

Office of Climate, Licensing and Licence Use,
Environmental Protection Agency,
Po Box 3000,
Johnstown Castle Estate,
Co Wexford.

19th May, 2008.

Attn. Dr. Jonathan Derham,

**Re: Dunmore Landfill Waste Licence No. W0030-OL. Condition 1.5.3.
Request for a Technical Amendment.**

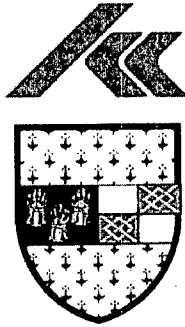
Dear Dr. Derham,

I refer to the above and confirm that Kilkenny County Council requests a technical amendment to Waste Licence W0030-02 specifically with regard to Condition 1.5.3.

Attached for your information please find submission, prepared by Fehily Timoney and Company, Consulting Engineers on behalf of Kilkenny County Council, setting out the background to the proposed technical amendment and proposing measures to address the concerns of the EPA Licence Inspector.

Yours sincerely,

Simon Walton
Senior Engineer
Environment Section
Kilkenny County Council.



DUNMORE LANDFILL

WASTE LICENCE REG. NO. W0030-02

PROPOSED TECHNICAL AMENDMENT REGARDING WASTE PLACEMENT IN CELL 14

Prepared for:

Kilkenny County Council
County Hall
John's Street
Kilkenny.

Prepared by:

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May 2008



DUNMORE LANDFILL

WASTE LICENCE REG. NO. W0030-02

**PROPOSED TECHNICAL AMENDMENT REGARDING
WASTE PLACEMENT IN CELL 14**

REVISION CONTROL TABLE

User is Responsible for Checking the Revision Status of This Document

Rev. Nr.	Description of Changes:	Prepared by:	Checked by:	Approved by:	Date:
A	Draft Issue to Client	SM	-	-	15.05.08
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Client: Kilkenny County Council

Keywords: Dunmore, Landfill, Technical Amendment, Condition 1.5.3, foodstuffs

Abstract: Fehily Timoney and Company (FTC) has been retained by Kilkenny County Council to prepare a technical paper to detail their proposed technical amendment to waste licence W0030-02.

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1. INTRODUCTION

Waste Licence No. W0030-02 is for the continued operation and development of a non-hazardous waste landfill at Dunmore, Co. Kilkenny. The Licensee is Kilkenny County Council, County Hall, John's Street, Kilkenny.

Condition 1.5.3 of the licence states:

'Only commercial and industrial wastes, not including foodstuffs, may be deposited in Cell 14.'

Kilkenny County Council (KCC) seeks a technical amendment to waste licence W0030-02 to enable importation of municipal waste including foodstuffs to Cell 14. KCC has retained Fehily Timoney and Company (FTC) to prepare this report on their behalf.

This report summarises the background to the imposition of Condition 1.5.3, describes the environmental implications of compliance with this condition as it exists, sets out proposals for mitigation of the risk of odour nuisance in Cell 14 and describes the impacts of the proposed technical amendment.

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2. BACKGROUND

2.1. Site History

Dunmore Landfill has been in operation since 1989. KCC was issued with waste licence W0030-01 for operation of the facility on 23rd November 1999. The reviewed licence W0030-02 was issued to KCC on 10th May 2002.

The facility consists of 14 lined cells and an operational civic amenity. Landfilling is currently ongoing in Cells 13 and 14. Cells 1 – 10 have been permanently capped, and capping of Cells 11 and 12 is substantially complete.

There have been few complaints regarding odour or other nuisance over the years of operation of Dunmore Landfill. Some instances of complaint concerning odour have occurred in the period November 2007 to February 2008. These concerns were addressed by correspondence from KCC to the EPA on 9th May 2008, a copy of which is included in Appendix A to this document.

