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ATTACHMENT A: NON TECHNICAL SUMMARY

Contents

Derryconnell Landfill Waste Licence Review

Attachment A: Non Technical Summary

Introduction

A Waste Licence (W0089-01) for Derryconnell Landfill was granted by the EPA on 25th of October 2000 with an Amendment to the Waste Licence on 28th of October, 2005. The site is licensed to landfill up to 14,000 tonnes per annum of waste and to store leachate for disposal at another licenced facility. The site also includes a civic amenity area where members of the public can deposit a range of items for recycling.

Restoration of the Landfill Site including the installation of the final capping and gas management system will be in accordance with the existing Waste Licence. It is proposed that the restoration works will commence during 2008.

Cork County submitted an application for a Waste Licence Review in July 2007 for the development of a waste transfer station on a previously un developed portion of the site within the licenced boundary. Operation of the Waste Transfer Station shall not commence until after closure of the existing landfill. All waste delivered to the site following the completion of landfilling operations at Derryconnell Landfill shall be compacted and transferred to other licenced waste facilities. The July 2007 Waste Licence Review application by Cork County Council also included a proposal for the development of a larger Civic Amenity Area adjacent to the proposed Transfer Station.

Cork County Council propose to install a temporary Waste Transfer Station which will remain in operation until the Permanent Waste Transfer Station is fully constructed and operational. The existing landfill capacity is expected to be reached in July / August 2008 when it is proposed that the temporary waste transfer station will become operational. This extra information submission has been prepared to provide information on the proposed temporary waste transfer station. Updated environmental monitoring data for 2007 has also been included in Annex 1 updated standard forms. The temporary waste transfer station shall be located on the existing hardstanding area north of the current reception building on the edge of Cell No. 1 (Drawing No. D1/1).

The proposed hours of operation for the Waste Transfer Station & Civic Amenity Centre are:
Hours of Operation - 8am to 6pm Monday to Saturday.
Hours of Waste Acceptance - 8am to 5pm Monday to Saturday.
Hours of Construction – 8am to 8pm Monday to Saturday.

Article 12 (1) a: Applicant's Details

The details of the Applicant are as follows:

Cork County Council
Hume House,
Wolfe Tone Street,
Clonakilty,
Co. Cork.

Tel: 023 – 58812

Article 12 (1) b: Planning Authority

The details of the relevant Planning Authority are as follows:

Cork County Council
Norton House,
Cork Road,
Skibbereen,
Co. Cork.

Tel: 028- 40340
Fax: 028- 21660

Article 12 (1) c: Sanitary Authority

The details of the relevant Sanitary Authority are as follows:

Cork County Council,
Bandon Waste Water Treatment Plant,
Bandon,
Co. Cork

Tel: 023-41285

Article 12 (1) d: Facility Details

Address of Facility
Derryconnell Landfill and Civic Amenity Site,
Derryconnell,
Schull,
Co. Cork.

Tel: 028 – 37048

NGR of Facility: 9627E, 3396N.

Article 12 (1) e: Nature of Facility

The Facility currently consists of a landfill which is licenced to accept up to 14,000 tonnes per annum with a leachate holding lagoon. There is currently a civic amenity area at the site. It is proposed to construct a temporary waste transfer station comprising of the compactor unit with ejector trailers to service the site until the permanent waste transfer facility is fully constructed and operational.

The proposed waste transfer station will allow for the ongoing management of the waste arisings of the region which have been landfilled at Derryconnell to date. The proposed capacity of the Waste Transfer Station will be 14,000 tonnes per annum which is the current licenced quantity for the landfill. The proposed capacity for the Civic Amenity Area is 5,000 tonnes per annum of recyclable material.

Article 12 (1) f: Classes of Activity

Third Schedule Waste Disposal Activities

Class 1	Deposit on, in under land (including landfill) *This activity is currently licensed.*
Class 4	Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons. *This activity is currently licensed and relates to leachate management which will be an on-going activity at the site.*
Class 5	Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment. T*his activity is currently licensed and is currently the Principal Activity*
Class 12	Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule. *This is a new activity which relates to the compaction of waste into sealed containers in the Transfer Station for disposal at another licensed waste facility. This will be the Principal Activity following closure of the landfill and commencement of Transfer operations.*
Class 13	Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced. *This activity is currently licensed.*

Fourth Schedule Waste Recovery Activities

These activities all relate to the Civic Amenity Area.

Class 2	Recycing or reclamation of organic substances which are not used as solvents (including composting and other biological processes).
Class 3	Recycling or reclamation of metals and metal compounds.
Class 4	Recycling or reclamation of other inorganic materials.
Class 13	Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.

Article 12 (1) f: Quantity and Nature of Waste

Table A-1: Quantity and Nature of Waste Accepted On Site

Waste Material	**EWC Code**	**Quantity (Tonnes Per Annum)**
Mixed Municipal Waste	20 03 01	12,000
Cardboard & Cardboard Packaging	15 01 01	770
Clean Plastic Bags	15 01 02	200
Mixed Paper	20 01 01	700
Plastic Bottles	15 01 02	100
Tetra Paks	15 01 05	50
Newsprint / magazines	20 01 01	450
Garden Waste	20 02 01	150
Scrap Metal	20 01 40	200
Timber (untreated only)	20 01 38	600
Electrical goods	20 01 36	100
White goods	20 01 36	100

Drinks and Food Cans	15 01 04	25
Glass Bottles and Jars	15 01 07	50
Flat Glass	20 01 02	150
Furniture	20 03 07	200
Household C & D Waste	17 01 07	2000
Household Gas Cylinders	16 01 16	8
Waste Oils	20 01 25 and 13 01 00	10
Oil Filters	13 02 00	5
Paint and Ink	20 01 27	20
Batteries	20 01 33 and 16 06 00	100
Fluorescent Light Bulbs	20 01 21	4
Plastic Oil Containers	16 01 99	8

Article 12 (1) h: Materials

The machinery currently on site comprises of a weighbridge, an excavator, compactor, forklift and a site dumper. The onsite equipment, lighting and all other ancillaries consume electricity. Small quantities of pesticides and insecticides are also used for the control and eradication of vermin and fly infestations at the facility.

Article 12 (1) g: Plant Methods and Operating Procedures

Operating Procedures Existing Facility

- The existing landfill operates as follows:
- Waste is brought in by Local Authority vehicles or licenced contractors.
- The vehicles are weighed and the waste tipped onto the working face of the landfill.
- Waste is brought in by the public to a skip in the civic amenity area.
- The public are charged on a weight basis.
- This waste is transferred to the working face of the landfill once the skip is full.
- Members of the public deposit a range of recyclable items at the civic amenity area.

Operating Procedures Proposed Waste Transfer Station

The plant used for the operation of the waste transfer station will include existing weighbridge, existing site dumper, proposed compactor unit and shunt vehicles with ejector trailers. The operating procedure at the waste transfer station will be as follows:

- Waste will continue to the brought to the site by local authority refuse collection vehicles or by permitted private operators.
- All vehicles will be weighed at the weighbridge.
- Waste will be tipped from the refuse vehicles directly into the compactor unit via the hopper.
- Waste will be compacted into an ejector trailer for transfer to a licenced waste facility.
- The existing site waste inspection and waste quarantine areas will be used as required.

Operating Procedure Civic Amenity Area

- Members of the public will have access to public areas only.
- Clear signposting is in place on site to direct member of the public to the appropriate location for deposition of recyclable items or bags of household refuse and parking or stopping zones are provided adjacent to the collection bins.
- Household refuse deposited by members of the public will be weighed and charged accordingly. Only bagged domestic refuse will be accepted from the public at the

civic amenity area. The bagged waste is to be deposited in the on site dumper truck at the civic amenity area for transport to the compactor unit by Cork County Council personnel. Members of the public will have access to the civic amenity area only.

Article 12 (1) j: Section 40 (4) of WMA

This information is contained in Attachment L.1

Article 12 (1) k: Nature of Emissions

Noise emissions may arise from operational plant as well as traffic to and from the site. Compaction operations and traffic movements to and from the site will be limited to normal working hours and so operations at the facility will not be expected to have a significant impact on existing background noise levels. A noise emission limit of 55dB(A)L (daytime) and 45dB(A)L (night time) at locations on the boundary will be used. Monitoring results will be compared against these standards. It is proposed that an additional noise monitoring locations shall be established adjacent to the proposed waste transfer station area (N13 NGR 96303E, 33890N).

The closure and capping of the landfill will result in a reduction of odour emissions from the site. A gas flare is currently in operation at the site with flaring taking place of landfill gas from the existing capped areas. The gas abstraction system is being extended as part of the final restoration of the site in association with the installation of the final capping on Cell No. 2 and Cell No. 3. It is unlikely that there will be any additional generation of odours as a result of the proposed waste transfer operations onsite. It is proposed that compacted waste shall not be stored on site for periods in excess of 96 hours. Materials collected for recycling at the site are not likely to cause odours.

Dust monitoring is undertaken annually under the current Waste Licence (W0089-01) monitoring programme. A 30 day average dust deposition rate of 350 mg/m^2/day is specified by the existing waste licence at the boundary of the site. Further dust monitoring will be carried out as per the Agency's recommendations. It is proposed that an additional dust monitoring location shall be established in the vicinity of the proposed waste transfer station (D13 NGR 96303E, 33890N).

It is proposed that all storm water runoff and runoff generated from cleaning operations within the proposed waste transfer station shall be collected and discharged to the leachate collection system. There will be no emissions to surface water or groundwater from the proposed Waste Transfer Station.

Article 12 (1) l: Impact of Emissions

Noise emission may arise from operational plant onsite as well as traffic to and from the site. Traffic movements will be limited to normal working hours therefore operation of the facility will not be expected to have a significant impact on existing background noise levels.

It is unlikely that there will be any additional significant impacts on air quality due to dust or odour as a result of operations at the facility. The refuse collection vehicles will discharge their waste loads directly into the compactor unit via the hopper. Following tipping the charge

box in the compactor is engaged which pushes the deposited waste forward into the ejector trailer. Once fully engaged the charge box seals the waste within the compactor unit. The compactor unit remains fully closed in between waste deliveries to the site or waste transfer operations from the onsite civic amenity facility.

There will be no emissions to surface water or groundwater as all runoff from the proposed waste transfer station is to be diverted to the leachate collection system.

The existing reception building will service the proposed transfer station. Toilet facilities are provided within the reception building and foul sewage is currently discharged to a septic tank and percolation area.

Article 12 (1) m: Monitoring and Sampling

The area proposed for the development of the waste transfer station is located within the existing landfill site. Surface water, groundwater, leachate, landfill gas, dust and noise monitoring are carried out on a regular basis as per Licence W0089-01 at a number of locations within and in the vicinity of the landfill site. The locations of the monitoring locations are shown on Drawing F1/1. The landfilling of waste is to be completed in July / August 2008 when it is proposed that the transfer station will come into operation. The results of the on going monitoring programme will provide the basis for the continuous assessment of the impact of the facility on all aspects of the environment.

Article 12 (1) o : Recovery and Treatment of Waste

There is an existing Civic Amenity Area on site at present where a range of recyclable materials are accepted from the general public. Household refuse is also accepted from the public on a pay by weight basis before being disposed of at the existing landfill.

As part of an earlier review application (July 2007) the development of a larger Civic Amenity Facility is proposed where all materials listed in Article 12.1 (e) will be accepted from the public. Approved operators will be used to remove recyclable materials from the site for processing.

Mixed municipal waste which is currently disposed of at the landfill is to be compacted into containers and transferred to another licenced facility once the landfill site reaches its current capacity.

Article 12 (1) p : Unauthorised or Unexpected Emissions

Emergency response procedures are in place to prepare in the case of unexpected or unauthorised emissions to the environment. In the unlikely event of an emission, the operators will ensure that:

- The spill is contained and cleaned up immediately
- The incident is recorded
- The EPA are notified.
- Samples are taken and sent for external analysis

Article 12 (1) q: Closure and Restoration

A Residuals Management Plan was prepared and submitted to the Agency as part of the Environmental Management System in October 2001. The plan follows the guidelines of the EPA's Landfill Manual on Restoration and Aftercare.

The landfilling of waste at the facility is likely to continue until July / August 2008 with the restoration of the site commencing then. Following the filling of the cells, they will be capped according to EPA recommendations. Once the landfill portion of the site is closed, the site will commence operation as a waste transfer station where waste will be compacted into sealed ejector trailers for transfer to another licensed landfill.

There are no plans to decommission the Transfer Station and Civic Amenity Facility in the foreseeable future. In the event of cessation of activities at the site, Cork County Council proposes the following closure and restoration measures:

- The equipment used at the site will be removed by Cork County Council.
- Portable structure such as recycling receptacles, will be removed from the site.
- Street sweeper vehicles will be used to clean the site.
- Office equipment will be removed.
- Cork County Council will provide the EPA with at least six months written notice of any intention to close the facility.

Article 12 (1) r: Financial Provisions

Cork County Council is a local authority and is committed to the provision of funds for the management, development and restoration of Derryconnell Landfill site and the development of the Waste Transfer Station, Permanent Waste Transfer Station and Civic Amenity Facility.

Article 12 (1) s: SI 476 of 2000

Not applicable – the activity is not for the purposes of an establishment to which the European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2000 apply.

Article 12 (1) t: Directive 80/68/EEC

The landfill will comply with the Directive.

ATTCAHMENT B: GENERAL

Attachment B.1: Applicant's Details

The Site Ownership Plan (Drawing No. B1/1) is attached. The boundary of Cork County Council's land ownership is shown in blue.

Attachment B.2: Location of the Activity

Attachment B.2.1:
The Site Plan (Drawing No. B2/1) is attached. The boundary relating to the existing Waste Licence is marked in red and all proposed activities will take place within this licenced boundary.

Attachment B2.2
The Location Map is attached - Drawing No. B2/2 - Location Map & Services Plan.

Attachment B.2.3
The Services Plan is attached Drawing No. B2/2) – Location Map & Services Plan. This includes details of all underground and overhead services, existing and planned, within 500m of the site boundary.

Attached B.3: Planning Authority

As the facility is located within the functional area of Cork County Council (the relevant Planning Authority) planning permission is not required. The development is in accordance with the planning objectives for the site. A copy of the Waste Licence (W0089-01) and Amendment B to the Waste Licence for the existing facility is included.

Attachment B.4: Sanitary Authority

Foul sewage arising from the existing facility is discharged to a septic tank and percolation area. Storm water runoff and washings from the proposed waste transfer station are to be diverted to the leachate lagoon. Leachate is stored on site in the leachate lagoon from where it is transported to the Bandon Wastewater Treatment Plant for treatment and disposal.

Attached B.5: Other Authorities

Not applicable

Attached B.6: Notices and Advertisements

This submission relates to additional information only following on from the Waste Licence Review Application (dated July 2007).

Attachment B.7.1: Type of Waste Activity

THIRD SCHEDULE Waste Disposal Activities

Class 1 Deposit on, in or under land (including landfill)
This activity is currently licensed.

Class 4 Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.
This activity is currently licensed and relates to leachate management which will be an ongoing activity at the site.

Class 5 Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment.
This activity is currently licensed and is the Principal Activity.

Class 12 Repackaging prior to submissions to any activity referred to in a preceeding paragraph of this Schedule.
This is a new activity which relates to the compaction of waste into sealed containers in the Transfer Station for disposal at another licensed waste facility. This will be the Principal Activity following closure of the landfill and commencement of transfer operations.

Class 13 Storage prior to submission to any activity referred to in a preceeding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.
This activity is currently licensed.

FOURTH SCHEDULE Waste Recovery Activities

These activities all relate to the Civic Amenity Area.

Class 2 Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological processes).

Class 3 Recycling or reclamation of metals and metal compounds.

Class 4 Recycling or reclamation of other inorganic materials.

Class 13 Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such was is produced.

Attachment B.7.2: Maximum Annual Tonnage

The maximum annual tonnage for the landfill is 14,000 tonnes per annum. It is estimated that the landfill will reach its capacity and will close in July / August 20008. Following closure of the landfill 14,000 tonnes of waste will be accepted at the Waste Transfer Station for compaction and transfer to another licensed facility.

It is expected that the maximum annual tonnage of materials to be accepted at the Civic Amenity Area for recycling will be 5,000 tonnes per annum.

Attachment B.7.3: Fees

This submission relates to additional information only following on from the Waste Licence Review Application (dated July 2007). The relevant fees have been submitted as part of the original Waste Licence Review Application.

Attachment B.8: SEVESCO II Directive

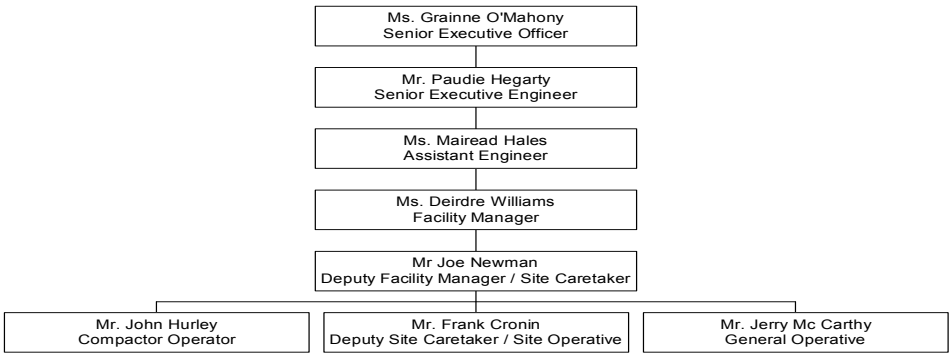
Not applicable

ATTACHMENT C: MANAGEMENT OF THE FACILITY

Attachment C.1: Site Management

The management structure in Cork County Council for the Landfill and Waste Transfer Station is given in the organisational chart below.

Figure C-1 Organisational Chart



The site manager and site operatives will be trained to an appropriate standard and will attend at appropriate intervals Certified Training Programmes, such as those offered by the Fas Environmental Training Unit. Further details of the experience and qualifications of the personnel outlined in the organisational chart are provided in Section C.1 of the Waste Licence Application Form.

The Site Managers are responsible for the day to day operation and supervision of each facility and are trained in EPA waste acceptance and handling procedures, as well as the Environmental Management of the Facility. The site operatives are responsible for site upkeep, collection of charges, maintenance of on going site records and implementation of waste acceptance procedures including operating the weighbridge and the logging of vehicles.

Training and awareness among facility staff is achieved through both external and in house training as well as through posting of environmental awareness material within each site office.

Attachment C.2: An Environmental Management System (EMS)

An Environmental Management System (EMS) has been developed for the facility and is attached. Cork County Council will update the plan to incorporate the proposed Waste Transfer Station and Civic Amenity Facility in the first year of operation. The plan was approved by the Agency in October 2001. It is and will continue to be reviewed annually and reported on in the AER.

The EMS is based around the "Plan, Do, Check, Act" methodology as follows:

- The "Plan" part of the system will be made up of the Environmental Policy Statement, along with the environmental aspects, legal and other requirements, objectives and targets and the Environmental Management Programme;
- The "DO" part of the system will be made up of procedures relating to staff structure and responsibility, training, awareness and competence, communication,

documentation and document control, operational control and emergency preparedness and response;
- The "Check" part of the system will be covered by monitoring and measurement, non conformance and corrective and preventative actions, records and the audit system;
- The "Act" part of the system will be covered by the management review process.

Specifically, the EMS incorporates the actions outlined below:

- Perform environmental review
- Prepare environmental policy
- Identify all aspects which can have an impact on the environment.
- Set out objectives and targets for the protection of the environment.
- Develop procedures to minimise risks to the environment.
- Define roles and responsibilities for environmental management.
- Train all relevant staff.
- Communicate objectives and targets as well as progress, with staff and general public.
- Perform a review of all aspects of the system regularly.
- Establish record keeping procedures.

An environmental monitoring programme has been in operation at the site since 2000. All sampling and monitoring on site is carried out by Cork County Council personnel. Following a request by the EPA in 2004 reporting is via two biannual reports which replace the programme of quarterly reporting previously specified in the Waste Licence (W00089-01). The location of all surface water, groundwater, leachate, gas, noise and dust monitoring points are shown on Drawing No. F1/1. The monitoring frequencies are as outlined in Table C.1 below:

Table C.1 Environmental Monitoring Locations

Monitoring Parameter	Monitoring Locations	Frequency
Landfill Gas	L1, L2, L3, L4, L5, L6, L7, L8, GW1, GW2, GW4, GW5, GW6, GW7, GW8 & site office	Weekly & Monthly
Landfill Gas Flare	Flare	Continuous, Weekly, Bi annually & Annually
Surface Water	SW1, SW2, SW3, SW4, SW5, SW6, SW7, SW8, SW9.	Quarterly & Annual
Groundwater	GW1, GW2, GW4, GW5, GW6, GW7 & GW8	Quarterly & Annual
Leachate	L1, L4, lined cell and leachate lagoon.	Quarterly & Annual
Dust	D1, D3, D6 & D8.	3 rounds per annum
Noise	N1, N6, N8 & NSL1.	Annual

Attachment C.3: Hours Of Operation

The proposed hours of operation for the Waste Transfer Station and Civic Amenity Facility are as follows:

- Hours of operation - 8am to 6pm Monday to Saturday.
- Hours of waste acceptance - 8am to 5pm Monday to Saturday.

- Hours of construction - 8am to 8pm Monday to Saturday.

Attachment C.4: Conditioning Plan

A conditioning plan was prepared and submitted to the Agency in July, 2002. This plan was prepared in accordance with guidance supplied by the EPA and ensures compliance with the European Council Directive on the Landfilling of Waste (1999/31/EC). This plan was approved by the Agency. No conditioning plan will be required for the Waste Transfer Station or Civic Amenity Facility at Derryconnell.

ATTACHMENT D: INFRASTRUCTURE AND OPERATIONS

ATTACHMENT D: INFRASTRUCTURE AND OPERATIONS

Attachment D.1a – Security

Access to the site is via a private road off the R592 Schull to Ballydehob road. The entrance gate adjacent to the R592 is kept locked outside of normal office hours. The keys for the gate are held by the site caretaker and a copy is held in the Cork County Council area office in Schull. The site is surrounded by a 2.5m high chainlink fence. There is also fencing around the leachate lagoon. The proposed transfer station is to be located on the existing hardstanding area north of the weighbridge and reception building. There is an existing CCTV system monitoring the area. Access to the proposed waste transfer station will be via the existing weighbridge.

Attachment D.1.b – Roads

The existing road paving in the vicinity of the civic amenity area and reception building is as follows: (from top to bottom)

- 40mm wearing course macadam.
- 60mm base course macadam.
- 150mm clause 804mm granular material Type B.

It is proposed that the existing haul road on Cell No. 1 will be widened as shown on Drawing D1/2 to facilitate turning operations on the upper unloading area. The construction of the haul road shall be as follows. The overburden will be stripped to a minimum depth of 200mm where necessary. A 225mm. layer filled with 75mm. gauge broken stone, thoroughly compacted with mechanical rammers so that the compacted surface finishes 75mm. below the final levels. The next 75mm. is finished with 40mm. broken stone, blinded with stone dust, and rolled with a seven ton roller.

Attachment D.1.c – Hardstanding areas

It is proposed to locate the waste transfer station on the hardstanding area to the north of the existing wheelwash. In order to accommodate the transfer station the wheelwash is to be removed. The transfer station is to be constructed on two levels. The upper hardstanding area is to be constructed on the southern eastern end of Cell No. 1. The existing ground levels and proposed final elevations are shown on Drawing D1/3. The refuse vehicles will unload directly into the hopper unit from the upper hardstanding area. The upper hardstanding area is to be composed of an 11m long by 8m wide concrete slab. The compactor unit is to be located on the lower level. A retaining wall is to be constructed outside the existing retaining rock armour. The compactor parking area is constructed at a 1/13 slope with all of the storm water and wash water draining to a sump and discharging to the existing leachate collection system.

Attachment D.1.d – Weighbridge

There is an existing weighbridge serving the landfill. It is proposed that this weighbridge will be used during the operation of the Waste Transfer Station. The weighbridge will weigh all trucks entering and leaving the site to record the amount of waste being collected on site and transported offsite. The existing weighbridge has dimensions of 18m length and 3.5m width with a 3m approach and exit ramp with a design capacity of up to 60 tonnes tonnes. The location of the weighbridge is shown on Drawing No. D1/1.

Attachment D.1.e – Wheel cleaner

There is an existing wheel washing area located adjacent to the proposed waste transfer station. The wheel washing area 18m x 6m consists of a power hose located on a hardstanding area. The wash water and grit from this area is drained to a settling sump (2m x 1m x 1.5m). Flowing settlement of the grit the clean water overflows into the wash water recirculation pump sump. A top up water supply is fed into the pump sump from the main water supply. The water level is controlled by means of a ball cock. From the sump, the water is pumped by submersible pumps via a 25mm pvc pipe to the 100 litres storage / pressure tank. Two connections for the power washer are available. The settlement tanks / sump is inspected on a daily basis and desludged as necessary. The silt is deposited at the working face. The wheel wash will not be required following capping of the landfill as all operations within the waste Transfer Station and Civic Amenity Area will take place on hardstanding areas.

