. There is a potential for malodours from these releases although Agency records contain no odour complaints in recent years. SI Green UK Ltd must provide the Agency with an action plan detailing procedures that will be implemented in the event of malodours releases being generated at the site. Once agreed the procedures must be adhered to.

Relevant Licence Conditions:		
B25, B26, D13, D37		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
None	D37	None

Actions:
SI Green UK Ltd to provide the Agency with an action plan detailing procedures that will be implemented in the event of malodours releases being generated at the site. Once agreed the action plan will form part of the site working plan and the procedures adhered to.

31 Control and monitoring of noise

31.1 OPRA Criterion 26

31.1.1 The purpose of this criterion is to ensure that noise (attributable to the site operations) is controlled (and monitored).

a The licence should only require the controlling of noise on the basis of significant impact and where it is not adequately covered by the planning permission. It should only be used after consultation with local planning and environmental health authorities. Justification and consultation should be recorded in the audit trail.

b The operator should provide evidence of effective measures to control noise particularly in regard to the maintenance of plant and equipment. Reference should be made to the complaints book, site logbook and the risk assessment.

31.2 Audit Findings

31.2.1 The licence requires measures, including the proper maintenance and use, shall be undertaken to control the noise of machinery and vehicles operating at the facility. The pumps used to control surface water and leachate levels are considered to be the most likely source of noise at the site. The pumps are contained within a roofed building at the base of the quarry aiding in the reduction of any potential noise nuisance. Records indicate that no noise complaints have been made to the Agency. Current licence conditions are considered adequate for existing operations.

Relevant Licence Conditions:		
D36		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
None	All	None

Actions:
None

32 Control of pests

32.1 OPRA Criterion 27

32.1.1 The purpose of this criterion is to control and eliminate pest infestation so as to prevent harm to human health and serious detriment to the amenities of the locality.

a The licence should set standards for monitoring and control of pest infestations to include procedures and an action plan.

b The operator should ensure that effective methods to control pests are used and provide evidence on site of those procedures together with action plan that looks at other related areas of site management.

c The operator should provide evidence of using suitable pest control and monitoring measures for the site. Reference should be made to the complaints book, site logbook and the site risk assessment.

32.2 Audit Findings

Licence condition D35 requires the licence holder to take measures in accordance with the working plan to deal effectively with any vermin and insects at the facility. No working plan has been agreed with the operator and therefore this condition remains unenforceable. The site licence conditions also do no meet the Agency's OPRA criteria.

32.2.1 The Agency has no record of any pest of fly infestations at the site since the licence was transferred to SI Green UK Ltd. The licence holder must submit an action plan detailing site specific control measures that are to be implemented at the site to control pests. Once agreed the procedures must be adhered to.

Relevant Licence Conditions:		
D35		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
D35	All	None

Actions:
SI Green UK Ltd must provide the Agency with an action plan detailing procedures that will be implemented in the event of an infestation of vermin or flies releases being generated at the site. Once agreed the action plan will form part of the site working plan and the procedures adhered to.

33 Control of birds and other scavengers

33.1 OPRA Criterion 28

33.1.1 The purpose of this criterion is to ensure that the presence of scavenging birds and other animals are controlled to prevent harm to human health, and to ensure that air protection zones and designated habitats are not compromised.

a The licence should set standards for monitoring and control of birds and other scavengers to include control measures and an action plan that looks at other related areas of site management.

b The operator should prove the adequacy of the control measures, with reference to site logbook and complaints book and the risk assessment.

33.2 Audit Findings

33.2.1 There are no requirements to control and monitor birds at the Cwmrhydyceirw Quarry. The landfill site has been capped and it is unlikely that birds and other scavengers would be attracted to the site as no wastes are exposed. No further measures are considered necessary.

Relevant Licence Conditions:		
None		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
None	All	None

Actions:
None

34 Control of litter

34.1 OPRA Criterion 29

34.1.1 The purpose of this criterion is to ensure that waste does not escape from the site, and that litter on site is dealt with appropriately to prevent harmful accumulations and visual detriment to the amenity.

a The licence should require measures to be taken to prevent the escape of waste from the confines of the site and for litter to be dealt with. Normally this would require the collection of escaped litter within a specified period (e.g. by the end of working day).

b The site should be clear of litter, with litter control measures in place – both preventive (litter nets) and reactive (litter collections). Visual inspections for litter and maintenance of control measures should be recorded.

34.2 Audit Findings

34.2.1 The site is not accepting wastes and as a result many of the litter conditions have been made redundant (e.g. the use of mobile litter screens etc). The site licence requires any loose waste to be collected and disposed at least once a week. No records are kept on site to determine whether this activity is being undertaken. Ideally all weekly litter inspection should be recorded in the site diary. There is no evidence that loose wastes are being blown from the site as all wastes previously deposited at the site have been capped.

Relevant Licence Conditions:		
D29, D31, D32, D33, D34		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
None	None	Partially

Actions:
SI Green UK Ltd to ensure that a record is kept of each weekly litter inspection in the site diary. Any remedial actions should also be recorded.

35 Record of specified events

35.1 OPRA Criterion 30

35.1.1 The purpose of this criterion is to ensure that records are kept of significant events such as maintenance and staffing levels and to record waste movements and deposit.

a The licence should require that records are kept of the following:

- **i** Waste data: input and output, waste characterisation, inventory and waste tracking system (at hazardous waste storage/treatment sites).
- **ii** Special waste deposit (location in the landfill)
- **iii** Monitoring data (including quality assurance of waste treatment).
- **iv** Incidents and significant events: Mechanical breakdown, spillages, fires,
- **v** Construction and Maintenance works (including planned shutdowns), inspections and monitoring
- **vi** Complaints
- **vii** Technically competent manager in attendance and hours of attendance,
- **viii** Waste returns

b The records should be kept securely on site and made available to the Agency. Attention should be paid to the accuracy of the records and suitability of formats.

35.2 Audit Findings

35.2.1 There are no licence conditions requiring the licence holder to keep and produce records of significant events at the site. It is recommended that Environment Agency Wales modify the site licence to ensure that details of day to day site operations and any significant events are recorded by the operator. This particularly important due to the requirement to control the pumping regime at the site.

Relevant Licence Conditions:		
None		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
N/A	All	None

Actions:
None

36 Engineered containment for storage of liquids, sludges or powders in above-ground tanks

36.1 OPRA Criterion 32

36.1.1 The purpose of this criterion is to ensure that tanks, used for the storage and treatment of waste, provide effective containment.

a The licence should require that tanks and bunds provide sufficient containment of the waste, with bunds having capacity of 110% of tank volume, and pipework and valves being located within the bunds. Tanks should be fitted with monitoring devices for measuring volume and other treatment information, to avoid excessive filling, leaks, fugitive emissions, etc. Treatment and storage vessels should be enclosed where there is a potential for airborne pollutants, with appropriate venting and abatement equipment.

b The operator should demonstrate the effectiveness of the tanks through regular maintenance and surveys of the integrity of tanks and associated infrastructure.

36.2 Audit Findings

36.2.1 Leachate and contaminated surface waters are the only wastes stored within above ground tank. Details of the engineered containment systems for both tanks can be found in chapters 11 and 13 respectively.

36.2.2 A fuel oil tank is a present on site but the operator does not currently use it. Prior to reuse the bund wall must be constructed or lined with a material impermeable to the oil stored within the tank. The capacity of the bund should also be calculated to give containment for 110% of the tanks total contents. The tank should also be marked with details of its contents and its capacity.

Relevant Licence Conditions:		
B12, D15		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
None	N/a	N/a

Actions:
Prior to reuse the fuel oil tank bund wall must be constructed in accordance with *CIRIA report 163: Construction of bunds for oils storage tanks*. The tank should also be marked with details of its contents and its capacity. A lockable valve to prevent the unauthorised discharge of the tanks contnents should also be installed.
Leachate and contaminated surface waters are the only wastes stored within above ground tank. Actions relating the engineered containment systems for both tanks can be found in chapters 11 and 13 respectively.

37 Acceptance of wastes banned under Landfill Regulations

37.1 OPRA Criteria 36

37.1.1 The purpose of this criterion is to ensure that no banned wastes are accepted.

a Regardless of whether a licence permits disposal to landfill, these banned wastes are not to be received. Refer to the Agency Landfill Directive Summary Note 2 for further detail.

37.2 Audit Findings

37.2.1 No wastes can be accepted at the site for disposal. This section is not applicable.

Relevant Licence Conditions:		
None		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
None	None	None

Actions:
None

38 Acceptance of wastes prohibited at this class of landfill

38.1 OPRA Criterion 37

38.1.1 The purpose of this criterion is to ensure that landfills only accept wastes that are in accordance with their classification.

a Regardless of permitted wastes on licences, the Landfill Regulations 2002 prohibit the acceptance of wastes that are not in accordance with the classification of the landfill. Refer to the Agency Landfill Directive Summary Note 2 for further detail.

Relevant Licence Conditions:		
None		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
None	None	None

38.2 Audit Findings

38.2.1 No wastes can be accepted at the site for disposal. This section is not applicable.

Actions:
None

39 Conditions not included under OPRA criteria but required by the library of licence conditions

39.1 OPRA Criteria

39.1.1 A number of conditions within the site licence are not strictly covered by OPRA criteria and therefore not scored on site inspection reports. The conditions concern notifications to the Agency, financial provisions, removal of wastes from sites that have closed, and other monitoring not covered previously.

39.2 Audit Findings

Financial Provision

39.2.1 SI Green UK Ltd entered in to a financial provision agreement on the 25 February 2000. Financial provision was made in the form of bond. The financial provision agreement requires the bond to be renewed every two years and the current bond will expire during February 2006.

39.2.2 The audit team recommends that financial provision agreement is reviewed upon renewal to ensure that it reflects current cost estimates of managing the site. The pumping costs associated with ground waters and leachate in the long term would be significant unless a more sustainable method was adopted to control groundwater ingress at the site.