2.2. Origin of Condition 1.5.3

Condition 1.5.3, which prohibits the placement of foodstuffs in Cell 14, appears to have been inserted into W0030-02 out of concern for environmental nuisance to neighbouring residents. The Inspector's Report states:

'The second issue arising from the facility and the proposal for expansion is the proximity of the proposed new landfill cells, particularly Cell 14, to a number of nearby residences. The active landfill area is in the region of 200m from the nearest residence. Five/six residences are within 200m of the proposed Cell 14 and within 250m of the proposed Cell 13. In order to mitigate against any potential environmental nuisances in close proximity to these residence I consider that a limitation should be imposed on the types of waste deposited in the proposed Cell 14....'

Appendix C contains a drawing illustrating the actual proximities of the relevant surrounding residences to Cells 13 & 14.

2.3. Odour Management Ireland Site Visit

Odour Management Ireland (OMI) recently visited Dunmore Landfill to carry out a surface emissions survey and to review landfill gas management practices. Further to this survey, OMI issued a list of queries to KCC on 29th April 2008. FTC is addressing OMI's queries on behalf of KCC. FTC continues to liaise with OMI to seek clarification in order to supply them fully with the information they require.

It should be noted that landfill gas was detected by OMI at the active face only, indicating that the present landfill gas management system is operating effectively.

However, KCC will continue to address the matters raised by OMI to maximise the efficiency of the gas management system.

2.4. Joint Waste Management Plan for the Southeast Region

The Joint Waste Management Plan for the Southeast Region (JWMPSER) 2006-2011 provides for the introduction of a three bin domestic refuse collection service in population centres in excess of 1,000 inhabitants (2006 census). The plan prescribes an introduction date not later than 1st January 2009. Implementation of this aspect of the plan is ongoing by way of waste collection permit reviews and publication of regional by laws (July 2008). Introduction of the three bin system will result in a significant reduction in the amount of foodstuffs contained within the mixed municipal waste being landfilled at Dunmore as most organic waste will be separately collected for biological treatment.

2.5. Compliance with Condition 1.5.3

Compliance with Condition 1.5.3 as it exists will result in the operation of Dunmore Landfill for many more years, as detailed in Section 4.1 of this report. This implies the continued risk of environmental nuisance, as identified in the Inspector's Report.

Condition 1.5.3 does not eliminate the risk of nuisance odours emanating from Cell 14, although it does mitigate this risk. While landfilling of foodstuffs is prohibited, placement of other organic waste in Cell 14 is not. This waste will decompose and will emit landfill gases which will be difficult to manage given their low methane concentrations.

Condition 1.5.3 has no effect to reduce the risk of other nuisances such as dust and noise.

The risk of occurrence of all such environmental nuisances will remain for as long as the landfill remains in operation.

3. PROPOSALS FOR ODOUR MANAGEMENT IN CELL 14

KCC recognises that the main environmental nuisance of concern to the EPA, as governed by Condition 1.5.3, is the risk of odour nuisance from Cell 14. With due regard to this issue, KCC proposes to install additional infrastructure in Cell 14 and undertake additional operational procedures as described below to mitigate this risk. FTC considers that the implementation of such measures, which are over and above measures currently being implemented at this or most other facilities, will provide for the sustainable environmental management of Cell 14, and will create circumstances whereby a grant of the proposed technical amendment will have no adverse affect with respect to nuisance odours.

3.1. Introduction

It is proposed to install odour management infrastructure in Cell 14 that will:

- Provide for active gas extraction at the tipping face
- Provide for conveyance of this extracted gas for oxidisation at the landfill gas flare
- Control of fugitive emissions

3.2. Proposed Gas Collection System

A schematic layout of the proposed gas collection system is included in Appendix B. Active gas extraction at the tipping face will be effected by installation of a combined system of vertical wells and horizontal slotted pipework. Both will be installed progressively within the waste as the waste front advances laterally and vertically.

3.2.1. Horizontal System

It is envisaged that one layer of slotted horizontal pipework will be installed, at c. 56 mOD. Slotted pipes will be connected via solid header pipes and manifolds to the facility gas main, and hence to the landfill gas flare. All pipes will be laid to falls to facilitate drainage of condensate. Figure 3.1 shows a schematic of a multiple horizontal gas extraction system. Slotted horizontal pipes connect into a solid collector pipe which terminates in a manifold. The manifold will be connected to the facility gas main.