Attachment D.1.f- Laboratory Facilities

There are no laboratory facilities associated with the operation of the Waste Transfer Station.

Attachment D.1.g – Fuel Storage

At present there is no fuel storage on site. The compactor unit requires a 1,000 litre capacity oil reservoir filled with 800 litres of oil for the operation of the hydraulics in the compactor. The compactor unit is to be housed on a hardstanding area all runoff from this area is to be discharged to the leachate collection system.

Attachment D.1.h – Waste Quarantine Area

The existing waste quarantine area is located on the west side of the leachate lagoon. Waste transported onsite is inspected and unsuitable waste is removed from the site by the carrier. If required, waste will temporarily be stored in the waste inspection area. All surface water runoff from this area is collected and drained to the leachate collection system. A by-pass system is provided to allow the discharge of clean surface water runoff to the normal surface collection system when the area is inactive.

Attachment D.1.h – Waste Inspection Area

The existing waste inspection area is located on the west side of the leachate lagoon. All surface water runoff is collected and drained to the leachate collection system. A by-pass system is provided to allow the discharge of clean surface water runoff to the normal surface collection system when the area is inactive.

Attachment D.1.j- Traffic Control

Vehicles disposing of municipal waste at the site will be weighed at the weighbridge on entry and exit and the weights of waste recorded. Loaded ejector trailers of compacted waste will be weighed when leaving the site in order to record the weight of waste leaving the site. Movements of vehicles over the weighbridge will be controlled using the traffic control barriers operated from the admin building.

Bags of municipal waste from members of the public are to be accepted at the civic amenity area on a pay by weight basis. The bagged waste is to be placed in the on site dumper for transport to the compactor unit by the site operatives.

Recyclable materials will continue to be accepted free of charge from the general public at the existing civic amenity centre.

During 2007 additional signage was put in place at the site to improve the flow of traffic. Following the introduction of the compactor for paper and cardboard new signs were put in place to instruct the public on the materials accepted. Finger post signs were put in place to identify each area of the site. A list of items for recycling was also put at the weighbridge so that the public were up to date with what the facility had to offer in the line of recycling. Road signage was improved to facilitate the domestic customer.

Attachment D.1.k – Services

There is an existing three-phase electricity supply at the site will be used to power the compactor unit. The main isolator and fuse box will be located adjacent to the compactor unit. The existing water mains extends as far as the reception building and wheelwash area. There are existing hydrants in vicinity which can be used for firefighting purposes if required. There is an existing telephone and fax line at the site, in addition to the CCTV monitoring and security system.

Attachment D.1.l – Sewerage & Surface Water Drainage Infrastructure

Toilet facilities are provided within the reception building and foul sewage is currently discharged to a septic tank and percolation area. Storm water runoff and wash water from the waste transfer station area shall drain to a gully located at the rear of the compactor unit from where it shall discharge to the leachate collection system.

Attachment D.1.m – Plant Sheds, Garages and Equipment Compound

It is proposed to construct the waster transfer station on the southern portion of Cell No. 1. The waste transfer station is to comprise of a compactor unit with a storage volume of approximately 8m^3. The compactor system is composed of the compactor unit, the support structure, the loading hopper and the power pack unit. It is proposed that the refuse collection vehicles will unload directly into the hopper from where waste will feed into the compactor unit. The compactor will pack into ejector trailers which shall be connected to a shunt vehicle parked on the same ground level as the compactor in the same plane, at a longtitudinal inclination of 1:13.

The dimensions of the compactor unit are as follows:

Element	Dimensions
Charge Box Length	3.0m
Charge Box Width	2.0m
Charge Box Depth	1.392m
Overall Length	8.30m
Overall Width (excl. clamps)	2.47m
Overall height (excl. hopper & support)	1.729m
Volume per stroke	6.00m^3
Charge box volume (excl. hopper)	8.35m^3

The compactor unit will be mounted on a substantial support structure to ensure that the charge box opening matches the height of the trailer. To secure the trailer there are three manually operated clamps, two on the body of the trailer and one on the rear crash bar

The compactor will be fitted with a large loading hopper, approx 4500mm wide and long at its top edge. This top edge will be positioned to match the upper floor level of the hardstanding unloading area to allow refuse vehicles tip directly into the loading hopper. To prevent refuse

vehicles reversing into the hopper a barrier system is to be constructed in the upper unloading area. The permanent barrier will comprise of a horizontal steel beam 300mm height. A moveable barrier also be installed adjacent to the hopper unloading area this moveable barrier will be raised when refuse trucks are unloading and locked in place when the upper unloading area is not is use. A bridge plate system is to be installed to ensure that there is no gap between the hopper and the upper floor which could allow spillage on the ground below.

The dimensions of the ejector trailer are as follows:

Element	Dimensions
Overall Length	12.2 to 12.8m
Internal Width	2.3 to 2.4m
Internal Depth	2.3 to 2.6m
Maximum Overall Height	3.6 to 4.0m
Overall Height of Floor	1.3 to 1.4m

Details of the compactor unit and the ejector trailers are shown on Drawing No. D1/2 and D1/3.

The existing civic amenity area will continue to operate in tandem with the transfer station. It is proposed that a new civic amenity centre shall be constructed in association with the permanent waste transfer station (Waste Licence Review Application July 2007).

Attachment D.1.n- Site Accommodation & Compounds

A portacabin building is currently used as an administration building. A control room, toilets and store room are provided. It is proposed that this building will be used to monitor the site during the operation of the waste transfer station.

Attachment D.1.o – Fire control System

Fires are prohibited onsite. Emergency response procedures are in place in case of a fire (See Attachment J). A 100mm extension from the water mains located adjacent to the R592 allows for the provision of fire hydrants throughout the site.

Attachment D.1.p – Civic Amenity Site

The existing Civic Amenity Area accepts recyclable waste and municipal waste delivered to the site by members of the public. The municipal waste will be charged on a pay by weight basis, compacted on site and disposed of at a licensed facility. All recyclable materials brought to the site by the public will be disposed of free of charge. The materials are separated in to the appropriate containers by the public. At present the following recyclable wastes accepted on site include:

- Paper and cardboard.
- Plastics
- Glass
- Aluminium cans,
- Food tins,
- Waste electrical and electronic equipment,
- Batteries,
- Aerosols,
- Scrap Metal

- Timber
- Light bulbs,
- Waste oil,
- Textiles

Attachment D.1.q – Details of Composting

There are no composting facilities onsite.

Attachment D.1.r – Description Of Incineration Infrastructure

There is no incineration infrastructure on site.

Attachment D.1.s – Details of Any Other Infrastructure Proposed

Not applicable.

ATTACHMENT D2: FACILTY OPERATION

Attachment D.2. a Unit Operations

The Waste Licence Review relates to the operation of a Waste Transfer Station at Derryconnell Landfill following the completion of landfilling operations at the site. It is expected that the landfilling in Cell No. 3 will reach completion in July / August 2008. The acceptance of waste and recyclables will be managed by the presence of site staff, who will be present on site at all times during normal operating hours to supervise waste disposal, deal with emergencies and prevent unauthorised entry to the site. All equipment will be serviced and maintained regularly.

D.2.a.1 Domestic Waste From Public

It is proposed that only bagged domestic waste will be accepted from the general public at the waste transfer station. This waste will be accepted at the civic amenity area where it will be weighed on the scales by a site operative and charged on a pay by weight basis. The waste is to be deposited in the on site dumper truck by the public from where it will be transported to the hopper unit and fed into the compactor unit by the site operatives. The public will have no access to the waste transfer station compactor unit.

D.2.a.2.Domestic Waste From Waste Contractors

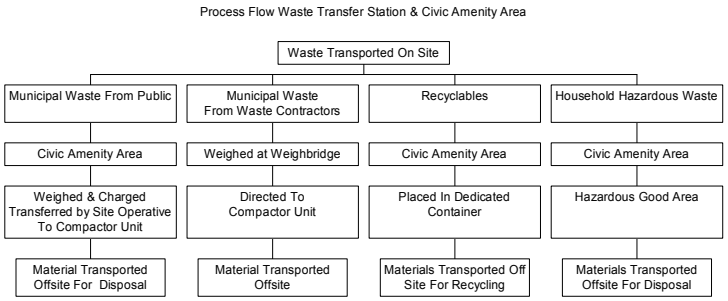
It is proposed that waste arriving on site from waste contractors or Local Authority Vehicles shall pass over the weighbridge where the waste amount and originator are recorded on the computer database. The collection vehicle shall unload the waste directly into the hopper for compaction and transfer to another licensed facility.

At present municipal refuse is collected on a fortnightly basis in Cork County Council Western Division Area. It is proposed that following the cessation of landfilling activities at Derryconell Landfill that municipal refuse from the County Council refuse collection trucks from Skibbereen, Bantry and Castletownbere shall be accepted at the proposed Waste Transfer Station at Derryconnell Landfill in addition to the refuse delivered directly to the site by the general public. In addition there are two commercial collections during recycling week. It is proposed that this refuse shall be compacted at Derryconnell Landfill for transfer to a licenced facility for disposal.

D.2.a.3 Waste Recovery

The existing civic amenity area will remain in operation at the site during the operation of the waste transfer station. The waste is delivered by the public to the relevant collection receptacle. Waste is then collected by licensed collectors and transported off site for recovery.

Figure D-1 – Process Flow Diagram Waste Transfer Station & Civic Amenity Centre



Attachment D.2.c – Emissions

Noise emissions will arise from operational plant as well as traffic to and from the site. Compaction operations and traffic movements to and from the site will be limited to normal opening hours and operations at the facility will not be expected to have a significant impact on existing background noise levels. Noise emission limits for the existing waste licence (WL0089-01) are 55dB(A)L daytime and 45dB(A)L night time monitoring results will be compared against these standards. Noise monitoring is carried out on an annual basis in accordance with the waste licence. The most recent noise monitoring survey at the existing landfill site was undertaken on 26th November 2007 (Attachment F.6). An additional noise monitoring location is proposed in the vicinity of the proposed waste transfer station (N13 NGR 96303E, 33890N).

It is unlikely that there will be any additional generation of odours as a result of the proposed Waste Transfer Station and Civic Amenity Facility. All municipal waste delivered to the site will be deposited into the hopper and compacted in sealed containers. It is proposed that the maximum storage time for compacted waste on site shall be 96 hours prior to transport off site to licenced waste facility for disposal.

Dust monitoring is carried out at in accordance with the Waste Licence for the site. Monitoring is currently undertaken three times per year, twice during the period May to September and once between October and April at monitoring locations D1, D3, D6 and D8. The most recent monitoring data is available from 2007 (Table I-1 and I-2 of Attachment I).

The waste transfer station is to be constructed on a hardstanding area with the discharge of storm water runoff and washings to the leachate collection system from where it drains to the leachate holding lagoon. There will be no emissions from the proposed waste transfer station to surface water or groundwater.

Attachment D.2.d – Laboratory Facilities

It is not proposed to provide laboratory facilities for the waste transfer station.

Attachment D.2.e – Incineration Facilities
There are no incineration facilities on this site.

ATTACHMENT D.3: LINER SYSTEM

The landfilling operations at Derryconnell Landfill are due to be completed in July / August 2008. The site has been in operation since 1985. Three no. lined cells and a lined leachate lagoon have been constructed at the site (Cell No. 1, Cell No. 2 and Cell No. 3). The cells have been lined in accordance with best practice and the requirements of Waste Licence W0089-1 and meet BAT as laid down in Annex 1 of the Landfill Directive.

No lining operations are required in association with the development of the waste transfer station therefore items, D.3.c to D.3.g of Section D.3 are not applicable on the Waste Licence Application Form.

ATTACHMENT D.4: LEACHATE MANAGEMENT

Attachment D.4.a – Leachate Management Plan

Leachate generated onsite is collected within the lined and unlined portions of the site. In the lined cells leachate is collected in the leachate drainage layer composed of a layer of pea gravel on the lined base of the cells. The leachate collection pipework in each cell drains to a leachate collection manhole or sump. Leachate build in the manhole and pump sumps is pumped to the leachate lagoon via the leachate rising main.

Contaminated storm water runoff is also diverted to the leachate lagoon. The leachate storage lagoon has a storage capacity of 3,208m^3 and a minimum freeboard of 0.5m is maintained at all times as per condition 4.14.5 of licence W0089-01. The leachate is transported to Bandon WWTP in a fully enclosed road tanker and discharged directly to the treatment works. The frequency of removal is varied to ensure a 0.5m freeboard is maintained at all times. The volumes of leachate removed off site are recorded.

It is proposed that all storm water runoff and wash water from the waste transfer station shall be discharged to the leachate collection system and leachate holding lagoon.

Attachment D.4.b – Leachate Quantities

The volumes removed off site during 2007 are summarised in Table D-1. The leachate lagoon was operational throughout 2007. The volume of leachate removed was 20,081.8m^3. All leachate was removed to Bandon WWTP. The landfill is expected to close in July / August 2008 following the completion of the final capping over the whole site the quantities of leachate are expected to reduce considerably.

Table D-1: Leachate Removal Volumes 2007

Month	Volume (Litres)
January	3,344,524
February	2,690,808
March	2,665,424
April	1,502,713
May	1,700,387
June	338,557
July	467,170
August	1,404,295
September	1,762,872
October	1,240,117
November	1,576,797
December	1,388,242
Total	**20,081,906**

Information on the leachate composition is provided from 2006 as volumes were too low to sample during November 2007. The composition of the leachate was measured on 27/11/2006 and is shown to be typical of the leachate composition for no-hazardous waste landfills.

Table D-2: Composition of Leachate

Parameter	Units	Average of Monitoring Points	Lagoon
Ammoniacal Nitrogen	mg/l	193.45	88.3
BOD	mg/l	151	264
COD	mg/l	404	538
Chloride	mg/l	243	217
Conductivity	mg/l	463	565
pH		7.45	7.5
Temperarure	^{o}C	10	8.9
Iron	ug/l	8082	252
Potassium	mg/l	115	111
Sodium	mg/l	237.5	170
TON	mg/l	< 0.3	< 0.3
Boron	ug/l	552.5	342
Cadmium	ug/l	< 1	< 1
Calcium	ug/l	98525	137300
Chromium (T)	mg/l	< 0.05	< 0.05
Copper	ug/l	< 1	< 1
Cyanide (Total)	mg/l	< 0.05	< 0.05
Fluoride	mg/l	0.55	0.5
Lead	ug/l	< 1	< 1
Magnesium	ug/l	48630	
Manganese	ug/l	8946	
Mercury	ug/l	< 0.05	
Sulphate	mg/l	123	
Total Alkalinity	mg/l	1340	
Total P	mg/l	0.575	
Orthophosphate	mg/l	0.04	1.06
Zinc	ug/l	18.5	
Faecal Coliform	cfu/100ml	110	
Total Coliform	cfu/100ml	3950000	

Attachment D.4.c – Details of Cell Sizes

The landfill site is composed of three lined cells and an unlined portion of the site. The cell sizes are as outlined in Table D-3 below.

Table D-3: Cell Sizes

Cell	Area (m^2)	Commencement of Filling	Completion of Filling	Lining System
Old Landfill Site (pre 1999)	6,000	1985	2004	Base unlined & final capping installed
Cell No. 1	1,080	Feb 2004	Nov 2004	Base lined & final capping installed
Cell No. 2	3,069	Nov 2004	Aug 2006	Base lined & final capping installed
Cell No. 3	2,550	Sept 2006	July / August 2008	Base lined & final capping installed

Attachment D.4.d – Details of Leachate Collection System

The leachate collection system within Cells No. 1, Cell No. 2 and Cell No. 3 is composed of 100 – 200mm perforated HDPE pipes in a 500mm deep bed of pea gravel on a HDPE lined landfill base. The floor and side slopes of the lined cells are covered with a leachate drainage layer 500mm in depth. The leachate collection pipework in each cell drains into a leachate collection manhole or sump. Leachate build up in the manholes and pump sumps is piped to the leachate storage lagoon in a 50mm diameter HDPE leachate rising main. The leachate is subsequently removed off site to the Bandon WWTP for treatment.

It is proposed that runoff from the waste transfer station shall be discharged to the leachate collection system. The hardstanding area is to be drained by a series of drains on the perimeter of the hardstanding area. The runoff is to discharge to the leachate collection system from where it shall discharge to the leachate storage lagoon via the existing leachate pipework.

Attachment D.4.e – Details of Leachate Storage System

The leachate storage lagoon has a total storage capacity of 3,208m^3. It is lined with HDPE and has a basal area of 7m x 7m. The walls of the lagoon are sloped at a gradient of 3:1 horizontal to vertical. The minimum freeboard in the lagoon is 0.5m. Leachate is tankered off site as required.

Attachment D.4.f – Leachate Monitoring

Leachate collection chambers with submersible pumps are installed within the lined cells as well as in the old landfill cell. The sumps are also equipped with an ultrasonic leachate level monitoring system which is linked to the reception building.

Schedule E.5 of waste Licence W0089-01 specifies that monitoring of leachate is to be undertaken at eight locations: L1, L2, L3, L4, L5, L6 and L7 and the leachate lagoon. The EPA in Quarter 2, 2004 instructed that leachate monitoring be reduced to the following locations: L1, L4 (unlined area), collection point in lined cell and leachate lagoon. The parameters and frequency of testing are included in Table D-4.

Table D-4: Parameters and Frequency of Leachate Analysis

Parameter	Frequency
Visual Inspection / Odour	Quarterly
Leachate Level	Weekly
Ammoniacal Nitrogen	Monthly
BOD	Monthly
COD	Monthly
Chloride	Quarterly
Electrical Conductivity	Quarterly
PH	Monthly
Temperature	Quarterly
Boron	Annually
Cadmium	Annually
Calcium	Annually
Chromium (total)	Annually
Copper	Annually
Cyanide	Annually
Fluoride	Annually
Iron	Annually
Lead	Annually
List I / II Organic Substances	Once
Magnesium	Annually
Manganese	Annually
Mercury	Annually
Potassium	Annually
Sulphate	Annually
Sodium	Annually
Total Alkalinity	Annually
Total Phosphorus	Quarterly
Total Oxidised Nitrogen	Annually
Zinc	Annually
Faecal Coliforms	Annually
Total Coliforms	Annually

Leachate levels were too low in November 2007 to obtain the required volume for sampling and analysis of the annual parameters.

Attachment D.4.g – Leachate Recirculation Details

A leachate recirculation system was installed as part of the final capping in Cell No. 1. No leachate recirculation has taken place to date. It is proposed that a leachate recirculation system shall also be installed in association with the final capping in Cell No. 2 and Cell No. 3.

In the event that the EPA grant permission for leachate recirculation to take place on site in the future the necessary pipework is in place.

Attachment D.4.h – Leachate Removal

Leachate arising from the facility is collected in the leachate collection system, stored in the leachate lagoon and transferred using an articulated tanker to Bandon WWTP for treatment. The following is the procedure followed for the removal of leachate from the lagoon.

- The empty tanker is parked along side the leachate lagoon, adjacent to the pumping unit.
- Electronic probes within the tanker unit are connected to the pumping unit.
- A hosepipe is connected to the rear of the tanker and locked into position.
- The pumping unit is powered on and filling of the tanker commences.
- As the cut out level near the top of the tanker is reached, the electronic probes cut out the pumping unit.
- All remaining leachate remaining in the hosepipe is fed back to the lagoon by gravity.
- The pumping unit is switched off and the hosepipe is unlocked and removed.
- The electronic probes are disconnected.
- The tractor unit removes the fuel tanker after depositing an empty tanker unit for refilling.
- The tractor unit transports the leachate to Bandon Waste Water Treatment Plant for disposal.
- The hosepipe is locked into position in the tanker.
- The adjacent pump is initiated and the leachate is discharged to the primary settlement tank.
- The tractor unit transports the empty tanker to Derryconnell Landfill for filling.

Procedures in the case of "Damage to the Integrity of the Leachate Management System" and for "Spillage of Leachate" are included in the Emergency Response Plan in Attachment J.

Attachment D.4.i – On – Site Leachate Treatment

On site leachate treatment is not undertaken at Derryconnell Landfill

Attachment D.4.j – Off – Site Leachate Treatment

The leachate from Derryconnell Waste Facility is transferred using an articulated tanker to the WWTP in Bandon, Co. Cork. During 2007 the volume of leachate transported off site was 20,081,906 litres. The monthly volumes of leachate removed off site during 2007 are outlined in Table D-1.

The WWTP is owned and operated by Cork County Council. An agreement exists with the operators of Bandon WWTP, to allow the disposal of waste water from the activities onsite to their facility. A letter confirming the agreement is attached.

ATTACHMENT D.5: LANDFILL GAS MANAGEMENT

Attachment D.5a – Landfill Gas Management Plan

Derryconnell Landfill has been in operation since 1985. The landfilling of waste is expected to be completed in July / August 2008. An extensive landfill gas management plan has been

implemented on site. It is estimated that the facility will produce in the order of 23Mm^3 of gas in its lifetime assuming that each tonne of waste will have a typical yield of 200m^3 of gas.

An active gas abstraction system has been installed at the site. To date 13 no. gas abstraction wells have been installed in the capped portion of the site (Unlined area and Cell No. 1). It is proposed that 4 no. gas abstraction wells shall be constructed within Cell No. 3 and 2 no. gas abstraction wells within Cell No. 2 as part of the Final Capping Contract. The gas extracted from the wells is carried via a system of buried pipework and condensate traps and pumped to an enclosed gas extraction / flare unit. Continuous monitoring of the exhaust gases from the gas flare is conducted. If monitoring indicates that the concentration of flammable gas exceeds 1% v/v or the concentration of carbon dioxide exceeds 1.5% in any buildings or confined spaces then the site management and the licensing authority are informed immediately.

All incidences relating to the uncontrolled migration of gas are noted in a detailed report and sent to the licensing authority after the incident has been investigated and the hazard has been equalised.

The existing reception / administration building has a gas detection monitoring / alarm in place. All electrical and electronic equipment located in enclosed spaces or down boreholes / leachate pipes shall be certified intrinsically safe.

The operation of the proposed waste transfer station and the continued operation of the existing civic amenity facility will not generate any landfill gas.

Attachment D.5.b – Passive Gas Control System

Not applicable as an active gas abstraction system has been installed at the site.

Attachment D.5.c – Details of Gas Barriers / Trenches

The active gas control system induces a vacuum which controls the flow of gas within the site. Permanent gas monitoring boreholes have been constructed within the perimeter of the site to identify any migration of gas.

Attachment D.5.d – Time Scale For Installation

The installation of the gas abstraction system in Cell No. 2 and Cell No. 3 is due to be undertaken in association with the installation of the final capping at the site during 2008.

Attachment D.5.e – Active Gas Control System

An active gas abstraction system has been installed at the site in association with the final capping of the landfill area (pre 1999) unlined portion of the site and Cell No.1. The gas abstraction wells have been installed at 40m intervals and each well is assumed to have a 25m drawdown radius. There are 3 no. gas abstraction wells in Cell No. 1 and 10 no. gas abstraction wells within the former landfill area (pre 1999 area). Gas wellheads are installed at the top of each of the abstraction boreholes.

Gas carrier pipes transfer gas collected in the abstraction wells to the flare compound. The permanent gas collection pipes are to be laid 600mm below the top level of the final cap within the subsoil layer. At present the gas header runs above ground levels in the area between Cell No. 2 and Cell No. 3. This pipe will be buried below ground in association with the installation of the final capping.

The gas flare unit is located in the flare compound west of the leachate lagoon. The flare stack is enclosed to avoid risk of fire and to minimise night – time visual impact. The flare compound is approx 10m by 10m and security is provided by a 2.5m high palisade fence. The flarestack is equipped with the following equipment to ensure safe and efficient operation:

- A temperature indicator and recorder
- An automatic pilot restart system
- A failure alarm system with an automatic isolation system
- Automatically controlled combustion air louvers
- A heat shield
- Source test ports
- View ports
- Duty and standby motors
- A flame arrestor

Attachment D.5.f – Gas Utilisation Plant

Not applicable.

Attachment D.5.g – Gas Alarm Systems

The flare is fitted with an auto-ignition device and alarm system which warns of system failure. Gas detection and protection systems have been installed in all buildings on site. The gas alarm system will be initiated when the trigger levels of 1% v/v and / or 20% of the LEL (Lower Explosive Limit) of methane or flammable gas and 1.5% by volume of carbon dioxide are exceeded in any space occupied or near an occupied area.

Weekly monitoring is also undertaken in the site office by Cork County Council personnel using a portable Gasdata LMSxi real time infrared analyser.

