Environment & Resource Management Ltd

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Dr. Jonathan Derham,
Environmental Protection Agency,
P.O. Box 3000,
Johnstown Castle Estate,
Co. Wexford.

30 November 2004

Project No. 04.148

Re: Review of Waste Licence 81-2

Dear Dr. Derham,

I am writing on behalf of our client, KTK Landfill Ltd. Please find attached one original, 2 no. copies and 2 copies on CD in PDF format of a Waste Licence Review Application for Waste Licence Reg. No. 81-2.

Please also find attached a cheque for the amount of €25,000.

Yours sincerely

Geoff Parker M.E.Sc., M.I.E.I., M.I.W.M.

CC: Ms. Margaret Heavey, Greenstar,
Mr. Michael Bergin, KTK Landfill Ltd.

KTK LANDFILL LTD.
BROWNSTOWN AND CARNALWAY,
KILCULLEN, CO. KILDARE.

NON HAZARDOUS WASTE LANDFILL

Waste Licence Register 81-2

APPLICATION FOR A WASTE LICENCE REVIEW

MAIN REPORT

Prepared By:
Environment & Resource Management Ltd.
No. 3 Tara Court,
Naas, Co. Kildare.

NOVEMBER 2004

KTK Landfill Ltd.

Non Hazardous Waste Landfill

Brownstown & Carnalway, Kilcullen, Co. Kildare

Application for a Review of Waste Licence No. 81-2

PREAMBLE

Environment & Resource Management Ltd. (ERML), acting on behalf of its client KTK Landfill Ltd., issued a letter to the Environmental Protection Agency ('the Agency' or EPA) on 20 July 2004.

The letter requested receipt of advice from the Agency in relation to a review of the above-referenced Waste Licence and the information required by the Agency for such a review.

The three-fold objectives of the review were articulated in the letter of the 20 July 2004 (See Appendix 1).

The Agency responded to the above-mentioned letter on 30 August 2004 (See Appendix 1). Their letter firstly acknowledged the request for a review in relation to the three stated objectives. It then stated, *".....a full review application is not required in this instance and the revised review procedure (as allowed for under Article 12(3)(a) of the Waste Management (Licensing) Regulations, 2004) will apply in this case".* The letter continues to list the information required in order that the review may be processed by the Agency.

The information and particulars specified by the Agency in its letter of 30 August 2004 for inclusion in this Application for the Review of Waste Licence 81-2 is contained in the text, appendices and accompanying drawings that follow.

A checklist of the EPA requested information and the location of the information in the enclosed Waste Licence Review Application Document is provided on Table P.1 overleaf.

Table P.1: Checklist of the EPA Requested Information and the Location of the Information in the enclosed Waste Licence Review Application Document

EPA Requested Information	Location of the Information in the enclosed Waste Licence Review Application Document
Article 5, 6, 7 & 9 Compliance requirements For the Review of Waste Licence	
(a) Publish and fix a site notice as specified in Articles 5, 6 and 7 of the Waste Management (Licensing) Regulations, 2004.	Section 2.
(b) Submit a notice to the Agency and the relevant planning authority in accordance with Article 9 of the Waste Management (Licensing) Regulations, 2004.	Section 3.
Article 12 Compliance requirements For the Review of Waste Licence	
1) Provide the information specified in Article 12(1)(a) of the Waste Management (Licensing) Regulations, 2004.	Section 4.
2) Provide information for the purposes of enabling the Agency to make a determination in relation to the matters specified in Section 40(4) of the Waste Management Acts 1996-2004.	Section 13.
3) Provide an assessment of the likely emissions, potential impacts and details of the mitigation measures for the intended change from inert fill to C&I fill in the void located south of Phase 1.	Section 7.8, 7.9 & 7.10.
4) Detail: • The anticipated changes in annual waste inputs for the broad classes (e.g. C&I, C&D); • The void of the new fill area; • The amended total void for the facility.	Section 10 • Section 10.1 • Section 10.2 • Section 10.3
5) In relation to the rearrangement of the infrastructure, provide an assessment of any likely emissions, potential impacts and details of mitigation measures for the intended changes.	Section 8.5, 8.6 & 8.7.

EPA Requested Information	Location of the Information in the enclosed Waste Licence Review *Application Document*
6) Provide details of the leachate management provisions in relation to the connection of Phase 1 into the new C&I fill area (including gradients, capacity of drainage layer in new area, etc.)	Section 7.4, 7.5 & 7.6.
7) Provide an updated plan and details for the restoration of the facility having regard to the amendments proposed.	Section 9.
8) Provide revised scaled drawings (and Sections) detailing all amendments to the design, layout and operation of the facility (max. size A3).	Section 6.
9) Provide a non-technical summary of the revised application.	Non Technical Summary.
10) State the grounds on which the review is made in accordance with Article 12(3)(a) of the Waste Management (Licensing) Regulations, 2004.	Section 1.
11) Provide the information to accompany the application as specified in Article 12(4) of the Waste Management (Licensing) Regulations, 2004.	Section 5.
12) Submit the appropriate fee for the review of your licence in accordance with Article 41 of the Waste Management (Licensing) Regulations, 2004.	Section 5.5
13) Provide details of any impacts on the existing waste licence conditions and justification for any proposed changes to the existing conditions 9 i.e. proposed changes in the licence, which are required in order to be consistent and facilitate the proposed amendments to the facility).	Section 11.
14) Describe how the amendments to the waste inputs relate to any relevant Regional Waste Management Plan or plans.	Section 12.
15) Confirm the planning status of the site and whether or not an EIS will be required to accommodate the changes proposed.	Section 14 & Section 15.

1. GROUNDS FOR THE APPLICATION FOR THE REVIEW OF WASTE LICENCE REGISTER NUMBER 81-2

Article 12(3)(a) of the Waste Management (Licensing) Regulations 2004, requires the Application for the Review of a Waste Licence to: (i) state the grounds on which it is made; and (ii) the reference number given to the Licence in the register.

The Waste Licence Reference Number in the register is as stated above, No. 81-2 (WL 81-2).

The grounds on which this Application for review is being made were outlined in the ERML letter of 20 July 2004 and are further described in Sections 1.1 to 1.3 of this submission. Further details on the proposed changes to the facility and an assessment of the potential emissions, details of the mitigation measures and potential impacts for the proposed changes are presented in Sections 7 to 9 of this Review Application Report.

1.1 Grounds No. 1 – A Re-Designation of an Inert Waste Disposal Area, to a Commercial & Industrial Waste Area

The licensee wishes to dispose of non-hazardous Commercial and Industrial (C&I) wastes in an area previously identified in 1998 for the deposition of inert materials. The Agency in its letter of 14 July 2004 (Reference 81-2/AK031DM) acknowledges that the filling and restoration of this area is consistent with the planning permission and EIS submitted.

The proposed area in which a fully engineered lined cell will be developed in accordance with EPA requirements is shown on the attached Drawings KTK/2002, KTK/2003 and KTK/2004.

1.2 Grounds No. 2 - A Reorganisation of Landfill Support Infrastructure

The licensee wishes to relocate some of the infrastructure to other appropriate locations, within the current boundaries of the licensed facility (refer to Conditions 3.5, 3.7, 3.9 and 3.15 of WL 81-2).

Drawings of the proposed infrastructure are attached (Drawings KTK/2002, KTK/2003, KTK/2004 and KTK/2005).

1.3 Grounds No. 3 – Amendments to the Restoration Plan

The licensee wishes to ensure that the post waste settlement landform has the minimum slopes and gradients that are recommended in the EPA's Landfill Manual on *Landfill Restoration and Aftercare.* The licensee proposes to place an additional surcharge of 1 metre (on average) of compacted waste in order to accelerate settlement and attain previously agreed final post-settlement levels within a shorter timeframe.

The licensee proposes to fill the site so that the overall maximum level and general form of the post settlement restored surface that were presented in the April 1998 EIS and in the review application documents submitted to the EPA in July 2001 will be retained.

Drawings KTK/2007 to KTK/2011 and LA-001 and LA-002 attached illustrate the proposed restoration and landscaping proposals.

2. ARTICLES 5, 6 & 7 COMPLIANCE REQUIREMENTS

2.1 Newspaper Notice

Article 12(4) requires the application to be accompanied by the relevant page of the newspaper in which a notice in accordance with Article 6 has been published. Article 6 specifies the content of a notice that is published in a newspaper pursuant to Article 5.

In accordance with Article 5, within the period of two weeks before the making of this Application for the Review of the Waste Licence, a notice of the intention to make this Application was published in a newspaper circulating in the area in which the activities will be carried on.

The notice, which was prepared in accordance with Article 6, was published in the Weekend Herald on 27 November 2004. A copy of the notice is attached in Appendix 2.

2.2 Site Notice

In accordance with Article 5, previous to the making of this Application for the review of the Waste Licence, a site notice of the intention to make this Application was erected at the facility.

The notice, which was prepared in accordance with Article 7, was erected on 30 November 2004, close to the site entrance. A copy of the text for this sign is attached in Appendix 3.

The location of the site notice is shown on Drawings KTK/2000 and KTK/2001.

3. ARTICLE 9 COMPLIANCE REQUIREMENTS

3.1 Notice to the Relevant Planning Authority

In accordance with Article 9, written notice of the application to review the Waste Licence was given to Kildare County Council. The notice took the form of a letter, which contained all information specified in Article 6 and was issued to the County Council on 30 November 2004. A copy of this letter is attached in Appendix 4.

4. ARTICLE 12(1)(a) COMPLIANCE REQUIREMENTS

4.1 Information Specified in Article 12(1)(a)

Applicant's Name:
KTK Landfill Ltd.

Applicant's Address:
Brownstown and Carnalway, Kilcullen, Co. Kildare.

Applicant's Telephone Number:
045 - 482600

Applicant's Fax Number:
045 – 482629

Address to which correspondence relating to the Application should be sent:
Environment & Resource Management Ltd.,
No. 3 Tara Court, Dublin Road,
Naas, Co. Kildare.