3.2.2. Vertical System

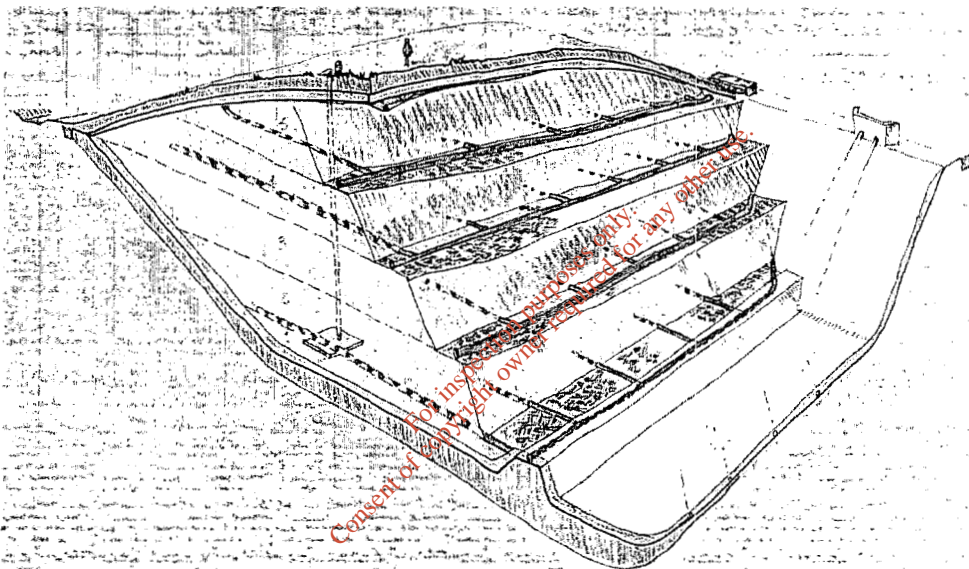
Four vertical vent stacks are founded on the leachate drainage blanket, and these will be extended in lifts as landfilling progresses. A slotted pipe connection to each of these wells (at a low level) will allow for active extraction during the early stages of landfilling. Two further vertical stacks founded on waste (c. 3m above floor level) will also be installed. All six stacks will eventually be fitted with gas well heads, and will be used for

permanent gas extraction. Each well head will connect to the facility gas main via manifold.

3.2.3. Conveyance to Gas Flare

During the initial stages of waste placement, the methane quantity in the landfill gas will be low and oxygen content will be high. It will thus be necessary to apply only a very slight negative pressure to the horizontal system to reduce the risk of quenching the landfill gas flare with poor quality gas. Control of the applied suction will be effected using valves at the manifolds. Manifolds will connect to the 180 mm diameter facility gas main which will convey gas to the flare, where the gas will be oxidised and odours removed by flaring at 1000°C for 0.3 sec retention time.

Figure 3.1 Schematic of Multiple Horizontal System Layers



3.3. **Control of Fugitive Emissions**

Any fugitive emissions at the active tipping face will be controlled by:

- application of organic filter materials such as wood chip or compost
- or
- application of other odour suppressants to the satisfaction of the Agency

3.4. **Gas Collection System Auditing Software**

KCC proposes to purchase proprietary software developed for the purpose of recording all gas monitoring and balancing data. This software will assist in the following functions:

- Provision of clear and concise graphical portrayal of the gas collection system at the facility (superimposed on an aerial photograph)
- Setting of clearly defined target operating parameters for the gas extraction system
- Monitoring of actual gas system performance such as gas flows, gas concentrations and actual extraction in comparison to gas model predictions
- Storing of all entered data in database format making it easily retrievable at the touch of a button
- Automatic issue of audit reports in a standard format for each gas system audit carried out
- Trend analysis – the operator can observe historical trends for all monitored points
- Equipment log – gives details of balancing equipment used and recalibration due dates
- The effective implementation of this software will help KCC to ensure the facility gas extraction system operates at maximum efficiency, and will enable maintenance of clear and consistent records for all gas extraction system data.