ATTACHMENT D.6: CAPPING SYSTEM

Derryconnell Landfill has been in operation since 1985. Landfilling of waste is due to be completed in July / August 2008. The installation and operation of the proposed waste transfer station will not have an impact on the restoration works at the site which involve the completion of the final capping of Cell No. 2 and Cell No. 3. Items D.6e to D.6. k of the Waste Licence Application are not applicable to the current licence review.

Attachment D.6a – Daily Landfill Cover

The waste arriving on site is disposed of at the working face, spread and covered daily. A Hitachi EX200 excavator or similar is used for the compaction and spreading of waste on the working face. The daily cover used is a combination of construction and demolition waste and biodegradable film.

Attachment D.6.b – Intermediate Landfill Cover

Commercial and demolition waste is used as intermediate cover.

Attachment D.6.c – Temporary Capping

The temporary capping is installed between completion of filling and installation of the final cap. It has a minimum thickness of 0.5m. 150mm of topsoil was installed on Cell No. 2 as a temporary cap. This allowed the establishment of grass cover until the final capping is installed.

Attachment D.6.d – Capping System

The final cap will meet the requirements of Condition 4.16.2 of WL0089-01. The contract documents for the final restoration of the site are currently being prepared.

Capping of the former landfill area (pre 1999) and Cell No. 1 was started in October 2004 and completed in April 2005. The capping comprised of the following layers:

Component	Description
Topsoil	150mm
Subsoil	850mm
Surface Water Drainage Layer	Geocomposite layer with geotextile filter / separator on top and bottom equivalent to Finess Pozidrain 6S240D/NW8.
Barrier Layer	Geotextile protection layer equivalent to Bentomat Cap 75. Approximately 6mm deep. Maximum permeability of 1 x 10 – 9m/s.
Gas Collection Layer	Non – woven needle punched geocomposite equivalent to Finess Pozidrain 6S240D/NW8. Approximately 5mm deep.
Total	1,016mm.

The capping system meets the requirements set by the Landfill Directive Annex 1. Capping of the remaining cells will be carried out in accordance with the relevant EPA manuals.

ATTACHMENT E: EMISSIONS

ATTACHMENT E : EMISSIONS

Attachment E.1: Emissions To Atmosphere

Derryconnell Landfill has been in operation since 1985 and the landfilling of waste is expected to cease in July / August 2008 once the capacity in Cell No. 3 has been reached. It is proposed that following the completion of landfilling activities that the site will be developed as a waste transfer station. There is currently a Civic Amenity Centre in operation at the site. A Permanent Waste Transfer Station and new Civic Amenity Centre are proposed (Waste Licence Review Application July 2007). Once the landfilling of waste has ceased it is proposed that municipal refuse will continue to be accepted onsite but will be compacted and transferred to another licensed facility for disposal. It is proposed that a temporary Waste Transfer Station shall be operated until the permanent Waste Transfer Station is constructed and operational.

Attachment E.1a – Composting Emissions

Not applicable

Attachment E.1b – Particulates

The processing of municipal waste at the facility will be limited to compaction of the waste within sealed containers. This will not result in an increase in the generation of particulates from the site.

Attachment E.1.c – Landfill Gas Emissions

The monitoring of landfill gas is currently undertaken at 16 no. locations at the site (L1, L2, L4, L5, L6, L7, L8 Landfill gas Flare and Site Office, GW1, GW2, GW4, GW5, GW6, GW7, GW8). Monitoring ranges from weekly to monthly frequency as specified in Schedule F.5 of Waste Licence W0089-01. Gas monitoring is undertaken on a monthly basis at the gas boreholes, vents and wells while the site office is monitored on a weekly basis. Measurement of methane (CH4), carbon dioxide (CO2), oxygen (O2), atmospheric pressure and temperature. The licence also specifies methane and carbon dioxide limits of 20% LEL (1% v/v) respectively in any building on or adjacent to the landfill including the site office.

Monitoring of landfill gas is undertaken by Cork County Council using a portable Gasdata LMSxi real time infrared analyser. The results of the most recent monitoring, Quarter 3 & 4 2007 indicate that as expected the highest levels of methane are being produced within the landfilled area at three boreholes L2, L4 and L8 (previously L3). The highest levels of methane were recorded at L2 in September (42.5%). High values were also recorded from L4 (38.4 % in August 2007) and L8 (33.5% in November 2007).

Fluctuation occurred in results from the four monitoring wells L1, L2, L4 and L8. For L1 values for methane ranged from 0% to 3.5% in September, for L2 values ranged from 0% in August to 42.5% in September, for L4 values ranged from 4.5% in December to 38.4% in August and for L8 values ranged from 0% in August to 33.5% in November.

There are two accessible monitoring locations outside of the landfilled area: L5 and L6. No methane was detected at either well during the most recent monitoring period. Carbon dioxide was detected at L5 through out the monitoring period with the exception of one sample. Concentrations ranged from 4.4% in November 2007 to a low of 0%. L5 and L6 are monitored weekly. Results from L6 showed no methane detected. Carbon dioxide was detected in all of the samples and values ranged from 0.2% in December to 4.7% in October. Two new leachate wells were put in place in June 2005 namely L7 and L3. At L7 no methane was detected.

Carbon dioxide was detected during all sampling occasions at concentrations ranging from 0.1% to 1.4%. Methane and carbon dioxide were not detected at L3. No methane was detected at the older groundwater wells GW4 and GW5. However carbon dioxide was detected atGW4 at levels ranging from 0.2% to 1.3% and at GW5 at values ranging from 0.2% to 1.4%.

6 New groundwater wells (GW1, GW2, GW4, GW6, GW7 and GW8) were installed in June 2005 and the new wells have been included in the gas-monitoring programme. Methane was not detected at GW1, GW2, GW4, GW5, GW7 and GW8 over the sampling period. For GW6, methane was detected on one occasion at a low 0.1% in November 2007. Carbon dioxide was present on two sampling occasions at GW1 at concentrations ranging from 0% to 1.4%. At GW2 carbon dioxide was detected at levels ranging from 0% to 1.0%. Methane was detected at GW6 on 1 of 25 sampling occasion at a concentration of 0.1%. Carbon dioxide was detected on 20 out of the 25 sampling occasions and the highest concentration detected was 1.4% in August, September and November. At GW7 Carbon dioxide was detected on 13 sampling occasions out of 25 and the highest detected value was 0.8% recorded in November 2007. Methane was not detected at GW8. Carbon dioxide was recorded on three of the 25 sampling occasions and the highest value was 0.4% during August 2007. Methane was not detected at the site office. Carbon Dioxide was detected on 4 of the 25 sampling occasions at 0.1%.

An AFS gas flare unit is used to burn landfill gas emitted from the landfill. Monitoring of the exhaust is undertaken for NOx, SO_2, CO, HCL, HF, TA Luft Organics and particulate matter, either on an annual or biannual basis (depending on the parameter). Further information on the monitoring schedule is detailed in Attachment F.9. The results of monitoring at the flare during 2007 for the listed parameters are summarised in Table E-1.

Table E-1: Landfill Gas Monitoring

Parameter	May 2006	April 2007	November 2007	Emission Limit [1]
Nitrogen Oxides (mg/Nm^3)	36	36	33	150
Carbon Monoxide (mg/Nm^3)	6	2	11	50
Sulphur Dioxide (mg/Nm^3)	6	4	4	
Temperature (^oC)	877.2	992.8	978	
TA Luft Class I Dichloromethane Tetrachloroethane	< 1.90	 < 0.43 < 0.64		20
TA Luft Class II Acetonitrile	< 1.90	 < 0.43		100
TA Luft Class III Vinyl Chloride	< 1.90	 < 1.07		150
Total TA Luft Organic Compounds (Class I – III)		< 2.13		150
HCl	2.66	*< 3.63		50
HF	0.1	< 3.63		5
Particulate	2.54	*< 0.01		130

Note [1] as specified in Schedule F.5 of waste Licence W0089-01.
Note * denotes that the measured parameter was below the laboratory's level of detection.

All parameters tested in the emissions from the flare unit were found to be within the limits specified by the waste licence. The landfilling of waste is due to cease in July / August 2008.

Landfill gas monitoring will continue. Aftercare monitoring of the facility will continue on a biannual basis and will measure the gas emissions at L1, L2, L3, L4, L5, L6 and L7. The Waste Transfer Station and Civic Amenity Facility will not produce any landfill gas. For this reason, there will be no additional impacts on air quality caused by landfill gas from the proposed development. Table E.1.(i) has been completed for the flare.

Attachment E.1.c – Landfill Leachate Emissions

There is an existing leachate holding lagoon at the site. It is proposed that storm water runoff and wash water from the waste transfer station shall be discharged to the leachate lagoon. The diversion of the additional discharge will not result in a significant change in emissions from the leachate lagoon.

Attachment E.1e – Infectious Organisms / Pathogens

Not applicable

Attachment E.1.f- Thermal Oxidizer Emissions

Not applicable

Attachment E.1g –Odour Emissions

An odour assessment was conducted in 1999 which consisted of a full simulation of the landfill gas emissions and air dispersion modelling. The model determined that the worst case condition would arise in 2003 at a point 165 metres from the landfill. The predicted odour levels were all below the odour detection limits under this worst case scenario with a minimum safety factor of 2. It identified that the most significant odour problems were likely to arise from three landfill gas pollutants; ethyl mercaptan, hydrogen sulphide and methyl mercaptan which are likely to be emitted from the leachate lagoon. Following the installation of the flare there have been no odour complaints at the site.

It is unlikely that there will be any generation of odours as a result of the proposed waste transfer and civic amenity facility operations onsite. The potential for odour generation at the site will be minimised as follows:

- Landfilling operations are expected to case in July / August 2008 and the landfill will be capped in accordance with Waste Licence W0089-01.
- Waste for disposal shall be compacted within 12 hours of acceptance at the facility.
- The waste will have undergone relatively little decomposition due to the quick turnaround times for the removal of waste from the site.
- All compacted mixed municipal waste or waste with the potential to cause odour nuisance, shall be removed from the facility within 96 hours of being compacted at the site,
- The transfer and compaction of waste will take place in sealed containers.
- Construction and demolition waste, dry recyclable materials and wood will not be stored onsite for a period longer than 3 months.

Attachment E.1.h – Dust Emissions

Dust monitoring is currently undertaken at four locations : D1, D3, D6 and D8 3 times per annum in accordance with the Waste Licence. The results for 2007 are included in Table I-1 and I-2 of Attachment I. Dust levels were lower than the limit of 350 mg/m^2/day as specified by the waste licence during the 2007 monitoring programme.

Further dust monitoring was conducted from the 14/03/07 to the 12/04/07 at 4 no. points in the area on the south west corner of the landfill site in the area proposed for the Permanent Waste Transfer Station (Waste Licence Review Application July 2007). These results are shown in Table I-2. Dust levels around the proposed Permanent Transfer Station and Civic Amenity Facility were all below the limit of 350mg/m^2/day except for D9 (585 mg/m^2/day). The elevated results were considered to have been caused by rotary drilling for subsoil investigation purposes which was being undertaken in the area. The impact of exhaust emissions on ambient air quality, from vehicles entering the site, is expected to be minimal. These measures, together with good housekeeping practices and staff awareness will minimise dust emissions therefore it can be concluded that the dust emissions to atmosphere from operations at the facility will be minimal.

ATTACHMENT E.2: Emissions To Surface Waters

Landfill

There are two elements to the surface water collection system within the existing landfill site. The surface water from the perimeter drain along the eastern and northern boundaries of the site drains to the monitoring sump adjacent to the reception area. At present there is a surface water pipe above ground passing between Cell No. 3 and Cell No. 2. This replaced the previous drain along the western boundary of the site. Surface water drains on the perimeter of cell No. 3 and Cell No. 2 are to be installed in association with the final capping contract. Continuous monitoring of flow, electrical conductivity, pH and TOC is undertaken as per condition 9.5 of the waste Licence. On occasions when these parameters are measured to be above the emission limits set out in the licence, flow is diverted to the leachate lagoon via a 80mm HDPE rising main and a 100mm HDPE rising main respectively.

There shall be no emissions from the proposed waste transfer station to the surface water. All runoff is to be diverted to the leachate collection system. It is proposed both the upper truck unloading area shall have a system of drains on the edge of the hardstanding area while the area containing the compactor unit shall drain to a low point to the rear of the unit. The existing reception building is to remain in use during the operation of the temporary civic amenity area. Foul sewage from the existing area is treated by means of a septic tank and percolation area.

Attachment E.3: Emissions To Sewer

There will be no emissions to sewer from the facility. Existing foul emission are gravity fed to the septic tank and percolation area on site. All storm water from the civic amenity area drains to the surface water collection chamber in the existing civic amenity area where there is a silt trap and monitoring sump.

Attachment E.4: Emissions To Groundwater

The proposed transfer station will be located on areas of hardstanding and will not result in any emissions to groundwater as all runoff is to be discharged to the leachate collection system. Monitoring of groundwater quality is undertaken at 7 no. locations: GW1, GW2, GW4, GW5, GW6, GW7 and GW8 on a quarterly basis as per Schedule E of Waste Licence W0089-01.

Attachment E.5: Noise Emissions

Noise surveys are carried out at the existing landfill on an annual basis as required by schedule E.4 of Waste Licence W0089-01. Schedule F.1 of the licence specifies maximum noise levels which are applicable to the noise sensitive location NSL1 of 55 dB(A) L_{Aeq} (30 min) for Daytime (08:00 – 22:00) and 45 dB(A)L_{Aeq} (30 min) for Night time (22:00 – 08:00). It

is proposed that an additional noise monitoring point shall be installed in the vicinity of the proposed waste transfer station (N13 NGR 96308E, 33890N).

Noise from the proposed waste transfer station is unlikely to increase significantly above the noise levels currently experienced. Noise will arise from operational plant at the proposed waste transfer station as well as from traffic to and from the site. There is expected to be no increase in the traffic movements from waste deliveries from the public. Traffic movements will be limited to normal opening hours therefore operations at the facility will not be expected to have a significant impact on existing background noise levels. The maximum annual tonnage of municipal waste to be brought to the site will remain within the licensed figures of 14,000tpa.

ATTACHMENT E.6: ENVIRONMENTAL NUISANCES

Attachment E.6.a – Bird Control

The facility operates a bird control programme with Bird Control Ireland. Currently a monthly visit by the specialists is undertaken. This will be continued during the operation of the waste transfer station. Good housekeeping measures reduce the risk of attracting birds to the site. The ejector trailer is sealed / connect to the compactor unit. It is proposed that the charge box in the compactor unit shall be kept in the closed position outside of periods of waste delivery to ensure the compacted waste remains sealed. This will prevent vermin gaining access to the compactor unit. A supply of the following items is kept on site to assist in the prevention of scavenging birds.

- Helekite
- Hawk Kites
- Helegas 7.82 cuM and regulator
- Winch and base plate
- Planner board
- Bird scaring pistol
- 50 M Bang Cartridge.

Attachment E.6 (ii) – Dust Control

Dust levels will be kept to a minimum on site as all areas within the proposed transfer station and the existing Civic Amenity Facility are paved. High levels of housekeeping will be maintained.

Attachment E.6 (ii) – Fire Control

Fires will be treated as an accident / emergency situation and dealt with in accordance with the site emergency procedures (see Attachment J – Emergency Response Procedures).

- The following measures will minimise the risk of fire:
- Site staff will be trained in the site emergency procedures in the event of fire.
- Site visitors will be made aware of emergency procedures.
- Appropriate fire fighting equipment will be available on site.
- Storage of flammable liquids on site will be kept to a minimum.
- Fire fighting equipment will be maintained and inspected regularly.
- Fire alarms will be tested regularly.

Attachment E.6 (iv) - Litter

The landfilling operations at the landfill site are expected to be completed in July / August 2008 after which the waste transfer station will become operational. Operational procedures at the facility will ensure that litter generation is minimised at all times. Waste will be deposited directly from the waste collection vehicles to the hopper unit and directly fed into the compactor unit. The sides of the hopper unit will contain litter to some degree within the compactor unit. Is it proposed that the charge box shall be kept in the fully extended position in between waste vehicle deliveries as well as overnight to prevent the escape of wind blow litter. In addition it is proposed to install a cover or canopy over the hopper unit. Due to the open nature of the site of the proposed waste transfer area it is proposed that the existing litter netting which is currently installed on the perimeter of Cell No. 3 shall be relocated to the perimeter of the unloading area to catch any wind blown litter.

In order to reduce the potential for wind blown litter arising within the civic amenity area only bagged municipal waste from the public will be accepted at the civic amenity centre where it will be stored in the on site dumper for transport to the compactor unit by the site operatives. Within the existing civic amenity centre materials will be deposited directly into the appropriate storage containers and any waste that escapes will be immediately collected. Site staff will collect any loose litter that may arise at the site on a daily basis.

Attachment E.6 (v) – Traffic Control

Vehicles disposing of municipal waste at the site will be weighed at the weighbridge on entry and exit and the weights of waste recorded. Loaded ejector trailers of compacted waste will be weighed when leaving the site in order to record the weight of waste leaving the site. Movement of vehicles over the weighbridge and into the site will be controlled using electric traffic control barriers operated from the reception building.

Public traffic throughout the Civic Amenity Area currently operates on a one way system which is clearly marked. Site signage directs the public to the appropriate container. Parking for staff and visitors is provided adjacent to the reception building.

Attachment E.6 (vi) – Vermin and Flying Insects

At the transfer station and civic amenity area good housekeeping measures will be employed to reduce the risk of attracting vermin and insects to the site. These measures include:

- The compaction of waste into sealed containers.
- The removal of any litter accumulating in the area and disposal on a regular basis.
- The immediate compaction of municipal refuse and subsequent storage in a sealed container.
- The regular removal of all biodegradable waste from transfer station to appropriate licensed disposal facility.

Cork County Council employ Arrest A Pest Ltd., a pest control specialist for vermin control. Fly spraying will occur periodically as required. The pest control specialists visit the site as required.

A written record will be kept at the facility of the programme for the control and eradication of vermin. These records shall include the following:

- Contractor details
- Contractors logs and site inspection reports.
- Details of pesticides used.
- Operator training details.
- Details of any infestations.

- Mode frequency, location and quantity of application.
- Measures to contain pesticides within the facility boundary.

Attachment E.6 (vii) – Road Cleansing

The site roads are maintained in a clean and tidy state at all times. The transfer station operations are to take place on hardstanding area. In the unlikely event of public roads being soiled, Cork County Council road sweeper vehicles will be employed to clean up.

Attachment E.6 (viii) – Scavenging

Scavenging does not take place on site. Cork County Council has installed a CCTV system on site at Derryconnell.

ATTACHMENT F: CONTROL & MONITORING

Attachment F.1: Treatment, Abatement and Control Systems

Attachment F.1 (i) To Atmosphere

Dust
Monitoring in accordance with the EPA Waste Licence together with good housekeeping practices and staff awareness will minimise dust emissions and will ensure that emissions to atmosphere are controlled effectively. The location of the dust monitoring points are shown on Drawing F1/1 and are listed Table F-1.

Odour
Once the landfill operations cease the potential for odours at the site will reduce. It is unlikely that there will be any additional emissions to air or generation of odours as a result of activities from the Transfer Station and Civic Amenity Area. Waste for disposal will be compacted within 12 hours of acceptance at the facility and all compacted mixed municipal waste or waste with the potential to cause odour nuisance, will be transferred to a licensed facility within 96 hours of being compacted at the site. The transfer and compaction of waste will occur in sealed containers. For these reasons, no further treatment, abatement or control of odour is required at the transfer station.

Landfill Gas
An AFS enclosed gas flare unit is used to burn landfill gas emitted from the landfill and monitoring of the exhaust gases is also required. Monitoring of the emissions from the flare unit is undertaken for Nox, SO2, CO, HCL, HF, TA Luft Organics and particulate matter, either on an annual or bi annual basis (depending on the parameter). Further information on the monitoring schedule is detailed in Attachment F.9. The flarestack is equipped with the following equipment to ensure safe and efficient operation:

- A temperature indicator and recorder.
- An automatic pilot restart system.
- A failure alarm system with an automatic isolation system
- Automatically controlled combustion air louvers.
- A heat shield.
- Source test ports.
- View ports
- Duty and standby motors.
- A flame arrestor.

The proposed transfer Station and existing civic amenity centre will not produce any landfill gas therefore no additional treatment, abatement or control of odour is required at the facility.

Attachment F.1 (ii) To Surface Water

No emission to surface water shall take place from the proposed waste transfer station. All storm water runoff and wash water is to be discharged to the leachate collection system. For these reasons, there will be no need for treatment, abatement and control of discharges to surface water.

Attachment F.1 (iii) To Sewer

There will be no emissions to sewer from the site. The existing reception building is serviced by a septic tank and percolation area.

Attachment F.1 (iv) To Groundwater
No emission to groundwater shall take place from the proposed waste transfer station. All storm water runoff and wash water is to be discharged to the leachate collection system. For these reasons, there will be no need for treatment, abatement and control of discharges to groundwater.

ATTACHMENT F.2 – F.9: Monitoring & Sampling Points

A monitoring programme has been in operation at Derryconnell Landfill since 2000. All environmental monitoring is carried out under the conditions of the Waste Licence W0089-01 for the facility. The location of the monitoring points are shown on Drawing F1/1. Emission Limit Values (ELV) are set by the Agency for many of the parameters. Exceeding these values is considered to be a non compliance with the Waste Licence. The aim of the monitoring programme is to comply with legislation and the requirements of the Agency and to monitor the quality of the environment in the vicinity of the Landfill and Waste Transfer Station and identify any adverse impacts caused by the activities onsite. As a condition of the Waste Licence, An Annual Environmental Report (AER) will be submitted to the Agency, which will collate and report all monitoring data each year. A comparative assessment will also be made with data from previous years.

Attachment F.2Air

F.2 (i) Dust
Dust is currently monitored at 4 no. locations (D1, D3, D6 and D8). It is proposed that an additional dust monitoring points D13 shall be located in the vicinity of the waste transfer station (NGR 96308E, 33890N). Further dust monitoring points (D9 to D12) have been proposed as part of the previous Waste Licence Review (July 2007) for monitoring in the vicinity of the permanent transfer station. These monitoring points will only be monitored following the installation of the permanent transfer station in the interim it is proposed to install an additional dust monitoring point D13 in the vicinity of the proposed transfer station.

All sampling and monitoring is carried out by Cork County Council personnel according to the German Engineering Institute VDI 2119 documents "Measurement of Dustfall Using the Bergerhoff Instrument (Standard Method)". Grid References for the existing and proposed monitoring points are outlined in Table F-1.

Table F-1 Dust Monitoring Locations

Monitoring Location	Easting	Northing
D1 (Existing)	96279	34068
D3 (Existing)	96191	33965
D6 (Existing)	96098	33811
D8 (Existing)	96343	33831
D13 (Proposed)	96308	33890

Dust monitoring currently takes place 3 times per annum, twice during the period May to September and once between October and April as per Schedule E of the Waste Licence. In addition to the above the site and adjoining roads will be inspected on a daily basis for evidence of excessive generation of airborne dust.

F.2 (ii) Landfill Gas

The monitoring of landfill gas is currently undertaken at 16 no. locations at the site (L1, L2, L4, L5, L6, L7, L8 Landfill gas Flare and Site Office, GW1, GW2, GW4, GW5, GW6, GW7, GW8). Monitoring at the various locations ranges from a weekly to monthly frequency. Permanent gas monitoring boreholes have been constructed within the perimeter of the site so that any migration of gas can be discovered quickly and controlled. The locations of the monitoring points are shown on Drawing F1/1. Landfill gas monitoring is discussed further in Attachment F.9. There is a gas flare in operation at the site and monitoring of emissions includes : NOX, SO2, CO, HCl, HF, TA Luft Organics and particulate matter as per Schedule F.5 of Waste Licence W0089-01.

ATTACHMENT F.3: Monitoring and Sampling of Surface Water

Surface water quality is monitored at 9 locations onsite as shown on Drawing F1/1 (SW1, SW2, SW3, SW4, SW5, SW6, SW7, SW8 and SW9). Monitoring points SW4 and SW9 are located up gradient of the landfill. All other monitoring points are located down gradient of the landfill. All surface water samples are collected by trained personnel from Cork County Council staff or by an approved firm of contractors retained by Cork County Council Staff or by an approved firm of contractors retained by Cork County Council. During transport of the samples they are stored in a chilled cooler box. Certain parameters are measured on-site at the time of sampling using a separate DO meter (Hach portable LD meter), pH meter (WTW pH 330i) and a Conductivity meter (WTW LF 191). All analyses are carried out by an accredited laboratory.

Table F-2: Surface Water Monitoring Locations

Monitoring Location	Easting	Northing
SW1	96335	33841
SW2	96112	33883
SW3	96507	33785
SW4	96140	33651
SW5	96450	34003
SW6	96292	34064
SW7	96290	33810
SW8	96187	33970
SW9	96086	33886

The surface water samples will be analysed for the list of parameters given in Table F-3.

