Mr Brian Meaney
Office of Licensing and Resources
Environmental Protection Agency
Po Box 3000
Johnstown Castle
Co. Wexford

**Re: Application for the Certification of an Unregulated Landfill Site (namely Pike Landfill) as per S.I. No. 524 of 2008 Waste Management (Certification of historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008**

Dear Sir,

Cork County Council would like to apply to have Pike Landfill site Certified as per the Waste Management regulations 2008.

A Tier 1 study was completed on this site in August 2007 as part of Cork County Councils statutory obligation under Section 22 of the Waste Management Act to investigate all old landfill sites in the county.

In October 2009 the Council commenced a Tier II Site Investigation on the site. Following the completion of this report the site could be classed as a Low Risk site.

Please find attached copy of the Tier I and Tier II c/w a cheque in the amount of €5000 – please note that the EPA recently refunded Cork County Council in the amount of €500 from the fee submitted for the Certificate of Authorisation for Newmarket Landfill Site and I hereby request that the Agency refund a similar amount in respect of this application.

Yours faithfully,

_____

Nicholas Bond
Head of Waste Enforcement
Environment Directorate
Cork County Council

# Certificate of Authorisation Application Form

Waste Management (Certification of Historic Unlicenced Waste Disposal and Recovery Activity) Regulations, 2008



| **EPA Ref. Nº:** *(Office use only)* | |
|---|---|

**Environmental Protection Agency**
PO Box 3000, Johnstown Castle Estate, Co. Wexford
Lo Call: 1890 335599 Telephone: 053-9160600 Fax: 053-9160699
Web: www.epa.ie Email: info@epa.ie

# CONTENTS

# APPLICATION GUIDANCE NOTES

**This application must be completed in accordance the guidance notes below and the instructions accompanying each section of the application form.**

This form is for the purpose of making an application for a Certificate of Authorisation in accordance with Regulation 7 (1) of the Waste Management (Certification of Historic Unlicenced Waste Disposal and Recovery Activity) Regulations, 2008 (hereinafter referred to as 'the Regulations'). A valid application must, as a minimum, contain the information prescribed in Regulation 7(2) of the Regulations.

The applicant must conform to the format set out in this application form and accompanying instructions. Each page of the completed application form must be numbered, e.g. *page 5 of 20,* etc. The basic information should be supplied in the spaces given in the application form, with supporting documentation supplied as attachments, as specified. All sections of the form must be completed. Where a section is not relevant to the application, the words "not applicable" should be clearly written. The abbreviation "N/A" should not be used.

The Risk Assessment (required under Regulation 6(1) of the Regulations) shall be submitted in full as Attachment D.1 to this application form. Risk Assessments are to be carried out in accordance with the '*Code of Practice - Environmental Risk Assessment for Unregulated Waste Disposal Sites'* (hereinafter referred to as the Code of Practice).



All maps/drawings/plans must be no larger than A3 size and scaled appropriately such that they are clearly legible. In exceptional circumstances, where A3 is considered inadequate, a larger size may be requested by the Agency.

All drawings should

- be titled and dated;
- have a unique reference number and be signed by a clearly identifiable person; and
- indicate a scale and the direction of north.

Information supplied on this application, including supporting documentation, will be put on public display and open to inspection by any person. Should the applicant consider information to be confidential, this information should be submitted in a separate enclosure bearing the legend "In the event that this information is deemed not to be held as confidential, it must be returned to…..". In the event that information is considered to be of a confidential nature, then the nature of this information, and the reasons why it is considered confidential (with reference to the "Access to Information on the Environment" Regulations) should be stated in the Application Form, where relevant.

**An original signed application shall be submitted together with 1 copy. A copy of the application (and risk assessment) shall also be provided on 2 CD-ROMs in searchable PDF format.**

**It should be noted that it will not be possible to process or determine the application until the required documents have been provided in sufficient detail and to a satisfactory standard.**

This document does not purport to be and should not be considered a legal interpretation of the provisions and requirements of the Waste Management (Certification of Historic Unlicenced Waste Disposal and Recovery Activity) Regulations 2008 (S.I. No. 524 of 2008).

# SECTION A: NON-TECHNICAL SUMMARY

A non-technical summary of the application is to be included here. The summary should identify all environmental impacts of significance associated with the site.

The following information must be included in the non-technical summary:

A description of:

- The site location.
- A brief history of the site, types and volumes of waste deposited, duration of disposal activities and date of cessation.
- The hydrogeology and ecology of the site and surrounding area, to include protected areas.
- Risk category of the site
- Actual and potential environmental impacts.
- Proposed remediation including timescale.