Address of Applicant's registered or principal office:
KTK Landfill Ltd, Burton Court, Burton Hall Road, Sandyford, Dublin 18.

5. ARTICLE 12(4) COMPLIANCE REQUIREMENTS

The information to accompany the Application, as specified in Article 12(4) of the Waste Management (Licensing) Regulations, 2004 has been provided as follows:

5.1 Newspaper Notice

A copy of the newspaper notice as discussed in Section 2.1 is attached in Appendix 2.

5.2 Text of Site Notice

A copy of the text for the site notice as discussed in Section 2.2 is attached in Appendix 3.

5.3 Copy of Notice to Planning Authority

A copy of the notice issued to the Planning Authority, as discussed in Section 3.1 is attached in Appendix 4.

5.4 Site Plans, Location of Site Notice, Points of Emissions and Points of Monitoring

Scaled site plans and Drawings are attached in Appendix 5. The location of the site notice is shown on Drawing KTK/2000 and KTK/2001.

The points of emissions other than from mobile plant are as follows:

- Leachate will be removed from a holding tank, which is located as shown on KTK/2003, KTK/2004 and KTK/2005;
- Landfill Gas will be extracted and subsequently directed to the gas utilisation plant or enclosed flares as shown on Drawing KTK/2008.

All other emissions will be dispersed.

The proposed revised monitoring locations are shown on Drawing KTK/2002. The private well monitoring locations and the noise monitoring locations (N8A, N12A & N16A) are not shown on this drawing but remain in the same location as in Waste Licence 81-2.

5.5 Fee for Waste Licence Review

The appropriate fees for the Waste Licence Review Application having regard to provision of Article 41 of the Waste Management (Licensing) Regulations 2004 are presented in Table 5.1.

A cheque for the correct amount is attached.

Table 5.1: Appropriate Fees for Waste Licence Review Application

Waste Activity	Amount of Fee for a Review of Waste Licence
1.1 The disposal of waste at a landfill facility where the annual intake is likely to exceed 100,000 tonnes	€25,000
TOTAL FEES	**€25,000**

6. SCALED DRAWINGS

Scaled Drawings showing the amendments to the design, layout and operation of the facility have been provided in relation to this application for the review of Waste Licence 81-2. The Drawings are attached in Appendix 5.

7. PROPOSED CHANGE FROM INERT FILL TO C&I WASTES, TO FILL THE VOID LOCATED SOUTH OF PHASE 1

7.1 Introduction

The original Waste Licence Application in 1998 (WL 81-1) proposed restoring the area now occupied by facility services infrastructure (south of the Phase 1 Development) with inert materials upon completion of landfilling in the rest of the site. The licensee now proposes to restore this area by developing an engineered cell and filling it with construction & demolition wastes and commercial & industrial wastes, in compliance with the Waste Acceptance Procedures already agreed with the Agency for the landfill site. This proposal does not increase the annual waste intake to the site. The proposed engineered cell will include lining, leachate and gas collection systems. An outline of the area to be developed into an engineered lined cell is shown on Drawing KTK/2002.

To form the engineered landfill cell, all of the infrastructure currently in the Services Platform must be relocated and the existing infrastructure decommissioned. The decommissioning and relocation of the services infrastructure is dealt within Section 8 of this Review Application Report.

Details on the proposed development of an engineered landfill cell, potential emissions from this development, mitigation measures and the potential impacts are presented in the subsections that follow.

7.2 Preparatory Works

The completion of a lined landfill cell, filling, final capping and restoration of the services will require preparatory works as described below.

After replacement of the infrastructure currently in the Services Platform, the preparatory works for the lined cell will include decommissioning and removal of the existing infrastructure in the Services Platform including, hardstand, wheel wash, weighbridges, offices, the concrete structure used as a waste quarantine bay, the Biocycle waste water treatment plant, silt settling tank, oil separator, the underground services and ducting.

Earthworks will then be carried out to form roads, hardstands and a lined cell for the receipt of wastes that will be required for restoration of the area of the existing Services Platform. The quantity of material to be excavated to form a lining system on the original floor of the gravel pit will be in the order of 50,000 m^3. This material will be reused on site for engineering purposes such as in the capping layer, covering waste, or protecting the side slope lining system of the facility.

Temporary surface drainage systems for areas outside of the waste body will be installed during construction of the lining systems. These temporary works will include piping and soak holes into the ground.

A civil engineering contractor will be employed to construct lined areas for waste disposal and leachate collection and management systems.

Drawing KTK/2003 depicts the proposed formation levels of the additional lined area. The formation level has been selected to be 1m above the water table.

7.3 Proposed Lining System

7.3.1 Base Liner

In accordance with the licence, a composite lining system comprising a minimum of 1 metre of compacted clay/silt till with a maximum co-efficient of permeability (k) of 1 x 10^{-9} m/second and a 2 mm thick HDPE geomembrane is proposed.

The proposed formation levels of the base liner are shown on Drawing KTK/2003. The base liner will slope in two directions to sumps.

7.3.1.1 Compacted Clay Liner

Local clayey till will be used. The clayey till will be screened so that the maximum particle size will be 75mm.

A CQA/CQC testing programme will be carried out in accordance with the EPA – Landfill Manuals –Landfill Site Design and will include:

- A level survey of the formation and completed levels of the CCL;
- Verification of the thickness of the CCL;
- Field density tests on each lift;
- Triaxial permeability tests on re-compacted samples;
- If possible permeability testing of intact samples recovered from U100 tubes pushed into the CCL;
- Particle size distributions;
- Moisture contents; and
- Atterberg Limits.

A CQA/CQC validation report will be prepared following the end of construction.

7.3.1.2 Geomembrane

The Geomembrane element of the composite liner will be 2 mm thick high-density polyethylene (HDPE). The HDPE will be protected by a non-woven geotextile. A qualified independent inspection company will carry out the CQA/CQC programme. In addition, a leak location survey will be carried out following placement of the drainage stone. A report will be issued following the end of the construction.

7.3.2 Side Slope Lining System

The side slope lining system is shown on Drawing KTK/2003. On the side slope, the liner will comprise a composite system placed on battered side slopes.

The composite liner on the slopes, delineated on Drawing KTK/2003, will comprise a needle punched geosynthetic clay liner (GCL), 2 mm HDPE geomembrane and a layer of geocomposite drainage layer on the southern slopes and non-woven geotextile on the northern slopes of the new cell. These materials will provide a drainage function and offer the first line of defence to mechanical puncture.

Tyres will be employed as ballast for the side slope lining system. The landfill operator will be responsible for placing additional materials against the lining system to protect it during filling operations.

7.4 Proposed Leachate Collection Systems

The enclosed Drawing KTK/2003 illustrates the proposed system, which will be similar to that constructed in the rest of Phase 1 and in other phases. There will be a 0.5 m thick drainage stone blanket, with a k > $1x10^{-3}$ m/sec. As this will be completely saturated by the 1 metre head of leachate, leachate pipes are not proposed, as they will serve no purpose, as the leachate will freely flow in the drainage blanket towards the pumped sumps at either end of the cell.

7.5 Leachate Management

7.5.1 Existing System

The elements of the existing systems, as shown on Drawing KTK/2003 are:

- Leachate Shaft No. 1 and a closed gravity pipeline with stainless steel valve. This drain was supplied during Phase 1 construction for a possible future connection to foul sewers or treatment works;
- Side slope risers with a perforated intake section and four pumps with level control switches. These pumps discharge into a rising/gravity pipeline leading to the leachate holding tank or into rising mains that convey leachate back into the landfill to further saturate the waste and enhance biodegradation;
- A Leachate Holding Tank at the location shown on Drawings KTK/2003, KTK/2004 and KTK/2005;
- A leachate pumping station installed in the leachate holding tank. The pumping station comprises a duty and standby pump, level control switches, an ultrasonic level sensor. The pumps have quick release couplings to allow removal and maintenance;
- This pumping station has been used to pump leachate into tankers for haulage offsite to the Kildare County Council Waste Water

Treatment Plant at Athy. The pumping station is connected to a rising main that was installed along the southern side of the platform and the west side of the site access road. The rising main is terminated in a chamber located near the entrance/exit point to the site. From there, there is a 100 mm ID HDPE gravity pipeline that has been installed along the north side of the reconstructed public road PI318. The 100 mm HDPE line has been terminated in a manhole located at the roadside near the junction of PI318 and the main Kilcullen/Naas Road, R448.

7.5.2 Proposed System

The main elements of the proposed future system are described below.

(i) Leachate in Phases 1 and 2 will be pumped out using the existing system or drain into the proposed lined extension of Phase 1 via a gravity pipeline (see Section 3 on Drawing KTK/2006) or flow into the Phase 3 sump when the leachate level in Phase 1 rises above 120.4 mOD.

(ii) Leachate in Phases 3 to 5 will be pumped from a sump (containing leachate pumps LP3 and LP4) and either re-circulated through closed pipes into the waste body, via purpose built trenches or galleries that will be relocated from time to time within the lined area or pumped directly into the proposed lined extension of Phase 1.

(iii) Leachate will flow in the proposed lined extension of Phase 1 towards pumped sumps located as shown on Drawing KTK/2003. Each sump will contain a submersible pump installed in an inclined side slope riser. Level switches will control the pumps. The pumps will remove the leachate from the floor of the proposed lined extension of Phase 1 and discharge it into a new holding tank or discharge it into rising mains for re-circulation into the waste body.

(iv) A new leachate holding tank will be located at the eastern end of the proposed lined extension of Phase 1, as shown on Drawings KTK/2003, KTK/2004 and KTK/2005. Leachate will be evacuated from the holding tanks by closed vacuum tankers, which will haul it to the Athy Waste Water Treatment Plant until such time as a connection to the foul drainage system in Kilcullen is available.

(v) A pumping station will be installed in the leachate holding tank to evacuate leachate from the holding tank and to discharge it into the foul sewers in Kilcullen. Infrastructure will be provided to treat leachate as required, prior to discharge into the Kilcullen foul sewers. The infrastructure will be situated near the proposed new holding tank. The pumping station will comprise a duty and standby pump, level control switches, and a level sensor. The pumps will have quick release couplings to allow removal and maintenance.