Relevant Licence Conditions:		
N/A		
WML Conditions Operator Not Compliant or Inappropriate With At Time of Audit	**Conditions Not Enforceable**	**OPRA Criteria Fulfilled By WML**
None	None	None

Actions:
The Agency's legal department is reviewing the original agreement to check whether a two-year period is required for the financial bond. The Agency will then have to discuss the results of this review with SI Green to amend the bond accordingly.
The Agency to review financial provision agreement to ensure that it reflects current cost estimates of managing the site in the event of the bond being enacted. The pumping costs associated with ground waters and leachate in the long term would be significant unless a more sustainable method was adopted to control groundwater ingress at the site.

40 Conclusions

40.1.1 The current site waste management licence issued on 6 July 1992 does not reflect the current operational status of the landfill site. The licence requires updating and should be modified in accordance with the Agency's library of licence conditions. The licence review as a minimum should impose new enforceable conditions for the following:

- **a** All environmental monitoring on site,
- **b** Site aftercare provisions,
- **c** Management control on site,
- **d** Site security,
- **e** Groundwater and leachate management on site to include all pipe work and tanks, and,
- **f** Emergency plans for fires and contacting personnel in the event of an incident.

40.1.2 Although the current site licence requires updating, the operator is still constrained by conditions within the current licence. Out of the current thirty-two OPRA landfill criteria currently inspected against by the Agency, only seven can be enforced against due to the lack of a site working plan and ambiguous licence conditions. The seven OPRA criteria under which relevant licence conditions can be enforced are:

- **a** Specified waste management operations; No disposal of waste can take place without a working plan being agreed with the Agency. The implementation of the Pollution prevention Control Regulations require SI Green UK Ltd to apply for a new permit prior to the commencement of any future waste disposal operations.
- **b** Leachate management; the licence holder is required to continue pumping of groundwater and leachate until it can be demonstrated to the satisfaction of the Agency that the landfill would not pose an unacceptable risk to the aquatic environment.
- **c** Surface water management; the licence holder must ensure that all waters collected in the 'clean water sump' are discharged via the Dŵr Cymru Welsh Water sewerage system until the Environment Agency is satisfied that the water quality would not pose and unacceptable risk to the environment.
- **d** Installation, maintenance and protection of final cap; site licence conditions state that the landfill cap must be highly impermeable. The current capping, when installed achieved a standard not less than $1x10^{-9}$ m/sec. The operator will have to monitor the condition of the cap due to damage from plant growth.
- **e** Site identification board; the operator has erected an ID board that lists relevant information required by the site licence.

f Mud and debris on the road; SI Green UK Ltd must ensure that any mud and debris arising from site operations on to the public highway must be cleared by sweeping site access road, hard surfaced areas and the public highway leading from the facility.

40.1.3 Many of the licence conditions within the site licence are only partially enforceable as they include references to the working plan (that is yet to be agreed). These conditions however also include prescriptive standards that must be achieved by the operator which ensure operations are undertaken in an environmentally sensitive manner. Details of those licence conditions that come under each inspection are detailed in Appendix D.

40.1.4 Since the transfer of the site licence to SI Green UK Ltd activities at the site have been limited to construction of new buildings and ongoing maintenance. The latest site improvement includes the erection of new a security fence around the quarry void. Further investment is required to ensure that pipework and bunding remain fit for purpose. The staff of site have indicated that it is the company's intention to replace all the pumping arrangements and associated pipe work for groundwater and leachate discharge to foul sewer during 2005, but this will be dependant on the future use of the site.

40.1.5 The Agency must also take steps to ensure that the existing waste mass is not flooded by groundwater due to a failure in the current pumping regime. Previous flooding caused led to a large number of odour complaints. An emergency plan must therefore be drawn up to ensure that any equipment required to pump ground water and leachate to the foul sewer manhole can be accessed and installed at the site in short notice. Due to the elevation from the lagoon to the roadway, any equipment brought onto site should be compatible with the existing site tank couplings and pipe work.

40.1.6 The financial provision agreement should also be reviewed to ensure it correctly reflects the costs associated in managing the site should the bond be enacted.

40.1.7 It is the recommendation of this audit to modify the waste management licence to ensure all conditions are enforceable and meet current Agency standards. A revised site working plan should also be sought from SI Green UK Ltd.

41 Recommendations

41.1.1 The following table provides a template so that progress against each action outlined within this report can be documented and timescales for compliance agreed. It is recommended that both the Agency and SI Green UK Ltd fully complete this table in detail. Once the contents have been agreed this timetable must be adhered to. An electronic version of the table will be made available to SI Green UK Ltd for completion.

41.1.2 Please note that the actions are ranked by priority (high, medium, and low). It is possible for an action that is considered to have a high priority to have a longer deadline for completion than, for example, an action highlighted as a medium risk due to complexity or amount of investment involved. Reference should be made to the relevant chapter of the report when considering any of the actions listed.

Action	Action For		Remedial Action(s) to be taken	Deadline for Completion
	SI Green UK Ltd	EAW		
OPRA Criterion 6: Environment Agency Wales to review the site licence to update as a minimum the monitoring and aftercare requirements.	✓			
OPRA Criterion 6: SI Green UK Ltd to submit a revised working plan detailing the aftercare and monitoring programmes for agreement with Environment Agency Wales.		✓		
OPRA Criterion 8: SI Green UK Ltd to supply details of the proposed technically competent manager. The appropriate level and type of technical competent award should be held and a copy of the relevant certificate should be supplied as evidence.	✓			
OPRA Criterion 8: SI Green UK Ltd to provide details of site staff including details of their role and responsibilities and also there and availability in case of emergency / holiday absence / illness etc.	✓			
OPRA Criterion: 11 The operator must ensure that all pipework is located off the roadway and where this is not possible all pipework must be shielded from damage.	✓			
OPRA Criterion 11: A bund wall should be constructed around the leachate holding tank. All bunding should be designed and constructed in accordance with *CIRIA report 163: Construction of bunds for oils storage tanks*. The tank should also be	✓			

Action	Action For		Remedial Action(s) to be taken	Deadline for Completion
	SI Green UK Ltd	EAW		
marked with details of its contents and its capacity.				
OPRA Criterion 11: The bund wall and base surrounding the surface water holding tank must be repaired to ensure it contains all liquids. All bunding should be designed and constructed in accordance with *CIRIA report 163: Construction of bunds for oils storage tanks*. The tank should also be marked with details of its contents and its capacity.	✓			
OPRA Criterion 11: The leachate tank valve must be fitted with a locking mechanism or provided with a removable hand wheel to prevent unauthorised interference or vandalism.	✓			
OPRA Criterion 11: Environment Agency Wales to modify the site licence to ensure that all leachate generated at the site is disposed of to foul sewer.		✓	OPRA Criterion:	
OPRA Criterion 12: A Site survey to check the integrity of all gas wells on site, any remedial action should conform to Waste Management Paper 26B and all information be forwarded to the Agency.	✓			
OPRA Criterion13: The bund wall and base surrounding the surface water holding tank must be repaired to ensure it contains all liquid. All bunding should be designed and constructed in accordance with *CIRIA report 163: Construction of bunds for oils storage tanks*. The tank should also be marked with details of its contents and its capacity.	✓			

Action	Action For		Remedial Action(s) to be taken	Deadline for Completion
	SI Green UK Ltd	EAW		
OPRA Criterion 13.2: Environment Agency Wales to draw up an internal emergency plan detailing the availability and cost of equipment required to continue pumping should an emergency situation arise and the licence holder is unavailable.		✓		
OPRA Criterion 13.3: The perimeter surface water interception drains located on the site boundary require maintenance to ensure easy access in the event of a blockage.	✓			
OPRA Criterion 14: SI Green UK Ltd to undertake works to ensure that the integrity of the cap is not compromised by plant growth	✓			
OPRA Criterion 15: Existing site notice boards should be amended to include all the information required the Environment Agency.	✓			
OPRA Criterion 15: Agency to modify licence should SI Green UK Ltd not voluntarily update the site identification boards		✓		
OPRA Criterion 16: SI Green UK Ltd need to take steps to ensure that the surface water holding tank and discharge point cannot be tampered if the main access gate is to remain open. Until the discharge point and surface water storage tank is made secure site staff must undertake regular inspections of the discharge point when either of the site access points are open and the pumps are active. The time of each inspection	✓			

Action	Action For		Remedial Action(s) to be taken	Deadline for Completion
	SI Green UK Ltd	EAW		
and any remedial actions must be recorded in a site diary.				
OPRA Criterion 18.1: SI Green UK Ltd to document site specific procedures for the filling and maintenance of the site pumps and equipment to minimise the risk of polluting spillages. Staff must adhere to the procedures once they have been agreed with the Agency.	✓			
OPRA Criterion 18.2: Environment Agency Wales to provide copies of relevant Pollution Prevention Guidance Notes to SI Green UK Ltd for information.		✓		
OPRA Criterion 19: SI Green UK Ltd must submit an emergency plan (including a fire action plan detailing fire prevention control measures and equipment) to the Agency for agreement. Once agreed the action plan will form part of the site working plan and the procedures adhered to.	✓			
OPRA Criterion 24: SI Green UK Ltd to undertake further gas monitoring of all boreholes to ensure that gas is not migrating from the site. A monitoring regime should then be set up ensuring that reports are sent to the Agency on a monthly basis. The reports should include landfill gas concentrations from all wells on site and off site and include methane, oxygen, carbon dioxide and atmospheric pressure. SI Green UK Ltd to	✓			

Action	Action For		Remedial Action(s) to be taken	Deadline for Completion
	SI Green UK Ltd	EAW		
review the locations of all boreholes to ensure representative monitoring and provide details of their construction.				
OPRA Criterion 24: SI Green UK Ltd to provide a monitoring plan detailing the construction and location of all external gas monitoring boreholes (existing and planned), proposed monitoring frequencies, determinands for analysis and also an action plan detailing actions to be taken in the event that set trigger levels are exceeded. The monitoring plan should be incorporated in to the site working plan.	✓			
OPRA Criterion 25: SI Green UK Ltd must provide a monitoring plan detailing the construction and location of all gas monitoring boreholes (existing and planned), proposed monitoring frequencies, determinands for analysis and also an action plan detailing actions to be taken in the event that set trigger levels are exceeded. The monitoring plan, once agreed, should be incorporated in to the site working plan. The Agency should consider modifying the site licence to ensure the report is submitted.	✓			
OPRA Criterion 26: SI Green UK Ltd to consider the installation of further boreholes to determine the leachate head within the site	✓			