Table F-3: Surface Water Monitoring Parameters

Parameter	Frequency
Visual Inspection / Odour	Weekly
Ammoniacal Nitrogen	Quarterly
BOD	Quarterly
COD	Quarterly
Chloride	Quarterly
Dissolved Oxygen	Quarterly
Electrical Conductivity	Quarterly
PH	Quarterly
Total Suspended Solids	Quarterly
Temperature	Quarterly
Cadmium	Annually
Calcium	Annually
Chromium (total)	Annually
Copper	Annually

Iron	Annually
Lead	Annually
List I / II Organic Substances	Once
Magnesium	Annually
Manganese	Annually
Mercury	Annually
Potassium	Annually
Sulphate	Annually
Sodium	Annually
Total Alkalinity	Annually
Total Phosphorus	Annually
Total Oxidised Nitrogen	Annually
Zinc	Annually

The resulting data is collated, tabulated and reported with an interpretation and comparison with the previous year's data. This information will continue to be presented in the AER, which will also be submitted to the EPA. In the event of the facility closing down, surface water monitoring will continue until a closure licence has been issued by the EPA. Aftercare and monitoring of the facility will continue biannually and will measure the level and composition at SW1, SW2, SW3 and SW7.

Attachment F.4: Monitoring and Sampling of Sewer Discharge

There are no discharges to sewer therefore no monitoring of sewer discharge is currently undertaken or proposed.

Attachment F.5: Monitoring and Sampling of Groundwater

Groundwater is currently monitored at 7 no. locations (GW1, GW2, GW4, GW5, GW6, GW7 and GW8) throughout the site. No further monitoring points are required for the proposed transfer station. The locations of the groundwater monitoring borehole are shown on Drawing F1/1 and grid references for the existing groundwater monitoring points are listed in Table F-4. Groundwater samples are collected by Cork County Council. The wells are purged of approximately 3.5 times their volumes before samples are taken. Certain parameters are measured on site using portable meters; DO meter (Hach portable LD meter), pH meter (WTW pH 330i) and conductivity meter (WTW LF 191). The collected samples are delivered directly to Alcontrol Geochem Laboratories (Dublin) for analysis. The samples are transported in a chilled container.

Table F-4: Groundwater Monitoring Locations

Monitoring Location	Easting	Northing
GW1	96302	33890
GW2	96215	33822
GW4	96294	34110
GW5	96336	33922
GW6	96135	33674
GW7	96104	33739
GW8	96085	33868

The groundwater samples are analysed for the list of parameters given in Table F-5.

Table F-5: Groundwater Monitoring Parameters

Parameter	Frequency
Visual Inspection / Odour	Quarterly
Groundwater Level	Monthly
Ammoniacal Nitrogen	Quarterly
Chloride	Quarterly
Dissolved Oxygen	Quarterly
Electrical Conductivity	Quarterly
pH	Quarterly
Temperature	Monthly
Boron	Annually
Cadmium	Annually
Calcium	Annually
Chromium (total)	Annually
Copper	Annually
Cyanide (total)	Annually
Fluoride	Annually
Iron	Quarterly
Lead	Annually
List I / II Organic Substances	Annually
Magnesium	Annually
Manganese	Annually
Mercury	Annually
Potassium	Quarterly
Sulphate	Annually
Sodium	Quarterly
Total Alkalinity	Annually
Total Phosphorus	Annually
Total Oxidised Nitrogen	Quarterly
Residue on evaporation	Annually
Zinc	Annually
Phenols	Quarterly
Faecal Coliforms	Quarterly
Total Coliforms	Quarterly

The resulting data is collated, tabulated and reported with interprepation and comparison with the previous year's data. This information shall continue to be presented in the AER, which will also be submitted to the EPA. In the event of the facility closing down, groundwater monitoring will continue until a closure license has been issued by the EPA. Aftercare and monitoring of the facility, once it has closed down, will continue on a quarterly basis and will measure the level and composition at GW1, GW2, GW3, GW4 and GW5.

Attachment F.6: Monitoring & Sampling of Noise

An annual noise survey was undertaken as specified by Schedule E.4 of Waste Licence W0089-01 at 4 no. locations (N1, N6, N8 and NSL1). It is proposed that noise monitoring be undertaken at a new monitoring location (N13) adjacent to the proposed waste transfer station. The NGR for monitoring points are outlined Table F-6.

Table F-6: Noise Monitoring Locations

Monitoring Location	Easting	Northing
N1	96279	34068
N6	96098	33811
N8	96343	33831
N13	96303	33890
NSL	95803	33824

Schedule F.1 of the Waste Licence specifies maximum noise levels, which are applicable to the noise sensitive location NSL1. The limits specified are 55 dB during daytime periods and 45 dB night time levels. The waste licence specifies daytime hours are those between 0800 and 2200 hours. The licence does not specify limits at the noise monitoring stations. All measurements were recorded in accordance with International Standard ISO 1996: 1982 Acoustics – Description and measurement of environmental noise, Part 1: Basic quantities and procedures and include 30 minute L_{Aeq}, L_{A10} and L_{A90} levels.

Attachment F.7: Meterological Data

It is not proposed to undertake meteorological monitoring at the site. The nearest weather station to record meterological elements on a daily basis is Valentia Synoptic Weather Station.

Attachment F.8: Monitoring and Sampling of Leachate

The monitoring of leachate is currently undertaken at 4 no. locations: L1, L4, collection point in lined cell and leachate lagoon. No further monitoring points will be required for the proposed waste recovery facility as all storm water runoff and wash water from the proposed waste transfer station will discharge to the leachate lagoon. The NGR for the existing leachate monitoring points are outlined in Table F-7.

Table F-7: Leachate Monitoring Locations

Monitoring Point	Easting	Northing
L1	96206	33964
L4	96181	33932

The leachate samples are analysed for the following parameters in Table F-8.

Table F-8: Leachate Monitoring Parameters

Parameter	Frequency
Visual Inspection / Odour	Quarterly
Leachate Level	Weekly
Ammoniacal Nitrogen	Monthly
BOD	Monthly
COD	Monthly
Chloride	Quarterly
Electrical Conductivity	Quarterly
PH	Monthly
Temperature	Quarterly
Boron	Annually
Cadmium	Annually
Calcium	Annually
Chromium (total)	Annually

Copper	Annually
Cyanide (total)	Annually
Fluoride	Annually
Iron	Annually
Lead	Annually
List I / II Organic Substances	Once
Magnesium	Annually
Manganese	Annually
Mercury	Annually
Potassium	Annually
Sulphate	Annually
Sodium	Annually
Total Alkalinity	Annually
Total Phosphorus	Annually
Total Oxidised Nitrogen	Annually
Zinc	Annually
Faecal Coliform	Annually
Total Coliform	Annually

In the event of the facility closing down, leachate monitoring will continue until a closure licence has been issued by the EPA.

ATTACHMENT F.9: Monitoring & Sampling of Landfill Gas

The proposed waste transfer operations will not have the potential to generate landfill gas. Landfill gas is currently monitored at 14 no. locations (L1, L2, L4, L5, L6, L7, L8, the site office and the landfill gas flare as well as all groundwater monitoring boreholes). It is proposed that the existing site office will service the proposed waste transfer station no additional buildings are required at this time. The NGR for the existing gas monitoring locations are outlined in Table F-9.

Table F-9: Landfill Gas Monitoring Locations

Monitoring Point	Easting	Northing
L1	96206	33964
L2	96220	33957
L4	96181	33932
L5	96138	33683
L6	96097	33875
L7	96342	33942
L8	96225	33986

Monitoring is undertaken on a monthly frequency expect at the site office where weekly monitoring is required. Measurement of the following parameters is undertaken: methane (CH4), carbon dioxide (CO2), oxygen (O2), atmospheric pressure and temperature. Schedule F.2 of the Waste Licence W0089-01 for the site specifies methane and carbon dioxide limits of 20% LEL (1% v/v) and 1.5% v/v respectively in any building on or adjacent to the landfill, including the site office.

Monitoring of the landfill gas is undertaken directly by Cork County Council personnel and is carried out using a portable Gasdata LMSxi real-time infra red analyser. In the event of the facility closing down, landfill gas monitoring will continue until a closure license has been issued by the EPA. Aftercare monitoring of the facility, once it has closed down will continue on a biannual basis and will measure the gas emissions at L1, L2, L3, L4, L5, L6 and L7.

ATTACHMENT G: RAW MATERIALS, PREPARATIONS & ENERGY

Attachment G.1 Raw Materials, Substances, Preparations and Energy

Landfill

The machinery currently on site comprises of an excavator, compactor, forklift and a site dumper using approximately 48,000 litres of diesel fuel. An estimated 86kWh/day of electricity is used for onsite activities. Small quantities of pesticides and insecticides are also used for the control and eradication of vermin and fly infestations at the facility.

Waste Transfer Station & Civic Amenity Facility

The list of raw materials and intermediates to be used in the waste transfer station is minimal. No packaging will be used as waste will be compacted and transferred directly to containers. Diesel fuel will be used to run the on site dumper, this will be delivered as required rather than stored on site. Small quantities or pesticides and insecticides will be used for the control and eradication of verim and fly infestations. The compactor, lighting and all other ancillaries will consume electricity. An estimate of the quantities of materials used and generated onsite is shown above but more accurate figures will be included in the AER once the facility is operating.

ATTACHMENT G.2: Energy Efficiency

The energy utilised on site is as follows:

- Electricity for the site lighting, office accommodation, pumps and gas flare.
- Fuel for the on site vehicles.

Once records are available for the proposed Waste Transfer Station & Civic Amenity Facility they will be forwarded to the agency as part of the Annual Environmental Report.

Some measures for energy efficiency include:

- Using energy efficient equipment whenever possible.
- Ensuring equipment is serviced and maintained regularly.
- Ensuring equipment is switched off, if safe to do so, when not in use.
- Use of energy efficient light fittings throughout the site.

ATTACHMENT H: MATERIALS HANDLING

H.1 Waste Types & Quantities – Existing & Proposed

Class 1	Deposit on, in under land (including landfill) *This activity is currently licensed.*
Class 4	Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.
Class 5	Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment. T*his activity is currently licensed and is currently the Principal Activity*
Class 12	Repackaging prior to submission to any activity referred to in a preceeding paragraph of this Schedule. *This is a new activity which relates to the compaction of waste into sealed containers in the Transfer Station for disposal at another licensed waste facility. This will be the Principal Activity following closure of the landfill and commencement of Transfer operations.*
Class 13	Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced. *This activity is currently licensed.*

Fourth Schedule Waste Recovery Activities

Class 2	Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological processes).
Class 3	Recycling or reclamation of metals and metal compounds.
Class 4	Recycling or reclamation of other inorganic materials.
Class 13	Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.

The facility consists of the landfilling area where a maximum 14,000 tonnes of municipal waste is landfilled annually including 10,800 tonnes of domestic waste, 1,200 tonnes of commercial waste and 2,000 tonnes of C & D waste. The current waste licence review application is for the provision of a waste transfer station at the site. A previous waste licence review application was made in July 2007 for a Permanent Waste Transfer Station and A Civic Amenity Facility. The civic amenity centre currently accepts the following materials:

- Paper and cardboard.
- Plastics
- Glass
- Aluminium cans,
- Food tins,
- Waste electrical and electronic equipment,
- Batteries,
- Aerosols,
- Scrap Metal
- Timber
- Light bulbs,
- Waste oil,
- Textiles

Attachment H.2: Waste Acceptance Procedures

Waste Acceptance procedures are in accordance with the EPA's Manual on Waste Acceptance and Council Decision establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of the Directive 1999 /31/EC.

Landfill / Waste Transfer Station

- Waste will only be accepted on site during licensed hours.
- All vehicles delivering and removing waste will be covered appropriately.
- All licensed vehicles carrying municipal waste entering the site will be weighed at the weighbridge. The vehicle's weight will be recorded on entering and leaving the site.
- Relevant information (date, name of carrier, weight, producer, waste description, etc) will be recorded on entry by site staff who will also check that the customer account details correspond to the load against the contract authorisation quoted by the Driver.
- Site staff will inspect the Waste Documentation, i.e. waste description, quantity and carrier registration details. The caretaker will inspect the load where possible to ensure that it complies with the waste transfer documentation. If no Waste Transfer Note is provided, the caretaker will ask the driver for the contract authorisation number and / or a description of the waste load and check that it compares with the information on the Computer Data System. Any problem will be reported to the Landfill Engineer and the Quarantine procedure followed.
- The caretaker will produce a weighbridge ticket for all waste types and materials paid by weight, which will be signed by the Driver and the caretaker.
- The caretaker will produce a hand written docket for all loads accepted on a pay-per load basis.
- The signature of the caretaker is to confirm that the waste has been checked as far as is possible at this stage, taking into account; the type of container, type of waste, the facilities available at the site.
- The caretaker will direct the Driver to the appropriate point to discharge the load either at the landfill until closure or into the hopper at the Transfer Station.
- For waste loads that require particular handling, the caretaker will notify the landfill operatives of the arrival of the load, so that they can prepare for it. The landfill operatives will tell the caretaker of any reason that the waste load cannot be operationally accepted for disposal at that time. If the load cannot be accepted, it will be held at the weighbridge / waiting area with the problem notified to the Landfill Enginer/ Manager.
- The waste on the working face will be spread and compacted as soon as is practicable and covered daily.

Civic Amenity Facility

At the Civic Amenity Facility the public dispose of recyclable waste, bulky waste (e.g. household construction and demolition waste, metals, timer, green waste) and residual mixed waste separated into containers, each for a different waste type. Clear signage indicates the use of each container.

Waste accepted at the civic amenity centre includes:

- Domestic waste from private individuals.
- Domestic hazardous waste
- Recyclable material

The acceptance and throughput of waste at the Civic Amenity Centre is managed by site staff who are present on site at all times during normal operating hours. All staff involved in waste

acceptance onsite will be trained in acceptance procedures and will have a good knowledge of the waste acceptance criteria.

- Private vehicles (cars, cars with small trailers and vans) will enter the site by main entrance.
- Individuals will be charged by weight for domestic waste accepted at the site.
- The caretaker will complete a receipt of payment and a copy will be retained on site for record purposes.
- Material brought to the site for recycling will be accepted free of charge and site together with clear site signage will direct the individual to the recycling receptacles.
- The caretaker of the site will have the responsibility of ensuring that only acceptable wastes are deposited at the Civic Amenity Site.
- Any non acceptable waste will be taken offsite the original carrier.

Attachment H.3: Waste Handling

Municipal waste, recyclable materials and household hazardous waste will be accepted onsite.

Attachment H.4: Waste Arisings

Any waste arising on site such as domestic waste from the office accomodation, waste packaging, green waste from landscaping activities will be deposited with in the appropriate receptacle at the facility.

ATTACHMENT I: EXISTING ENVIRONMENT & IMPACT TO THE FACILITY

Attachment I.1: Atmospheric Emissions

The existing landfill site at Derryconnell, Schull, Co. Cork is situated between Ballydehob and Schull on the Mizen Head Peninsula. The site is situated to the north east of Schull Harbour and to the north west of Ballydehob Bay. The site is located approximately 3km inland of Roaringwater Bay. The site is situated at an elevation of approximately 30m OD. The landfilling of waste takes place in naturally formed depressions between ridges of outcropping bedrock. There are no major industrial facilities in the vicinity of the site. There are a number of private residences and farm houses within 1km of the site but air emissions from these sources will be small. The R592 is located 150m to the south of the site. The volume of traffic along this road is relatively small. Due to the remote and exposed nature of the site and the absence of major industrial facilities in the region the air quality in the region is considered to be good.

I.1.(i) – Dust

Dust monitoring is undertaken at the site 3 times per annum in accordance with Waste Licence W0089-01. The dust levels are monitored at four locations at the site as shown on Drawing F1/1. Results for 2007 are included in Table I-1 below. Dust levels at the dust monitoring locations were below the limit of 350mg/m^2/day as specified in Schedule F.3 of the licence.

Table I – 1: Dust Monitoring Results for 2007

Monitoring Point	Round 1 27/07/07	Round 2 19/10/07	Round 3 Nov 07
D1		53	34.2
D3	307.2	4.6	30.8
D6	345.1	31.1	74.2
D8	70.9	44.6	84.8

Table I-1: Dust Monitoring Results For Proposed Waste Recovery Facility For 2007

Monitoring Point	Dust Deposition (mg/m2/day)
D9	585
D10	129
D11	124
D12	129

Further dust monitoring was undertaken from the 14/03/07 to 12/04/07 at 4 no. points around the proposed site of the Permanent waste Recovery Facility. These results are shown in Table I-2. Dust levels around the proposed waste recovery facility were below the limit of 350mg/m^2/day except for D9 (585 mg/m^2/day) which may have been partially caused by rotary drilling occurring in the vicinity of the monitoring station.

Waste will be compacted on arrival at the site inside the compactor unit. It will be stored in sealed containers prior to transfer to a licensed landfill. Good housekeeping practices and road sweeping will help maintain low dust emissions. Due to the nature of the waste to be accepted on the site, the impacts on air quality due to dust from the proposed site are expected to be minimal.

I.1 (ii) - Odours

The landfilling of waste in cell No. 3 is expected to be completed in July / August 2008. Following closure and restoration, odour emissions will decrease and therefore the impact caused by these will decrease. The operation of the proposed waste Transfer Station and the existing Civic Amenity Facility is unlikely to generate odours as waste received at the facility will be treated in the following way:

- Waste for disposal shall be compacted within 12 hours of acceptance at the facility.
- The waste will have undergone relatively little decomposition due to the quick turnaround times for the waste removed from the site and sent to landfill.
- All compacted mixed municipal waste or waste with the potential to cause odour nuisance, shall be removed from the facility within 96 hours.
- The transfer and compaction of waste shall take place in sealed containers.
- Construction and demolition waste, dry recyclable materials and wood shall not be stored on site for a period longer than 3 months.

I.1.(iii) – Landfill Gas

An AFS gas flare unit is used to burn landfill gas collected in the gas collection system within the unlined portion of the site and Cell No. 1. The existing gas collection system is to be extended into lined Cell No. 2 and Cell No.3 as part of the restoration contract which is to commence following the completion of the landfilling of waste. Monitoring of the emissions to atmosphere from the flare unit is undertaken regularly for NO_x, SO_2, CO, HCL, HF, TA Luft Organics and particulate matter. Monitoring of Flue Gas, Particulates, TA Luft Organics (Class I – III), Hydrochloric and Hydrofluoric Acid was carried out in April 2007.

Table I-3: Landfill Gas Monitoring

Parameter	May 2006	April 2007	November 2007	Emission Limit [1]
Nitrogen Oxides (mg/Nm^3)	36	36	33	150
Carbon Monoxide (mg/Nm^3)	6	2	11	50
Sulphur Dioxide (mg/Nm^3)	6	4	4	
Temperature (^oC)	877.2	992.8	978	
TA Luft Class I Dichloromethane Tetrachloroethane	< 1.90	 < 0.43 < 0.64		20
TA Luft Class II Acetonitrile	< 1.90	 < 0.43		100
TA Luft Class III Vinyl Chloride	< 1.90	 < 1.07		150
Total TA Luft Organic Compounds (Class I – III)		< 2.13		150
HCl	2.66	*< 3.63		50
HF	0.1	< 3.63		5
Particulate	2.54	*< 0.01		130

All parameters tested were found to be within the limits specified by the Waste Licence.

The development of a waste transfer station at the site will not produce any landfill gas. For this reason there will be no additional impacts on air quality caused from landfill gas from the proposed Waste Transfer Station and Civic Amenity Facility.

Attachment I.2: Assessment of Impact On Receiving Waters

No discharges are proposed to surface water from the proposed waste transfer station. Storm water runoff and wash water is to discharge to the leachate collection system from where it shall drain the to the leachate lagoon. The existing reception building is to remain in use during the operation of the waste transfer station and civic amenity area. There will be no additional foul emissions from the facility, foul sewage from the activities on site is currently treated in a septic tank and percolation area. Monitoring of the surface water will continue as per the licence conditions at current monitoring locations. (9 no.) There is no need for additional surface water monitoring points as the current monitoring locations take into account the location of the proposed development.

Surface water is currently monitored at 9 no. locations (SW1, SW2, SW3, SW4, SW5, SW6, SW7, SW8 and SW9) within and in the vicinity of the site on a quarterly and annual basis as specified by Waste Licence W0089-01. The parameters monitored are listed in Table F-3. The monitoring locations are shown on Drawing F1/1. Monitoring results for 2007 are presented in Table I.2 included with Annex 1 Standard Form with the Waste Licence Application Form. A number of sampling stations are located on watercourses with minimal flow in dry weather (i.e. SW2, SW6, SW8 and SW9) and in some cases have strong algal growth (SW2 and SW8). High suspended solids, ammoniacal nitrogen levels and low levels of dissolved oxygen are likely to be related to the low flows and high algal growth. Elevated levels of manganese and iron are likely to be related to the underlying geology and low pH may be due to local land use including coniferous forestry. Based on the monitoring results for 2007 there is no evidence of a significant decline in water quality from the current activities onsite.

Attachment I.3: Assessment of Impact of Sewer Discharge

There are currently no emissions to sewer from the facility, as foul sewage on site is not discharged to a municipal foul sewer. The existing reception building is to remain in place to serve the proposed transfer station. Foul sewage quantities will remain similar to those generated currently and this will continue to discharge to the septic tank and percolation area.

Attachment I.4: Assessment of Impact Groundwater and Soils

There will be no emission to groundwater from the proposed development as runoff is to be diverted to the leachate lagoon. The proposed development will not cause adverse impacts to groundwater and soils on site. Monitoring of groundwater quality is undertaken at 7 no. locations: GW1, GW2, GW4, GW5, GW6, GW7 and GW8 on a quarterly basis as per Schedule E of Waste Licence W0089-01. No further monitoring points will be added as the proposed development will be located within the area covered by the existing groundwater monitoring points.

Groundwater is currently monitored at 7 no. locations within and in the vicinity of the site on a quarterly and annual basis as specified by Waste Licence W0089-01. The parameters monitored are listed in Table F-5. The monitoring locations are shown on Drawing F1/1. Monitoring results for 2007 are presented in Table I.4 included with Annex 1 Standard Form with the Waste Licence Application Form. Groundwater monitoring results from 2007 indicate that the current development at the site is not significantly impacting on groundwater quality.

Attachment I.5: Ground and / of Groundwater Contamination

As discussed previously, the Derryconnell Landfill has been operating since 1985 but due to lack of available space it is expected to close in July / August 2008. A civic amenity centre is currently provided at the site. No changes to the waste body are being proposed at this time. The proposed development consist of the provision of a Waste Transfer Station and no emissions to ground or groundwater are proposed.

Attachment I.6: Noise Impact

The main potential sources of noise during the operation of the waste transfer station are the operation of the compactor unit and movement of vehicles on site. A noise survey is undertaken annually as specified by waste Licence W0089-01. The monitoring of noise is undertaken at 3 no. locations on and adjacent to the landfill site: N1, N6 and N8. One additional monitoring point is located offsite at a noise sensitive location situated 400m west of the landfill and designated NSL1 (NGR 95803E, 33824N).

Each location is monitored at a 30 minute noise interval and the LAeq, LA10 and LA90 parameters are to be determined. One third octave band frequency analysis is also required. A limit of 55dB during daytime periods and 45dB at night time at any noise sensitive location is set by the agency (daytime hours are between 08:00 and 22:00). The licence does not specify limits at the noise monitoring stations.

The most recent annual noise survey was undertaken on 26th of November, 2007. The survey of the landfilling area was undertaken at stations N1, N6, N8 and NSL1. Measurements were recorded using a Bruel & Kjaer Type 2260 integrating sound level meter, which was calibrated before and after the survey. The survey was undertaken by Dixon.Brosnan on behalf of Cork County Council. Following survey completion recorded data were uploaded to PC for subsequent analysis using task-specific software. All measurements were recorded in accordance with International Standard International Standard ISO 1996: 1982 Acoustics – Descritpion and Measurements of Environmental Noise, Part 1: Basic Quantities and Procedures.

The $L_{Aeq\ 30\ min}$ recorded at noise sensitive location NSL1 was 40dB, significantly lower than the daytime limit of 55dB specified in licence W0089-01. No noise was audible from the landfill at this location. Increased traffic movements associated with movement of capping material into the site resulted in an elevated $L_{Aeq\ 30\ mins}$ level of 72 dB measured at N8. No persistent audible tones were noted at any of the measurement stations. Overall noise levels recorded were satisfactory. Based on the results of the latest noise surveys, noise onsite is not an issue. Monitoring of noise will continue as specified by the licence with the development of the facility an additional monitoring point N13 in the vicinity of the proposed waste transfer station. It is not expected that the activities from the proposed waste facility will adversely impact on noise emissions onsite. The results of the noise survey undertaken on 20/11/2006 are provided in Table I.6(i) included with Annex 1 Standard Form with the Waste Licence Application Form.