(vi) This pumping station will be used to pump leachate into a rising main. This rising main is terminated in a chamber, located near the entrance/exit point to the site that discharges into a 100 mm ID

(vii) HDPE gravity pipeline was installed along the north side of public road PI318. The 100 mm HDPE line has been terminated in a manhole located at the roadside near the junction of PI318 and the main Kilcullen and Naas Road, R448. Discussions with Kildare County Council are ongoing in relation to jointly developing a gravity / rising main along the R448, to connect the leachate collection systems in the KTK and Silliot Hill landfills to the foul sewers in Kilcullen.

7.6 Leachate Level Monitoring

Pursuant to Condition 3.16.3 of WL 81-2, the existing systems of monitoring will be replaced by a new system as described below.

7.6.1 Specifications

The proposed method of monitoring of leachate levels at the base of the landfill will be vented pressure transducers installed within the drainage layer. The pressure transducers will be connected to a data logger, which will provide real time data to the on site management team.

7.6.2 Locations

The leachate level monitoring points will be at or near the leachate sumps constructed in the base of the lined areas.

7.7 Gas Management

7.7.1 Infrastructure

The overall master plan for Gas Management at the facility is one that includes enclosed flares and a gas utilisation plant to convert the landfill gas to electricity via 3 no. 1 Mega watt gas engines. A system of wells and piping have been installed at the facility. Some of the existing piping and wells will be utilised but as filling is carried on, it is anticipated that some of the existing wells and piping will require replacement and/or relocation. Additional piping and wells will be installed as required to complete the system as required, to deliver gas to the utilisation plant and to control emissions from the facility. The backbone of the existing and future gas collection system is a perimeter ring main. This ring main will extend around the entire site including the infill area south of the existing Phase 1 landfill development area. A schematic view of the master plan for Gas Management at the KTK Landfill is shown on Drawing KTK/2008.

7.7.2 Gas Monitoring locations

With the development of the proposed additional lined area, there will be a number of changes to the gas monitoring locations at the facility. Three present gas monitoring locations (CP1, CP2 & CP3) at which monitoring

was initiated by the licensee, are in road gullies which connect the present hardstand to the Phase 1 lined area. However, as the present hardstand will be decommissioned, these gullies will be removed. There are no plans for direct connections of surface water drainage system from the hardstand of the proposed additional lined area into the landfill, so there will be no need to monitor road gullies.

Also gas borehole G12 & G13 will be removed with the development of the additional lined area. These will be replaced by three new gas monitoring wells (G14, G15 & G16), which will be located and constructed in accordance with the EPA's guidance on gas monitoring. It is noted that locations G14 to G16 have been approved by the Agency, under Specified Engineering Works proposed submitted by ERML on behalf of the licensee.

7.8 Potential Emissions

7.8.1 Air

There is a potential for the emission of dust from the proposed construction of a lined area and the associated infrastructure.

The source and location of potential dust emissions will be bare soil slopes, hard roads and stockpiles of cover materials. Some of the C&I wastes will contain fines and thus will be a potential source of dust. There may also be potential for emissions from the paved areas. The nature and composition of the emissions will be generally fine particulate inert matter. The quantity, level and rate will be variable.

Emissions of odour and landfill gas are expected as potential emissions from the proposed additional lined area as the material to be deposited is C&I waste, which will have a biodegradable fraction.

7.8.2 Litter

Small amounts of litter may arise as a result of the proposed change of waste types from inert wastes to construction & demolition wastes and commercial & industrial wastes, to be landfilled within the proposed additional lined area

7.8.3 Noise

It is not anticipated that noise levels will increase to nuisance levels during the proposed construction of the lined area and the relocation of associated infrastructure.

Once the new area is operational, it is anticipated that noise emissions at the perimeter of the facility will be consistent with existing noise levels at the facility.

7.8.4 Groundwater

There is a potential for an emission of leachate to groundwater from the proposed extension of the lined landfill. Leachate is produced in landfills from infiltrating rainwater interacting with and extracting substances from the deposited waste, which render such leachate a potential risk to groundwater quality, if it is not contained and collected.

7.8.5 Surface Water

No emissions to the adjoining surface water are expected from the development, as all clean surface water will be discharged to engineered percolation areas in the unsaturated geological deposits and all leachate will be contained and managed as described in Section 7.5.

7.9 Mitigation Measures

7.9.1 Air

The applicant proposes to implement all reasonable control measures to reduce dust emissions from the site, including constructing paved access roads, installing a wheel wash and using a water bowser to wet roads. Monitoring programmes for dust are underway and will be continued in the future.

The planned measures for reducing emission of landfill gas to air are firstly control of the incoming wastes, covering of waste, installation of a low permeability capping layer on the waste, and emission control by active collection and flaring. The landfill gas management plan is described in Section 7.7.

7.9.2 Litter

Litter mitigation measures, in the vicinity of the proposed additional lined area, will include the following:

- Incoming and outgoing vehicles will be appropriately covered;
- Tipped wastes will be covered regularly to minimise the potential for wind blow;
- Litter checks will be carried out daily over the area and along the access road to the proposed additional lined area;
- Litter nets will be erected and maintained close to the working cell, across the front of the cell and given the need to get vehicles in and out, on the approach to the working face;
- All litter nets will be cleared on a routine basis during the day to prevent too much litter accumulating in the nets and causing it to spilt or overturn;
- Mobile litter cages will be used in the vicinity of the working cell, as required. The cages will be positioned next to each other in lines around the tipping area to give the best strategic advantage, in order to minimise windblown litter.

- During severe windy conditions, it may be necessary to move operations to a different cell or working face, where the wind is less likely to cause problems or to close the landfill completely.

7.9.3 Noise

Noise mitigation measures will include the following:

- Use of standard noise abatement equipment on plant and vehicles;
- Provision of Screening Mounds approximately 1–2 metres high along site boundaries where required;
- Drivers of HGV's and other vehicles will be required to use reverse warning lights with care;
- Access roads will be levelled and covered with a macadam surface.

7.9.4 Groundwater

Groundwater is protected at this site by the natural geological/hydrogeological conditions. There is an unsaturated zone of silt/sand/gravel between the base of the pit and the water table. There is groundwater flow in the sand and gravel that will tend to dilute and disperse contaminants entering the groundwater flow regime. However, the first line of defence beneath fill areas will be an engineered composite lining system that will be overlain by a permeable drainage layer to facilitate collection of leachate. The second line of defence is the geological/hydrological conditions underlying the site, which will tend to attenuate any leakage from the site. The final line of defence will be to minimise the amount of leachate generation during filling and after completion of the landfill, by including a clay barrier or similar layer in the capping system.

Therefore, the proposed lined area will be designed in accordance with the Best Available Technology (BAT) principal, in order to protect the underlying groundwater.

7.9.5 Surface Water

In summary, the mitigation measures will include:

- Separate systems for clean surface water runoff and potentially contaminated surface water runoff;
- Full treatment of sewage to meet the accepted discharge criteria of the sanitary authority;
- A lined landfill with a leachate collection system.

Surface water runoff from capped areas will be directed to percolation areas in the unsaturated geological deposits. In this case, there will not be any direct discharge to surface water during the operational period.

There will not be uncontrolled runoff or groundwater discharge that could affect the quality of the adjoining stream/bog/wet grassland.

7.10 Potential Impacts

7.10.1 Air

The mitigation measures will be directed at reducing the nuisance effects of dust to acceptable limits and to meeting the Emission Limit Values specified in the Waste Licence 81-2.
Emissions of odours and landfill gas will be dealt with, by the installation of a gas extraction, flaring and utilisation system.

7.10.2 Litter

Strict mitigation measures for litter control, as described in Section 7.9.2 above will be implemented prior to landfilling within the proposed additional lined area. Once implemented, the mitigation measures will ensure minimal impacts due to loose litter.

A Work Instruction (WI KTK 1.05) "Litter Prevention and Erection of Litter Nets" has been prepared by the licensee and is utilised by the facility management team to ensure minimal impact due to litter.

7.10.3 Noise

The mitigation measures will be directed at reducing the nuisance effects of noise on local properties to acceptable limits and to meeting the Emission Limit Values specified in the Waste Licence 81-2.

7.10.4 Groundwater

Emissions to groundwater in terms of quantities are controlled by the hydraulic gradients vertically beneath the fill. With time, after closure of the site, a low water table will exist at the base of the fill. Upon closure of the facility, other direct discharges of potentially polluting liquid to groundwater will cease with the exception of discharge of runoff from the restored surface in the post closure period, as described in Section 9.4.8. The leachate collection system will be operated and maintained for as long as required following closure and therefore, no significant effects are expected on groundwater quality.

Percolation areas (soak holes) are employed for disposal of surface water runoff from paved areas. Areas in which there are substances that could pollute groundwater, (i.e. waste inspection bays, leachate loading, wheel wash and fuel dispensing areas) drain to the leachate collection system.

7.10.5 Surface Water

No significant effects on the quality of the adjoining surface water are expected from the development, as all clean surface water will be discharged to groundwater and all leachate will be contained and managed as described in Section 7.5.

The proposed development includes separation of clean surface runoff from potentially polluting surface water runoff as detailed above and discharge of the clean runoff to engineered percolation areas within the unsaturated geological deposits, which will filter suspended solids.

8. REARRANGEMENT OF SERVICES INFRASTRUCTURE

8.1 Introduction

To allow restoration of the area south of the existing Phase 1 landfill development area, new infrastructure, roads and hardstanding will be/ have been provided to replace/enhance the infrastructure/hardstanding currently located in the existing Service Platform. Specifically, the licensee will provide the infrastructure detailed in the following sections and illustrated on Drawings KTK/2004 and KTK/2005.

8.2 New Infrastructure - Roads and Hardstanding

Pursuant to Condition 3.5 of W.L. 81-2, roads and hardstanding will be provided along the southern side of the site and also along the top of the lined slope of the Phases 3 and 4 development areas. In addition, there will be a hardstanding on the existing waste surface in Phase 4 for the storage of equipment and plant; drum and tank storage; and quarantining wastes, as required.