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4. IMPACTS OF PROPOSED TECHNICAL AMENDMENT

4.1. Early Closure

At the present rate of filling, Cell 13 is expected to be filled to capacity by mid-June 2008. Complying with Condition 1.5.3 as it stands, filling of Cell 14 at the current rate is presently estimated to take **11.75 years**, resulting in a projected facility closure date of **February 2020**. There is also the possibility that once KCC's current principal customer (i.e. Doheny Wheelie Bins) is refused entry to dispose of mixed municipal waste, this custom could be lost in its entirety. This could extend the duration of facility operation still further.

In circumstances where Cell 14 is allowed to receive municipal waste including foodstuffs, at the current rate of intake the facility would be filled to capacity by **September 2009**. This will enable timely closure of the facility and an early reduction in potential nuisances such as odour, noise, dust and vermin.

4.2. Reduction in Leachate Generated

The Inspector's Report on the 2001 waste licence review application emphasises the sensitivity of the site with respect to the regionally important aquifer. The Inspector's Report goes so far as to say that;

'The main issue arising from this application is that the facility is located on a regionally important aquifer with an extreme vulnerability rating'.

With due cognisance of this fact the Inspector goes on to state;

'If any extension is to be allowed to the landfill it should be only if strict conditions in relation to leachate management are implemented'.

The proposed technical amendment, implying early completion of filling to Cell 14 and early final capping, will result in a dramatic reduction in the amount of leachate being generated at the facility. The difference in the volume of leachate produced if the facility closes in September 2009 as against closure in February 2020 is estimated at 43,600m³.

KCC's proposed technical amendment would therefore substantially mitigate the primary risk identified by the Agency when granting the revised waste licence W0030-02, i.e. leachate generation and its potential impact on the regionally important and vulnerable aquifer.

4.3. Early Capping

The proposed technical amendment to Condition 1.5.3 will allow early completion of final capping of the facility, which could take place in Spring/Summer of 2010. Early final capping will;

- reduce the amount of leachate generated
- improve the efficiency of landfill gas collection
- improve the visual aspect of the facility
- reduce the potential for odour nuisance
- reduce the potential for dust nuisance
- reduce the potential for litter nuisance
- reduce the potential for vermin nuisance
- accelerate commencement of the aftercare period

4.4. Restoration and Aftercare Fund

All operational, restoration and aftercare costs are covered directly by Kilkenny County Council. KCC reserves a portion of gate receipts to fund the aftercare period. The amount of money available for aftercare is directly related to the net 'profit' KCC makes on gate receipts. If KCC is made to continue operating the facility with piecemeal commercial landfilling only for potentially the next 12+ years, operational costs will far outweigh gate revenue. Also, commencement of the aftercare period will have been postponed by approximately 10.5 years. Thus, while it can be expected that there will be no addition to the aftercare fund during this period, the real value of the current fund will be significantly decreased due to inflation.

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5. CONCLUSION

Waste Licence W0030-02 (ref Condition 1.5.3) places a restriction on the landfilling of foodstuffs in Cell 14. It is understood that this restriction is intended principally to address the risk of nuisance odours and their impact on local residents.

In seeking a technical amendment to allow landfilling of mixed municipal waste including foodstuffs in Cell 14, KCC has made specific proposals to put in place innovative new odour management infrastructure and procedures which will mitigate the risk of such nuisance occurrences at Cell 14.

Furthermore, the proposed technical amendment will:

- Facilitate the closure of Dunmore Landfill by the end of 2009
- Provide for the orderly completion of landfilling at the facility
- Reduce the risk of environmental nuisance occurrences such as dust and noise
- Facilitate the early completion of capping of the facility
- Reduce the volume of leachate generated at the facility
- Sustain the economic viability of the facility
- Accelerate the commencement of the aftercare period

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Appendix A

KCC Correspondence to EPA 09 May 2008

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Mr. Noel Byrne,
Regional Manager,
Office of Environmental Enforcement,
Environmental Protection Agency,
Johnstown Castle Estate,
Co. Wexford.

9th May, 2008

Re: Dunmore Landfill Site – Waste Licence Register No. W0030-02

Dear Mr. Byrne,

I refer to the above and to our meeting of 29th April, 2008 in Johnstown Castle regarding same.