Action	Action For		Remedial Action(s) to be taken	Deadline for Completion
	SI Green UK Ltd	EAW		
OPRA Criterion 26: SI Green UK Ltd must undertake a three monthly leachate sampling regime for those determinands specified with Waste Management Paper 4 unless otherwise agreed with the Agency.	✓			
OPRA Criterion 26: All leachate sumps should be surveyed to ensure that they are collecting leachate from the landfill. Groundwater and surface water may be ingressing into these sumps and thus diluting the contamination levels. This will require thorough investigation by the site operator.	✓			
OPRA Criterion 26:The operator should undertake a comprehensive survey of all monitoring locations to check the integrity of the borehole structure, leachate sumps and submit borehole logs to the Agency.	✓			
OPRA Criterion 27: Operator should review and interpretate all available monitoring data and implement a monitoring programme in line with Regulation 15 Groundwater Protection. The review should also investigate all existing groundwater wells integrity and hydrological information to ensure the locations are correctly placed. The Agency and Operator should investigate the need for offsite wells.	✓			
OPRA Criterion 28: SI Green UK Ltd must provide a surface water monitoring and action plan. The plan must detail the and location of all surface water monitoring points proposed	✓			

Action	Action For		Remedial Action(s) to be taken	Deadline for Completion
	SI Green UK Ltd	EAW		
monitoring frequencies, determinands for analysis and also an action plan detailing actions to be taken in the event that set trigger levels are exceeded. The monitoring plan, once agreed, should be incorporated in to the site working plan. The Agency should consider modifying the site licence to ensure the report is submitted.				
OPRA Criterion 29: Environment Agency Wales to modify the site licence should the operator wish to undertake works that may lead to the release of dust and particulates. Alternatively SI Green UK Ltd could provide a dust and particulate monitoring and action plan for agreement with the Agency. Once agreed the action plan will form part of the site working plan and the procedures adhered to. The licence condition and/or action plan must set standards for monitoring and control of aerial emissions of dusts; fibres and particulates include procedures for the suppression of aerial emissions.		✓		
OPRA Criterion 30: SI Green UK Ltd to provide the Agency with an action plan detailing procedures that will be implemented in the event of malodours releases being generated at the site. Once agreed the action plan will form part of the site working plan and the procedures adhered to.	✓			
OPRA Criterion 32: SI Green UK Ltd must provide the Agency with an action plan detailing procedures that will be implemented in the event of an infestation of vermin or flies	✓			

Action	Action For		Remedial Action(s) to be taken	Deadline for Completion
	SI Green UK Ltd	EAW		
releases being generated at the site. Once agreed the action plan will form part of the site working plan and the procedures adhered to.				
OPRA Criterion 34: SI Green UK Ltd to ensure that a record is kept of each weekly litter inspection in the site diary. Any remedial actions should also be recorded.	✓			
OPRA Criterion 36: Prior to reuse the fuel oil tank bund wall must be constructed in accordance with *CIRIA report 163: Construction of bunds for oils storage tanks*. The tank should also be marked with details of its contents and its capacity. A lockable valve to prevent the unauthorised discharge of the tanks contnents should also be installed.	✓			
Non OPRA: The Agency's legal department is reviewing the original agreement to check whether a two-year period is required for the financial bond. The Agency will then have to discuss the results of this review with SI Green to amend the bond accordingly.		✓		
Non OPRA:The Agency to review financial provision agreement to ensure that it reflects current cost estimates of managing the site in the event of the bond being enacted. The pumping costs associated with ground waters and leachate in the long term would be significant unless a more sustainable method is adopted to control groundwater ingress at the site.		✓		

42 Glossary of Acronyms

CQA – Construction Quality Assurance

CoTC - Certificate of Technical Competence

EA - Environment Agency

EAW - Environment Agency Wales

EAWML – Environment Agency Waste Management Licence

EM - Environment Management

EWC - European Waste Classification

GCMS - Gas Chromatography Mass Spectrometry

TCM – Technically Competent Management

UKAS - United Kingdom Accreditation Service

WAMITAB - The Waste Management Industry Training and Advisory Board

WML - Waste Management Licence

43

Appendix A : Waste management licence

No. L1/15

CONTROL OF POLLUTION ACT 1974
PART I

WASTE DISPOSAL LICENCE

THE * SWANSEA CITY COUNCIL
HEREBY GRANT a Waste Disposal Licence, pursuant to an application dated 14TH APRIL, 1992, in respect of the following:

Full name and address of licence holder	The Secretary, Caerleon Company Ltd.,
Full name and address of local representative (if any) of licence holder	John Joyce, Royal Buildings, 10 Princess Way, Swansea
Location of site to which this licence relates	Cwmrhydyceirw Quarry, Morriston, Swansea. OS/GR 66509930
Form of deposit or disposal to which this licence relates	Contained Landfill Site
Types of waste of which deposit or disposal is authorised and any limitation as to quantity	Specified in Schedule C

This Licence is granted subject to the following conditions:—

See attached Schedules A - F

Dated 6th July, 1992.

(*Signed*) .....
DIRECTOR OF ENVIRONMENTAL
(*Designation*) HEALTH SERVICES

HN/PC

THE LICENCE HOLDER SHOULD READ CAREFULLY THE NOTES OVERLEAF.

* Insert name of Waste Disposal Authority.

Cat. No. W.D. 5.
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WASTE DISPOSAL LICENCE - DEFINITIONS

SCHEDULE A - DEFINITIONS.

The following meanings shall apply throughout this licence:

1. **WORKING PLAN** shall mean the operational statement, hydrological and hydrogeological management statement together with drawings of the proposed facility which will be known as Schedule G.

2. **THE ACT** shall mean the Control of Pollution Act 1974 as amended.

3. **DISPOSAL AUTHORITY** shall have the meaning assigned to it in Section 30(1) of the Control of Pollution Act 1974.

4. **DULY AUTHORISED OFFICER** shall mean any person authorised in writing by the Disposal Authority pursuant to Section 90 (1) of the Control of Pollution Act 1974.

5. **APPROPRIATELY QUALIFIED PERSON** shall mean a recognised Consultant Engineer or other such appropriately qualified persons as may be agreed in writing by the Waste Disposal Authority.

6. **ENVIRONMENTAL HAZARD** shall have the meaning assigned to it in Section 4(5) of the Control of Pollution Act 1974.

7. **LICENCE HOLDER** shall mean the person or persons to whom this licence is granted.

8. **DESIGNATED OFFICER** shall mean the person, nominated by the licence holder, responsible for the security and satisfactory operation of the facility.

9. **COMPETENT PERSON** shall mean a person who, through training and/or qualification is able to identify the nature of the waste delivered to the facility.

10. **BIODEGRADABLE** shall mean material which may be broken down by the action of microorganisms.

11. **LEACHATE** shall mean liquid which seeps from or through the landfill and by doing so extracts substances from the deposited waste.

12. **DRUMMED WASTE** shall mean any container in which material is stored, such containers having a storage capacity of less than 10 litres shall not be regarded as drummed waste.

13. **SPECIAL WASTE** shall have the meaning assigned to it in Section 2(1) of the Control of Pollution (Special Waste) Regulations 1980 and any subsequent amendements.

14. **FLAMMABLE** shall have the meaning assigned to it in Schedule 1, Part 1, of the Classification, Packaging and Labelling of dangerous Substances Act 1984.

15. **EMERGENCY** shall mean a case where a person has reasonable cause to believe than circumstances exist which are likely to endanger life or health or cause damage to property or pollution of water.

16. **LANDFILL GAS** shall mean gas having the characteristics of gas produced in landfills containing biodegradable waste.

17. **OPERATING** shall mean the deposit of controlled waste and works or measures undertaken in the preparation for such deposits and all matters incidental thereto.

18. Notwithstanding the above, words and phrases in this licence have the meaning ascribed to them by the Control of Pollution Act 1974 and its associated regulations.

WASTE DISPOSAL SITE LICENCE CONDITIONS

CWMRHYDYCEIRW QUARRY, MORRISTON.

SCHEDULE B. - SITE PREPARATION.

1(a) No waste is to be deposited on the site until the existing waste deposited has been isolated and contained by works carried out in accordance with the " the cell 1 containment design" submitted with the working plan. This design is subject to the results of the Ground Water/Leachate trial following which the specification for the engineering containment works will be evaluated and where necessary modified to meet the requirements of the Waste Disposal Authority in conjunction with the National Rivers Authority.

1(b) The landfill gas control system for cell 1 is to be completed to the specification detailed in the working plan and maintained at all times.

1(c) The leachate systems for this cell will be maintained with the main sump extending to the final surface level as set out in the working plan and maintained at all times.

2. No waste shall be deposited and only operations agreed in writing by the Waste Disposal Authority shall be carried out until the Working Plan submitted has been fully agreed with the Waste Disposal Authority and confirmed in writing

Site Infrastructure.

3. The preparatory works required by conditions 2 to 27 below shall be supervised and certified, by an appropriately qualified person, that they have been constructed in accordance with the working plan. Certification shall be forwarded to the Waste Disposal Authority and no waste material shall be accepted at the facility until the Waste Disposal Authority confirms, in writing, that the site preparatory works have been carried out in accordance with the working plan.

4. Perimeter fencing and gates shall be provided and maintained at all times in accordance with the working plan. The gates shall be securely locked at all times when the facility is unattended. Any damage to the gates and fencing which impairs their effectiveness will be repaired by the end of the working day and if this cannot be accomplished the licence holder shall provide security personnel to guard the facility until such repair is effected.

5. An identification board of durable material and finish shall be displayed at the entrance to the facility at the location specified in the working plan. This shall give the name, address, telephone number and the operational hours of the facility; the name, address and telephone number of the licence holder, the Waste Disposal Authority and the personnel to contact in the event of an emergency. The board shall be maintained in a legible condition.

6. A site control office of the type specified in the working plan shall be provided at the location specified in the working plan.

7. The road from the site entrance to the site control office (hereinafter called the site access road) shall be constructed in accordance with the working plan. The site access road shall be maintained to the original standard as specified in the working plan.