Pursuant to Condition 3.6 of W.L. 81-2, an office will be provided at the weighbridge as this is the main check-in point for loads. This office will have a fax and a working telephone.

Pursuant to Condition 3.7 of W.L. 81-2 and as previously agreed by the Agency, waste inspection and quarantine areas will be provided on the waste surface and within the Phase 4 hardstand area. Currently, wastes are quarantined as agreed with the Agency on the surface of the waste within lined areas having a leachate collection system. It is proposed to continue with this practice. Pursuant to Condition 3.7.2 of W.L. 81-2, the existing concrete structure on the hardstanding is not suitable and can only be used for one function (i.e. not waste inspection and waste quarantine together). Thus, other facilities have been provided elsewhere at the facility to satisfy the requirements of Condition 3.7.2 of W.L. 81-2.

Pursuant to Condition 3.7.3 of W.L. 81-2, drainage of all waste inspection/quarantine areas will continue to be into the existing or future leachate collection systems at the facility.

Two (2 No.) weighbridges will be provided and maintained at the facility as per Condition 3.8 of W.L. 81-2.

Pursuant to Condition 3.9.1 of W.L. 81-2, a power spray wheel wash has been installed at the location shown on Drawing KTK/2004.

Pursuant to Condition 3.10 of W.L. 81-2, a sealed tank for the storage of wastewater from the new weighbridge office will be provided as shown on Drawing KTK/2004. A licensed contractor will pump this tank out regularly.

Pursuant to Condition 3.15 and Condition 3.2.1 of W.L. 81-2, new surface water management systems will be provided to cater for new roads and hardstands. These will include kerbs, gullies, silt settling tanks and oil-water separators as shown on the Drawings.

All of this infrastructure will meet the intent of the conditions of the current Waste Licence 81-2 and the reason for it (i.e. for protection of the environment).

8.3 Removal of Existing Infrastructure

After all of the above-described infrastructure is in place it is proposed to decommission the following existing infrastructure:

- The existing hardstanding shown on Drawing KTK/2001;
- The concrete structure indicated on Drawing KTK/2001, which has been used for waste inspection and quarantine in the past but has generally not been used as these activities have been carried out within the lined landfill area as agreed with the Agency;
- The weighbridges and offices shown on Drawing KTK/2001 as these will be provided in another location;
- The old wheel wash shown on Drawing KTK/2001 will be removed and replaced by another wheel wash (see Drawing KTK/2004);
- The Biocycle wastewater treatment plant shown on Drawing KTK/2001 as it will no longer be needed at this location.

8.4 Surface Water Management

The main access road to the new services area will be paved with macadam and constructed with longitudinal and cross falls to ensure positive drainage of storm water runoff towards concrete kerbs and standard road gullies.

Surface water runoff from the roads will be collected in roadside gullies and directed westerly in closed gravity drain pipes towards a new silt settling chamber and a Class 1 Bypass separator. The discharge from the Class 1 Bypass separator will be into percolation areas and the wet grassland located in the buffer zone south of the landfill.

A small quantity of runoff from the eastern end of the new road will drain into a separate Class 1 bypass separator and then into percolation areas (soak-away). (Refer to Drawing KTK/2003).

8.5 Potential Emissions

8.5.1 Air

Traffic along the new road and hardstand is a potential source of dust emission.

8.5.2 Noise

It is not anticipated that there will be any increase in noise emissions as a result of the proposed relocation of facility infrastructure. It is also not intended to vary the quantities of waste accepted at the facility and therefore noise levels due to traffic volumes will not increase.

8.5.3 Surface Water Runoff

Water Runoff from roads and hard-stands are a potential emission from the proposed rearrangement of infrastructure. Clean surface water runoff from the proposed new infrastructure will be expected. The rate of emission of clean surface water to percolation areas will depend on the intensity of rainfall events and will vary. The total annual emission will be the annual precipitation from hard-stand areas that are estimated to be approximately 8,000 m^2. A maximum rate of emission based on average rainfall data will be approximately 7,650 m^3 per year from the roads and hard-stands.

The discharge from the drive through wheel wash will go to landfill and not to surface water.

8.6 Mitigation Measures

8.6.1 Air

The applicant proposes to implement all reasonable control measures to reduce dust emissions from the site, including constructing paved access roads, installing a wheel wash and using a water bowser to wet roads. Monitoring programmes for dust are underway and will be continued in the future.

8.6.2 Noise

Noise mitigation measures include the following:

- Use of standard noise abatement equipment on plant and vehicles;
- Provision of Screening Mounds approximately 1–2 metres high along site boundaries where required;
- Drivers of HGV's and other vehicles will be required to use reverse warning lights with care;
- Access roads will be covered with a macadam surface.

8.6.3 Surface Water Runoff

Surface water runoff from the roads and hardstands will be directed to a silt-settling tank, oil separators and then discharged into percolation areas, soakaways or wet grassland. In this case, there will not be any direct discharge to surface water during the operational period.

Potential spills such as fuel spills will be cleared up as soon as practical with absorbent materials and booms.

There will not be uncontrolled runoff or discharge to groundwater that could affect the quality of the adjoining stream.

8.7 Potential Impacts

8.7.1 Air

The mitigation measures will be directed at reducing the nuisance effects of dust on local properties to acceptable limits and to meeting the Emission Limit Values specified in the Waste Licence 81-2.

8.7.2 Noise

The mitigation measures will be directed at reducing the nuisance effects of noise on local properties to acceptable limits and to meeting the Emission Limit Values specified in the Waste Licence 81-2.

8.7.3 Surface Water Runoff

Percolation areas, soakaways and wet grassland have been and will be employed for disposal of surface water runoff from paved areas. Areas in which there are substances that could pollute groundwater, (i.e. waste inspection bays, leachate loading, wheel wash and fuel dispensing areas) drain to the leachate collection system.

No impacts on surface water are anticipated.

9. UPDATED PLAN FOR THE RESTORATION OF THE FACILITY

9.1 Introduction

The first Restoration Plan for this site, including final levels and landscaping was devised in 1998 during the preparation of the Planning Application, which was lodged in April 1998. That plan was resubmitted in September 1998, with some added detail in connection with the first Waste Licence Application to the EPA, Reference WL 81-1. The Restoration Plan was resubmitted to the EPA with further detail in July 2001 with the Waste Licence Review Application, reference WL 81-2.

An updated plan for filling and restoring the site has been prepared by the licensee and its consultants. This plan takes into account the nature of

the wastes being landfilled on the site and some extensive research over the last two years into waste settlement and densification.

To take into account the inevitable settlement of the waste body, the licensee proposed a surcharge of 3m in its Waste Licence Review Application of July 2001. This surcharge was proposed to cater for waste settlement that was expected to be in the range of 15% on average across the site during a 20-year plus post closure period. The surcharge would include additional wastes and soils on the surface of the landfill. The surcharge is needed to accelerate settlement, compensate for the inevitable settlement of waste and to ensure that the final surface slopes meet the accepted minimum grades as indicated in the EPA's Manuals on Landfill Restoration and Aftercare; Site Design; and Operational Practices and also the EPA's BAT Guidance Notes on Landfill Activities.

On the basis of extensive literature research and site monitoring carried out in relation to the KTK Landfill, the licensee now proposes to place an additional surcharge of 1 metre (making a total of 4 m on average of surcharge) of compacted wastes over the surface area of the landfill.

The rationale for the proposed total surcharge of 4m on average, further information on waste settlement at the KTK Landfill and the proposed surcharge levels are presented in subsection 9.2, which follows.

9.2 Waste Settlement and Proposed Surcharge Levels

The licensee has commissioned its consultants to carry out extensive waste settlement studies (i.e. literature reviews and waste settlement surveys at the KTK Landfill facility).

Settlement of a landfill surface is an inevitable given the nature of waste materials. At the KTK Landfill, commercial and industrial solid wastes are being emplaced in the void. As with municipal solid wastes (MSW), these wastes tend to be heterogeneous and contain a quantity of organic and therefore biologically decomposable wastes. In simplest terms waste settlement refers to the reduction in volume of emplaced wastes at a landfill. The reduction in volume is seen as a reduction in the surface levels of the landfill.

Waste settlement can be said to occur during landfilling (i.e. "pre-closure") or after landfilling has ceased (i.e. post-closure).

In general there is physical waste settlement and waste settlement due to biological decomposition.

The main mechanisms involved in waste settlement include: mechanical compression, ravelling (i.e. movement of smaller particles into larger voids or cavities), physical change and bio-chemical decomposition.

The extent of settlement depends on:

- Initial compaction;

- Degree of decomposition;
- The effects of waste consolidation;
- The height of the completed fill.

From a time perspective there are three main stages of landfill settlement: **i)** instantaneous settlement or primary settlement; **ii)** delayed or long-term physical settlement due to consolidation under the self weight of the wastes; and **iii)** long-term biological settlement or decomposition of wastes. Waste settlement is initially rapid and decreases with time.

The review of literature suggested settlement values in the order of up to 30% of the height of the waste at landfill sites. The settlement of the wastes post closure, which is the period of most interest when devising a restoration contour plan, is manifested by consolidation under self weight and by loss of matter due to biodegradation. A simple model was prepared for the wastes at the KTK Landfill that included densification of the wastes from an initial placement density of 0.70 tonnes/m^3 to 0.80 tonnes/m^3 and biodegradation of the organic fraction of the wastes that was estimated by waste composition surveys. This model suggested that 30% settlement would occur at the KTK Landfill with this modest increase in density within the relatively deep waste body of over 24 metres in some parts of the site.

To confirm both the magnitude and the rate of settlement, level surveys of settlement pins, installed in the waste surface of Phases 1 and 2 (where no wastes have been placed since mid 2002) has been carried out over a 6-month period in 2004. The results to date have shown an annualised rate of settlement of between 3.0 and 4.6% in the 6-month period. This settlement is expected to continue with the rates gradually slowing down as the waste mass stabilises over time.