Supporting information should form **Attachment A.1.**

# SECTION B: GENERAL

## B.1. Applicant's Details

Only application documentation submitted by the applicant and by the nominated person will be deemed to have come from the applicant.

| | |
|---|---|
| Name*: | Cork County Council |
| Address: | Environment Directorate |
| | Inniscarra |
| | Co. Cork |
| | |
| Tel: | 021-4532700 |
| Fax: | 021-4532727 |
| e-mail: | |

*Full name and address of the local authority making the application.

### Name and Address for Correspondence

| | |
|---|---|
| Name*: | Mr. Nicholas Bond |
| Address: | Environment Directorate |
| | Inniscarra |
| | Co. Cork |
| | |
| Tel: | 021-4532701 |
| Fax: | 021-4532727 |
| e-mail: | nicholas.bond@corkcoco.ie |

*This should be the name of the person nominated by the local authority for the purposes of this application.

**Name of Qualified Person**

Site investigations must be supervised by a suitably qualified, trained and experienced person. Section 2.3 of the Code of Practice sets out the requirements in this regard, which should be observed by local authorities. The Code of Practice states that, notwithstanding the fact that a local authority will be in position to carry out much of the risk assessment using in-house resources, "a suitably qualified, trained and experienced person, who is a registered professional with chartered status (or equivalent) awarded by a relevant professional body, and who has successfully conducted risk assessments at other sites, should supervise the Site Investigations … and be used to carry out the risk assessment." Please provide the name of the qualified person, in-house or external, used for this risk assessment.

| | |
|---|---|
| Name: | Mr. Nicholas Bond |
| Qualification: | Bachelor in Engineering, Civil Engineering, NUIG,<br>Post Grad Dip Environmental Engineering. |
| Professional Body: | Chartered Engineer |
| Address: | Environment Directorate |
| | Inniscarra |
| | Co.Cork |
| | |
| Tel: | 021-4532701 |
| Fax: | 021-4532727 |
| e-mail: | nicholas.bond@corkcoco.ie |



| | |
|---|---|
| Name: | Mr. Daniel O' Shea |
| Qualification: | Bachelor in Engineering, Civil Engineering, Cork IT,<br>Bachelor of Science, Construction Management Cork IT. |
| Professional Body: | |
| Address: | Environment Directorate |
| | Inniscarra |
| | Co. Cork |
| | |
| Tel: | 021-4532728 |
| Fax: | 021-4532727 |
| e-mail: | daniel.oshea@corkcoco.ie |

**Interest in Site**

State whether the applicant(s) is the registered owner of the land (please check):

| | |
|---|---|
| **Landowner** | ☐ |
| **Landowner (part)** | ☐ |
| **Not Landowner** | X |

Provide the name and address of the current owner(s) and lessees of the land. An appropriately scaled drawing (≤A3) outlining the land ownership should be included in **Attachment B.1.**

| | |
|---|---|
| Name: | John Rice |
| Address: | Curraghmore |
| | Strawhall |
| | Fermoy |
| | Co. Cork |
| Tel: | 025-31015 |
| Fax: | |
| e-mail: | |

| | |
|---|---|
| Name: | Tom Rice |
| Address: | Strawhall |
| | Fermoy |
| | Co. Cork |
| | |
| Tel: | 025-31967 |
| Fax: | |
| e-mail: | |



## B.2. Fees

| **Appropriate Fee (€5,000) Included** | **Yes** | **No** |
|---|---|---|
| | **YES** | |

# SECTION C: SITE DETAILS

## C.1. Site Location

| | |
|---|---|
| Name: | Pike Landfill |
| Address*: | Beachfield |
| | Fermoy |
| | Co.Cork |
| | |
| Tel: | |
| Fax: | |
| e-mail: | |

* Include any townland

**Attachment C.1.** should contain appropriately scaled drawings or maps (≤A3) showing the site location in the context of its surroundings and clearly highlighting the site boundary.

## C.2. Unauthorised Waste Sites Register (Section 22) – Site Boundary and Site Code

State that the site has been recorded on the online Section 22 Register at www.epa.ie/uwsr and that the boundary drawn of the site represents the full extent of the site.