8. A weighbridge of the type specified in the working plan shall be provided at the location specified in the working plan. The weighbridge shall in accordance with Section 11 of the Weights and Measures Act 1985 "be passed fit for use for trade" and shall be accordingly certified and stamped by an Inspector of Weights and Measures. The weighbridge shall be maintained in a condition "passed fit for use for trade" in accordance with Section 11 of the Weights and Measures Act 1985.

9. Wheel cleaning equipment of the type specified in the working plan shall be provided at the location specified in the working plan. The equipment shall be used and maintained as specified in the working plan.

10. Provisions for the storage and maintenance of plant shall be constructed in accordance with the working plan and shall be maintained to the original standard as specified in the working plan.

11. Artificial lighting shall be provided for those operations which are to be carried out during the hours of darkness, as defined by the statutory lighting up times published by the Science Research Council, at the locations specified and as specified in the working plan. The lighting shall be maintained to the original standard as specified in the working plan.

12. Storage containers for liquids shall be of a type and construction suitable for the liquids which they contain and labelled to show their contents. They shall conform, where necessary, to all relevant safety and construction standards and shall be installed at a location and to containers shall be maintained to the original standard as specified in the Working Plan

Site Preparation.

13. A clean water collection system and sump within the quarry area shall be constructed as set out in the Working Plan and maintained so as to ensure ground water is directed to the clean water sump.

14. All water courses, springs and issues located within the facility shall be intercepted and diverted to the perimeter of the facility in accordance with the working plan, in order to prevent the contamination of the water courses, springs and issues.

15. External water and gas monitoring boreholes shall be constructed in accordance with the working plan. The boreholes shall be maintained to their original standard as specified in the working plan.

16. A leachate collection system shall be constructed in accordance with the working plan. The system shall be maintained to the original standard as specified in the working plan.

17. Clay used for the purposes of this licence shall be naturally occuring uncontaminated clay. This clay shall also be free from peat, any material having a volume greater than 0.05 m3, any perishable material, any material susceptible to spontaneous combustion, and any material in a frozen condition.

18. Representative samples of the clay (or other such specified low permeability material) from each source to be used in lining the facility shall be tested in a NAMAS accredited soils laboratory to ensure they meet the following requirements:

(i) If the clay is to stand alone as the lining it must achieve the following minimum criteria:-

(a) capable of achieving a permeability of 1 x 10-9 m/sec or less;
(b) a minimum clay content (particle size less than 0.002mm) of 10% ;
(c) liquid limit less than 90;
(d) plasticity index less than 65.

(ii) Where a composite lining system is used in conjunction with a thickness of 2.5mm of H.D.P.E. synthetic membrane then the permeability of the clay shall be not greater than 1 x 10-8m/sec so as to achieve an overall permeability equivalent to 1m of clay of 1 x 10-9m/sec or less based on the above criteria.

19. A report containing the results of all laboratory tests, shall be submitted to the Waste Disposal Authority and the National Rivers Authority before the works proceed. The report shall indicate the minimum moisture content to be achieved during emplacement, the type of equipment to be used, the maximum thickness of each layer and the minimum number of passes per layer.

20. The site is to be filled in the sequence laid down in the working plan. Lining if each cell is to progress in advance of the level of waste with a minimum freeboard of 1m being maintained at all times.

21. Perimeter or other bunds forming part of the containment system shall be formed from clay (or other specified low permeability material) and shall have a minimum crest width of 2.00m, and shall be designed and constructed to provide a batter which will remain stable, both during and after the operation life of the facility.

22. Representative samples of the placed clay (or other specified low permeability material) shall be taken, by an appropriately qualified person, at a minimum of 2 per day, 25 per hectare on horizontal surfaces, and 1 per 400m elsewhere. In addition, undisturbed samples shall be taken at an interval of 1 per 10 000m3 on all other surfaces, on a pattern approved by the Waste Disposal Authority and the National Rivers Authority. The samples shall be tested in a NAMAS accredited soils laboratory to ensure that a permeability of less than 1 x 10-9 m/sec or more than 1 x 10-8m/sec where it is laid as a composite with 2.5mm of H.D.P.E. membrane has been achieved. The permeability of each sample shall be measured directly by the falling head method in accordance with Test No.23 of BS 1377.

23. If the permeability of any sample exceeds 1 x 10-9 m/sec or more than 1 x 10-8m/sec where it is laid as a composite with 2.5mm of H.D.P.E. membrane the suspect area shall be excavated and replaced. This replaced section shall then be subjected to the permeability testing procedures as stated in condition 22 above.

24. The results of all permeability tests shall be forwarded to the Waste Disposal Authority within 7 days of the results being received. Waste shall not be deposited on any phase of the facility until the lining achieves the permeability specified in condition 22 above.

Emergency Plan.

25. The Flexible Membrane Liner (FML) shall be laid to the specification as detailed in the working plan and shall conform to the Quality Control Programme specified.

A compliance document shall be provided containing certification that the quality programme has been fully implemented; the Method Statement for the liner installation detailed in the Construction Specification has been followed; all field and laboratory test results and details of each source of material and the location of where it was laid.

The report is to be complied by a suitably qualified independent engineer.

26. Any deviation from the specified Quality Control Programme shall require the written approval of the Waste Disposal Authority in consultation with the National Rivers Authority.

27. The Waste Disposal Authority reserves the right to undertake its own test on the flexible membrane liner material on areas of the completed liner and on subgrade layers.

28. An emergency plan shall be provided within two months of the granting of this licence detailing the procedures to be adopted in the event of the release of any hazardous material, liquid or gas. The Health and Safety Executive, British Gas, the local Environmental Health Department, National Rivers Authority, the emergency services and the Waste Disposal Authority shall be consulted when drawing up these procedures.

29. The emergency plan required by condition 25 above shall be reviewed at six monthly intervals and it shall also be updated whenever necessary to take account of changes in personnel or other circumstances. The updated emergency plan shall be forwarded forthwith to the Waste Disposal Authority.

SCHEDULE C. - TYPES OF WASTE

1. Notwithstanding the generality of the types of waste specified in this Schedule the following wastes shall be specifically excluded from delivery to the facility.

(a) Controlled waste being defined as 'Special Waste' in the Control of Pollution (Special Wastes) Regulations 1980 and any subsequent ammendments.

(b) Substances within the Control of Radioactive Substances Act 1960 and any subsequent ammendments

(c) Percussives and explosives and other substances with similar characteristics, excepting where such wastes are in such a form or state where the percussive or explosive properties are and will remain ineffective.

(d) Any waste containing substances listed in the Highly Flammable Liquids and Liquified Petroleum Gases Regulations 1972.

(e) Any substances listed by the United KIngdom Government under the provisions of the European Community Directive on Pollution Caused by Certain Dangerous Substances Discharged to The Aquatic Environment (76/464/EC) and listed in Annex 1A of the Final Declaration of the Third International Conference of the North Sea 1990.

(f) Domestic waste and any other putrescible material.

(g) Sludges;

(h) Clinical waste as defined by the Control of Pollution (Collection and Disposal of Wastes) Regulations 1988.

(i) Any waste containing more than 1ppm of Polychlorinated Biphenols.

2. Only the following wastes, shall subject to condition 1 above, be accpted at the facility:

(a) Wastes from the demolition, construction or modification of buildings;

(b) Soil, subsoil and hardcore;

(c) Industrial waste only with the approval of the Waste Disposal Authority;

(d) Imported European waste only with the approval of the Waste Disposal Authority;

(e) High solid filter cakes only with the approval of the Waste Disposal Authority. Filter cakes will be restricted to 15% of the total waste by weight entering the site on a monthly basis.

All wastes requiring WDA approval will be subject to an authorisation proceedure as set out in the working plan.

3. The total quantity of waste accepted daily shall not exceed 1000 Tonnes.

SCHEDULE D. - OPERATIONS.

1. The licence holder shall operate the facility in accordance with the working plan as approved by the Waste Disposal Authority and contained in Schedule G of this licence.

2. Any proposed modification to the approved working plan shall be submitted to the Waste Disposal Authority together with the proposed date of implementation at least 6 weeks before the propsed date of such implementation.

3. The licence holder shall obtain written approval from the Waste Disposal Authority for any proposed modification to the actual conduct of the operations from the proposals approved in the working plan.

4. The types of wastes accepted at the facility shall consist of those specified in Schedule C of this licence. All wastes shall be visually inspected to ensure that they conform with the requirements of Schedule C of this licence. Any wastes not conforming to the requirements of Schedule C shall be rejected as unsuitable for disposal at the facility.

5. The Waste Disposal Authority shall be notified immediately of any waste that has been rejected as unsuitable for disposal in accordance with condition 4 above and Schedule C of this licence. This notification shall include the nature and quantity of waste, the name and address of the producer of the waste, the registration number of the vehicle delivering the waste, the name and address of the vehicle's driver and operator, and the time of rejection of the waste.

6. No operations shall be carried out at the facility during the hours of darkness as defined by the statutory lighting up times published by the Science Research Council; i.e. half an hour after sunset to half an hour before sunrise.

7. Permitted wastes shall be delivered to and removed from the facility between the hours specified below. Except in cases of emergency, no delivery or removal of waste shall take place outside these hours without the prior approval of the Waste Disposal Authority. All circumstances of emergency movement of such wastes shall be reported forthwith in writing to the Waste Disposal Authority.

Mondays - Fridays	From: 8 am To: 5 pm	(Subject to condition 6 as above)
Saturdays	From: 8 am To: 1 pm	

Not at all on Sundays and Bank Holidays.

8. The facility shall be manned and supervised during operating hours (see condition 7 above) in accordance with the working plan. Supervisors must be able to identify the types of waste permitted by this licence and those wates specifically excluded.

9. A written record shall be kept of the characteristics and quantities of all wastes delivered to the facility, the name and address of the person delivering the waste, the date and time of the delivery, and identification of the origin of the waste. This record shall be available to any representative of the Waste Disposal authority for inspection at the facility at any reasonable time.

10. A summary of the records required by condition 9 above of all wastes delivered to the facility in a calendar month shall be submitted to the Waste Disposal Authority before the tenth day of the succeeding calendar month.

11. The phasing and direction of the depositing of waste shall be carried out as specified in the working plan and each phase phase shall be comleted before the deposit of waste is commenced in each subsequent phase.