Attachment I.7: Assessment of Ecological Impacts and Mitigation Measures

The proposed waste transfer station is to be constructed within the existing landfill site in an area of hardstanding and on the southern portion of Cell No. 1. The development of the transfer station in this area will not impact on the ecology of the area as the development is taking place on an area of existing landfill.

A report was prepared by Roger Goodwillie and Associates in February 1999 to determine the impact of the site on the ecology of the area. This study was prior to the installation of the leachate management system and construction of the lined cells. The report concluded that at the time, there was slight evidence of habitat damage on the adjacent land and that the effluent discharged to the stream was causing eutrophication on the bankside vegetation and deoxygenation of the water. It also suggested that better management facilities to treat leachate will reduce the impact on downstream habitats. These measures have been adopted. The recent surface water monitoring results show no significant impact on surface water as a result of the current landfilling operations.

ATTACHMENT J: ACCIDENT PREVENTION & EMERGENCY RESPONSE

ATTACHMENT J: ACCIDENT PREVENTION & EMERGENCY RESPONSE

Attachment J.1: Accident Prevention & Emergency Reponse

The Emergency Response Procedures for the existing Derryconnell Facility as agreed with the Agency are attached here (part of the Environmental Management System). The plan will be updated to include the new development within one year of the issue of the licence.

ATTACHMENT K: REMEDIATION, DECOMMISSIONING, RESTORATION & AFTERCARE

ATTACHMENT K: REMEDIATION, DECOMMISSIONING, RESTORATION & AFTERCARE

Attachment K.1(a) – Cessation of Activity

In the event of cessation of activities at Derryconnell Landfill Cork County Council will ensure that the site is restored to the highest quality. A waste licence review is being sought for the operation of a waste transfer station at the site and the continued operation of the existing civic amenity centre. There are no plans to decommission this section of the site in the foreseeable future.

Landfill
A Residuals Management Plan was prepared and submitted to the Agency as part of the Environmental Management System in October 2001. The Plan follows the guidelines of the EPA's Landfill Manual on Restoration and Aftercare. It is estimated that the landfilling of waste shall be completed in July / August 2008 and that Restoration Operations will then commence. Following the filling of cells, they will be capped according to EPA recommendations. The final capping (1,016mm) will consist of:

- 150mm of topsoil,
- 850mm subsoil,
- Surface water drainage layer - geocomposite layer with geotextile filter / separator on top and bottom equivalent to Finess Pozidrain 6S240D/NW8
- Barrier Layer - geotextile protection layer equivalent to Bentomat Cap 75. Approximately 6mm deep. Maximum permeability of 1 x 10 –9m/s.
- Gas collection layer - non – woven needle punched geocomposite equivalent to Finess Pozidrain 6S240D/NW8. Approximately 5mm deep.

Once the cells are filled, they will be permanently capped to the specifications agreed with the Agency within 12 months. Following closure the cells will be restored complying with the following measures:.

- The storage of soils shall be in such a manner so as to maximise the preservation of the soil structure for future use within the facility. Any soils stored on site shall be in suitable locations.
- Any depressions arising after profiling shall be rectified by the emplacement of suitable capping or restoration material.
- No material or object that is incompatible with the proposed restoration of the facility shall be present within one metre of the final soil surface levels.
- Where tree planting is proposed to be carried out above waste-filled areas, a synthetic barrier shall be used to augment the clay cap. Topsoil and subsoil depths shall be a minimum of 1m unless otherwise agreed in advance with the Agency.

Monitoring of groundwater, surface water, leachate and gas will continue onsite following closure based on the following frequencies.

Table K-1: Monitoring During Restoration & Aftercare

Medium	Parameter	Frequency	Monitoring Locations
Surface Water	Level	Biannually	SW1, SW3, SW4, SW7
	Composition	Biannually	
Groundwater	Level	Quarterly	GW1, GW2, GW3, GW4, GW5.
	Composition	Quarterly	
Landfill Gas	Gas Emissions	Biannually	L1, L2, L3, L4, L5,L6,L7.
Stability & Settlement		Annually	Monitoring points to be established.

Regular inspection (minimum biannually) of the following equipment is proposed during the aftercare period and maintenance will be carried out as required:

- Leachate pumps
- Leachate level monitoring
- Continuous surface water monitoring system
- Gas flarestack and abstraction system
- Fencing and gates

Cork County Council will ensure that funds are available for the restoration and aftercare of the Derryconnell Waste Facility.

Waste Transfer Station & Civic Amenity Facility

Cork County Council proposes the following closure and restoration measures:

- The equipment used at the site will be removed by Cork County Council.
- Portable structures, such as recycling receptacles will be removed from the site.
- Street sweeper vehicles will be employed to clean the site.
- Cork County Council will remove office equipment.
- Cork County Council will provide the EPA with at least six months written notice of any intention to close the facility.

Activities in this area of the site are unlikely to result in either groundwater or land contamination as all activities will take place on constructed hardstanding. In the event of decommissioning of the facility, the civic amenity site would not require a special Residual Management Plan.

ATTACHMENT L: STATUTORY REQUIREMENTS

ATTACHMENT L: STATUTORY REQUIREMENTS

L.1: Section 40(4) Waste Management Act

Section 40(4) of the waste Management Act, 1996 requires that any emissions from the recovery activity in question will not result in the contravention of any relevant standard, including any standard for an environmental medium, or any relevant emission limit value, prescribed under any other enactment.

Noise: Noise emissions may arise from operational plant as well as traffic to and from the site. Compaction operations and traffic movements to and from the site will be limited to normal opening hours and so operations at the facility will not be expected to have a significant impact on existing background noise levels. The standards applicable for noise emission at the site are as follows: BS5228 (1984 and 1987) "Noise Control On Construction and Open Sites" Part 1. A noise emission limit of 55dB(A)L (daytime) and 45dB(A)L (night time) at locations on the boundary will be used. Monitoring results will be compared against these standards.

A noise monitoring survey is carried out annually around the existing landfill site. It is proposed that an additional monitoring point shall be added adjacent to the proposed Waste Transfer Station. Monitoring results to date indicate that noise levels are generally below the EPA recommended levels except for one location which is located adjacent to a busy road.

Odour: It is unlikely that there will be any additional generation of odours as a result of the proposed waste recovery operations onsite. Recyclable waste received at the facility is unlikely to cause odours. A gas flare is currently in operation at the landfill site

Dust: Dust monitoring is carried out annually under Waste Licence W0089-01. An additional dust monitoring location is proposed adjacent to the waste transfer station (D13). A 30 day average dust deposition rate of 350 mg/m^2/day is recommended at the boundary of the site. All results from the latest period of monitoring were found to be below the recommended deposition rate except at one location where drilling was taking place during a site investigation programme. Results from regular dust monitoring will be compared against these standards. Further dust monitoring will be carried out as per the agency's recommendations.

Surface Water: Surface water runoff from the proposed waste transfer station will be collected in the leachate collection system before being discharged to the leachate lagoon.

Groundwater: All areas of the proposed waste transfer station will be located on hardstanding and all areas used for the storage of liquids or hazardous waste will be fully bunded. There will be no emission to groundwater from the proposed development at the site.

Section 40(4)(b) of the Waste Management Act, 1996 required that the activity concerned will not cause environmental pollution, which is defined as: "the holding, transport, recovery and disposal of waste in the manner which would to a significant extent endanger human health or harm the environment and in particular:

a) create a risk to waters, the atmosphere, land, soil, plants or animals
b) create a nuisance through noise, odours or litter,
c) adversely affect the Countryside or places of special interest".

Monitoring of groundwater, surface water, leachate, landfill gas, noise, dust emission in addition to ecology have been considered within the scope of this application. No significant environmental impacts were identified, therefore the requirements of Section 40(4)(b) of the Waste Management Act 1996 are deemed to be satisfied.

Section 40(4)(b) Of the Waste Management Act 1996 as amended in 2003 requires that the activity comply with Council Directive 1999 / 31/EC of the landfill of waste.

The site operates and will be developed in accordance with the requirements of the Landfill Directive.

Section 40(4)(c) of the Waste Management Act 1996 requires that the BATNEEC (best available technology not entailing excessive costs) will be implemented to minimise the risk of potential emissions from the activity concerned.

Liquid Emission: It is proposed that runoff from the Waste Transfer Station area shall be discharged to the leachate collection system. This will prevent any emissions to surface water or groundwater.

Air Emissions: Operational procedures such as the storage of waste in sealed containers and the implementation of a maximum storage time of 96 hours for compacted waste storage will minimise odour emissions from the site and reduce the potential for attracting vermin and flies. Operation procedures such as the tipping of waste directly into the hopper unit and the provision of litter netting will control wind blow litter.

Section 40(4) (c) of the Waste Management Act, 1996 as amended in 2003 requires that the activity concerned is consistent with the objectives of the relevant waste management plan and will not prejudice measures taken or to be taken by the relevant local authority or authorities for the purpose of the implementation of any such plan.

The proposed site is consistent with the Cork Waste Management Plan prepared in accordance with the Waste Management Act 1996 and the Waste Management (Planning) Regulations 1997. This Waste Management Plan adopted in 2001, sets out the proposed plan for the following 25 years.

The policy sets out the national targets, which will apply to waste management by local authorities. Included in the waste recycling targets are:

- Diversion of 50% of overall household waste away from landfill.
- Minimum of 65% reduction in biodegradable waste consigned to landfill.
- Recycling of at least 25% of munipical waste.

There national targets are to be achieved within fifteen years of development of the Waste Management Plan, and are intended to fulfil our obligations under EU legislation. According to Cork County's Waste Management Plan, the average household recycling rate for Cork County in 2003 was only 11.4%. However the continued provision of the existing civic amenity centre will help achieve the above targets.

Section 40(4)(d) of the Waste Management Act, 1996 requires that if the applicant is not a local authority, the corporation of a borough that is not a county borough, or the council of an urban district, subject to subsection (8), he or she is a fit and proper person to hold a waste licence.

Not applicable as the applicant is a Local Authority.

Section 40(4)(e) of the Waste Management Act, 1996 requires that financial provisions are provided for the facility.

Cork County Council will provide funding to develop, operate and restore the landfill, transfer station and civic amenity facility in accordance with legislation. The necessary personnel will be employed and trained to manage the facility in compliance with legislation.

Section 40(4)(f) of the Waste Management Act, 1996 amended in 2003 requires that energy will be used efficiently in the carrying on of the activity concerned.

The environmental management system for the facility will include the provision for the undertaking of an energy audit. Additionally, energy efficiency has been considered in all aspects of the design of the proposed development.

Section 40(4)(g) of the Waste Management Act, 1996 amended in 2003 requires that any noise from the activity concerned wll comply with, or will not result in the contravention of, any regulations under section 106 of the Act of 1999.

Noise standards of 55dB(A)LAeq (daytime) and 45dB(A)LAeq (nightime) at locations along the boundary will be observed. Consistent monitoring will be conducted and compared to these standards.

Section 40(4)(h) of the Waste Management Act, 1996 amended in 2003 requires that necessary measures will be taken to prevent accidents in the carrying on of the activity concerned and, where an accident occurs, to limit its consequences for the environment.

An Environmental Management System (EMS) has been developed for the landfill facility and Cork County Council will update the plan to incorporate the proposed waste transfer station in the first year of operation of this facility. The plan was submitted and approved by the Agency in October 2001. It was and will continue to be reviewed annually and submitted to the Agency in the AER.

An Accident and Emergency Response Plan for the existing Derryconnell Facility exists and will be updated to include the proposed development within one year of the licence. Site personnel will be trained in first aid and appropriate emergency equipment provided on site. Emergency response procedure will include a management structure for dealing with all emergencies on site.

Section 40(4)(i) of the Waste Management Act, 1996 amended in 2003 requires that necessary measures be taken upon the permanent cessation of the activity concerned (including such a cessation resulting from the abandonment of the activity) to avoid any risk of environmental pollution and return the site of the activity to a satisfactory state.

The site will be restored in accordance with the requirements of the Landfill Directive. The capping system will include a landfill gas collection layer with a geosynthetic clay liner, a surface water drainage layer and various sub-soil and topsoil finishing layers. The restored site will be subject to an aftercare period involving environmental monitoring, which will continue whilst the waste management licence is maintained. Following closure of the landfill area, the site will be used as a waste transfer facility where waste will be stored awaiting transfer to another licensed landfill.

In the event of cessation of activities at the Facility, Cork County Council proposes the following closure and restoration measures:

- The equipment used at the site will be removed by Cork County Council.
- Portable structures, such as recycling receptacles, will be removed from the site.
- Street sweeper vehicles will be used to clean the site.
- Office equipment will be removed.
- Cork County Council will provide the EPA with at least six months notice of any intention to close the facility.

There are no plans to decommission the Facility in the foreseeable future.

ATTACHMENT I.2: FIT & PROPER PERSON

This section is not applicable as the applicant, Cork County Council, is a local authority.

APPENDIX 1

ANNEX 1 STANDARD FORMS

APPENDIX 2

DRAWINGS

DOCUMENT CONTROL SHEET

Client	Cork County Council					
Project Title	Derryconnell Landfill					
Document Title	Waste Licence Review – Additional Information April 2008					
Document No.	RPS/MCW0521Rp0001F01					
This Document Comprises	DCS	TOC	Text	List of Tables	List of Figures	No. Of Appendices
	1	1	70	0	0	2

Rev.	Status	Author(s)	Reviewed By	Approved By	Office of Origin	Issue Date
F01	Final	C. Doyle			Cork	April, 2008

Consulting Engineers

ANNEX 1 STANDARD FORMS

Standard forms are provided in this section for the recording and presentation of environmental monitoring and site investigation results

TABLE E.1(i) LANDFILL GAS FLARE EMISSIONS TO ATMOSPHERE
Emission Point:

Emission Point Ref. Nº:	A1-1
Location :	Landfill Gas Flare
Grid Ref. (12 digit, 6E,6N):	E096216 N033769
Vent Details Diameter: Height above Ground(m):	 1.3m (OD) 8.5m
Date of commencement of emission:	August 2005

Characteristics of Emission :

CO			11 mg/m^3
Total organic carbon (TOC)			< 5.70 mg/m^3
NOx			36 mg/Nm^3 0ºC. 3% O_2(Liquid or Gas), 6% O_2(Solid Fuel)
Maximum volume of emission			3,000 m^3/hr
Temperature	992.8 ºC(max)	877.2 ºC (min)	ºC(avg)

(i) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up/shutdown to be included):*

Periods of Emission (avg)	60 min/hr	24 hr/day	365 day/yr

TABLE E.1(ii) MAIN EMISSIONS TO ATMOSPHERE (1 Page for each emission point)

Emission Point Ref. N^{o}:	
Source of Emission:	
Location :	
Grid Ref. (12 digit, 6E,6N):	
Vent Details Diameter: Height above Ground(m):	
Date of commencement:	

Characteristics of Emission :

(i) Volume to be emitted:			
Average/day	m^3/d	Maximum/day	m^3/d
Maximum rate/hour	m^3/h	Min efflux velocity	$m.sec^{-1}$
(ii) Other factors			
Temperature	^{o}C(max)	^{o}C(min)	^{o}C(avg)
For Combustion Sources: Volume terms expressed as : ☐ wet. ☐ dry. _____$\%O_2$			

(iii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included):*

Periods of Emission (avg)	_____min/hr _____hr/day _____day/yr

TABLE E.1(iii): MAIN EMISSIONS TO ATMOSPHERE - Chemical characteristics of the emission (1 table per emission point)

Emission Point Reference Number:_____

Parameter	Prior to treatment[1]				Brief description of treatment	As discharged[1]					
	mg/Nm^3		kg/h			mg/Nm^3		kg/h.		kg/year	
	Avg	Max	Avg	Max		Avg	Max	Avg	Max	Avg	Max

1. Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0^{o}C,101.3kPa). Wet/dry should be the same as given in Table E.1(ii) unless clearly stated otherwise.

TABLE E.1(iv): EMISSIONS TO ATMOSPHERE - Minor /Fugitive

Emission point Reference Numbers	Description	Emission details[1]				Abatement system employed
		material	mg/Nm$^{3(2)}$	kg/h.	kg/year	
A2-1	Dust, particulates					Site operating procedures
A2-2	Landfill gas emission from active cells					Daily capping, site operating procedures and landfill gas management

1 The maximum emission should be stated for each material emitted, the concentration should be based on the maximum 30 minute mean.
2 Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0^{o}C101.3kPa). Wet/dry should be clearly stated. Include reference oxygen conditions for combustion sources.

TABLE E.2(i): EMISSIONS TO SURFACE WATERS
(One page for each emission)

Emission Point:

Emission Point Ref. N^{o}:	SW7
Source of Emission:	Storm water runoff from the existing site
Location :	South west corner of the site (Drawing F1/1)
Grid Ref. (10 digit, 5E,5N):	96290E 33810N
Name of receiving waters:	Athboy River – small stream ultimately discharging to Ballydehob Bay
Flow rate in receiving waters:	_____ $m^3.sec^{-1}$ Dry Weather Flow _____ $m^3.sec^{-1}$ 95%ile flow
Available waste assimilative capacity:	kg/day

Emission Details:

(i) Volume to be emitted			
Normal/day	m^3	Maximum/day	m^3
Maximum rate/hour	10.8 m^3		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included):*

Periods of Emission (avg)	60 min/hr 24 hr/day 365 day/yr

TABLE E.2(ii): EMISSIONS TO SURFACE WATERS - Characteristics of the emission (1 table per emission point)

Emission point reference number : ***SW7 (96290E 33810N)***

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	

TABLE E.3(i): EMISSIONS TO SEWER(One page for each emission)

Emission Point: Not Applicable

Emission Point Ref. N^{o}:	
Location of connection to sewer :	
Grid Ref. (10 digit, 5E,5N):	
Name of sewage undertaker:	

Emission Details:

(i) Volume to be emitted			
Normal/day	m^3	Maximum/day	m^3
Maximum rate/hour	m^3		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included):*

Periods of Emission (avg)	_____min/hr _____hr/day _____day/yr

TABLE E.3(ii): EMISSIONS TO SEWER - Characteristics of the emission (1 table per emission point)

Emission point reference number : Not Applicable

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	

TABLE E.4(i): EMISSIONS TO GROUNDWATER (1 Page for each emission point)

Emission Point or Area: Not Applicable

Emission Point/Area Ref. Nº:	
Emission Pathway: (borehole, well, percolation area, soakaway, landspreading, etc.)	
Location :	
Grid Ref. (10 digit, 5E,5N):	
Elevation of discharge: (relative to Ordnance Datum)	
Aquifer classification for receiving groundwater body:	
Groundwater vulnerability assessment (including vulnerability rating):	
Identity and proximity of groundwater sources at risk (wells, springs, etc):	
Identity and proximity of surface water bodies at risk:	

Emission Details:

(i) Volume to be emitted			
Normal/day	m^3	Maximum/day	m^3
Maximum rate/hour	m^3		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included):*

Periods of Emission (avg)	_____min/hr _____hr/day _____day/yr

Table E.5(i): NOISE EMISSIONS - Noise sources summary sheet

Source	Emission point Ref. No	Equipment Ref. No	Sound Pressure[1] dBA at reference distance	Octave bands (Hz) Sound Pressure[1] Levels dB(unweighted) per band									Impulsive or tonal qualities	Periods of Emission
				31.5	63	125	250	500	1K	2K	4K	8K		
Landfill Gas Flare														Hours of Operation
Power Generator														Hours of Operation
Compactor														Hours of Operation

1. For items of plant sound power levels may be used.

TABLE F.1: ABATEMENT / TREATMENT CONTROL

Emission point reference number *:* _____

Control[1] parameter	Equipment [2]	Equipment maintenance	Equipment calibration	Equipment back-up
Temperature & Retention Time	Enclosed Flare System	As per manufacturers instruction	As per manufacturers instruction	
	Septic tank	As per manufacturers instruction	As per manufacturers instruction	

Control[1] parameter	Monitoring to be carried out[3]	Monitoring equipment	Monitoring equipment calibration

[1] List the operating parameters of the treatment / abatement system which control its function.
[2] List the equipment necessary for the proper function of the abatement / treatment system.
[3] List the monitoring of the control parameter to be carried out.

TABLE F.2 to F.8 : EMISSIONS MONITORING AND SAMPLING POINTS - (1 table per media)

Emission Point Reference No(s). : Dust (D1, D3, D6, D8, D13)

Parameter	Monitoring frequency	Accessibility of Sampling Points
Dust Deposition	3 times per annum	Permanent access is maintained at all monitoring points.

Emission Point Reference No(s). : Surface Water (SW1, SW2, SW3, SW4, SW5, SW6, SW7, SW8, SW9)

Parameter	Monitoring frequency	Accessibility of Sampling Points
Visual Inspection / Odour	Weekly	Permanent access is maintained at all monitoring points
Ammoniacal Nitrogen	Quarterly	
BOD	Quarterly	
COD	Quarterly	
Chloride	Quarterly	
Dissolved Oxygen	Quarterly	
Electrical Conductivity	Quarterly	
PH	Quarterly	
Total Suspended Solids	Quarterly	
Temperature	Quarterly	
Cadmium	Annually	
Calcium	Annually	
Chromium (Total)	Annually	
Copper	Annually	
Iron	Annually	
Lead	Annually	
List I / II organic substances	As required by Agency	
Magnesium	Annually	
Manganese	Annually	
Mercury	Annually	
Potassium	Annually	
Sulphate	Annually	
Sodium	Annually	
Total Alkalinity	Annually	
Total Phosphorus / orthophosphate	Annually	
Total Oxidised Nitrogen	Annually	
Zinc	Annually	

Emission Point Reference No(s). : Groundwater (GW1, GW2, GW4, GW5, GW6, GW7, GW8)

Parameter	Monitoring frequency	Accessibility of Sampling Points
Visual Inspection / Odour	Quarterly	Permanent access is maintained at all monitoring points
Groundwater Level	Monthly	
Ammoniacal Nitrogen	Quarterly	
Chloride	Quarterly	
Dissolved Oxygen	Quarterly	
Electrical Conductivity	Quarterly	
PH	Quarterly	
Temperature	Monthly	
Boron	Annually	
Cadmium	Annually	
Calcium	Annually	
Chromium (Total)	Annually	
Copper	Annually	
Cyanide (Total)	Annually	
Fluoride	Annually	
Iron	Quarterly	
Lead	Annually	
List I / II organic substances	As required by Agency	
Magnesium	Annually	
Manganese	Annually	
Mercury	Annually	
Potassium	Quarterly	
Sulphate	Annually	
Sodium	Quarterly	
Total Alkalinity	Annually	
Total Phosphorus / orthophosphate	Annually	
Total Oxidised Nitrogen	Quarterly	
Total Organic Carbon	Quarterly	
Residue on Evaporation	Annually	
Zinc	Annually	
Phenols	Quarterly	
Faecal Coliforms	Quarterly	
Total Coliforms	Quarterly	

Emission Point Reference No(s). : Noise (existing points – N1, N6, N8, NSL1 additional point N13).

Parameter	Monitoring frequency	Accessibility of Sampling Points
L(A)EQ [30 minutes]	Annual	Permanent access is maintained at all monitoring points
L(A)10 [30 minutes]	Annual	
L(A)90 [30 minutes]	Annual	
Frequency Analysis (1/3 Octave Band analysis)	Annual	

Emission Point Reference No(s). : Leachate (L1, L4, collection point in lined cell and Lagoon).