At the meeting, having sought to address any operational concerns of the E.P.A with respect to Dunmore Landfill Site, Kilkenny County Council committed to the preparation of a consolidated report summarising Agency concerns together with Council responses thereto.

In line with the above please find attached said report for your information and attention as necessary.

In conclusion I note that our application for a derogation to Condition 1.5.3 of our Waste Licence, restricting Cell 14 to the placement of commercial and industrial wastes only excluding foodstuffs, shall be lodged to the Agency week commencing 19th May, 2008. I note your intention to arrange a Site Inspection at Dunmore Landfill Site prior to 23rd May, 2008 in order to assess the details provided in the attached report.

Yours sincerely,

**Simon Walton,
Senior Engineer,
Environment Section.**

Encl.

Re. Dunmore Landfill Site- Waste Licence Register No. W0030-02

Reference is made to recent meeting between Kilkenny County Council and the Environmental Protection Agency at Johnstown Castle on 29th April, 2008. The EPA convened the meeting to discuss their concerns regarding operational practices at Dunmore Landfill Site. At this meeting Kilkenny County Council agreed to prepare and submit a consolidated report detailing the recent history of operational practices at the facility together with a synopsis as to how the concerns raised by the Agency have been addressed.

For the record attendees at the meeting included;

On behalf of the EPA – Mr. Noel Byrne, Regional Manager, OEE, Mr. Damien Masterson, Inspector, OEE and Ms. Deirdre Edwards, Inspector, OEE.

On behalf of Kilkenny County Council- Mr. Simon Walton, Senior Engineer, Ms. Carol McCarthy, Senior Executive Engineer and Ms. Eimear Doyle, Landfill Manager.

Attention is drawn to EPA Inspection Reports dated 10th March, 2008 and 31st March, 2008 arising from respective EPA site visits dated 20th February, 2008 and 20th March, 2008. In line with the principal matters raised at the meeting of 29th April Kilkenny County Council sets out the following;

1.Odour Issues

EPA Inspection Report dated 10th March, 2008, further to a Site Inspection dated 20th February, 2008, notes that **'the Agency is very concerned at the level of non compliance at this facility'** particularly citing the absence of cover and working face operational practices leading the Agency to **'believe that these poor operational practices are leading to nuisance odours at the facility.'**

In response Kilkenny County Council notes that an odour complaint with respect to the facility was received on 6th November, 2007. Further to notification and in acknowledging that an odour issue had arisen relating to practices at the facility Kilkenny County Council made immediate arrangements for the following;

- (i) temporary connection of Cell 13 (operational cell) to cell 12 pending delivery of parts required to provide permanent connection of Cell 13 to gas flaring system
- (ii) Communication leaflet to adjoining affected residences apologising for the inconvenience and outlining the measures in place to address same

Arising from the foregoing Kilkenny County Council notes that no further complaints were received with respect to odours emanating from the facility until 28th January, 2008. At that stage works had commenced to effect the permanent connection of Cell 14 to the gas management system on site, such works concluding on 19th February, 2008.

Thereafter, on 20th February, 2008 the EPA undertook a Site Inspection at Dunmore Landfill as described above.

In line with the foregoing Kilkenny County Council acknowledges that, in the period pending connection of Cell 14 to the gas management system, periodic odours

emanated from the facility. However interim arrangements sought to minimise associated nuisance and Kilkenny County Council notes that three complaints arose in the period including the EPA's own inspection on 20th February, 2008.

In the period since 20th February, 2008 it is noteworthy that no odour complaints have been received with respect to the facility and that Kilkenny County Council's daily odour monitoring concludes that there has been no odours emanating from the facility in the period since 20th February, 2008.

In support of the above Kilkenny County Council also highlights that no reference is made to odour concerns regarding the facility in the most recent EPA Site Inspection Report dated 31st March, 2008. In addition an odour impact assessment, completed by the EPA in the environs of Dunmore Landfill on 14th April, 2008, concluded that there were no odours giving rise to nuisance at the facility or in the immediate area of the facility.