12. No waste material shall be burnt within the boundaries of the facility. Any outbreak of fire shall be regarded as an emergency and immediate action shall be taken to extinguish it. Fire fighting equipment and emergency water supplies shall be provided, maintained and identified in accordance with the working plan. All outbreaks of fire shall be reported immediately to the County Fire Brigade and the Waste Disposal Authority.

13. In the event of an emergency, the appropriate procedures specified in the emergency plan required by condition 25 of Schedule B shall be implemented. The Waste Disposal Authority shall be informed forthwith of an emergency. The circumstances of an emergency shall be confirmed to the Waste Disposal Authority in writing as soon as is practicable.

14. Measures, in accordance with the working plan shall be taken to remove any mud, debris or any other material that is deposited on any roadway by vehicles using the facility. These measures shall include the sweeping of the site access road, hard surfaced areas and the public highway leading from the facility.

15. Measures, in accordance with the working plan, shall be taken to prevent damage to pipework, valves, pumps and storage tanks which may cause pollution of water, danger to public health or be seriously detrimental to the amenities of the locality.

16. Subsidiary site roads shall be provided at the locations detailed in the working plan. The roads shall be constructed by laying compacted clean hardcore and/or rubble free of any timber or metal, to a height of not less than 0.30 metres above the adjacent ground level.

17. All subsidiary site roads shall be laid to falls to encourage surface water run off, and be maintained free from potholes. Any potholes shall be filled with clean compacted hardcore within 2 working days.

18. All site roads shall as necessary or when requested by the Waste Disposal Authority be sprayed with clean water to effectively suppress dust.

19. Solid wastes shall be compacted and formed into a layer as soon as possible after deposit and not later than the end of the working day in which it was deposited.

20. The layers of waste shall be formed by using the compaction equipment specified in the working plan, equipped with a blade or other suitable levelling device. The waste shall either:

(a) be deposited on the ground forming the base of the site or on a previous layer in front of the face and shall be formed into a compacted layer by being pushed upwards and driven over by the compaction equipment specified in the working plan;

or it shall

(b) be deposited on the surface of the site behind the face and partially compacted by the specified compaction equipment before being pushed over the face.

21. All large articles which are likely to cause voids shall be crushed, broken up or flatten and covered each day in such a position that they are not within 1.0 metre of the surface or within 2.0 metres of any flank or face.

22. All long objects, including trees, lamp posts etc., shall be broken in lengths not exceeding 2.0 metres and covered each day in such a position that they are not within 1.0 metre of the surface or within 2.0 metres of any flank or face.

23. The depth of any layer of waste shall not exceed 2.5 metres after initial compaction.

24. Before Covering, all working flanks and faces shall be compacted to form gradients not greater than 1 in 3.

25. The surface flanks and faces shall, subject to the traction needs of the vehicles operating at the working face, be covered with suitable non-biodegradable material so that by the end of the working day all exposed surfaces shall have been covered to a depth of not less than 0.15 metres.

26. Each layer of waste and covering material shall be laid to a fall to encourage surface water run-off from the working face.

27. No waste other than that which is wholly non-biodegradable and which will not float on water shall be deposited into standing water.

28. No processing, sorting, or re-excavation of any waste shall take place at the facility without the prior written approval of the Waste Disposal Authority.

29. All vehicles carrying light wastes shall be adequately covered to prevent any loss of contents by wind or vehicle movements.

30. All vehicles leaving the facility shall use the wheel cleaning apparatus required by condition 9 in Schedule B of this licence.

31. Fixed litter screens shall be provided for each phase of operation as specified in the working plan.

32. Movable litter screens shall be positioned immediately downwind of the working face having regard to the manoeuvering needs of vehicles. The screens shall be repositioned as and when a change in wind direction dictates.

33. Any material arrested by the screens required by conditions 32 and 33 above shall be removed not later than the end of the working day.

34. Not less frequently than once a week or at a greater frequency as directed by the Waste Disposal Authority any loose waste which may be lying at the facility or its immediate environs shall be collected and disposed of in accordance with the working plan.

35. Measures in accordance with the working plan shall be taken to deal effectively with any vermin and insects at the facility.

36. Measures, including proper maintenance and use, shall be undertaken to control the noise of machinery and vehicles operating at the facility which may be detrimental to the amenities of the locality.

37. Measures in accordance with the working plan shall be taken to effectively suppress dust and malodours which may be detrimental to the amenities of the locality.

38. All leachate generated at the facility shall be treated and/or disposed of in accordance with the working plan.

39. Leachate monitoring wells shall be progressively installed at the locations specified in the working plan within each cell of waste as the waste levels are raised. They shall be constructed and maintained to the standard specified in the working plan.

40. Leachate levels within the site shall be kept to a minimum and should under no circumstances be allowed to rise above 1 metre measured from the base of the leachate sump at any of the monitoring locations.

41. Water collected in the clean water sump shall be dispersed of via the main sewerage system until the Water Company and the National Rivers Authority are satisfied that water quality is such as to allow it to be discharged to a suitable water course. Approval for discharge to the water course must be in writing.

42. Pumping of ground water from the sumps shall be continued until it can be demonstrated to the satisfaction of the Waste Disposal Authority and the National Rivers Authority that the landfill would not pose an unacceptable risk to the aquatic environment.

43. Gas monitoring wells shall be progressively installed at the locations specified in the working plan within each cell of waste as the waste levels are raised. They shall be constructed and maintained to the standard specified in the working plan.

44. The landfill gas control system shall be progressively installed in accordance with the working plan. The system shall be maintained at all times to the original specification detailed in the working plan.

45. Until final restoration, completed landfill areas shall be graded and maintained as detailed in the working plan.

46. Any cessation of operations for a period in excess of 12 weeks shall be notified to the Waste Disposal Authority. Not less than 14 days notice shall be given to the Waste Disposal Authority of the date on which operations are to recommence in the event of such a cessation.

47. A copy of any notice or instruction received in respect of the facility from any authority, other than the Waste Disposal Authority, which in any way relates to the use ofthe facility, shall be given to the Waste Disposal Authority within 3 days of the receipt of such a notice or instruction.

48. The terms of this licence shall be made known to any person who is given responsibility for the management or control of the facility and be available at all times at the facility for the use of such persons.

49. A moveable water supply must be provided to the working surface of the tip and must be connected to a sprinkler system. This is to cater for the deposit of ash on the site so that loose bags can be sprayed to suppress dust.

50. Notwithstanding the generality of the conditions in this Schedule, the activities to which this licence relates shall not be carried on so as to cause pollution to water or danger to public health or become seriously detrimental to the amenities of the locality affected by the activities.

SCHEDULE E. - MONITORING.

1. Surface water samples shall be taken from the locations specified at 3 monthly intervals. The samples shall be analysed in accordance with the working plan and the results shall be forwarded forthwith to the Waste Disposal Authority and the National Rivers Authority.

2. Water samples shall be taken from each external ground water monitoring borehole at 3 monthly intervals. The samples shall be analysed in accordance with the working plan and the results shall be forwarded forthwith made available to the Waste Disposal Authority and the National Rivers Authority.

3. Water samples shall be taken from each leachate monitoring well 3 monthly intervals. The samples shall be analysed in accordance with the working plan and the results shall be forwarded forthwith made available to the Waste Disposal Authority and the National Rivers Authority. All Liquid monitoring programmes and analytical suits shall be reviewed on an annual basis and may be subject to modification by the Waste Disposal Authority in consultation with the National Rivers Authority.

4. Water levels shall be measured in each ground water monitoring borehole and leachate well at monthly intervals and the results shall be forwarded/made available to the Waste Disposal Authority and the National Rivers Authority.

5. If any analysis of surface water indicates contamination of the surface water indicates contamination of the surface waters, the Waste Disposal Authority and the National Rivers Authority shall be notified immediately. The situation shall be treated as an emergency and the appropriate procedures specified in the emergency plan required by condition 25 of Schedule B shall be implemented.

6. Monitoring shall be carried out using portable gas detection equipment for the methane and carbon dioxide components of landfill gas. The portable gas detection equipment shall be calibrated, operated and maintained in accordance with the manufacturer's instructions for the gas it is intended to monitor.

7. The monitoring specified in condition 6 above shall be carried out on each gas monitoring borehole, gas well and at each of the other gas monitoring points as detailed in the working plan. This monitoring shall be carried out by taking a minimum of 3 repeated readings from each gas monitoring point, gas well and gas monitoring borehole during the course of one day and at intervals of not more than 7 days. At the time of each reading the barometric pressure and air temperature shall be measured using the equipment in the working plan.

8. The results of the gas monitoring required by conditions 7 & 8 above shall be forwarded/made available to the Waste Disposal Authority.

9. A minmum of_3 gas samples be taken, at points agreed with the Waste Disposal Authority, for gas chromatography analysis at 6 monthly intervals. The results of the analysis shall be forwarded/made available to the Waste Disposal Authority.

10. If any leachate borehole, leachate well, gas borehole or gas well should at any time become unserviceable for sampling, then it shall be made serviceable or replaced by agreement with the Waste Disposal Authority within 4 weeks of becoming unserviceable.

11. The gas control system shall be inspected daily. Any damage, mechanical malfunction, or extraneous material likely to impair its effectiveness shall be rectified immediately.

12. If at any time gas levels greater than 1% flammable gas or 1.5% carbon dioxide, by volume in air, are detected in any gas monitoring point situated outside the landfilled area, the Waste Disposal Authority shall be notified immediately. The situation shall be treated as an emergency and the appropriate procedures specified in the emergency plan required by condition 25 of Schedule B shall be implemented.

SCHEDULE F.

1. The final layer of waste deposited shall be subject to the minimum compaction, and shall to a depth of not less than one metre be kept free of materials likely to interfere with the final restoration or subsequent use.

2. Until final restoration, completed areas of landfilling shall be graded and maintained in accordance with the details specified in the working plan.

3. Once final levels have been achieved the facility shall be provided with capping consisting of a minimum thickness of one one metre of clay or other low permeability material as detailed in the working plan. The material shall be placed in layers less than 0.300m thick.

4. Final restoration shall be to the contours in accordance with the working plan. The permeability of the capping layer shall be not less than 1 x 10-9 m/sec. The capping layer shall be covered with a minimum of 0.500m of subsoil and soil to prevent desiccation, penetration of roots or erosion. Such capping shall not affect the integrity of the gas venting system.