Parameter	Monitoring frequency	Accessibility of Sampling Points
Visual Inspection / Odour	Quarterly	Permanent access is maintained at all monitoring points
Leachate Level	Weekly	
Ammoniacal Nitrogen	Monthly (lagoon)	
BOD	Monthly (lagoon)	
COD	Monthly (lagoon)	
Chloride	Quarterly	
Electrical Conductivity	Quarterly	
PH	Monthly (lagoon)	
Temperature	Quarterly	
Boron	Annually	
Cadmium	Annually	
Calcium	Annually	
Chromium (Total)	Annually	
Copper	Annually	
Cyanide (Total)	Annually	
Fluoride	Annually	
Iron	Annually	
Lead	Annually	
List I / II organic substances	As required by Agency	
Magnesium	Annually	
Manganese	Annually	
Mercury	Annually	
Potassium	Annually	
Sulphate	Annually	
Sodium	Annually	
Total Phosphorus / orthophosphate	Annually	
Total Oxidised Nitrogen	Quarterly	
Zinc	Annually	
Faecal Coliforms	Annually	
Total Coliforms	Annually	

Emission Point Reference No(s). : Landfill Gas (L1, L2, L3, L4, L5, L6, L7, Site Office)

Parameter	Monitoring frequency		Accessibility of Sampling Points
	Gas Boreholes / Vents / Wells	Site Office	Permanent access is maintained at all monitoring points
Methane (CH4) % v/v	Monthly	Weekly	
Carbon dioxide (CO2) % v/v	Monthly	Weekly	
Oxygen (O2) % v/v	Monthly	Weekly	
Atmospheric Pressure	Monthly	Weekly	
Temperature	Monthly	Weekly	

Emission Point Reference No(s). : Landfill Gas Flare

Parameter	Monitoring frequency	Accessibility of Sampling Points
Inlet		Permanent access is maintained at all monitoring points
Methane (CH4) % v/v	Monthly	
Carbon Dioxide (CO2) % v/v	Monthly	
Oxygen (O2) % v/v	Monthly	
Outlet		
Volumetric Flow rate	Biannually	
SO2	Biannually	
NOx	Biannually	
CO	Continuous	
Particulates	Annually	
TA Luft ClassI, II, III organics	Annually	
Hydrochloric acid	Annually	
Hydrogen fluoride	Annually	

TABLE Ff: Fugitive ENVIRONMENT MONITORING AND SAMPLING LOCATIONS (1 table per media)

Monitoring Point Reference No :_____

Parameter	Monitoring frequency	Accessibility of Sampling point

Table G.1 Details of Process related Raw Materials, Intermediates, Products, etc., used or generated on the site

Ref. Nº or Code	Material/ Substance[1]	CAS Number	Danger[2] Category	Amount Stored (tonnes)	Annual Usage (tonnes)	Nature of Use	R[3] - Phrase	S[3] - Phrase
	Water Electricity Diesel Hydraulic Oil				 31,390kWh 48,000 litres 50 litres	 Site equipment Site equipment		

Notes: 1. In cases where a material comprises a number of distinct and available dangerous substances, please give details for each component substance.
2. c.f. Article 2(2) of SI Nº 77/94
3. c.f. Schedules 2 and 3 of SI Nº 77/94

TABLE H.1(i): WASTE - Hazardous Waste Recovery/Disposal

Waste material	EWC Code	Main source[1]	Quantity		On-site Recovery/Disposal (Method & Location)	Off-site Recovery, reuse or recycling (Method, Location & Undertaker)	Off-site Disposal (Method, Location & Undertaker)
			Tonnes / month	m^3 / month			
Waste Oil	20 01 25 and 13 01 00	Delivered to site by public	0.5	Not applicable	Stored in civic amenity area	Recovered and recycled by Enva Ireland Ltd	Not applicable
Oil Filters	13 02 00	Delivered to site by public	0.4	Not applicable	Stored in civic amenity area	Recovered and recycled by Atlas Environmental Ireland Ltd., Portlaoise (W0184-01).	Not applicable
Paint & Ink	20 01 27	Delivered to site by public	0.33	Not applicable	Stored in civic amenity area	To be determined	Not applicable
Batteries	20 01 33 and 16 06 00	Delivered to site by public	2.5	Not applicable	Stored in civic amenity area	Recovered and recycled by Atlas Environmental Ireland Ltd., Portlaoise (W0184-01).	Not applicable
Fluorescent Light Bulbs	20 01 21	Delivered to site by public	0.3	Not applicable	Stored in civic amenity area	Recycled by Irish Lamp Recycling Ltd., Kildare (CK WMC 57/01)	Not applicable
Household Gas Cylinders	16 01 16	Delivered to site by public		Not applicable	Stored in civic amenity area	Refilled and reused by Calor Teoranta, Dublin.	Not applicable
Plastic Oil Containers	16 01 99	Delivered to site by public		Not applicable	Stored in civic amenity area	Recovered and recycled by Atlas Environmental Ireland Ltd., Portlaoise (W0184-01).	Not applicable

[1] A reference should be made to the main activity / process for each waste.

TABLE H.1(ii) WASTE - Other Waste Recovery/Disposal

Waste material	EWC Code	Main source[1]	Quantity		On-site recovery/disposal[2] (Method & Location)	Off-site Recovery, reuse or recycling (Method, Location & Undertaker)	Off-site Disposal (Method, Location & Undertaker)
			Tonnes / month	m^3 / month			
Mixed Waste	20 03 01	Domestic & Commercial Waste	1,167		Transferred to active cell of landfill. Transferred to compactor unit following completion of Cell No. 3.	Not applicable	Not applicable
Cardboard & Cardborad Packaging	15 01 01	Delivered to site by public	6		Compacted and stored in Baler Basement	Recycled and recovered by Veolia (Ipodec), Cork (W0173-01)	Not applicable
Clean Plastic Bags	15 01 02	Delivered to site by public	2		Stored in civic amenity area		Not applicable
Mixed paper	20 01 01	Delivered to site by public	8		Stored in civic amenity area		Not applicable
Plastic Bottles	15 01 02	Delivered to site by public	3		Stored in civic amenity area		Not applicable
Tetra Paks	15 01 05	Delivered to site by public			Stored in civic amenity area	To be determined	Not applicable
Newsprint / magazines	20 01 01	Delivered to site by public	7		Stored in civic amenity area	Recycled and recovered by Veolia (Ipodec), Cork (W0173-01)	Not applicable
Garden Waste	20 02 01	Delivered to site by public			Stored in civic amenity area	To be determined	Not applicable
Scrap metal	20 01 40	Delivered to site by public	10		Stored in civic amenity area	Cork Metal Ltd., Cork (W0173-01)	Not applicable
Timber (untreated only)	20 01 38	Delivered to site by public			Stored in civic amenity area	To be determined	Not applicable
Electrical goods	20 01 36	Delivered to site by public	6		Stored in civic amenity area	Recycled by Cedar Resource Management Ltd., Dublin (WL 185-1)	Not applicable
White goods	20 01 36	Delivered to site by public	5		Stored in civic amenity area		Not applicable
Drinks and food cans	15 01 04	Delivered to site by public	5		Stored in civic amenity area	Recovered by Rehab Recycling Partnership, Cork (CK WMC 146/03)	Not applicable
Glass bottles & jars	15 01 07	Delivered to site by public	5		Stored in civic amenity area		Not applicable
Flat Glass	20 01 02	Delivered to site by public	2		Stored in civic amenity area		Not applicable

1 A reference should be made to the main activity/ process for each waste.
2 The method of disposal or recovery should be clearly described and referenced to Attachment H.1

Table I.2(i) SURFACE WATER QUALITY

(Sheet 1 of 2) Monitoring Point/ Grid Reference: _____SW1_96335E, 334841N_____

Parameter	Results (mg/l)					Sampling method[2] (grab, drift etc.)	Normal Analytical Range[2]	Analysis method / technique
	24/11/06	03/04/07	24/06/07	27/09/07	21/22/07			
pH (pH units)	7.1	7.0	7.2	7.0	7.1			
Temperature (^{O}C)	8.8	9.6	18.1	15.1	9.1			
Electrical conductivity EC (us/cm)	193	175	186	201	199			
Ammoniacal nitrogen NH_4-N (mg/l)	0.8	4.7	1.07	0.458	0.248			
Chemical oxygen demand (mg/l)	21	15	11	13	11			
Biochemical oxygen demand (mg/l)	< 2	< 3	5	< 3	10			
Dissolved oxygen DO (mg/l)	9.2	9.1	9.1	8.9				
Calcium Ca (mg/l)	11.24				472.4			
Cadmium Cd (ug/l)	< 0.001				< 1.0			
Chromium Cr (ug/l)	< 0.05				44.3			
Chloride Cl (mg/l)	33	49.6	37.4	38.7	35.2			
Copper Cu (ug/l)	< 0.001				< 30.0			
Iron Fe (ug/l)	< 0.002				750.8			
Lead Pb (ug/l)	< 0.001				< 3			
Magnesium Mg (mg/l)	2.59				2.2			
Manganese Mn (ug/l)	< 0.001				329.4			
Mercury Hg (ug/l)	0.00009				4.4			
Total Suspended Solids (mg/l)	< 10	12	1	< 1	21			

Surface Water Quality (Sheet 2 of 2) SW1 96335E, 334841N

Parameter	Results (mg/l)					Sampling method (grab, drift etc.)	Normal Analytical Range	Analysis method / technique
	24/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
Nickel Ni								
Potassium K (mg/l)	3.3				< 2			
Sodium Na (mg/l)	20				7.9			
Sulphate SO_4 (mg/l)	13				15.6			
Zinc Zn (ug/l)	0.015				< 10			
Total alkalinity (as $CaCO_3$)n(mg/l)	50				30			
Total organic carbon TOC								
Total oxidised nitrogen TON (mg/l)	0.6				66.6			
Nitrite NO_2								
Nitrate NO_3								
Faecal coliforms (cfu/100mls)								
Total coliforms (cfu /100mls)								
Total P (mg/l)					0.32			

Table I.2(i) SURFACE WATER QUALITY

(Sheet 1 of 2) Monitoring Point/ Grid Reference: _____SW2_- 96112E, 33883N_____

Parameter	Results (mg/l)					Sampling method[2] (grab, drift etc.)	Normal Analytical Range[2]	Analysis method / technique
	24/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
pH (pH units)	7.4	7.1	7.2		7.2			
Temperature (^{O}C)	8.7	7.8	16.1		9.2			
Electrical conductivity EC (us/cm)	148	101	100		150			
Ammoniacal nitrogen NH_4-N (mg/l)	< 0.2	0.07	0.01	Dry	0.024			
Chemical oxygen demand (mg/l)	76	126	13		18			
Biochemical oxygen demand (mg/l)	5	44	6		5			
Dissolved oxygen DO (mg/l)	8.6	9.9	9.8					
Calcium Ca (mg/l)	1.956				17.4			
Cadmium Cd (ug/l)	< 0.001				< 1.0			
Chromium Cr (ug/l)	< 0.05				45.2			
Chloride Cl (mg/l)	23	35.8	57.3		30.5			
Copper Cu (ug/l)	< 0.001				< 30.0			
Iron Fe (ug/l)	0.595				3418			
Lead Pb (ug/l)	< 0.021				4			
Magnesium Mg (mg/l)	1.833				1.6			
Manganese Mn (ug/l)	0.891				459.2			
Mercury Hg (ug/l)	0.00012				0.33			
Total Suspended Solids	8.7	7.8	16.1		150			

Surface Water Quality (Sheet 2 of 2) SW2 - 96112E, 33883N

Parameter	Results (mg/l)					Sampling method (grab, drift etc.)	Normal Analytical Range	Analysis method / technique
	24/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
Nickel Ni								
Potassium K (mg/l)	1.7				< 2			
Sodium Na (mg/l)	14.5				2.6			
Sulphate SO_4 (mg/l)	5				9.6			
Zinc Zn (ug/l)	0.027				< 10			
Total alkalinity (as $CaCO_3$)n(mg/l)	20				8			
Total organic carbon TOC								
Total oxidised nitrogen TON (mg/l)	< 0.3				0.183			
Nitrite NO_2								
Nitrate NO_3								
Faecal coliforms (cfu/100mls)								
Total coliforms (cfu /100mls)								
Total P (mg/l)					0.04			

Table I.2(i) SURFACE WATER QUALITY

(Sheet 1 of 2) Monitoring Point/ Grid Reference: _____SW3 – 96507E, 33785N_____

Parameter	Results (mg/l)					Sampling method[2] (grab, drift etc.)	Normal Analytical Range[2]	Analysis method / technique
	24/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
pH (pH units)	7.5	7	7.2	6.98	7.1			
Temperature (^{O}C)	8.9	7.0	15.1	10.2	8.2			
Electrical conductivity EC (us/cm)	239	177	256	415	160			
Ammoniacal nitrogen NH_4-N (mg/l)	< 0.2	1.32	0.43	0.076	0.056			
Chemical oxygen demand (mg/l)	< 15	12	12	12	19			
Biochemical oxygen demand (mg/l)	2	< 3	6	< 3	< 3			
Dissolved oxygen DO (mg/l)	8.8	10.1	9.6	8.6				
Calcium Ca (mg/l)	8.05				12.8			
Cadmium Cd (ug/l)	< 0.001				< 1.0			
Chromium Cr (ug/l)	< 0.05				41.9			
Chloride Cl (mg/l)	31	42.8	39.3	38.4	80.3			
Copper Cu (ug/l)	< 0.001				< 30.0			
Iron Fe (ug/l)	0.033				3817			
Lead Pb (ug/l)	< 0.001				3.5			
Magnesium Mg (mg/l)	2.320				5.4			
Manganese Mn (ug/l)	0.005				1498			
Mercury Hg (ug/l)	0.0001				0.34			
Total Suspended Solids (mg/l)	< 10	6	1	2	73			

Surface Water Quality (Sheet 2 of 2) SW3 – 96507E, 33785N

Parameter	Results (mg/l)					Sampling method (grab, drift etc.)	Normal Analytical Range	Analysis method / technique
	24/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
Nickel Ni								
Potassium K (mg/l)	1.6				< 2			
Sodium Na (mg/l)	18.5				35.8			
Sulphate SO_4 (mg/l)	26				29.4			
Zinc Zn (ug/l)	0.015				< 10			
Total alkalinity (as $CaCO_3$)n(mg/l)	30				16			
Total organic carbon TOC								
Total oxidised nitrogen TON (mg/l)	0.4				0.480			
Nitrite NO_2								
Nitrate NO_3								
Faecal coliforms (cfu/100mls)								
Total coliforms (cfu /100mls)								
Total P (mg/l)					< 0.03			

Table I.2(i) SURFACE WATER QUALITY

(Sheet 1 of 2) Monitoring Point/ Grid Reference: SW4-96140E, 33651N

Parameter	Results (mg/l)					Sampling method[2] (grab, drift etc.)	Normal Analytical Range[2]	Analysis method / technique
	24/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
pH (pH units)	7.4	7.2	7.5	7.0	7			
Temperature (^{O}C)	8.8	7.3	15.3	10.7	8.5			
Electrical conductivity EC (us/cm)	161	157	210	345	148			
Ammoniacal nitrogen NH_4-N (mg/l)	0.6	1.72	0.28	0.278	0.082			
Chemical oxygen demand (mg/l)	24	< 8	< 8	13	18			
Biochemical oxygen demand (mg/l)	< 2	< 3	< 3	< 3	8			
Dissolved oxygen DO (mg/l)	7.7	9.8	7.9	7.0				
Calcium Ca (mg/l)	9.793				10.4			
Cadmium Cd (ug/l)	< 0.001				< 1.0			
Chromium Cr (ug/l)	< 0.05				41.7			
Chloride Cl (mg/l)	33	43.2	36	37.2	41.3			
Copper Cu (ug/l)	< 0.001				< 30			
Iron Fe (ug/l)	0.026				962.8			
Lead Pb (ug/l)	< 0.001				4.45			
Magnesium Mg (mg/l)	2.47				1.6			
Manganese Mn (ug/l)	0.001				415.6			
Mercury Hg (ug/l)	0.0001				3.84			
Total Suspended Solids (mg/l)	8.8	7.3	15.3	10.7	7			

Surface Water Quality (Sheet 2 of 2) SW4-96140E, 33651N

Parameter	Results (mg/l)					Sampling method (grab, drift etc.)	Normal Analytical Range	Analysis method / technique
	24/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
Nickel Ni								
Potassium K (mg/l)	2.8				< 2			
Sodium Na (mg/l)	20				2.7			
Sulphate SO_4 (mg/l)	15				10.6			
Zinc Zn (ug/l)	0.015				< 10			
Total alkalinity (as $CaCO_3$)n(mg/l)	30				20			
Total organic carbon TOC								
Total oxidised nitrogen TON (mg/l)	< 0.3				75.4			
Nitrite NO_2								
Nitrate NO_3								
Faecal coliforms (cfu/100mls)								
Total coliforms (cfu /100mls)								
Total P (mg/l)					0.03			

Table I.2(i) SURFACE WATER QUALITY

(Sheet 1 of 2) Monitoring Point/ Grid Reference: _____SW5 – 96450E, 34003N_____

Parameter	Results (mg/l)					Sampling method[2] (grab, drift etc.)	Normal Analytical Range[2]	Analysis method / technique
	24/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
pH (pH units)	7.6	7.1	7.3	6.76	7			
Temperature (^{O}C)	8.8	6.8	14.9	8.9	8.3			
Electrical conductivity EC (us/cm)	191	170	220	230	161			
Ammoniacal nitrogen NH_4-N (mg/l)	< 0.2	1.42	0.46	0.153	0.04			
Chemical oxygen demand (mg/l)	19	39	11	19	< 8			
Biochemical oxygen demand (mg/l)	< 2	< 3	6	< 3	4			
Dissolved oxygen DO (mg/l)	8.9	9.3	9.1	6.3				
Calcium Ca (mg/l)	7.488				11.1			
Cadmium Cd (ug/l)	< 0.021				< 1.0			
Chromium Cr (ug/l)	< 0.05				41.7			
Chloride Cl (mg/l)	31	42.8	< 1	38.5	39.4			
Copper Cu (ug/l)	< 0.001				< 30			
Iron Fe (ug/l)	0.037				1488			
Lead Pb (ug/l)	< 0.001				< 3			
Magnesium Mg (mg/l)	2.465				2.5			
Manganese Mn (ug/l)	0.004				547.1			
Mercury Hg (ug/l)	0.00007				0.7			
Total Suspended Solids (mg/l)	< 10	6	< 1	< 10	47			

Surface Water Quality (Sheet 2 of 2) SW5 – 96450E, 34003N

Parameter	Results (mg/l)					Sampling method (grab, drift etc.)	Normal Analytical Range	Analysis method / technique
	24/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
Nickel Ni								
Potassium K (mg/l)	1.2				< 2			
Sodium Na (mg/l)	17.5				8.7			
Sulphate SO_4 (mg/l)	14				86.8			
Zinc Zn (ug/l)	0.016				< 10			
Total alkalinity (as $CaCO_3$)n(mg/l)	20				14			
Total organic carbon TOC								
Total oxidised nitrogen TON (mg/l)	0.5				0.290			
Nitrite NO_2								
Nitrate NO_3								
Faecal coliforms (cfu/100mls)								
Total coliforms (cfu /100mls)								
Total P (mg/l)					< 0.03			

Table I.2(i) SURFACE WATER QUALITY

(Sheet 1 of 2) Monitoring Point/ Grid Reference: _____SW6 – 96292E, 34064N_____

Parameter	Results (mg/l)					Sampling method[2] (grab, drift etc.)	Normal Analytical Range[2]	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
pH (pH units)	7	7.2	7.0	7.2	7.1			
Temperature (^{O}C)	8.7	8.1	16.1	14.1	8.5			
Electrical conductivity EC (us/cm)	345	701	540	556	560			
Ammoniacal nitrogen NH_4-N (mg/l)	2.2	37.8	9.82	41.2	9.745			
Chemical oxygen demand (mg/l)	37	28	31	60	32			
Biochemical oxygen demand (mg/l)	2	< 3	14	12	4			
Dissolved oxygen DO (mg/l)	7.1	9.7	9.5	8.9				
Calcium Ca (mg/l)	17.39				27.8			
Cadmium Cd (ug/l)	< 0.001				< 1.0			
Chromium Cr (ug/l)	< 0.05				41.5			
Chloride Cl (mg/l)	62	94.5	53.1	5.94	59.1			
Copper Cu (ug/l)	< 0.001				< 30			
Iron Fe (ug/l)	0.547				1954			
Lead Pb (ug/l)	< 0.001				< 3			
Magnesium Mg (mg/l)	3.615				6.2			
Manganese Mn (ug/l)	0.045				673			
Mercury Hg (ug/l)	0.00013				1.8			
Total Suspended Solids (mg/l)	8.7	8.1	16.1	14.1	9			

Surface Water Quality (Sheet 2 of 2) SW6 – 96292E, 34064N

Parameter	Results (mg/l)					Sampling method (grab, drift etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
Nickel Ni								
Potassium K (mg/l)	5.5				6.3			
Sodium Na (mg/l)	22				26.2			
Sulphate SO_4 (mg/l)	12				23.7			
Zinc Zn (ug/l)	0.017				< 10			
Total alkalinity (as $CaCO_3$)n(mg/l)	60				110			
Total organic carbon TOC								
Total oxidised nitrogen TON (mg/l)	1.6				2.62			
Nitrite NO_2								
Nitrate NO_3								
Faecal coliforms (cfu/100mls)								
Total coliforms (cfu /100mls)								
Total P (mg/l)					0.03			

Table I.2(i) SURFACE WATER QUALITY

(Sheet 1 of 2) Monitoring Point/ Grid Reference: SW7 96290E, 33810N

Parameter	Results (mg/l)					Sampling method[2] (grab, drift etc.)	Normal Analytical Range[2]	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
pH (pH units)	7.3	6.9	7.1	7.0	7.0			
Temperature (^{O}C)	8.7	6.7	14	14.5	9.2			
Electrical conductivity EC (us/cm)	187	201	199	207	454			
Ammoniacal nitrogen NH_4-N (mg/l)	0.7	4.53	0.98	0.301	0.186			
Chemical oxygen demand (mg/l)	23	12	8	14	12			
Biochemical oxygen demand (mg/l)	< 2	< 3	4	3	6			
Dissolved oxygen DO (mg/l)	8.8	9.8	9.1	9.1				
Calcium Ca (mg/l)	9.836				16.6			
Cadmium Cd (ug/l)	< 0.001				< 1.0			
Chromium Cr (ug/l)	< 0.05				41.3			
Chloride Cl (mg/l)	34	47.4	34.4	37.4	37.2			
Copper Cu (ug/l)	< 0.001				< 30			
Iron Fe (ug/l)	0.008				784			
Lead Pb (ug/l)	< 0.001				3			
Magnesium Mg (mg/l)	2.415				2.2			
Manganese Mn (ug/l)	0.004				327.4			
Mercury Hg (ug/l)	0.00013				< 0.2			
Total Suspended Solids (mg/l)	< 10	8	2	7	13			

Surface Water Quality (Sheet 2 of 2) SW7 96290E, 33810N

Parameter	Results (mg/l)					Sampling method (grab, drift etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
Nickel Ni								
Potassium K (mg/l)	3.2				< 2			
Sodium Na (mg/l)	20				4.9			
Sulphate SO_4 (mg/l)	13				69.7			
Zinc Zn (ug/l)	0.019				< 10			
Total alkalinity (as $CaCO_3$)n(mg/l)	50				32			
Total organic carbon TOC								
Total oxidised nitrogen TON (mg/l)	0.3				0.290			
Nitrite NO_2								
Nitrate NO_3								
Faecal coliforms (cfu/100mls)								
Total coliforms (cfu /100mls)								
Total P (mg/l)					< 0.03			

Table I.2(i) SURFACE WATER QUALITY

(Sheet 1 of 2) Monitoring Point/ Grid Reference: SW8 - 96187E, 33970N

Parameter	Results (mg/l)					Sampling method[2] (grab, drift etc.)	Normal Analytical Range[2]	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
pH (pH units)	7.4	6.8	7.1	Dry	7.0			
Temperature (^{O}C)	8.8	6.9	16.1		8.8			
Electrical conductivity EC (us/cm)	142	120	122		150			
Ammoniacal nitrogen NH_4-N (mg/l)	1.1	0.06	0.09		0.092			
Chemical oxygen demand (mg/l)	34	98	122		28			
Biochemical oxygen demand (mg/l)	< 2	60	31		32			
Dissolved oxygen DO (mg/l)	7.9	8.6	8.8					
Calcium Ca (mg/l)	2.099				0.2			
Cadmium Cd (ug/l)	< 0.001				< 1.0			
Chromium Cr (ug/l)	< 0.05				< 10			
Chloride Cl (mg/l)	23	28	28.2		29.8			
Copper Cu (ug/l)	< 0.001				< 30			
Iron Fe (ug/l)	0.193				5590			
Lead Pb (ug/l)	< 0.001				3			
Magnesium Mg (mg/l)	1.551				0.2			
Manganese Mn (ug/l)	0.048				258.9			
Mercury Hg (ug/l)	0.00014				< 0.2			
Total Suspended Solids (mg/l)	11	16	826		1170			

Surface Water Quality (Sheet 2 of 2) SW8 - 96187E, 33970N

Parameter	Results (mg/l)					Sampling method (grab, drift etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
Nickel Ni								
Potassium K (mg/l)	0.9				< 2			
Sodium Na (mg/l)	13.5				0.15			
Sulphate SO_4 (mg/l)	4				11.6			
Zinc Zn (ug/l)	0.018				< 10			
Total alkalinity (as $CaCO_3$)n(mg/l)	30				16			
Total organic carbon TOC								
Total oxidised nitrogen TON (mg/l)	< 0.3				0.207			
Nitrite NO_2								
Nitrate NO_3								
Faecal coliforms (cfu/100mls)								
Total coliforms (cfu /100mls)								
Total P (mg/l)					0.08			