On the basis of the literature review and level surveys to date, it is expected that the waste surface will settle by up to 20% of its final height at closure. Accordingly, a closure contour plan has been devised that takes into account 20% settlement and also results in a final landform that resembles the site prior to sand and gravel excavation. In this regard the indicative final restored contours of the surface of the site that resembled the pre excavation contours were initially presented on Drawing KTK/06 that accompanied the 1998 Waste Licence application, 81-1. A slightly modified version of the final restored contours was presented on Drawing KTK/703 Rev C, submitted with the July 2001 Waste Licence Review Application 81-2.

It is proposed to place commercial and industrial (C&I) wastes on this site to the required levels to ensure that the final settled surface meets the requirements of the Agency and also to resemble levels originally proposed in 1998. At the licensed input rate filling of waste will continue until October 2008 to form the domed shape shown on Drawing KTK/2007. Interim capping materials circa 0.5 m thick will be placed

during this period on the edges and flanks of the domed hill as areas are brought up to proposed levels.

On the interim surface shown on Drawing KTK/2007, it is proposed to place further C&I wastes as required to reshape the profile where there has been excessive settlement and also recovered waste soils or crushed C&D wastes to the closure contour surface depicted on Drawing KTK/2008. This plan has been developed in conjunction with Martin Murray Architects to provide a natural landscape feature that would blend into the surrounding countryside. Encouraged by active leachate recirculation and gas abstraction, the initial maximum height of 151 mOD and the overall surface shown on Drawing KTK/2008 will continue to reduce as the wastes below settle. The predicted post settlement final levels are shown on Drawing KTK/2009. Consistent with the planning permission, the maximum level shown is at 145 mOD.

9.3 Capping Works

Between October 2008 and December 2011, the licensee proposes to oversee and encourage a controlled engineered settlement while capping and restoring the facility to have a final profile similar to the contours shown on Drawing KTK/2008.

The initial capping materials will be recovered waste soils and/or crushed hard materials such as concrete and bricks derived from C&D wastes, which will be placed from October 2008 over the surface to ensure there is al least 0.5m of cover on the C&I wastes. In some areas there will be significantly greater thickness placed to form the two small hillocks that will rise initially to 151 mOD.

The final capping will comprise the following from the finished surface down:

a) Topsoil (150 –300 mm thick);

b) Subsoil, such that the thickness of subsoil and topsoil is at least 1 metre;

c) A geocomposite sheet that comprises a geosynthetic top drainage layer, geosynthetic clay liner and a geosynthetic gas drainage layer.

Associated with the capping works will be the installation of perimeter drainage systems to take clean run-off from the restored landfill surface. The perimeter drainage systems will be a shallow swale, formed in the restoration layers that would be lined with a geotextile and graded stone to avoid erosion. The outlet for such perimeter swales will be directly to soak holes or a surface water management pond on the landfill surface which will drain to soak holes or the wet grassland that is located within the buffer zone that lies to the south of the main area of landfill development.

9.4 Landscaping Plan

9.4.1 Introduction

A two-stage landscaping plan was prepared and presented in the April 1998 EIS, (Volume I, Section 4.13, pages 4-49 to 4-52). The landscaping proposals, which were prepared by P.C. Roche & Associates were shown on Drawings N147-23 and N147-24 (submitted with the April 1998 Planning Application and September 1998 Waste Licence Application).

The most recent Landscaping Plan for the KTK Landfill Ltd. site at Kilcullen, Co Kildare was submitted to the EPA in July 2001 in conjunction with the Waste Licence Review Application. A two-stage landscaping plan was presented at that time.

A modified three-stage landscaping plan is now presented in this Waste Licence Review:

- Stage I - Ongoing Landscaping Works During Operations (2005 to October 2008);
- Stage II - Site Restoration from October 2008 to End of Year 2011;
- Stage III Ongoing Maintenance Landscaping Beyond Year 2012.

The landscape plans and restoration schemes are being reviewed and will be implemented.

9.4.2 Stage I of the Landscape Plan – Ongoing Landscaping Works during Operations

Filling of the site with C&I wastes will be carried out between present and October 2008 to the levels shown on Drawing KTK/2007. During this period landscaping will be carried out.

Stage I of the landscape plan, includes landscaping at the site entrance reception area, site boundary soil mounding and screen planting. The current status of landscaping at the site is illustrated on Drawing KTK/2011.

Additional works in Stage I include ongoing tree and hedgerow planting to selected areas to ensure that the construction and filling operations are screened to the extent practical. This planting will include medium to large growing trees with hedging plants to develop site boundary planting similar to the surrounding agricultural lands. Planting of mixed woodland groups with medium to large growing trees has been and will be carried out as required. This group will be utilised to provide screening to the landfill. The group will contain standard to advanced standard sized trees planted at 1-metre centres.

Also during operations between 2005 and October 2008 interim restoration layers will be placed where possible on the waste surface and then lightly seeded to minimise dust generation and erosion potential.

9.4.3 Stage II of the Landscape Plan - Site Restoration from October 2008 to End of Year 2011

The Stage II landscaping proposals are illustrated Drawing LA-001.

9.4.4 Stage II Landscaping Plans

In summary, the landscaping plans for Stage II include:

(a) Between 2008 and mid to end of 2010, the site will be built up to the levels shown on Drawing KTK/2008. These levels allow for settlement of 20% of the waste height post closure of the landfill;

(b) Capping/Placement of Restoration Layers. The engineered capping system will be placed during 2011;

(c) Reinstatement and planting of field and townland boundaries will be carried out during 2011.

9.4.5 Restoration of the Landfill Surface

The capping works described in Section 9.3 will be placed during 2011.

The restoration of the landfill surface includes placement of subsoil and topsoil as the capping system of the landfill. The subsoil layer will have a minimum thickness of 1,000 mm. The subsoil layer will be ripped to ensure that sub soil drainage is not impeded and good soil aeration and growth.

An imported layer of topsoil will be spread on completion of the earth moving works. The topsoil layer is to be spread to a depth of approximately 200 mm. This topsoil layer will be cultivated and prepared to take grass seed. The topsoil will be ripped.
Additional works in Stage II of the plan include tree and shrub planting along the general lines of the former hedgerows and townland boundary (see Drawing LA-001). This planting will contain shallow rooting trees with hedging plants to develop the field boundary planting similar to the surrounding agricultural lands. Planting of mixed woodland tree groups with medium to large growing trees is also proposed. The group will contain standard to advanced standard sized trees planted at 1-metre centres.

9.4.6 Internal Field and Townland Boundary Reinstatement

The restoration proposals include the reinstatement of the internal field and townland boundaries, including fencing and planting. The plant type will contain species similar to the surrounding hedgerows. Plant types will include:

Hedgerow
Hawthorn
Whitethorn
Holly
Salix spp.
Viburnum
Hazel

Reinstatement of the town land boundary is proposed on the site as indicated on Drawing LA-001. Replacement planting will contain similar species to the original hedgerow.

Additional shrub/understorey species will be utilised at landscape contract stage. The use of native species will be beneficial to the diversity and extent of habitats for flora and fauna in the area.

Stock proof fences (approx. 1.2 m high) will be installed along the hedges where required. A strand of barbed wire will be used as required. The palisade security fence that will be in place during the operating period of the facility will be removed and replaced with post and wire fences.

9.4.7 Stage III of the Landscape Plan - Ongoing Maintenance Landscaping Beyond Year 2012

The landscape reinstatement works ca. 2016 –2020 are illustrated on Drawing LA-002.

It is essential that the proposed planting is maintained as soon as the landscaping contract is completed. This will ensure success of landscape reinstatement work. The landscape maintenance contract will include continuous monitoring of the following:

- Growth of the grass sward;
- Nutrients of the top soil, recommendation on supplementing where necessary;
- Development of plants, replacement of failed or non-thriving plants;
- Development of natural occurring flora and fauna.

This monitoring will be carried out on the existing, retained and on the proposed planting and grassed areas.

Stage III of the landscape plan will also include detailed surveys of the hedgerows and trees that enclose the site. On the basis of these surveys recommendations will be prepared on the removal of dead or dying hedgerow plants, the removal of broken or damaged branches and any replanting to ensure that the hedgerows are maintained.

Maintenance of the existing retained trees and hedgerows will be carefully timed to avoid disturbance of wildlife, especially nesting birds.

9.4.8 Aftercare Management Plan

9.4.8.1 Features of the Site Following Closure

Some features of the site following closure will be as follows:

- Drainage of the domed shaped landform will be generally to the perimeter of the site. From the contours shown on Drawings KTK/2008 and KTK/2009 it can be discerned that a very limited area of the site will drain northwards to a roadside ditch along County Road P.I. 318. Most of the land surface will drain to the western, southern or eastern fringes of the site, as it originally did prior to excavation for sand and gravel;
- A road will be maintained on the site during the aftercare period to allow access to the leachate-holding tank and pumping systems;
- Fencing will be monitored at the site;
- Planted hedgerows and grass swards as described previously; and
- A four-wheel drive vehicle track will be provided around the site to allow access to pollution control measures and monitoring points.

In the future the following pollution control and monitoring points will exist:

- The leachate collection pipe side slope riser clean outs;
- There will be a gas utilisation plant generating up to 3 MW of electricity and at least 2 No. enclosed gas flares;
- The headworks of the inclined leachate pump sumps, which will be extended to the final surface contours;
- Groundwater and gas monitoring boreholes;
- The leachate holding tank and telescopic leachate shaft;
- All passive or active gas control measures, which will be confirmed during the latter stages of the operating phase as a minimum;
- Surface water management infrastructure including surface water drains along hedgerows, surface water ponds, silt tanks, oil separators and soakaways.

In accordance with EPA requirements, an aftercare period is being planned to ensure environmental pollution is controlled and there are no significant risks to the environment. The details of the aftercare management plan will evolve over time and agreed with the EPA.