It is also of note, as agreed with the EPA, that, as part of an upcoming application to the EPA with respect to Cell 14, Kilkenny County Council will address matters arising from the Odour Monitoring Ireland survey of gas management practices at the facility.

In conclusion therefore Kilkenny County Council acknowledges that some odour problems existed at the facility in the period November 2007 to February, 2008 and highlights that interim measures, whilst not eliminating the odour, contributed to a minimisation of any difficulties/nuisance accruing. Thereafter the connection of Cell 13 to the gas management system has coincided with the elimination of any odour complaints and odour detection in the vicinity of Dunmore Landfill.

Working Face

EPA Inspection Report dated 10th March, 2008 states that **'the working face was approximately twice the size of the limit (50m long x 25m wide) set in Condition 5.3.1 (c) of the licence.'** Furthermore additional concern is expressed in Inspection Report dated 31st March, 2008 where the EPA concludes that **'a significant amount of waste was exposed on the day of the inspection (20th March).'**

In response, as acknowledged by Kilkenny County Council at our meeting with the Agency on 29th April, 2008, Kilkenny County Council recognises the concerns of the EPA in this matter. In response the working face of cell 13 has been reduced to an area of 25 metres wide and 25 metres in length as per condition 5.3.1(c).

Intermediate / Daily Cover

EPA Inspection Report dated 10th March, 2008 notes that **'large areas of Cell 13 and 14 do not have adequate cover material.'**

As acknowledged at meeting with the EPA on 29th April, 2008 Kilkenny County Council recognises the concerns of the EPA in this matter. In response intermediate cover material has been placed on all filled areas of Cell 13 & 14, which are currently not being used as working faces as per condition 5.4.1 of the licence.

Daily cover material is being placed on waste at the end of each working day as per condition 5.4.2.

Site Housekeeping

EPA Inspection Report dated 31st March, 2008 observes that **' a number of holes and tears were noted in the litter netting to the south of Cell 14'** and that **'litter was observed in trees and ditches around the facility.'**

As per condition 7.3, litter on site or in the immediate vicinity of the facility is controlled by the use of litter netting and daily litter picking. With specific reference to EPA site inspections dated 20th February, 2008 and 20th March, 2008 ongoing clean up of the litter throughout and in the neighbourhood of the facility continues daily. Repairs have also been made to the litter netting located to the south of cell 14.

A review of the storage of recovered materials on site has also been carried out following comments in recent EPA Site Inspection Reports. All scrap metal is placed in the appropriate skip container as soon as is practical pending it's removal off site by an authorised waste contractor. Similar measures have been put in place for the removal of waste tyres and gas cylinders off site. Kilkenny County Council seeks to ensure that whole or shredded tyres are not disposed of in the landfill.

Signage indicating the waste inspection and quarantine area has been put in place following the EPA Site Inspection Report dated 10th March, 2008.

Appendix B

Schematic of Proposed Gas/Odour Management Infrastructure for Cell 14

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Legend:

-  GAS
-  HORIZONTAL GAS COLLECTION TRENCH SLOTTED
-  HORIZONTAL GAS COLLECTION TRENCH SLOTTED
-  VERTICAL WELL GAS COLLECTION
-  VERTICAL WELL GAS COLLECTION
-  WOODS SLOTTED
-  PERFORATED VERTICAL WELL PIPE CONNECTION
-  AIR-PURIFIED EXHAUSTION WELL
-  EXISTING GAS EXTRACTION WELL
-  PROPOSED GAS MANHOLE

Rev.	Scale Used	Title of Drawing
A	A1-1:250, A3-1:500	PROPOSED CELL 14 LAYOUT

ISSUE FOR INFORMATION

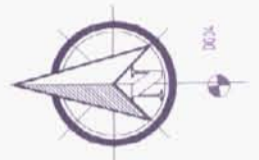
Rev.	Scale Used	Title of Drawing
A	A1-1:250, A3-1:500	PROPOSED CELL 14 LAYOUT