Table I.2(i) SURFACE WATER QUALITY

(Sheet 1 of 2) Monitoring Point/ Grid Reference: SW9 – 96086E, 33886N

Parameter	Results (mg/l)					Sampling method[2] (grab, drift etc.)	Normal Analytical Range[2]	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
pH (pH units)	7.4	6.6	6.8	Dry	6.9			
Temperature (^{O}C)	8.8	6.9	15.9		8			
Electrical conductivity EC (us/cm)	156	201	276		189			
Ammoniacal nitrogen NH_4-N (mg/l)	< 0.2	0.08	0.05		0.04			
Chemical oxygen demand (mg/l)	33	60	12		28			
Biochemical oxygen demand (mg/l)	< 2	22	6		19			
Dissolved oxygen DO (mg/l)	8.8	9.2	8.9					
Calcium Ca (mg/l)	2.606				7.41			
Cadmium Cd (ug/l)	< 0.001				< 10			
Chromium Cr (ug/l)	< 0.05				45.2			
Chloride Cl (mg/l)	28	33.4	54.3		45.8			
Copper Cu (ug/l)	< 0.001				< 30			
Iron Fe (ug/l)	0.248				33110			
Lead Pb (ug/l)	< 0.001				11.02			
Magnesium Mg (mg/l)	1.94				2.8			
Manganese Mn (ug/l)	0.04				3065			
Mercury Hg (ug/l)	0.0012				7.9			
Total Suspended Solids (mg/l)	< 10	26	< 1		614			

Surface Water Quality (Sheet 2 of 2) SW9 – 96086E, 33886N

Parameter	Results (mg/l)					Sampling method (grab, drift etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
Nickel Ni								
Potassium K (mg/l)	0.6				< 2			
Sodium Na (mg/l)	17.5				8.9			
Sulphate SO_4 (mg/l)	8				15.2			
Zinc Zn (ug/l)	0.025				< 10			
Total alkalinity (as $CaCO_3$)n(mg/l)	30				10			
Total organic carbon TOC								
Total oxidised nitrogen TON (mg/l)	< 0.3				1.464			
Nitrite NO_2								
Nitrate NO_3								
Faecal coliforms (cfu/100mls)								
Total coliforms (cfu /100mls)								
Total P (mg/l)					0.15			

Table I.4(i) GROUNDWATER QUALITY

(Sheet 1 of 2) Monitoring Point/ Grid Reference: GW1 - 96302E, 33890N

Parameter	Results (mg/l)					Sampling method (composite etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
pH (ph units)	6.5	6.5	6.44	6.5	6.6			
Temperature (^{o}C)	9.7				19.9			
Electrical conductivity EC (us/cm)	421	421	432	421	432			
Ammoniacal nitrogen NH_4-N (mg/l)	< 0.2	0.4	0.25	0.245	0.069			
Dissolved oxygen DO (mg/l)	3.2			4.5	2.3			
Residue on evaporation (180^{o}C) (mg/l)	220				3515			
Calcium Ca (mg/l)	38.25				49.3			
Cadmium Cd (ug/l)	< 0.001				0.4			
Chromium Cr (ug/l)	< 0.05				50			
Chloride Cl (mg/l)	24	36	26.2	25.7	24.9			
Copper Cu (ug/l)	0.003				7.9			
Cyanide Cn, total (ug/l)	< 0.05				N/A			
Iron Fe (ug/l)	< 0.002	2430	7070	7574	3040			
Lead Pb (ug/l)	< 0.001				4.7			
Magnesium Mg (mg/l)	4.583				6.9			
Manganese Mn (ug/l)	0.014							
Mercury Hg (ug/l)	0.00009				< 0.02			
Nickel Ni								
Potassium K (mg/l)	1.4	1.3	1.6	1.5	1.3			
Sodium Na (mg/l)	17	21.5	19.9	19.7	19.2			

GROUNDWATER QUALITY (SHEET 2 OF 2) __GW1 - 96302E, 33890N

Parameter	Results (mg/l)					Sampling method (composite, dipper etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
Orthophosphate (mg/l)					0.055			
Sulphate SO_4 (mg/l)	14				19.2			
Zinc Zn (ug/l)	0.014				9.3			
Total alkalinity (as $CaCO_3$) (mg/l)	100				123			
Total organic carbon TOC (mg/l)	7	8.6	2.4	22	17.9			
Total oxidised nitrogen TON (mg/l)	2.3	0.334	35.8	0.344	1.243			
Arsenic As								
Barium Ba								
Boron B (mg/l)	0.03				< 0.02			
Fluoride F (mg/l)	0.1				0.25			
Phenol (ug/l)	< 0.01	0.159	< 0.01	0.008	0.073			
Total Phosphorus P (mg/l)	0.12				0.25			
Selenium Se								
Silver Ag								
Nitrite NO_2								
Nitrate NO_3								
Faecal coliforms (cfu/100mls)	< 1	17	6	70	93			
Total coliforms (cfu /100mls)	210	< 1	33	158	4350			
List I / II substances					None			
Water level (m depth)	2.0				2.7			

Table I.4(i) GROUNDWATER QUALITY

(Sheet 1 of 2) Monitoring Point/ Grid Reference: GW2 – 96215E, 33822N

Parameter	Results (mg/l)					Sampling method (composite etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
pH (ph units)	6.5	6.5	6.52	6.5	6.52			
Temperature (°C)	8.9				18.7			
Electrical conductivity EC (us/cm)	611	491	611	491	491			
Ammoniacal nitrogen NH_4-N (mg/l)	< 0.2	0.07	0.12	0.169	0.096			
Dissolved oxygen DO (mg/l)	3.6			4.3	4.5			
Residue on evaporation (180°C) (mg/l)	156				280			
Calcium Ca (mg/l)					52			
Cadmium Cd (ug/l)	< 0.001				0.6			
Chromium Cr (ug/l)	< 0.05				< 10			
Chloride Cl (mg/l)	21	26.6	25	18.2	17.2			
Copper Cu (ug/l)					6.1			
Cyanide Cn, total (ug/l)	< 0.05							
Iron Fe (ug/l)	< 0.002	201.8	342.5	241.4	8.9			
Lead Pb (ug/l)	< 0.001				1.4			
Magnesium Mg (mg/l)	2.664				4.1			
Manganese Mn (ug/l)	0.001							
Mercury Hg (ug/l)	0.00009				< 0.02			
Nickel Ni								
Potassium K (mg/l)	2.3	2.9	3.4	9.1	1.8			
Sodium Na (mg/l)	11	19.2	18.4	16.3	14.8			

GROUNDWATER QUALITY (SHEET 2 OF 2) _GW2 – 96215E, 33822N_____

Parameter	Results (mg/l)					Sampling method (composite, dipper etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
Ortgophosphate (mg/l)					0.065			
Sulphate SO_4 (mg/l)					126.6			
Zinc Zn (ug/l)	0.055				15.8			
Total alkalinity (as $CaCO_3$) (mg/l)	80				126			
Total organic carbon TOC (mg/l)	4	3.6	4.8	48	12.3			
Total oxidised nitrogen TON (mg/l)	< 0.3	0.334	< 0.138	46.1	< 0.138			
Arsenic As								
Barium Ba								
Boron B (mg/l)	0.027				< 0.02			
Fluoride F (mg/l)	0.1				0.51			
Phenol (ug/l)	< 0.01	0.035	< 0.01	0.044	0.011			
Total Phosphorus P (mg/l)	0.1				0.07			
Selenium Se								
Silver Ag								
Nitrite NO_2								
Nitrate NO_3								
Faecal coliforms (cfu/100mls)	2	248	138	73	231			
Total coliforms (cfu /100mls)	3600000	15	3930	1553	7120			
List I / II Substances					None			
Water level (m depth)	1.28				2.06			

Table I.4(i) GROUNDWATER QUALITY

(Sheet 1 of 2) Monitoring Point/ Grid Reference: GW4 – 96294E, 34110N

Parameter	Results (mg/l)					Sampling method (composite etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
pH (ph units)	6.6	6.6	6.51	6.6	6.51			
Temperature (°C)	8.8				19.2			
Electrical conductivity EC (us/cm)	428	428	449	428	449			
Ammoniacal nitrogen NH_4-N (mg/l)	< 0.2	0.07	0.04	0.081	0.053			
Dissolved oxygen DO (mg/l)	3.8			4.6	4.1			
Residue on evaporation (180°C) (mg/l)	277				1380			
Calcium Ca (mg/l)	70.36				46.6			
Cadmium Cd (ug/l)	< 0.001				1.3			
Chromium Cr (ug/l)	< 0.05				< 10			
Chloride Cl (mg/l)	37	47.7	42.3	38.1	49.7			
Copper Cu (ug/l)	0.006				37.4			
Cyanide Cn, total (ug/l)	< 0.05							
Iron Fe (ug/l)	< 0.002	1536	8798	5543	4312			
Lead Pb (ug/l)	< 0.001				14.1			
Magnesium Mg (mg/l)	3.089				5.3			
Manganese Mn (ug/l)	0.23							
Mercury Hg (ug/l)	0.0001				0.17			
Nickel Ni								
Potassium K (mg/l)	0.9	0.8	1	0.9	0.9			
Sodium Na (mg/l)	22.5	23.4	26.7	22.9	26.3			

GROUNDWATER QUALITY (SHEET 2 OF 2) _GW4 – 96294E, 34110N_ _____

Parameter	Results (mg/l)					Sampling method (composite, dipper etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
Orthophosphate (mg/l)					0.156			
Sulphate SO_4 (mg/l)	8				149.4			
Zinc Zn (ug/l)	0.016				74.5			
Total alkalinity (as $CaCO_3$) (mg/l)	190				117			
Total organic carbon TOC (mg/l)	8	9.9	4.4	42	16.5			
Total oxidised nitrogen TON (mg/l)	< 0.3	< 0.138	< 0.138	35.5	0.268			
Arsenic As								
Barium Ba								
Boron B (mg/l)	0.026				< 0.02			
Fluoride F (mg/l)	0.3				0.57			
Phenol (ug/l)	< 0.01	0.025	< 0.01	0.014	2.7			
Total Phosphorus P (mg/l)	0.23				0.04			
Selenium Se								
Silver Ag								
Nitrite NO_2								
Nitrate NO_3								
Faecal coliforms (cfu/100mls)	< 1	11	5	33	3			
Total coliforms (cfu /100mls)	480	< 1	1450	98040	81640			
List I / II Substances					None			
Water level (m depth)	0.55				0.82			

Table I.4(i) GROUNDWATER QUALITY

(Sheet 1 of 2) Monitoring Point/ Grid Reference: GW5 – 96336E, 33922N

Parameter	Results (mg/l)					Sampling method (composite etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
pH (ph units)	6.7	6.7	6.62	6.7	6.62			
Temperature (°C)	9.2				20.1			
Electrical conductivity EC (us/cm)	566	566	506	566	506			
Ammoniacal nitrogen NH_4-N (mg/l)	< 0.2	0.08	0.07	0.115	0.057			
Dissolved oxygen DO (mg/l)	6.1			7.1	2.1			
Residue on evaporation (180°C) (mg/l)					3390			
Calcium Ca (mg/l)	61.67				63.6			
Cadmium Cd (ug/l)	< 0.001				3			
Chromium Cr (ug/l)	< 0.05				< 10			
Chloride Cl (mg/l)	28	40.7	31.1	28.4	35			
Copper Cu (ug/l)	< 0.005				23.4			
Cyanide Cn, total (ug/l)	< 0.05							
Iron Fe (ug/l)	0.148	2838	5499	13100	3664			
Lead Pb (ug/l)	< 0.001				18			
Magnesium Mg (mg/l)	2.944				9.4			
Manganese Mn (ug/l)	0.011							
Mercury Hg (ug/l)	0.00012				< 0.02			
Nickel Ni								
Potassium K (mg/l)	1.3	0.8	1.3	1.1	1.1			
Sodium Na (mg/l)	14.5	20.5	19.2	19.5	23.3			

GROUNDWATER QUALITY (SHEET 2 OF 2) __GW5 – 96336E, 33922N__

Parameter	Results (mg/l)					Sampling method (composite, dipper etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
Orthophosphate (mg/l)					0.097			
Sulphate SO_4 (mg/l)	8				19.4			
Zinc Zn (ug/l)	420				677.4			
Total alkalinity (as $CaCO_3$) (mg/l)	130				114			
Total organic carbon TOC (mg/l)	29	15.7	3.6	65	19.3			
Total oxidised nitrogen TON (mg/l)	2.6	< 0.138	< 0.138	0.225	2.074			
Arsenic As								
Barium Ba								
Boron B (mg/l)	0.03				< 0.02			
Fluoride F (mg/l)	0.1				0.29			
Phenol (ug/l)	< 0.01	0.081	< 0.01	0.005	2.5			
Total Phosphorus P (mg/l)	0.18				< 0.03			
Selenium Se								
Silver Ag								
Nitrite NO_2								
Nitrate NO_3								
Faecal coliforms (cfu/100mls)	< 1	727	2	< 100	19			
Total coliforms (cfu /100mls)	420	12	770	1450	8200			
List I / II Substances					None			
Water level (m depth)	0.88				1.2			

Table I.4(i) GROUNDWATER QUALITY

(Sheet 1 of 2) Monitoring Point/ Grid Reference: GW6 – 96135E, 33674N

Parameter	Results (mg/l)					Sampling method (composite etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
pH (ph units)	6.1	6.1	5.81	6.1	6.7			
Temperature (°C)	9.8				20			
Electrical conductivity EC (us/cm)	371	371	330	371	330			
Ammoniacal nitrogen NH_4-N (mg/l)	< 0.2	1.76	4.42	3.30	5.55			
Dissolved oxygen DO (mg/l)	3.6			4.4	2.8			
Residue on evaporation (180°C) (mg/l)	215				470			
Calcium Ca (mg/l)	22.15				21.5			
Cadmium Cd (ug/l)	< 0.001				0.3			
Chromium Cr (ug/l)	< 0.05				< 10			
Chloride Cl (mg/l)	44	48.1	52.7	26.2	47			
Copper Cu (ug/l)	0.002				5.4			
Cyanide Cn, total (ug/l)	< 0.05							
Iron Fe (ug/l)	0.993	7050	13480	5086	9192			
Lead Pb (ug/l)	< 0.001				2			
Magnesium Mg (mg/l)	5.27				6.6			
Manganese Mn (ug/l)	3.524							
Mercury Hg (ug/l)	0.00007				< 0.02			
Nickel Ni								
Potassium K (mg/l)	3.9	2.5	4.6	72.9	6.6			
Sodium Na (mg/l)	30	32.3	34.5	22.6	31.8			

GROUNDWATER QUALITY (SHEET 2 OF 2) ____GW6 – 96135E, 33674N_____

Parameter	Results (mg/l)					Sampling method (composite, dipper etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
Orthophosphate PO_4 (mg/l)					0.078			
Sulphate SO_4 (mg/l)	4				4.8			
Zinc Zn (ug/l)	0.028				140.8			
Total alkalinity (as $CaCO_3$) (mg/l)	120				103			
Total organic carbon TOC (mg/l)	12	7	3.9	37	18.2			
Total oxidised nitrogen TON (mg/l)	< 0.3	0.474	< 0.138	< 0.138	< 0.138			
Arsenic As								
Barium Ba								
Boron B (mg/l)	0.029				0.03			
Fluoride F (mg/l)	0.2				0.36			
Phenol (ug/l)	< 0.01	< 0.01	0.093	< 0.01	0.008			
Total Phosphorus P (mg/l)	0.21				< 0.03			
Selenium Se								
Silver Ag								
Nitrite NO_2								
Nitrate NO_3								
Faecal coliforms (cfu/100mls)	< 1	< 1	< 1	< 1	4			
Total coliforms (cfu /100mls)	< 1	< 1	4	< 1	214			
List I / II Substances					None			
Water level (m depth)	0.35				0.7			

Table I.4(i) GROUNDWATER QUALITY

(Sheet 1 of 2) Monitoring Point/ Grid Reference: GW7 – 96104E, 33739N

Parameter	Results (mg/l)					Sampling method (composite etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
pH (ph units)	6.4	6.4	6.76	6.4	6.76			
Temperature (°C)	9.5				19.9			
Electrical conductivity EC (us/cm)	954	954	852	954	852			
Ammoniacal nitrogen NH_4-N (mg/l)	3.4	0.63	24.8	19.3	15.925			
Dissolved oxygen DO (mg/l)	3.1			4.5	4.6			
Residue on evaporation (180°C) (mg/l)	565				670			
Calcium Ca (mg/l)	124.6				19.4			
Cadmium Cd (ug/l)	< 0.001				0.4			
Chromium Cr (ug/l)	< 0.05				< 10			
Chloride Cl (mg/l)	51	44.2	106.9	78.1	78.8			
Copper Cu (ug/l)	0.005				4.9			
Cyanide Cn, total (ug/l)	< 0.05							
Iron Fe (ug/l)	< 0.002	1760	30030	17230	8312			
Lead Pb (ug/l)	< 0.001				1.8			
Magnesium Mg (mg/l)	9.609				6			
Manganese Mn (ug/l)	5.607							
Mercury Hg (ug/l)	0.00009				< 0.02			
Nickel Ni								
Potassium K (mg/l)	13	7.9	20.2	17.8	6			
Sodium Na (mg/l)	42	30.6	77.7	58	29.4			

GROUNDWATER QUALITY (SHEET 2 OF 2) __GW7 – 96104E, 33739N_____

Parameter	Results (mg/l)					Sampling method (composite, dipper etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
Orthophosphate (mg/l)					0.063			
Sulphate SO_4 (mg/l)	96				46			
Zinc Zn (ug/l)	1.687				125.8			
Total alkalinity (as $CaCO_3$) (mg/l)	320				440			
Total organic carbon TOC (mg/l)	15	9.8	4	55	26			
Total oxidised nitrogen TON (mg/l)	0.8	3.67	< 0.138	0.537	< 0.138			
Arsenic As								
Barium Ba								
Boron B (mg/l)					0.03			
Fluoride F (mg/l)	0.7				0.55			
Phenol (ug/l)	< 0.01	0.049	< 0.01	0.021	3.7			
Total Phosphorus P (mg/l)	0.19				0.04			
Selenium Se								
Silver Ag								
Nitrite NO_2								
Nitrate NO_3								
Faecal coliforms (cfu/100mls)	2	1	< 1	< 1	2			
Total coliforms (cfu /100mls)	144	< 1	2	< 1	65			
List I /II Substances					None			
Water level (m depth)					0.82			

Table I.4(i) GROUNDWATER QUALITY

(Sheet 1 of 2) Monitoring Point/ Grid Reference: GW8 – 96085E, 33868N

Parameter	Results (mg/l)					Sampling method (composite etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
pH (ph units)	6.8	6.8	6.52	6.8	6.52			
Temperature (°C)	9.4				20.2			
Electrical conductivity EC (us/cm)	573	573	210	573	210			
Ammoniacal nitrogen NH_4-N (mg/l)	< 0.2	0.08	0.42	0.201	0.034			
Dissolved oxygen DO (mg/l)	6.3			8.2	4.2			
Residue on evaporation (180°C) (mg/l)	138				185			
Calcium Ca (mg/l)					138.3			
Cadmium Cd (ug/l)	< 0.001				0.4			
Chromium Cr (ug/l)	< 0.05				< 10			
Chloride Cl (mg/l)	36	55.2	36.3	38.6	44.5			
Copper Cu (ug/l)	0.008				4.1			
Cyanide Cn, total (ug/l)	< 0.05							
Iron Fe (ug/l)	0.203	116.7	161.7	129.6	11,150			
Lead Pb (ug/l)	< 0.001				< 0.3			
Magnesium Mg (mg/l)	2.133				12.5			
Manganese Mn (ug/l)	0.011							
Mercury Hg (ug/l)	0.0001				< 0.02			
Nickel Ni								
Potassium K (mg/l)	0.3	0.5	0.6	0.4	12.2			
Sodium Na (mg/l)	23	27.5	23.3	22	55.4			

GROUNDWATER QUALITY (SHEET 2 OF 2) __GW8 – 96085E, 33868N_____

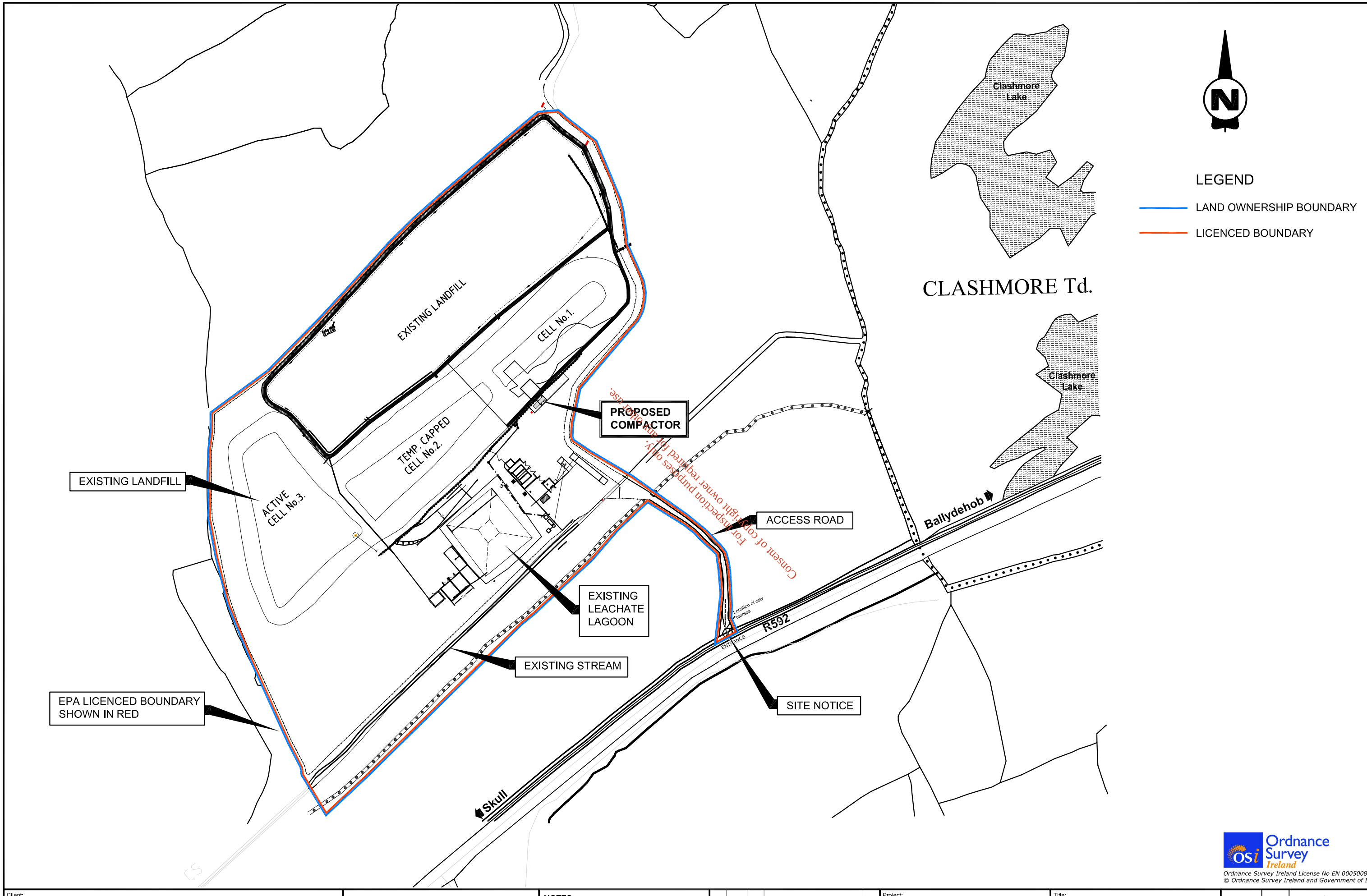
Parameter	Results (mg/l)					Sampling method (composite, dipper etc.)	Normal Analytical Range	Analysis method / technique
	26/11/06	03/04/07	24/06/07	27/09/07	21/11/07			
Orthophosphate (mg/l)					0.066			
Sulphate SO_4 (mg/l)	15				26			
Zinc Zn (ug/l)	0.03				16.3			
Total alkalinity (as $CaCO_3$) (mg/l)	20				10			
Total organic carbon TOC (mg/l)	19	12	2.9	51	12.5			
Total oxidised nitrogen TON (mg/l)	< 0.3	< 0.138	< 0.138	71.1	< 0.138			
Arsenic As								
Barium Ba								
Boron B (mg/l)					0.1			
Fluoride F (mg/l)	0.1				0.44			
Phenol (ug/l)	< 0.01	0.166	< 0.01	0.022	0.016			
Total Phosphorus (mg/l)	0.1				0.03			
Selenium Se								
Silver Ag								
Nitrite NO_2								
Nitrate NO_3								
Faecal coliforms (cfu/100mls)	30	< 1	28	1	43			
Total coliforms (cfu /100mls)	160	< 1	141	5	1046			
List I / II Substances					None			
Water level (m depth)	0.81				1.6			

Table I.6(i) Ambient Noise Assessment

Third Octave analysis for noise emissions should be used to determine tonal noises

	National Grid Reference	Sound Pressure Levels		
	(5N, 5E)	$L(A)_{eq}$	$L(A)_{10}$	$L(A)_{90}$
1. SITE BOUNDARY				
Location 1: N1	E96279 N34068	43	44	35
Location 2:N6	E96098 N33811	46	48	38
Location 3:N8	E96343 N33831	64	59	47
2. NOISE SENSITIVE LOCATIONS				
Location 1: NSL1	E95803 N 33824	49	52	42

NOTE: All locations should be identified on accompanying drawings.