9.4.8.2 Elements of the Aftercare Management Plan

The elements of the aftercare management plan will be:

- Regular visits to the site to check for settlement and erosion and the performance of the drainage systems;

- Maintenance of the grassland by agreement with local concerns or contracted personnel including filling in of any depressions;
- Maintenance of the leachate pumping systems;
- Jetting the leachate collection pipe as and when required;
- Maintenance of access roads, fences and gates;
- Maintenance of the environmental monitoring network;
- Maintenance of all gas control measures;
- Annual inspections by a qualified and other specialists of an as required.

10. ANTICIPATED CHANGES IN ANNUAL WASTE INPUTS AND CAPACITY OF THE SITE

10.1 Waste Types and Quantities

No anticipated changes in Annual Waste Inputs for the broad classes are expected, as a result of the acceptance of this Waste Licence Review.

The rates of acceptance will remain the same as those indicated in Waste Licence 81-2, Schedule A. It is noted that pursuant to Condition 1.4 of Waste Licence 81-2, the actual quantity of each of these waste types disposed in the landfill can vary if agreed with the Agency.

Broadly, the annual inputs of wastes will be as follows:

- Commercial circa 220,000 tonnes;
- Industrial, Construction and Demolition 55,000 tonnes.

10.2 The Void of the New Fill Area

The post waste settlement capacity of the proposed new lined area is calculated to be 160,000 m^3.

10.3 The Amended Total Void for the Facility

The post settlement capacity of the facility including the proposed new lined area is 2.6 million m^3.

11. IMPACTS & PROPOSED CHANGES TO EXISTING WASTE LICENCE CONDITIONS

The Waste Licence Conditions expected to be affected by the Waste Licence Review, justification for any proposed changes to the existing conditions and proposed changes to the conditions of the licence, which are required in order to be consistent and facilitate the proposed amendments to the facility are presented in Table 11.1 (attached at back of report).

12. RELATION OF AMENDED WASTE INPUT TO REGIONAL WASTE MANAGEMENT PLAN

12.1 Preamble

There will be no increase in annual waste input. The proposed amendments to the facility provide additional capacity for waste disposal in the Greater Dublin area.

For the purposes of this response, the following documents have been referred to:

- Kildare Waste Management Plan (Published 2000);
- Regional Planning Guidelines for the Greater Dublin Area (published 8 July 2004);
- Dublin Waste Management Plan (Published 2001).

12.2 Kildare Waste Management Plan

With regard to disposal, the Waste Management Plan states that, in the short to medium term, Kildare County Council will consider alternative arrangements for the disposal of residual waste in co-operation with neighbouring Local Authorities. This will include:

- The encouragement of private sector collectors in the use of approved privately operated disposal facilities.

12.3 Regional Planning Guidelines for Greater Dublin Area (published 8 July 2004)

Regional Planning Guidelines for the Greater Dublin Area (GDA) apply to the geographical areas of Dublin City, Fingal, Dun-Laoghaire-Rathdown, South Dublin, Kildare, Meath and Wicklow. The objective of the Regional Planning Guidelines is to provide a long-term (12-20 years) strategic planning framework for the development of the region. These Guidelines were formally adopted on 8 July 2004. Excerpts relating to waste management area are as follows:

Executive Summary (Page 73) – An interregional solution should be sought, through the liaison and cooperation between relevant parties, to address the critical lack of waste disposal infrastructure within the Greater Dublin Area (GDA).

Section 8.6.3 – From a strategic perspective, the waste management industry (which includes Planning Authorities and private operators) should aim to develop integrated waste management facilities infrastructure in the Greater Dublin Area (GDA). This infrastructure includes new landfills, waste to energy plants, biological treatment and recycling facilities. In developing this infrastructure, provision should be made to:

- Develop biological treatment facilities for organic waste, further recycling and waste to energy plants to serve the needs of the GDA;
- Consider the requirements for new infrastructure in the context of the GDA, rather than the existing waste management regions.

12.4 The Dublin Waste Management Plan

The Dublin Waste Management Plan (2001) sets a recycling target for Construction and Demolition (C&D) waste at 82% for the period 1999 to 2004 and it is envisaged that some of the C&D waste recovered at the KTK Landfill Facility will originate in the Dublin region.

12.5 Summary

The proposed new lined area at the KTK Landfill will assist the objectives of the Kildare and Dublin Waste Plan by providing a facility for recovery of C&D wastes and providing disposal facility for residual wastes that is designed, constructed, operated, monitored and managed in accordance with the Directive on the Landfill of Waste.

13. MATTERS RELATING TO SECTION 40(4) OF THE WASTE MANAGEMENT ACT 1996

13.1 Emissions from the Disposal Activities

The licensee will ensure that emissions from the area of licensed activities will be monitored as required by the conditions of the licence and will not result in the contravention of any relevant standard, including any standard for an environmental medium, or any relevant emission limit value, prescribed in any other enactment.

13.2 Environmental Pollution

The activities will be carried out in accordance with the conditions attached to the reviewed Waste Licence and will not cause any environmental pollution.

13.3 EU Landfill Directive on the Landfill of Waste (1999/31/EC)

The KTK Landfill will be designed, constructed, operated, managed, maintained, monitored and closed in accordance with the requirements of the EU Landfill Directive. The licensee will take all steps necessary to ensure that the activities carried on at the facility will be in accordance with the EU Landfill Directive.

13.4 BAT and Prevention of Facility Emissions

Best Available Techniques (BAT) will be used to prevent or eliminate or, where that is not practicable, to limit, abate or reduce an emission from the disposal activities.

In the context of this facility and the proposed additional infrastructure, BAT will include design, construction, management, maintenance, operating and decommissioning of:

- Seperation of clean surface water runoff from leachate and discharge of clean water into unsaturated geological deposits;
- A composite lining system and leachate collection systems in the proposed extension of Phase 1 for non-hazardous waste in accordance with the EU Directive on the landfill of waste;
- Recirculation of leachate to stabilise the wastes in as short a time as possible;
- An active gas management and utilisation system;
- Restoration of the surface of the completed landfill with materials and to gradients that will promote run off and minimise leachate generation.

13.5 Consistency with the Objectives of the Waste Plan

Relevant objectives of the Kildare County Council Waste Management Plan (2000) are highlighted below.

Specific Policy on Disposal:

In the short to medium term, Kildare County Council will consider alternative arrangements for the disposal of residual waste in co-operation with neighbouring Local Authorities.

The Council will encourage private sector collectors in the use of approved privately operated disposal facilities.

This facility at KTK Landfill is such a development for the landfilling of C&I waste and recovery of C&D wastes.

Summary:

On the basis of the foregoing, it is apparent the waste management infrastructure and activities proposed in this Waste Licence Review Application will not be inconsistent with the Kildare County Council waste management plan and will not prejudice the implementation of the plan by Kildare County Council. The licensee intends to ensure that this is the case.

13.6 Fit and Proper Person

The licensee is considered to be a fit and proper person for the following reasons:

- Neither that person nor any other relevant person has been convicted of an offence under the Waste Management Acts 1996 – 2001, the Environmental Protection Agency Act 1992, the Local Government (Water Pollution) Acts 1977 and 1990 or the Air Pollution Act 1987;
- The licensee and any person/persons employed by him/her to direct/control the carrying on of the activity to which the reviewed

Waste Licence will relate, have the requisite technical knowledge or qualifications to carry on that activity in accordance with the Licence and the other requirements of the Waste Management Acts 1996 – 2001;

- The licensee is in a position to meet any financial commitments on liabilities that the Agency reasonably considers will be entered into or incurred by him/her in carrying on the activity to which the reviewed Waste Licence will relate in the accordance with the terms thereof or in consequence of ceasing to carry on that activity.

13.7 Requirements Under Section 53 of Waste Management Act, 1996 – Financial Provisions Regarding Waste Recovery and Disposal

The licensee will comply with any of the requirements of the Agency requested under Section 53 of the Waste Management Act 1996 and all of the requirements of Section 53A of the Waste Management Act 1996 (as inserted by Section 43 of the Protection of the Environment Act, 2003.

The licensee will ensure that charges are imposed in relation to the disposal of wastes at the facility that meet the cost of acquisition, development, operation, closure and all financial provisions during the operating period and the relevant after care period of not less than 30 years. Statements will be prepared annually and furnished as required by Section 53A subsections (5) and (6).

13.8 Energy Use

Energy will be used efficiently whilst carrying on the activities by ensuring measures, such as regular maintenance of plant and equipment are implemented by the licensee. Energy efficient plant and equipment will be sourced and used, as appropriate. Gravity drainage systems will be used wherever possible. Lighting systems will be placed on timers to conserve energy during non-operating hours.

The licensee's parent company 'Greenstar' is part of a joint venture company that is in the process of developing a gas utilisation plant at the facility that will contribute 3MW of power to the national grid.

13.9 Noise

The activities will comply with and not result in the contravention of any regulations made under Section 106 of the Environmental Protection Agency Act of 1992, by providing plant and equipment that has the appropriate noise silencing systems and by regular maintenance and repair (as required) of plant and equipment.

13.10 Accidents

The licensee has emergency procedures that have been developed to limit the consequences on the environment. These emergency procedures

were submitted to the Agency in April 2000. They have recently been updated and the current issue is No. 3, dated September 2004.

The licensee has a Safety Statement and furnishes personal protective equipment to its employees for use. The licensee will require that construction on the site be carried out in accordance with the Safety, Health and Welfare (Construction) Regulations, 2001.

13.11 Restoration and Aftercare

The licensee has updated the Restoration and Aftercare Plans taking into account current conditions and the proposed amendments to the facility. These Plans will be kept under review and revised accordingly during the life and aftercare period of the facility. Financial provisions will be made as are at present required under Waste Licence 81-2 and pursuant to a revised Waste Licence to ensure that risk of environmental pollution will be avoided and the site will be returned to a satisfactory state upon permanent cessation of the activities.

In regard to the environmental controls, to address the proposed changes the licensee intends to provide the following:

Odour Control:

Gas extraction wells will be installed in the proposed new lined area as it is filled. The extraction wells will cover the entire landfill area.