Name of Client
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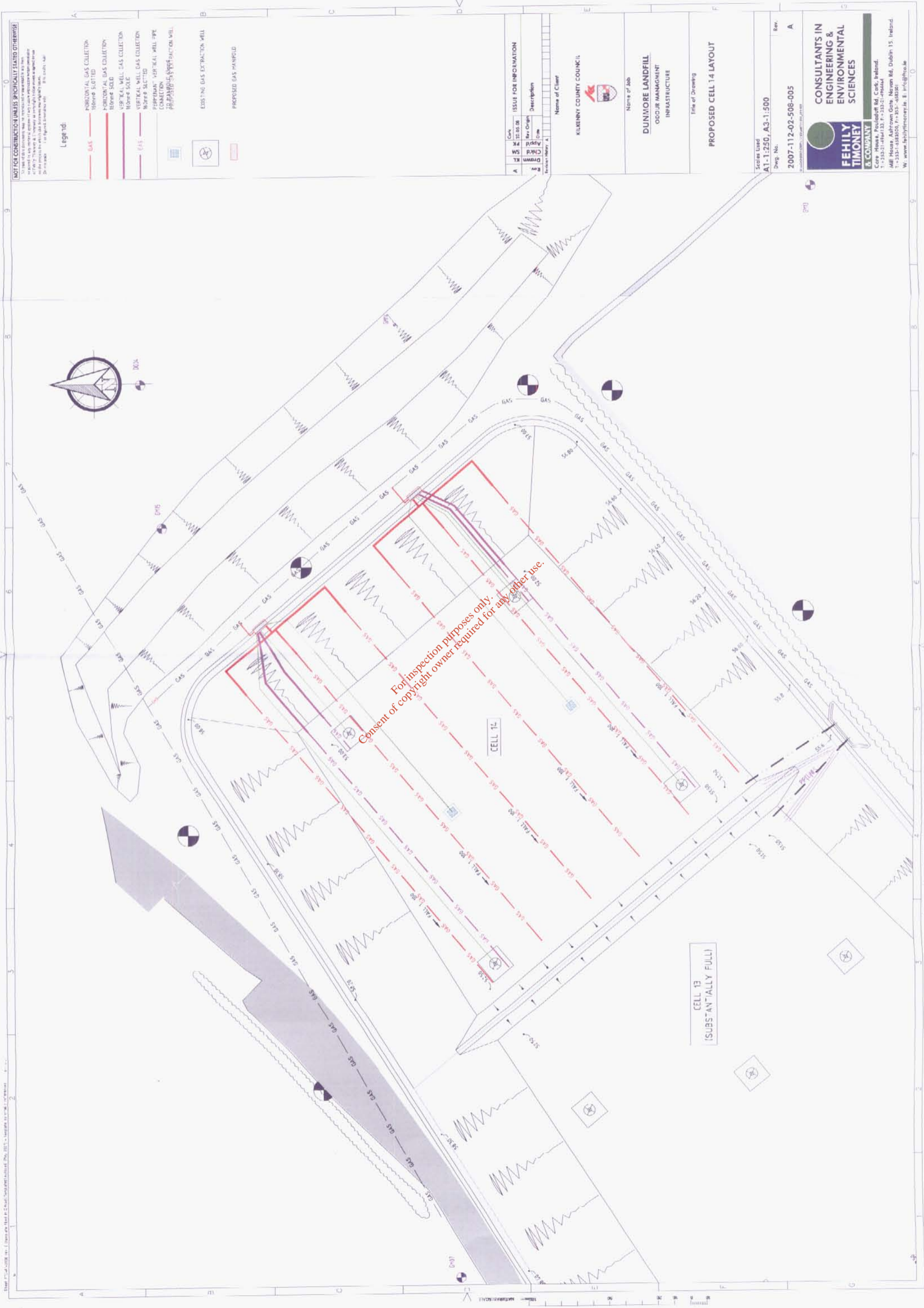
Name of Job
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ODOUR MANAGEMENT
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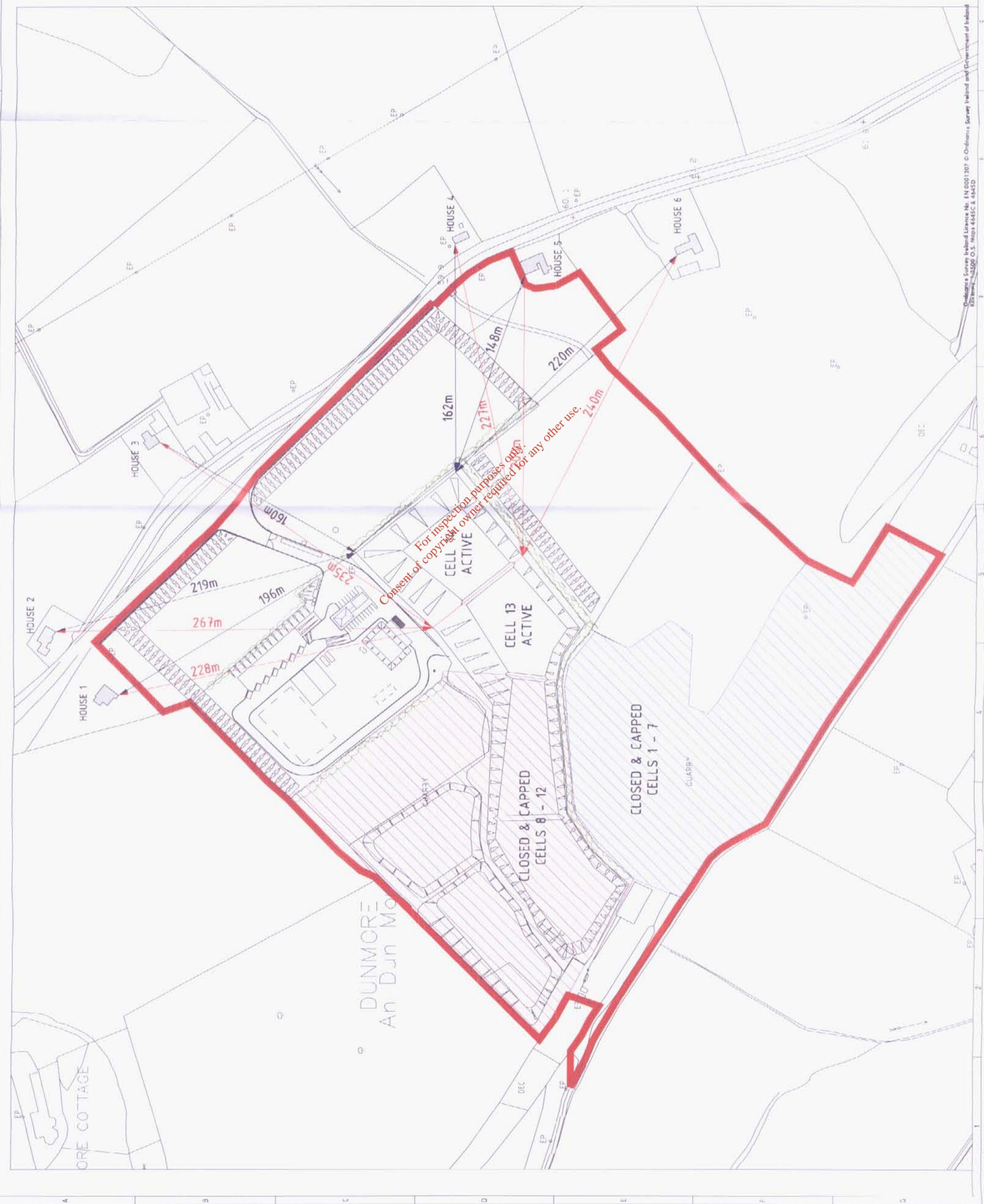


Appendix C
Proximity of Houses to Cells 13 and 14

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Rev	Issue	Date	Description
1	Issue for Information	22.02.08	

Name of Client:
KILKENNY COUNTY COUNCIL

Name of Job:
DUNMORE LANDFILL
 ODOUR MANAGEMENT
 INFRASTRUCTURE

Title of Drawing:
 PROXIMITY OF ADJACENT
 HOUSES

Scales Used:
A3 1:2500

Draw. No.:
2007-112-02-102-003

Rev:
A

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