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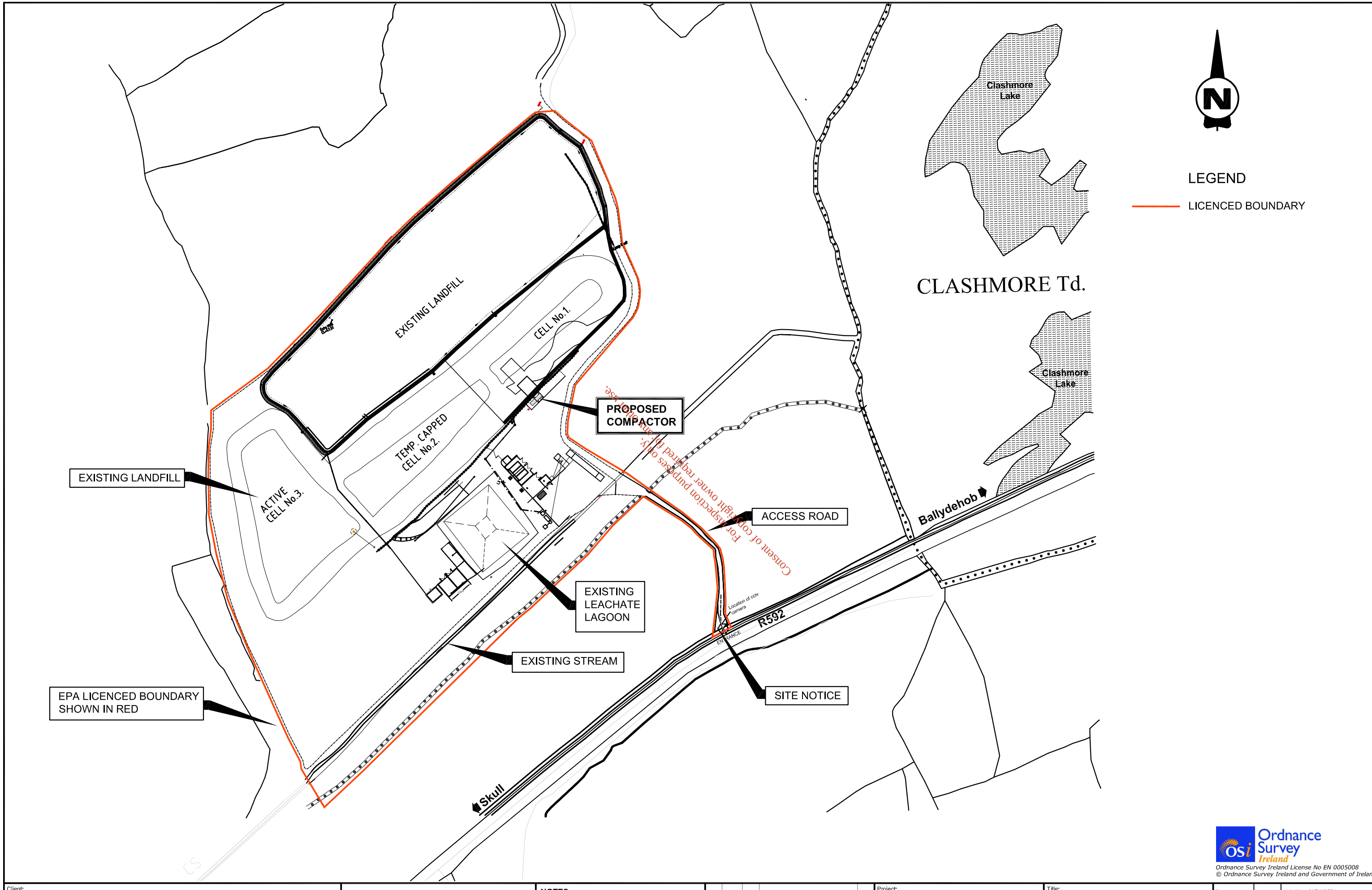
No.	Date	BC / CD	Amendment / Issue	App.
D01	Apr.'08	BC / CD	DRAFT ISSUE	KPoS

Project: **DERRYCONNELL LANDFILL WASTE LICENCE REVIEW MARCH 2008**

Title: SITE OWNERSHIP PLAN

Drawn by:	BC	Job No: MCW0521	
Checked by:	CD	File No: MCW0521DG0002	
Approved by:	KPoS	Drg. No: **B1/1**	Rev: D01
Scale: 1 : 2,000 @ A3			
Date: March 2008			



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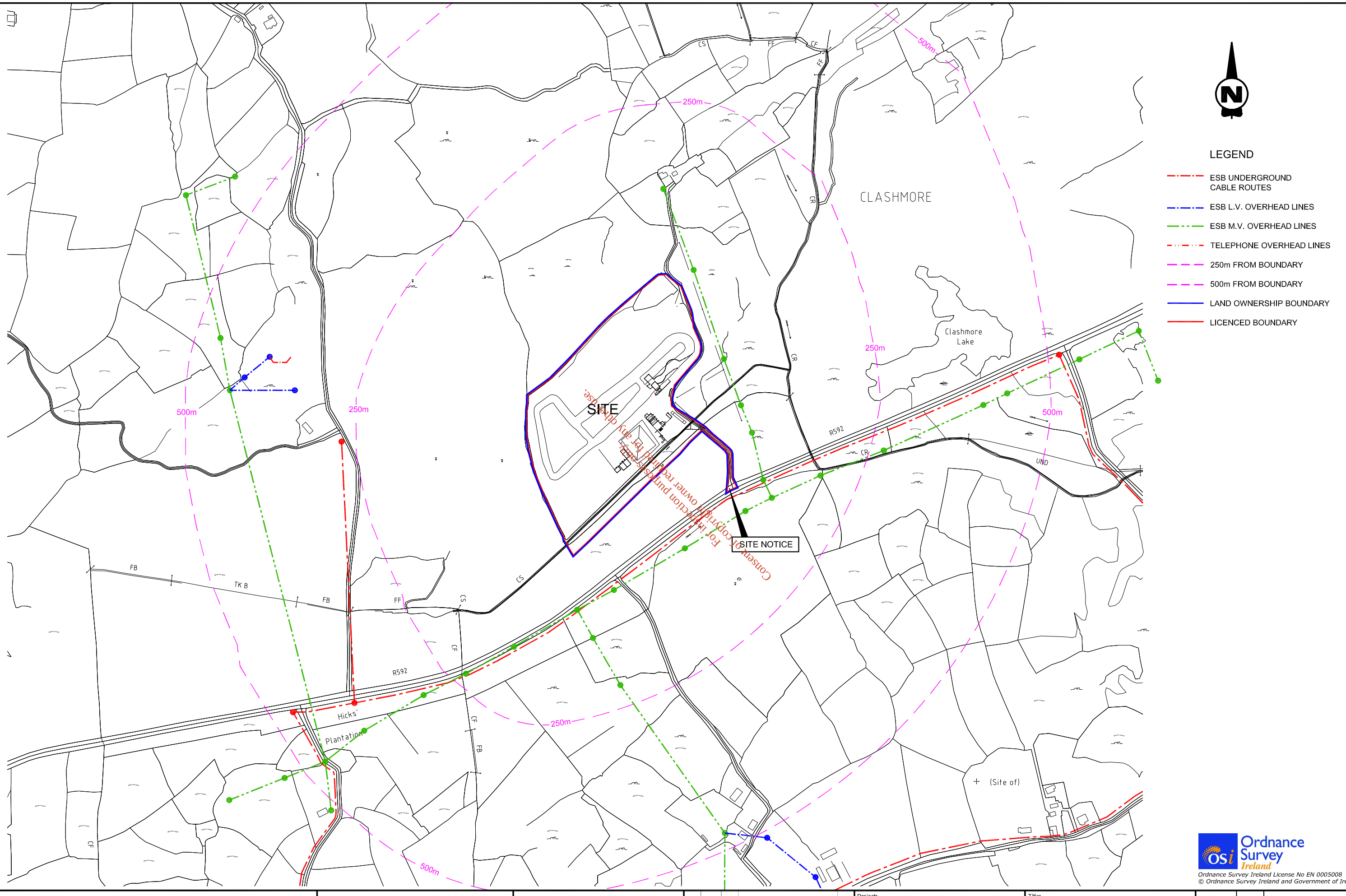
No.	Date	BY / CHK	Amendment / Issue	App.
D01	Apr.'08	BC / CD	DRAFT ISSUE	KPoS

Project: **DERRYCONNELL LANDFILL WASTE LICENCE REVIEW MARCH 2008**

Title: SITE PLAN

Drawn by:	BC	Job No: MCW0521	
Checked by:	CD	File No: MCW0521DG0003	
Approved by:	KPoS	Drg. No: **B2/1**	Rev: D01
Scale: 1 : 2,000 @ A3			
Date: March 2008			



LEGEND

- ESB UNDERGROUND CABLE ROUTES
- ESB L.V. OVERHEAD LINES
- ESB M.V. OVERHEAD LINES
- TELEPHONE OVERHEAD LINES
- 250m FROM BOUNDARY
- 500m FROM BOUNDARY
- LAND OWNERSHIP BOUNDARY
- LICENCED BOUNDARY

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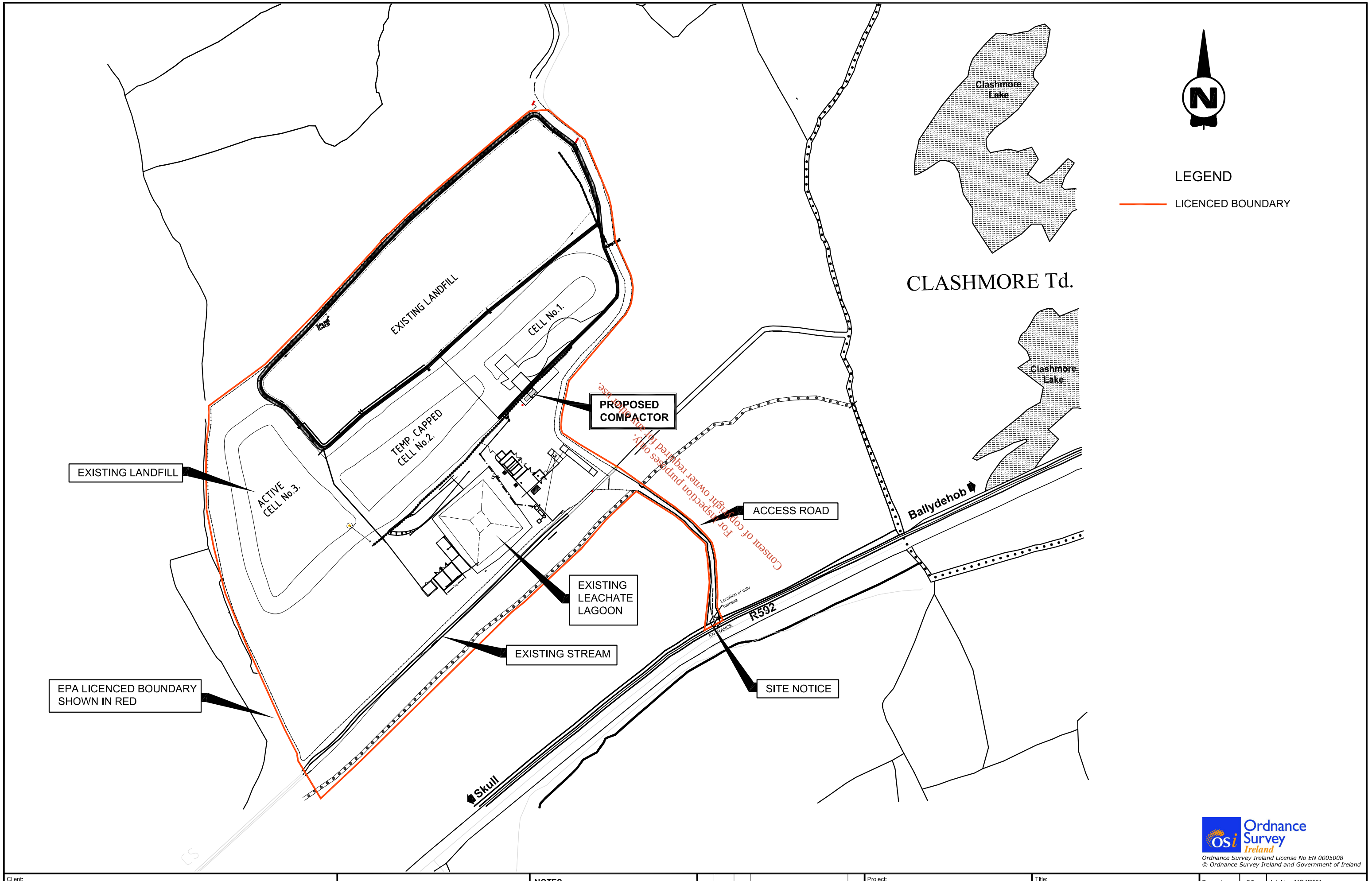
No.	Date	By / Chk	Amendment / Issue	App.
D01	Mar.'08	KD	DRAFT ISSUE	KPoS

Project: **DERRYCONNELL LANDFILL WASTE LICENCE REVIEW MARCH 2008**

Title: LOCATION AND SERVICES PLAN

Drawn by:	BC	Job No:	MCW0521
Checked by:	CD	File No:	MCW0521DG0004
Approved by:	KPoS	Drg. No:	B2/2
Scale:	1 : 5,000 @ A3	Rev:	D01
Date:	MARCH 2008		



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No.	Date	BY / CHK	Amendment / Issue	App.
D01	Apr.'08	BC / CD	DRAFT ISSUE	KPoS

Project: **DERRYCONNELL LANDFILL WASTE LICENCE REVIEW MARCH 2008**

Title: SITE PLAN

Drawn by:	BC	Job No: MCW0521	
Checked by:	CD	File No: MCW0521DG0005	
Approved by:	KPoS	Drg. No: **D1/1**	Rev: D01
Scale: 1 : 2,000 @ A3			
Date: March 2008			

Cell No. 1
(capped)

PROPOSED WIDENING OF EXISTING HAUL ROAD

EXISTING HAUL ROAD

Haul Road

Road Edge

Road Edge

PROPOSED CONCRETE SLAB AT UPPER UNLOADING AREA

PROPOSED COMPACTOR

Wall Top

Wall Bottom

Cell No. 2
(Full-temporary cap)

Bank Top

Bank Bottom

Bank Top

Bank Bottom

Concrete Pipe

Concrete Pipe

Concrete Pipe

Pipe under soil

Pipe

Pipe

Plastic Pipe

Instrument Box

Active Dump Area

Hardstanding

Leachate Storage Lagoon

Existing Surface Water Pipe

RG

RG

Fuel Storage Area

Scrap Metal Skip

Green Waste Skip

Timber Waste Skip

Admin. Building

Weighbridge

White Goods Storage Area

Entrance Gate

S.W. COLLECTION

SILT TRAP

MONITORING SUMP

SUMP

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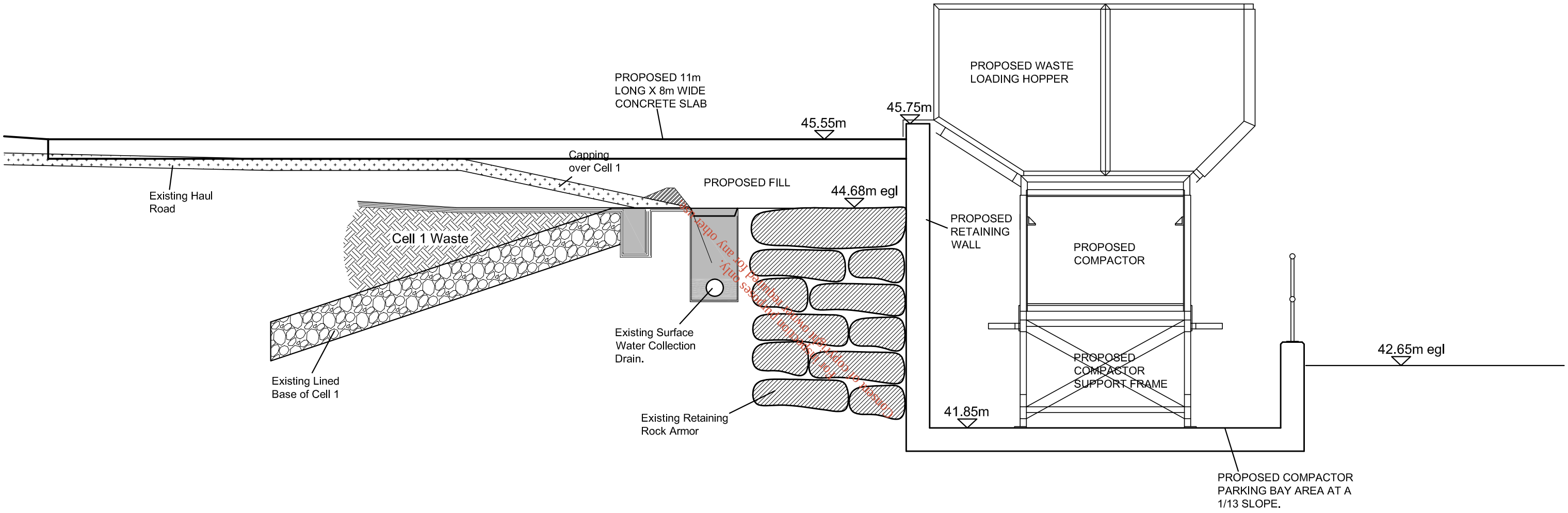
No.	Date	BY / CK	Amendment / Issue	App.
D01	Apr.'08	BY / CK	DRAFT ISSUE	KPoS

Project: **DERRYCONNELL LANDFILL WASTE LICENCE REVIEW MARCH 2008**

Title: LAYOUT PLAN NEAR PROPOSED COMPACTOR

Drawn by:	JM	Job No: MCW0521	
Checked by:	CD	File No: MCW0521DG0006	
Approved by:	KPoS	Drg. No: **D1/2**	Rev: D01
Scale: 1 : 500 @ A3			
Date: April 2008			



CROSS SECTION AT HOPPER LOCATION

Scale 1:50

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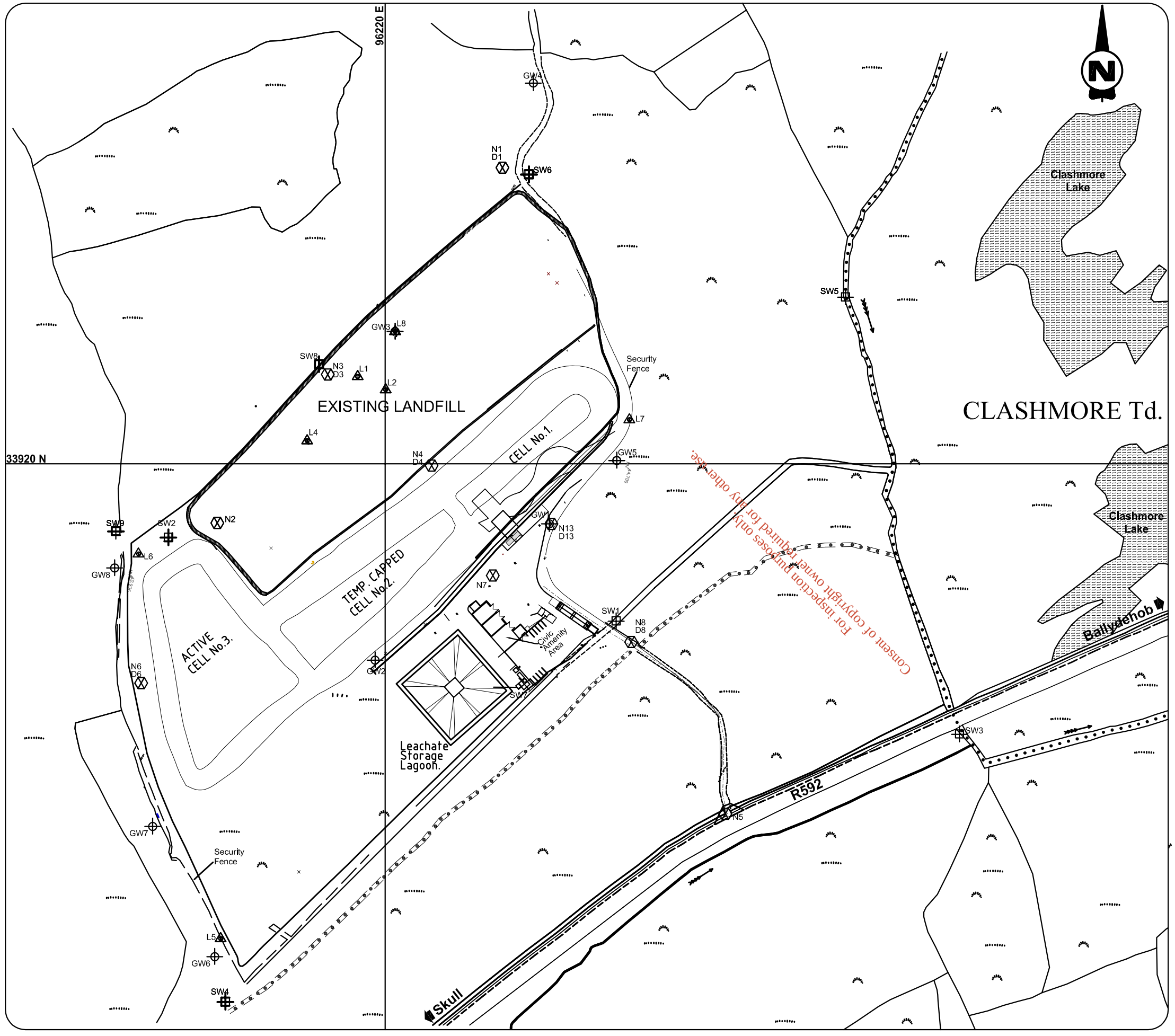
No.	Date	BY / CHK	Amendment / Issue	App.
D01	Apr.'08	JM / CD	DRAFT ISSUE	KPoS

Project: **DERRYCONNELL LANDFILL WASTE LICENCE REVIEW MARCH 2008**

Title: CROSS SECTION AT COMPACTOR LOCATION

Drawn by: JM		Job No: MCW0521	
Checked by: CD		File No: MCW0521DG0007	
Approved by: KPoS		Drg. No: D1/3	Rev: D01
Scale: 1 : 50 @ A3			
Date: April 2008			



(A) COMBINED LEACHATE AND GAS MONITORING.		
L1	96206 E	33964 N
L2	96220 E	33957 N
L4	96181 E	33932 N
L5	96138 E	33683 N
L6	96097 E	33875 N
L7	96342 E	33942 N
L8	96225 E	33986 N
(B) SURFACE WATER		
SW1	96335 E	33841 N
SW2	96112 E	33883 N
SW3	96507 E	33785 N
SW4	96140E	33651N
SW5	96450 E	34003 N
SW6	96292 E	34064 N
SW7	96290 E	33810 N
SW8	96187E	33970N
SW9	96086E	33886 N
(C) NOISE + DUST		
N1, D1	96279 E	34068N
N2	96136 E	33890 N
N3, D3	96191 E	33965 N
N4	96243 E	33919 N
N5	96390 E	33745 N
N6, D6	96098 E	33811 N
N7	96274 E	33864 N
N8, D8	96343 E	33831 N
N13, D13	96303 E	33890 N
(D) GROUNDWATER		
GW1	96302 E	33890 N
GW2	96215 E	33822 N
GW3	96225 E	33968 N
GW4	96294 E	34110 N
GW5	96336 E	33922 N
GW6	96135 E	33674 N
GW7	96104 E	33739 N
GW8	96085 E	33868 N

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No.	Date	BY / CHK	Amendment / Issue	App.
D01	Mar.'08	MG / CD	DRAFT ISSUE	KPoS

Project: **DERRYCONNELL LANDFILL WASTE LICENCE REVIEW MARCH 2008**

Title: 1:1000 LOCATION PLAN OF ENVIRONMENTAL MONITORING LOCATION

Drawn by:	MG	Job No: MCW0521	
Checked by:	CD	File No: MCW0521DG0008	
Approved by:	KPoS	Drg. No: **F1/1**	Rev: D01
Scale: N.T.S.			
Date: MARCH 2003			