PERMIT

ASIANTAETH YR AMGYLCHEDD CYMRU
ENVIRONMENT AGENCY WALES

ENVIRONMENTAL PROTECTION ACT 1990, sect. 37(1)(a)

NOTICE OF MODIFICATION OF WASTE MANAGEMENT LICENCE

To: Fairyacre Limited
Company Secretary of Legislator 1171 Limited
Of 5 Balfour Place, Mount St., London, W1Y 5RG

WHEREAS on 6 July 1992 Caerleon Limited was granted a Disposal Licence *(Number L1/15)* by Swansea City Council relating to land at Cwmrhydyceirw Quarry, Morriston, Swansea

AND WHEREAS on 1 May 1994 the said disposal licence converted to a waste management licence pursuant to section 77(2) of the Environmental Protection Act 1990 ("the 1990 Act")

AND WHEREAS on 31 March 2000 the said waste management transferred to Legislator 1171 Limited pursuant to Section 40 of the 1990 Act

NOTICE is HEREBY GIVEN that the Environment Agency modifies the conditions contained in the said waste management licence as follows:-

SCHEDULE G shall be added to the conditions of the licence as indicated in the attachment to this notice

Such modification shall take effect on 1 June 2000

Dated 25/5/2000 (Signed) ..... For Environment Planning Manager

N.B.- The person served with this notice may under Section 43 of the 1990 Act appeal against the Agency's decision to the Secretary of State within six months of the date of the decision or such longer period as the Secretary of State may allow. **Delete as appropriate -[The person on whom this notice is served may also make application to the Secretary of State for a ruling as to whether the Agency has acted reasonably in including the above statement as to the non-application of Section 43(4) of the 1990 Act]* **(See notes overleaf.)**

Asiantaeth yr Amgylchedd, Glan Tawe, 154 Fford Sant Helen, Abertawe, SA1 4DF
Ffon 01792 645300, Ffacs 01792 470068

Environment Agency, Glan Tawe, 154 St Helens Road, Swansea, SA1 4DF
Tel 01792 645300, Fax 01792 470068

ref notlacop

SCHEDULE G

1 The financial provision for meeting the obligations under this Licence set out in the Agreement made between the Licence Holder and the Agency dated 25 February 2000 shall be maintained by the Licence Holder throughout the subsistence of this Licence and the Licence Holder shall produce evidence of such provision whenever required by the Agency.

The financial provisions for meeting the initial obligations of the licence referred to in this condition are based on the premise that the site does not receive waste

2 No waste shall be received until a revised schedule of financial provisions has been to and agreed by the Agency. The revision shall include the anticipated operational costs for the active phase of the site during disposal activities , restoration, completion and a 50 year period of aftercare

3 Any changes in the technically competent management of the site and the name of any incoming person together with evidence that such person has the required technical competence shall be submitted to the Agency in writing within 5 working days of the change in management

FOR ENVIRONMENT PLANNING MANAGER ...

DATED ... 25 ... May ... 2010 ...

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Appendix B : Sample results

MIDAS: Sample Details Report

Sampling Point Details

Point Code:	76555	'BUCKET NUMBER' SWANSEA EAST AREA
Type:	FZ	FRESHWATER - UNSPECIFIED
Area:	T	WELSH - SOUTH WEST
Sub Area:	5	Neath & Port Talbot
Country:	Wales	
Political Codes:		

Sample Details

Status:	Archived		
Source:	1	LLANELLI LABORATORY (NLS)	
Reference:	258339		
Taken:	17-Jun-2004 14:45		
Material:	ZZZZ	UNCODED	
Purpose:	SI	STATUTORY FAILURES (FOLLOW UPS AT NON-DESIGNATED POINTS)	
Mechanism:	S	SPOT	
Sampler:	P225	PAUL EDMONDS	
Received at Lab:	18-Jun-2004 08:04	**Last Updated:**	21-Jul-2004 16:20:33
Analysis Complete:	16-Jul-2004 12:16	**Transfer to Archive:**	30-Jul-2004 08:07:30
Sample Held?	No		
Reason For Change:			

Pre-Sampling Details

System Id:	10	**Run Id:**	39825		
Officer:	WEP4	**Run Date:**	17-Jun-2004	**Run No:**	102
Sample Id:	236891				
ARG Codes:	PA257				

Comments

Sampler's Comments:

SS6651599307 - CWMLS02 CRC

Analyst's Comments:

Confirmation Comments:

Sample Address:

Ref: 258339 **Smpt Code:** 76555 **Taken:** 17-Jun-2004 14:45 **Material:** ZZZZ

Measurements

Status	Det. Code	Det. Name	Meth. Code	---Result---	Unit	Perm	Pol	Stats	Usr	IDV	Excl stats
E	0050	LEAD - AS PB	21	<2	ug/l	U	U	U	U	U	N
E	0061	PH - AS PH UNITS	27	7.25	PHUNITS	U	U	U	U	U	N
E	0062	CONDUCTIVITY @20C	27	6850	uS/cm	U	U	U	U	U	N
E	0085	BOD ATU as O2	21	<0.5	mg/l	U	U	U	U	U	N
E	0092	COD - AS O2	21	154	mg/l	U	U	U	U	U	N
E	0099	CARBON ORGANIC TOTAL - AS C	21	2.85	mg/l	U	U	U	U	U	N
E	0105	MERCURY - AS HG	21	0.019	ug/l	U	U	U	U	U	N
E	0108	CADMIUM - AS CD	21	26.4	ug/l	U	U	U	U	U	N
E	0111	AMMONIA - AS N	28	1.45	mg/l	U	U	U	U	U	N
E	0116	NITROGEN TOTAL OXIDISED - AS N	28	<0.5	mg/l	U	U	U	U	U	N
E	0117	NITRATE - as N	25	<0.45	mg/l	U	U	U	U	U	N
E	0118	NITRITE - as N	28	<0.05	mg/l	U	U	U	U	U	N
E	0162	ALKALINITY PH 4.5 - as CACO3	27	117	mg/l	U	U	U	U	U	N
E	0172	CHLORIDE ION - AS CL	28	1834	mg/l	U	U	U	U	U	N
E	0183	SULPHATE - AS SO4	21	679	mg/l	U	U	U	U	U	N
E	0207	SODIUM - AS NA	21	291	mg/l	U	U	U	U	U	N
E	0211	POTASSIUM - AS K	21	492	mg/l	U	U	U	U	U	N
E	0237	MAGNESIUM - AS MG	21	25.3	mg/l	U	U	U	U	U	N
E	0241	CALCIUM - AS CA	21	912	mg/l	U	U	U	U	U	N
E	1042	ETHANOIC ACID {ACETIC ACID}	21	<30	mg/l	U	U	U	U	U	N
E	1065	HEXANOIC ACID	21	<10	mg/l	U	U	U	U	U	N
E	1068	2-METHYLPROPANOIC ACID {ISOBUTYRIC ACID}	21	<10	mg/l	U	U	U	U	U	N
E	1069	3-METHYLBUTANOIC ACID {ISOVALERIC}	21	<10	mg/l	U	U	U	U	U	N
E	1075	BUTANOIC ACID {BUTYRIC ACID}	21	<10	mg/l	U	U	U	U	U	N
E	1088	PROPANOIC ACID {PROPIONIC ACID}	21	<10	mg/l	U	U	U	U	U	N
E	3164	CHROMIUM - AS CR	21	<0.5	ug/l	U	U	U	U	U	N
E	6046	ARSENIC - AS AS	27	<1	ug/l	U	U	U	U	U	N
E	6050	MANGANESE - AS MN	21	330	ug/l	U	U	U	U	U	N
E	6051	IRON - AS FE	21	3040	ug/l	U	U	U	U	U	N
E	6452	COPPER - AS CU	21	5.32	ug/l	U	U	U	U	U	N
E	6455	ZINC - AS ZN	21	389	ug/l	U	U	U	U	U	N
E	6462	NICKEL - AS NI	21	<3	ug/l	U	U	U	U	U	N
E	9449	PHOSPHATE - AS P	21	7	ug/l	U	U	U	U	U	N

MIDAS: Sample Details Report

Sampling Point Details

Point Code:	76555	'BUCKET NUMBER' SWANSEA EAST AREA
Type:	FZ	FRESHWATER - UNSPECIFIED
Area:	T	WELSH - SOUTH WEST
Sub Area:	5	Neath & Port Talbot
Country:	Wales	
Political Codes:		

Sample Details

Status:	Archived		
Source:	1	LLANELLI LABORATORY (NLS)	
Reference:	258340		
Taken:	17-Jun-2004 13:55		
Material:	ZZZZ	UNCODED	
Purpose:	SI	STATUTORY FAILURES (FOLLOW UPS AT NON-DESIGNATED POINTS)	
Mechanism:	S	SPOT	
Sampler:	P225	PAUL EDMONDS	
Received at Lab:	18-Jun-2004 08:05	**Last Updated:**	21-Jul-2004 16:21:08
Analysis Complete:	16-Jul-2004 12:16	**Transfer to Archive:**	29-Jul-2004 08:07:30
Sample Held?	No		
Reason For Change:			

Pre-Sampling Details

System Id:	10	**Run Id:**	39801		
Officer:	WEP4	**Run Date:**	17-Jun-2004	**Run No:**	101
Sample Id:	236719				
ARG Codes:	PA257				

Comments

Sampler's Comments:

SS 66457 99283 CEMGLW01 CRC

Analyst's Comments:

Confirmation Comments:

Sample Address:

Ref: 258340 **Smpt Code:** 76555 **Taken:** 17-Jun-2004 13:55 **Material:** ZZZZ

Measurements

Status	Det. Code	Det. Name	Meth. Code	---Result---	Unit	Perm	Pol	Stats	Usr	IDV	Excl stats
E	0050	LEAD - AS PB	21	252	ug/l	U	U	U	U	U	N
E	0061	PH - AS PH UNITS	27	7.17	PHUNITS	U	U	U	U	U	N
E	0062	CONDUCTIVITY @20C	27	5960	uS/cm	U	U	U	U	U	N
E	0085	BOD ATU as O2	21	>80	mg/l	U	U	U	U	U	N
E	0092	COD - AS O2	21	1368	mg/l	U	U	U	U	U	N
E	0099	CARBON ORGANIC TOTAL - AS C	21	116	mg/l	U	U	U	U	U	N
E	0105	MERCURY - AS HG	21	0.177	ug/l	U	U	U	U	U	N
E	0108	CADMIUM - AS CD	21	2.31	ug/l	U	U	U	U	U	N
E	0111	AMMONIA - AS N	28	403	mg/l	U	U	U	U	U	N
E	0116	NITROGEN TOTAL OXIDISED - AS N	28	<0.5	mg/l	U	U	U	U	U	N
E	0117	NITRATE - as N	25	<0.45	mg/l	U	U	U	U	U	N
E	0118	NITRITE - as N	28	<0.05	mg/l	U	U	U	U	U	N
E	0162	ALKALINITY PH 4.5 - as CACO3	27	2214	mg/l	U	U	U	U	U	N
E	0172	CHLORIDE ION - AS CL	28	959	mg/l	U	U	U	U	U	N
E	0183	SULPHATE - AS SO4	21	150	mg/l	U	U	U	U	U	N
E	0207	SODIUM - AS NA	21	570	mg/l	U	U	U	U	U	N
E	0211	POTASSIUM - AS K	21	288	mg/l	U	U	U	U	U	N
E	0237	MAGNESIUM - AS MG	21	57.5	mg/l	U	U	U	U	U	N
E	0241	CALCIUM - AS CA	21	110	mg/l	U	U	U	U	U	N
E	1042	ETHANOIC ACID {ACETIC ACID}	21	<30	mg/l	U	U	U	U	U	N
E	1065	HEXANOIC ACID	21	<10	mg/l	U	U	U	U	U	N
E	1068	2-METHYLPROPANOIC ACID {ISOBUTYRIC ACID}	21	<10	mg/l	U	U	U	U	U	N
E	1069	3-METHYLBUTANOIC ACID {ISOVALERIC}	21	<10	mg/l	U	U	U	U	U	N
E	1075	BUTANOIC ACID {BUTYRIC ACID}	21	<10	mg/l	U	U	U	U	U	N
E	1088	PROPANOIC ACID {PROPIONIC ACID}	21	<10	mg/l	U	U	U	U	U	N
E	3164	CHROMIUM - AS CR	21	70.7	ug/l	U	U	U	U	U	N
E	6046	ARSENIC - AS AS	27	8.2	ug/l	U	U	U	U	U	N
E	6050	MANGANESE - AS MN	21	737	ug/l	U	U	U	U	U	N
E	6051	IRON - AS FE	21	53900	ug/l	U	U	U	U	U	N
E	6452	COPPER - AS CU	21	12.4	ug/l	U	U	U	U	U	N
E	6455	ZINC - AS ZN	21	880	ug/l	U	U	U	U	U	N
E	6462	NICKEL - AS NI	21	103	ug/l	U	U	U	U	U	N
E	9449	PHOSPHATE - AS P	21	204	ug/l	U	U	U	U	U	N

MIDAS: Sample Details Report

Sampling Point Details

Point Code:	76555	'BUCKET NUMBER' SWANSEA EAST AREA
Type:	FZ	FRESHWATER - UNSPECIFIED
Area:	T	WELSH - SOUTH WEST
Sub Area:	5	Neath & Port Talbot
Country:	Wales	
Political Codes:		

Sample Details

Status:	Archived		
Source:	1	LLANELLI LABORATORY (NLS)	
Reference:	258341		
Taken:	17-Jun-2004 13:35		
Material:	ZZZZ	UNCODED	
Purpose:	SI	STATUTORY FAILURES (FOLLOW UPS AT NON-DESIGNATED POINTS)	
Mechanism:	S	SPOT	
Sampler:	P225	PAUL EDMONDS	
Received at Lab:	18-Jun-2004 08:05	**Last Updated:**	21-Jul-2004 16:21:50
Analysis Complete:	16-Jul-2004 12:16	**Transfer to Archive:**	22-Jul-2004 08:07:27
Sample Held?	No		
Reason For Change:	add sampling mechanism		

Pre-Sampling Details

System Id:	10	**Run Id:**	39801		
Officer:	WEP4	**Run Date:**	17-Jun-2004	**Run No:**	101
Sample Id:	236718				
ARG Codes:	PA225				

Comments

Sampler's Comments:

SS 6654399276 - CWMSW02 CRC

Analyst's Comments:

Confirmation Comments:

Sample Address:

Ref: 258341 **Smpt Code:** 76555 **Taken:** 17-Jun-2004 13:35 **Material:** ZZZZ

Measurements

Status	Det. Code	Det. Name	Meth. Code	---Result---	Unit	Perm	Pol	Stats	Usr	IDV	Excl stats
N	0061	PH - AS PH UNITS	26 N		PHUNITS						N
N	0076	TEMPERATURE WATER	26 N		CEL						N
E	0085	BOD ATU as O2	21	1.4	mg/l	U	U	U	U	U	N
E	0092	COD - AS O2	21	<12	mg/l	U	U	U	U	U	N
E	0111	AMMONIA - AS N	28	<0.5	mg/l	U	U	U	U	U	N
E	0119	AMMONIA UN-IONISED (CALCULATED)	25 N		mg/l	U	U	U	U	U	N
E	0135	SOLIDS SUSPENDED @105C	21	2	mg/l	U	U	U	U	U	N
E	0180	ORTHOPHOSPHATE - as P	28	<0.5	mg/l	U	U	U	U	U	N
E	0301	CARBON ORGANIC DISSOLVED - AS C	24	1.94	mg/l	U	U	U	U	U	N
N	3527	FLOW INSTANTANEOUS	26 N		l/s						N
E	6037	ALUMINIUM DISSOLVED - AS AL	21	<4	ug/l	U	U	U	U	U	N
E	6057	ALUMINIUM - AS AL	27	5.97	ug/l	U	U	U	U	U	N
N	7274	IDENTITY OF HAND HELD METER	26 N		UNITLESS						N
E	9901	OXYGEN DISSOLVED (INSTRUMENTAL) - AS % SATN	25 N		%	U	U	U	U	U	Y
N	9924	OXYGEN DISSOLVED (INSTRUMENTAL - IN SITU) - AS O	26 N		mg/l						N

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Appendix C : Site specific health and safety risk assessment

ENVIRONMENT AGENCY MANAGEMENT OF HEALTH & SAFETY AT WORK REGULATIONS	
PART 1. WORK ACTIVITY/TASK IDENTIFICATION SHEET	
1. REGION/AREA	Welsh Region / South West Area
2. TEAMS	Swansea Environment Management Team
3. TASK SUMMARY	Inspection of Cwmrhydyceirw Landfill Site, Morriston, Swansea.
4. TASK COMMENCES	Ongoing
5. TASK FINISHES	Ongoing
6. PERSONAL PROTECTIVE EQUIPMENT	Safety footwear (steel toe caps & mid-sole) Hard Hat EAW high visibility tabard Latex gloves (Required for some tasks) Respiratory mask (Required for some tasks) Eye protection (Required for some tasks) Lifejacket (Required for some tasks) Waterproof Clothing (Weather dependant) Warm Clothing (Weather dependant)
7. LOCATIONS	Cwmrhydyceirw Landfill Site, Morriston, Swansea.
8. ASSESSORS	Paul Edmonds
9. DATE	May 2004
10. REVIEW PERIOD	Annual
11. AUTHORISATION	**CHECKED BY** **SIGNED** **DATE** ...../...../.....

	DESCRIPTION OF TASK / AREAS OF LANDFILL SITE	3. IDENTIFICATION OF HAZARD, HARMFUL EFFECTS	PERSONS AT RISK	INITIAL, RISK LEVEL	RISK CONTROL MEASURES	RISK AFTER CONTROLS	RISK CONTROL ADEQUATE	OPTIONS FOR IMPROVED RISK CONTROL. BY SHANKS WASTE SOLUTIONS
A	Main Vehicle access to, and from, the Site Office site on Cwmrhydyceirw Road.	1. Other road users. 2. Concrete Mixer HGV using access . 3. Mud on the road.	EAW. Site users. Site staff. Road users	L	1. N/A. 2. Be aware of vehicles braking. 3. Moderate speed & braking distance according to road conditions. 4. Check vehicle and remove mud before leaving the site.	L	Y	None.
B	Bunded tank and foul sewer discharge point	1. Odours and vapours if site is pumping	EAW. Site users. Site staff. Road users		1. Be aware of vehicles travelling on Quarry road, Do not park in front of gate if undertaking 2. Designated parking would be opposite Foul sewer discharge point. <u>Put on appropriate Personal Protective Equipment (PPE) at this point.</u> As a minimum you need: Suitable footwear (steel toecaps and puncture resistant steel mid-sole), high visibility EAW tabard, and hard hat Wear appropriate clothing for the weather conditions. 3. Log onto the lone worker system.			
B	Inspection of Leachate and Surface/Ground water pipes alongside Quarry Road	2. Other road users HGVs			4. Be aware of vehicles travelling on Quarry road. Do not park on road, park in designated area. 5.			
C	Second Inner Gate on Quarry Road	3. Other road users HGVs	EAW. Site users. Site staff. Road users		6. Be aware of vehicles travelling on Quarry road, Do not park in front of gate if undertaking 7. Designated parking would be opposite Foul sewer discharge point.			
D	Pedestrian access down track to landfill site at bottom of quarry.	4. Occasional site 4X4 access. .	EAW. Site users. Site staff.	L	8. Standard PPE. 1. Park in designated area next to site office and workshop. <u>Put on appropriate Personal</u>	L	Y	