Gas Control:

Landfill gas will be controlled at the facility including the proposed new lined area by installation of gas extraction wells. The gas extracted from the wells will be directed to a gas utilisation plant and enclosed flares.

Leachate Control and Management:

The new lined area will involve an extension of the leachate management system. Drawing KTK/2003 depicts the intentions of the licensee in regard to containment, collection and management of leachate within the additional lined area. The requirements of the existing licence and the Landfill Directive will be met in regard to leachate management in the KTK Landfill.

Restoration and Aftercare at the Facility:

As discussed above, the licensee has developed revised Restoration and Aftercare Plans, which were presented in Section 9.0 of this report.

14. PLANNING STATUS OF SITE

Planning Permission (Reference No. 98/608) included restoring the site to surrounding ground contours by depositing imported dry waste materials from construction and demolition sites, road and pipeline projects and commercial/industrial premises within an engineered facility on a 25 ha

site. As part of this development, the Services Platform is to be decommissioned and restored to a sloping surface. In order to restore this area, the services infrastructure must be relocated to temporary positions until it is removed from the site in accordance with Condition 18 of the Planning Permission.

The licensee intends to restore the services platform by placing C&I waste in this area and decommission (i.e. remove all infrastructure from the site (in due course) that is not required for restoration purposes). Decommissioning of the services platform, restoration, aftercare and maintenance of the site were addressed in the original EIS submitted with the planning application in April 1998. On this basis, the proposed works, which are the subject of this waste licence review application are consistent with the planning permission and EIS submitted.

At the permitted filling rates and anticipated rates of waste settlement, there is not sufficient time within the limits imposed by Condition 3 of the planning permission, to restore the landfill to the agreed final levels and achieve appropriate post-settlement conditions for long-term stability of the engineered capping system. A separate planning application will be lodged to provide additional time to bridge this gap between the planning condition in question and the standards required under the Waste Licence.

A second Planning Permission has been granted (Reference No. 04/861), which allows the development of a gas utilisation plant at the north side of the site. This proposed plant has been the subject of technical submissions to the Agency. The proposed plant has been agreed by the Agency.

15. EIS REQUIREMENT

As there is no intention to change the nature and annual quantity of waste input into the site, there is no need for an EIS.

As the intention of the Restoration Plan is to create a landform that will after settlement of the wastes be similar in form to that shown on the drawings submitted with the April 1998 Planning Application and September 1998 Waste Licence Application, there is no need for an EIS.

Table 11.1: Licence Conditions Impacted by Proposed Amendments to the Facility.

CONDITION NO.	EXISTING CONDITION -	SUGGESTED REPLACEMENT CONDITION -	JUSTIFICATION FOR REPLACEMENT -
1.4	Commercial Waste and Industrial Waste may be recovered and disposed of at the facility subject to the maximum quantities and other constraints listed in Schedule A and Condition 1.5, unless otherwise agreed with the Agency. Subject to the constraints of Schedule A and Condition 1.5, only those Waste Types listed in Tables E.1.1, E.1.3 and E.1.4 of the application shall be disposed of at the facility.	Commercial Waste and Industrial Waste may be recovered and disposed of at the facility subject to the maximum quantities, types and other constraints listed in Schedule A, Condition 1.5 and Council Decision 2003/31/EC, unless otherwise agreed with the Agency.	This condition needs to updated to reflect current legislation. Schedule A provides sufficient information on the types and quantities of waste to be recovered and disposed of at the facility. Council Decision 2003/31/EC and Condition 1.5 adequetely define the nature of the wastes that may be deposited at the KTK Landfill.
1.10	This licence is being granted in substitution for the waste licence granted to the licensee on 12th April 1999 and bearing Waste Licence No.: 81-1. The previous waste licence (Register No: 81-1) is superseded by this licence.	This licence is being granted in substitution for the waste licence granted to the licensee on 8th April 2002 and bearing Waste Licence No.: 81-2. The previous waste licence (Register No: 81-2) is superseded by this licence.	Should the review be accepted, the existing Waste Licence Ref. No. 81-2 will be replaced by Waste Licence Ref. No. 81-3.
2.2.1	Within three months from the date of grant of this licence, the licensee shall submit updated details of the management structure of the facility to the Agency. Any proposed replacement in the management structure shall be notified in advance in writing to the Agency. ..... etc.	Any proposed replacement in the management structure shall be notified in advance in writing to the Agency. ..... etc.	The licensee has recently submitted written updated details of the management structure at the facility to the Agency.
3.4.1	Security and stockproof fencing and gates shall be installed and maintained as shown in drawing No. KTK/411 Rev. C dated March '01 in the application. The security fence and gates shall be at the locations shown on Drawing No. KTK/411 Rev. C. The base of the fencing shall be set in the ground.	Security and stockproof fencing and gates shall be located, installed and maintained, as shown on Drawing No. KTK/2002 Rev. A, dated Nov. '04 in the application or as agreed with the Agency. The base of the fencing shall be set in the ground.	The location, installation and maintenance of the security and stockproof fencing and gates may change, thus the licensee shall be in a position to agree changes with the Agency. Should the review be accepted, the original Drawing will become outdated.
3.5.2	A hardstanding area shall be maintained at the location and in accordance with the detail shown on Drawing No. KTK/606 Rev. C "Phase 1 Base Development and Platform Layout" in the application.	A hardstanding area shall be maintained at the location and in accordance with Drawing No. KTK/2003 Rev. A and KTK/2004 Rev. A, dated Nov. '04, or as agreed with the Agency.	The location of the hardstand area will change, should the review be accepted. Therefore the original Drawing will become outdated and new areas will be provided as shown or as agreed with the Agency.
3.7.1	A Waste Inspection Area and Quarantine Area shall be maintained at the location shown in KTK/606 Rev. C "Phase 1 Base Development and Platform Layout" in the application. The licence shall ensure that this area is maintained in a manner suitable and be of a size appropriate for the inspection of waste and subsequent quarantine if required.	A Waste Inspection Area and Quarantine Area shall be maintained at the location shown on Drawing KTK/2004, Rev A dated Nov '04 or as agreed with the Agency. The licence shall ensure that this area is maintained in a manner suitable and be of a size appropriate for the inspection of waste and subsequent quarantine if required.	The location of the Waste Inspection Area and Quarantine Area will change, should the review be accepted. The original Drawing will become outdated and new areas will be provided as shown, or as agreed with the Agency.
3.7.3	Drainage from these areas shall be directed to the leachate collection system as shown in Drawing No. KTK/606 Rev. C "Phase 1 Base Development and Platform Layout" in the application.	Drainage from these areas shall be directed to the existing leachate collection system or to the leachate collection system as shown on Drawing No.s KTK/2003 Rev. A, KTK/2004 Rev A dated Nov '04 or as agreed with the Agency.	The location of the Waste Inspection Area and Quarantine Area will change, should the review be accepted. Therefore the drainage from these areas to the leachate collection system will also change. Thus, the original Drawing will become outdated. However, drainage from the Waste Quarantine and Inspection areas shall be to the leachate collection system.

CONDITION NO.	EXISTING CONDITION -	SUGGESTED REPLACEMENT CONDITION -	JUSTIFICATION FOR REPLACEMENT -
3.9.1	The licensee shall maintain a wheelwash/dry wheel shake at the facility as shown in Drawing No. KTK/606 Rev. C "Phase 1 base development and Platform Layout" in the application.	The licensee shall maintain a wheelwash/dry wheel shake at the facility at the locations shown on Drawing No. KTK/2003 Rev. A, dated Nov. '04, as agreed with the Agency.	The location of the wheelwash/dry wheel shake will change, should the review be accepted. Therefore the original Drawing will become outdated. However, a wheelwash shall be provided at the facility.
3.11.5	The integrity and water tightness of all the bunds and their resistance to penetration by water or other materials stored therein shall be confirmed by the licensee and shall be reported to the Agency by the 31st January 2004. This confirmation shall be repeated at least once every three years thereafter and reported to the Agency on each occasion.	The integrity and water tightness of all the bunds and their resistance to penetration by water or other materials stored therein shall be confirmed within 12-months after the grant of this licence and then once every three years and be reported to the Agency on each occasion.	The original date for testing the bunds has passed and was reported to the Agency. The condition should be changed to reflect this and to ensure that the testing is carried out within 3-years of the last testing carried out in 2004.
3.13.1	Unless otherwise agreed with the Agency, leachate management infrastructure shall be provided and maintained at the facility as described in Attachment D.1 of the Application.	Leachate management infrastructure shall be provided and maintained at the facility, in accordance with Section 7.5.2 of the Application or as agreed with the Agency.	The provision and maintenance of the leachate management infrastructure will change, should the review be accepted. Therefore, Attachment D.1 of the previous Waste Licence Review Application (81-2) will become outdated. The proposed infrastructure is described in Section 7.5.2 of the Application. The Agency may agree proposals under Condition 3.2.1.
3.14.1	Landfill gas management infrastructure shall be provided and maintained at the facility as described in Attachment D.5 – "Landfill Gas Management", of the Application. The licensee shall, within three months of the date of grant of this licence, submit to the Agency for its agreement, an updated proposal, with timeframes for the active collection and flaring of landfill gas.	Landfill gas management infrastructure shall be provided and maintained at the facility, in accordance with Section 7.7 of the Application or as agreed with the Agency.	The provision and maintenance of the landfill gas management infrastructure will change, should the review be accepted. Therefore, Attachment D.5 of the previous Waste Licence Review Application will become outdated. The proposed infrastructure is described in Section 7.7. of the Application. The Agency may agree proposals under Condition 3.2.1.
3.15.1	Surface water management shall be provided as described in Attachment H.9 of the application.	Surface water management shall be provided as described in accordance with Sections 7.9.4 and 8.4 of the Application or as agreed with the Agency.	The provision of surface water management will change, should the review be accepted. Therefore, Attachment D.9 of the previous Waste Licence Review Application will become outdated. The proposed infrastructure is described in Section 7.9.4 and 8.4 of the Application. The Agency may agree proposals under Condition 3.2.1.
4.1	The licensee shall restore the facility on a phased basis. The Restoration and Aftercare Plans for the facility shall be as stated in attachments G.1 and G.2 of the Application.	The licensee shall restore the facility on a phased basis, as described in Section 9 of the Application or as agreed with the Agency.	The phased restoration plan for the facility will change, should the review be accepted. Therefore, Attachment G.1 and G.2 of the previous Waste Licence Review Application will become outdated. Section 9 of the current Application describes the proposed Restoration and Aftercare Plans. In addition, capping systems may be agreed by the Agency under Condition 3.2.1.

CONDITION NO.	EXISTING CONDITION -	SUGGESTED REPLACEMENT CONDITION -	JUSTIFICATION FOR REPLACEMENT -
4.2	The final profile/height of the facility shall be as shown in Drawing No. KTK/703 Rev. C. – "Capping Layer Design Contours", mOD Malin Head.	The final profile/height of the facility shall be as shown on Drawing No. KTK/2009 Rev. A, or as agreed with the Agency.	The final profile/height of the facility will change, should the review be accepted. Therefore the original Drawing will become outdated.
5.2.1	Waste Acceptance procedures shall be carried out in accordance with Attachment E.4 "Waste Acceptance Procedures" of the application.	Waste Acceptance shall be carried out in accordance with procedures previously agreed with the Agency, in relation to WL 81-1 and 81-2 or in accordance with Council Decision 2003/33/EC.	Should this review be accepted, the Waste Acceptance Procedures may change and therefore Attachment E.4 of the original Waste Licence Review will become outdated. This condition shall be modified to reflect previous submissions and new legislation.
5.7.9	No smoking shall be allowed on the facility other than in the Office as shown on Drawing No. KTK/611 Rev. B "Main Office Area" April '00, in the application.	Smoking will only be permitted in a designated outdoor area in the vicinity of the main office.	As a result of new legislation, smoking is no longer permitted in any indoor workplace.
5.10.4	Recirculation of leachate shall only be carried out using the pipework and infiltration system and on-site pumping system as described in attachment D.4.m. .....etc.	Recirculation of leachate shall only be carried out using the pipework and infiltration system and on-site pumping system, as described in Section 7.5.2 of the Application or as agreed with the Agency. .....etc.	The pipework and infiltration system and on-site pumping system for the Recirculation of leachate at the facility will change, should the review be accepted. Therefore, Attachment D.4.m of the previous Waste Licence Review Application will become outdated. Section 7.5.2 of this application reflects current proposals.
6.4.1	All surface water collected from the hardstanding areas of the facility and from lined cells shall be diverted to the leachate holding tank and treated as leachate.	All surface water collected from the hardstanding areas of the facility will be discharged through silt traps and an oil/water separator.	It is not good practice to separate surface water and then treat surface water as leachate. This is not sustainable and not in accordance with BAT. Also, the EPA have agreed with the surface water collection and disposal system presently in place at the facility.
7.3.1	The measures and infrastructure as described in Section 7.15 "Litter Abatement Methods and Procedures" of the Environmental Management Plan submitted with the Application shall be applied to control litter at the facility.	The measures and infrastructure as described in Section 7.15 "Litter Abatement Methods and Procedures" of the previously submitted Environmental Management Plan shall be applied to control litter at the facility.	The Environmental Management Plan will not be submitted as part of this application, as it was previously submitted.
9.2	Contingency Arrangements for the facility shall be as detailed in attachment K.1 "Contingency Arrangements" of the application.	Contingency Arrangements for the facility shall be as detailed in the licensees "Emergency Information and Procedures", Issue No. 3, dated 09 September 2004, or any updates of the same document kept at the site office.	The document containing the Contingency Arrangement ("Emergency Information And procedures") has been updated, since the previous application from Issue 1 (dated 03 July 2001) to Issue No. 3 (dated 09 September 2004).
11.3.1	The licensee shall submit to the Agency for its agreement, an Annual Environmental Report (AER), by the 31st January 2002 and within one month of the end of each year thereafter.	The licensee shall submit to the Agency for its agreement, an Annual Environmental Report (AER), within one month of the end of each year.	The date for submission of the first AER in this condition has long passed. Therefore this Condition should be amended.
11.4	The licensee shall, by 16th July 2002, submit to the Agency for its agreement, a Conditioning Plan for the facility as required by Council Directive 1999/31/EC on the landfill of waste. ..... etc.	**Suggest Deleting this Condition**	The date of this condition has long passed and therefore this Condition should be removed.

CONDITION NO.	EXISTING CONDITION -	SUGGESTED REPLACEMENT CONDITION -	JUSTIFICATION FOR REPLACEMENT -
12.2.1	The licensee shall submit a revised Environmental Liabilities Risk Assessment for the facility, which will address liabilities arising from the carrying on of the activities to which this licence relates. A report on this assessment shall be submitted to the Agency for its agreement within six months of date of grant of this licence.	**Suggest Deleting this Condition**	The date of this condition has long passed and the revised Environmental Liabilities Risk Assessment for the facility was submitted. Therefore this Condition should be removed.
SCHEDULE C.5	ELV's for Gas Utilisation Plant in mg/m^3: • NO2.....500 • CO.....650 • PM10.....130 • TA Luft Class 1.....20 • TA Luft Class 2.....100 • TA Luft Class 3.....150 • Hydrogen Chloride.....50 • Hydrogen Fluoride.....5 • Hydrocarbons.....10 ELV's for Landfill Gas Flare in mg/m^3: • NO2.....500 • CO.....650 • PM10.....130 • TA Luft Class 1.....20 • TA Luft Class 2.....100 • TA Luft Class 3.....150 • Hydrogen Chloride.....50 • Hydrogen Fluoride.....5 • Hydrocarbons.....10	ELV's for Gas Utilisation Plant in mg/m^3: • NO2.....500 (no change) • CO.....1,400 • PM10.....130 (no change) • TA Luft Class 1..... • TA Luft Class 2.....**1,000 for total VOC** • TA Luft Class 3..... • Hydrogen Chloride.....50 (no change) • Hydrogen Fluoride.....5 (no change) • Hydrocarbons.....N/A ELV's for Landfill Gas Flare in mg/m^3: • NO2.....500 (no change) • CO.....650 (no change) • PM10.....N/A • TA Luft Class 1.....N/A • TA Luft Class 2.....N/A • TA Luft Class 3.....N/A • Hydrogen Chloride.....50 (no change) • Hydrogen Fluoride.....5 (no change) • Hydrocarbons.....N/A	A request was made to the Agency in a letter dated 12 October 2004 to amend the ELV's for the proposed Gas Utilisation Plant and the Existing Flare, from the existing to the proposed values for the following reason: 1) Considerable variations to TA Luft (2002) and recently issued EPA Waste Licences.
SCHEDULE D.1	Monitoring Locations shall be those as set out in Table D.1.1 and as detailed in Table J.2 Monitoring Points and Grid Reference locations of the application.	Monitoring Locations shall be those as set out in Table D.1.1. (Suggested replacement content for Table D.1.1 listed overleaf).	A number of monitoring locations will change, should the review be accepted. Therefore, Table J.2 of the previous Waste Licence Review Application will become outdated.

CONDITION NO.	EXISTING CONDITION -	SUGGESTED REPLACEMENT CONDITION -	JUSTIFICATION FOR REPLACEMENT -
TABLE D.1.1	Landfill Gas Monitoring Locations: • G1 • G2 • G3 • G4 • G5 • G6 • G7 • G8 • G9 • G10 • G11 • G12 • G13 • CP1 • CP2 • CP3	Landfill Gas Monitoring Locations: • G1 • G2 • G3 • G4 • G5 • G6 • G7 • G8 • G9 • G10 • G11 • G14 • G15 • G16	Five gas-monitoring locations will no longer exist, should the review be accepted. Three of these are gullies (CP1, CP2 & CP3), which will be removed when the existing services platform is decommissioned. Three new gas monitoring locations (G14, G15 & G16) will be provided to replace the 2 No. gas wells G12 and G13 in accordance with the EPA guidance on gas monitoring.
	Dust Monitoring locations: • D1A • D2A • D3A • D4A • D5A	Dust Monitoring locations: • D1A • D2A • D3A • D4A • D5A • D6A	One new dust monitoiring locations will be added.
	Noise Monitoring Locations: • N1A • N2A • N3A • N4A • N5A • N6A • N8A • N12A • N16A	Noise Monitoring Locations: • N1A • N2A • N3A • N4A • N5A • N6A • N8A • N12A • N16A	The number and location of all noise monitoring locations will remain the same.

CONDITION NO.	EXISTING CONDITION -	SUGGESTED REPLACEMENT CONDITION -	JUSTIFICATION FOR REPLACEMENT -
TABLE D.1.1 (CONT.)	Surface Water Monitoring locations: • SW4A • SW5A • SW6A • SW7A • SW8A (KTK-18)	Surface Water Monitoring locations: • SW4A • SW5A • SW6A	Two surface water monitoring locations will no longer exist as these are within the existing services platform, should the review be accepted.
	Ground Water Monitoring Locations: • BH4 • BH-11d • 97-4 • 97-5d • 97-6d • 97-7d • KTK-10 • KTK-11 • KTK-15 • KTK-16 • Private Wells as per condition 8.6.1.	Ground Water Monitoring Locations: • BH4 • BH-11d • 97-4 • 97-5d • 97-6d • 97-7d • KTK-10 • KTK-11 • KTK-15 • KTK-16 • Private Wells as per condition 8.6.1. • KTK-19 • KTK-20 • KTK-21	Three new Groundwater monitoring locations will be added.
	Leachate: • L • KTK/17 • VMP1 • VMP2 • VMP3 • VMP4 • VMP5	Leachate: • L • At Side Slope Risers to Leachate Sumps	Six leachate-monitoring locations will no longer exist, should the review be accepted. The leachate holding tank will move but will still be monitored as leachate monitoring location L. Also, sampling and level monitoring will be carried out at the existing or new leachate sumps.