					Protective Equipment (PPE) at this point. As a minimum you need: Suitable footwear (steel toecaps and puncture resistant steel mid-sole), high visibility EAW tabard, and hard hat Wear appropriate clothing for the weather conditions. 9. Log onto the lone worker system			
	DESCRIPTION OF TASK / AREAS OF LANDFILL SITE	**IDENTIFICATION OF HAZARD, HARMFUL EFFECTS**	**PERSONS AT RISK**	**RISK LEVEL**	**RISK CONTROL MEASURES**	**RISK AFTER CONTROLS**	**RISK CONTROL ADEQUATE**	**OPTIONS FOR IMPROVED RISK CONTROL. BY**
D	Landfill site and Quarry Void	1. Slips trips falls 2. Steep or vertical Quarry Sides, falling rocks 3. Landfill sampling	EAW. Site staff. Site Company.	M	1. Standard Appropriate PPE 2. Keep away from vertical rock faces. 3. Avoid direct contact with any leachate. Wear PPE + Gloves if you need to sample liquid. 4. Observe good hygiene practices. 5. Avoid direct contact with the waste. Wear PPE + Gloves if you need to sample. 4. Wear PPE + gloves, respiratory and eye protection if sampling. Be aware that asbestos can be concealed	L	Y	
E	Ground water and Surface Water Lagoon in Quarry Void	1. Deep Lagoon. 2. Waterborne infections. 3. Pumping compound.	EAW. Site users. Site staff.	M	1. CAUTION / KEEP CLEAR. The sump is not fenced at the rear of the wheel wash. 2. Keep clear. Wear PPE + eye protection. 3. Pumping Compound fenced and locked. Do not enter without site personnel..	M	Y (only if accompanied by a member of the site staff or LFG management company)	

	DESCRIPTION OF TASK / AREAS OF LANDFILL SITE	IDENTIFICATION OF HAZARD, HARMFUL EFFECTS	PERSONS AT RISK	INITIAL, RISK LEVEL	RISK CONTROL MEASURES	RISK AFTER CONTROLS	CONTROL MEASURES ADEQUATE	OPTIONS FOR IMPROVED RISK CONTROL. BY SWANSEA CITY WASTE DISPOSAL COMPANY
J	Sampling from boreholes / wells / manholes.	1. Remote areas 2. LFG / fire / explosion 3. Leachate / surface water and possible risk of infection / harm. 4. Heavy chamber covers 5. Confined spaces 6. Cuts / crush injuries when removing covers. 7. Carrying bottles over uneven ground	EAW Site staff Consultants	M	1. Log onto Argyle lone worker system. Notify site staff that you will be visiting this area or ask them to accompany you. 2. Use specialist-monitoring equipment that's approved for working in flammable environments. 3. Do not make direct contact with the leachate / surface water – wear PPE + Gloves. 4. Work in pairs. Observe manual handling best practice. Use specialist tools. 5. Do not enter chambers in any circumstance. 6. Wear PPE + Gloves. 7. Use a rucksack (plastic bottles) or wire basket (glass)	L	Y	
L	Ground spiking for Landfill Gas analysis.	1. Remote areas 2. LFG / fire / explosion 3. Contact with waste - possible risk of infection / harm. 4. Heavy equipment 5. Possibility of damaging underground services (gas / electricity / water / sewer) 6. Possibility of damaging hazardous waste (e.g. asbestos / gas canisters / cylinders. DO NOT UNDERTAKE GROUND SPIKING WITHOUT AN ADDITION SPECIALIST RISK ASSESSMENT	EAW Consultants	H	1. Log onto Argyle lone worker system. Notify site staff that you will be visiting this area or ask them to accompany you. 2. Use specialist-monitoring equipment that's approved for working in flammable environments. 3. Do not make direct contact with waste – wear PPE + Gloves / eye protection. 4. Work in pairs. Observe manual handling best practice. Use specialist tools. 5. Before commencing obtain plans from all service. Use GPS to confirm location on site and cross-reference with utility plans. Use a CAT scanner before penetrating the ground. 6. Seek advice from site staff about potential hazards on site.	H	N	

	DESCRIPTION OF TASK / AREAS OF LANDFILL SITE	IDENTIFICATION OF HAZARD, HARMFUL EFFECTS	PERSONS AT RISK	INITIAL, RISK LEVEL	RISK CONTROL MEASURES	RISK AFTER CONTROLS	CONTROL MEASURES ADEQUATE	OPTIONS FOR IMPROVED RISK CONTROL. BY SWANSEA CITY WASTE DISPOSAL COMPANY
N	Site security fence.	1. Remote area 2. Difficult access from site side of fence. 3. Other road users.	EAW Site staff Totters	M	1. Log onto Argyle lone worker system. Notify site staff that you will be visiting this area or ask them to accompany you. 2. Inspect site security fence from Quarry Road. 3. Be aware of potential for fast moving vehicles.	L	Y	

	DESCRIPTION OF TASK / AREAS OF LANDFILL SITE	IDENTIFICATION OF HAZARD, HARMFUL EFFECTS	PERSONS AT RISK	INITIAL, RISK LEVEL	RISK CONTROL MEASURES	RISK AFTER CONTROLS	CONTROL MEASURES ADEQUATE	OPTIONS FOR IMPROVED RISK CONTROL.
Q	Intermediate cap. Final cap. Vegetated cap.	1. Remote. 2. Mud / dust. 3. Steep slopes. 4. Tripping hazards 5. Voids / areas of subsidence. 6. Ponding water.	EAW Site staff	L	1. Log onto Argyle lone worker system. Notify site staff that you will be visiting this area or ask them to accompany you. 2. Wear PPE + Consider dust mask. 3. Wear suitable footwear. Visually assess the terrain before walking onto a slope. 4. Be aware that on top of the cap there will be raised borehole, large stones, protruding waste, vegetation, and gas / leachate collection infrastructure which are tripping hazards. 5. Be aware that waste degradation can cause subsidence of the site cap. This may lead to the creation of deep holes in the cap. Keep well away as the area may be unstable (see Q6) 6. Be aware that water may be deep and contain hidden hazards. <u>Do not</u> enter any standing water.	L	Y	

	DESCRIPTION OF TASK / AREAS OF LANDFILL SITE	IDENTIFICATION OF HAZARD, HARMFUL EFFECTS	PERSONS AT RISK	INITIAL, RISK LEVEL	RISK CONTROL MEASURES	RISK AFTER CONTROLS	CONTROL MEASURES ADEQUATE	OPTIONS FOR IMPROVED RISK CONTROL.
T	EAW 4X4 vehicle use on site.	1. Collision 2. Mud 3. Wastes falling from refuse vehicles. 4. Vehicle roll over / fall over 5. Vehicle stuck - injury whilst using winch or being towed. 6. Mud obscuring lights / number plates after site visit.	EAW Site staff Site users	L	Only use 4x4 vehicle if suitably trained. 1. Use hazard / dipped lights / beacon to make vehicle more visible. 2. Moderate speed according to road conditions. 3. Keep a safe distance away from any vehicles travelling in front of you. 4. Assess terrain before driving vehicle onto slopes / cambered surfaces / soft ground / rutted ground. 5. Assess terrain before driving onto soft / rutted ground to avoid getting stuck. WINCH. Do not use winch unless suitably trained. Use remote operation cable. Stand well clear of vehicle whilst using winch. Inspect cable for wear before use. Use thick gloves whilst handling cable. TOWING Assess suitability of chain / rope / cable for towing and inspect for damage before use. Do not stand between vehicles whilst towing. Be aware of potential for vehicles to roll back and cause crush injury's. Apply handbrake on both vehicles before you move between them to attach / remove the towing device. 6. Check vehicle and remove mud before leaving the site.	L	Y	

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Appendix D : Key Criteria Map

ENVIRONMENT AGENCY SITE AUDIT

Licence L1/15 (34048) **Licence Holder:** Legislator 1171 Limited

EA Ref: 34048 **Site Name:** Cwmrhydyceirw Quarry

Audit Date: 16 June 2004 **Audit Lead:** Paul Edmonds **Number of other staff taking part:** 2

Description of Scope: High level assessment and audit of all existing licence conditions against the principles of the key criteria and operator compliance - Schedule A was excluded.The audit is carried out as a benchmark of site operations prior to the proposed PPC permit.

Audit ID: WV100003 **Associated Site Inspection Form ID:** 425554

Overview

Key: 'OS' = Out of Scope,' -' = Record not completed

Criteria Ref:	Licence Conditions:	OPRA Criteria Fulfilled	Condition Enforcable	Operator aware of OPRA Requirements	Compliant
000	None	-	-	-	-
001	B1A, B2, B11, C1a to C1i, D1, D2, D3, D6, D7, D28, D44, D45, D49	No	Yes	Yes	Yes
002	C1a TO C1i, C2, C3, D4, D27	No	Yes	Yes	Yes
003	D8, D47	No	No	No	No
004	None	No	No	-	-
005	B17, B18, B19, B21, B22, B23, B24	No	Yes	No	No
006	B1c, B3, B16, D38, D39, E5, E11	No	No	Yes	No
007	B1b, B3, D42, D43	No	No	No	No
008	B3, D40, E1, B13, B14, D15	No	No	Yes	No
009	B3, F3, F4	No	No	No	Yes
010	B5	No	Yes	Yes	No
011	B4	No	Yes	Yes	No
012	B7, B9, D14, D30	No	No	Yes	Yes
013	B25, B26, D13, D15	No	No	No	No
014	B25, B26, D12, D13	No	No	Yes	Yes
015	B8, D4, D5, D9, D10	No	No	Yes	Yes
016	B3, B20, D11, D19, D20a, D20b, D20, D21, D22, D23, D24, D26, D27, D44, F1, F2	No	No	Yes	Yes
017	None	No	No	-	-

018	None	No	No	-	-
019	B3, B15, B25, B26, D13, E7, E8, E9, E10, E11, E12, E13	No	No	No	No
020	D15, B25, B26, D13, E7, E8, E9, E10, E11, E12, E13	No	No	No	No
021	B3, B25, B26, D13, E3, E4, E5, D15	No	No	Yes	No
022	B3, B15, B25, B26, E2, D13, E4, D41	No	No	Yes	No
023	B3, B25, B26, D13, E6, E1	No	No	Yes	No
024	B25, B26, D13, D18, D29, D37, D48	No	No	Yes	No
025	B25, B26, D13, D37	No	No	Yes	No
026	D36	No	No	Yes	No
027	D35	No	No	Yes	No
028	None	No	No	-	-
029	D29, D31, D32, D33, D34	No	Yes	Yes	Yes
030	None	No	No	-	-
032	B12, D15	No	No	Yes	No
036	None	No	No	-	-
037	None	No	No	-	-