**Following the Tier 2 and Tier 3 site investigations, if the extent of the site is determined to be greater or less than that initially recorded in the Section 22 Register, then the boundary must be amended accordingly.**



| | |
|---|---|
| **Finalised boundary entered in Section 22 Register?** | X |

Provide the unique code assigned to the site in the Section 22 Register

| | |
|---|---|
| **Site Code** | S22-02183 |

Provide a six-digit National Grid Reference for the site location

| | | | | |
|---|---|---|---|---|
| **Grid Reference** | 181,754 | **E** | 99,252 | **N** |

Confirm the following waste details entered on the Section 22 Register:

- State which type of waste activity was carried out at the site (please check):

| | |
|---|---|
| **Disposal** | X |
| **Recovery** | ☐ |

- State the principal waste type at the site (please check):

| | |
|---|---|
| **C&D** | X |
| **Industrial** | ☐ |
| **Municipal** | ☐ |
| **Pre 1977** | ☐ |
| **Unknown** | ☐ |

- State any additional waste types at the site (please check):

| | |
|---|---|
| **Agriculture** | ☐ |
| **C&D** | ☐ |
| **Dredged Soil** | ☐ |
| **ELV/Scrap Metal** | ☐ |
| **Hazardous** | ☐ |
| **Industrial** | ☐ |
| **Mining** | ☐ |
| **Municipal** | ☐ |
| **Municipal Sludge** | ☐ |
| **Other** | ☐ |

- State whether or not hazardous waste is present at the site (please check):

| | |
|---|---|
| **Present on site** | ☐ |
| **Not present on site** | X |



- Estimate the total quantity of waste at the site (tonnes):

| | |
|---|---|
| **Total waste quantity at the site:** | (Unknown) tonnes |

- Provide the start date and end date of waste activities at the site:

| | |
|---|---|
| **Start date** | 01/01/1975 |
| **End date** | 01/01/1990 |

## C.3. Risk Category

State which Risk Category* the site belongs to (please check):

| | |
|---|---|
| **Class A (High)** | ☐ |
| **Class B (Moderate)** | ☐ |
| **Class C (Low)** | X |

*See Chapter 4, Code of Practice (as required under Section 6(2) of the Regulations)

## C.4. Land Use

Provide details of the current use of the land on which the closed landfill is situated.

**Attachment C.4.** should detail this information or refer to the specific section of the risk assessment documentation where this information is contained.

## C.5. Types and quantities of waste deposited

Provide details of the types and estimated quantities of waste deposited at the site.

**Attachment C.5.** should detail this information or refer to the specific section of the risk assessment documentation where this information is contained.

In addition, state whether the types and quantities of waste which have been recorded on the online Section 22 Register at www.epa.ie/uwsr represent the final estimated quantities at the site.

**Following the Tier 2 and Tier 3 site investigations, if the type and quantities of waste are determined to be greater or less than that initially recorded in the Section 22 Register, then these quantities must be amended accordingly.**



| | |
|---|---|
| **Finalised estimate of waste types and quantities entered in Section 22 Register** | X |

# SECTION D: RISK ASSESSMENT

For sites which have been assigned risk category Class A (High Risk) or Class B (Moderate Risk) during the Tier 1 assessment, a full risk assessment (Tier 1, 2 and 3) must be carried out. Class C (Low Risk) sites must have, as a minimum, Tier 1 and exploratory Tier 2 assessments. All sections of the risk assessment must be included as part of this application, including any part of the Tier 1 assessment carried out using the EPA Section 22 Register risk assessment tool at www.epa.ie/uwsr.

For all sites, a proposal detailing necessary measures for remediation, risk attenuation and site restoration must be provided, and must as a minimum contain the following information:

- Details of all necessary measures proposed, including a statement of the impact of the remediation measures. Proposed measures must clearly address all risks identified in the revised Conceptual Site Model for the site. This should also include details of alternative measures considered and reasons for rejection of same, where applicable.

- Schedule for completion of the proposed necessary measures, including a timeframe for the submission of a validation report.

- Details of any ongoing or long-term monitoring or assessment programme which may be required to evaluate and ensure the effectiveness of the necessary measures as carried out.

**Two copies of the risk assessment shall be submitted. The risk assessment shall also be provided on two CD-ROMs in searchable PDF format.**

The Risk Assessment should be submitted as **Attachment D.1.**

# SECTION E:

# APPROPRIATE ASSESSMENT

In addition to the foregoing, all sites (whether low, moderate or high risk) should be subject to screening for Appropriate Assessment in accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011). The results of any such screening should be submitted as part of this application. The screening should demonstrate whether the project is/is not likely, whether individually or in combination with other plans or projects, to have significant effects on any European Site or sites as defined in Regulation 2(1) of the Habitats Regulations (S.I. No. 477 of 2011) having regard to best scientific knowledge and its conservation objectives. Where, based on the Stage 1 screening, it is considered that an appropriate assessment *is not* required, a reasoned response should be provided.

Where screening has determined that an appropriate assessment *is* required, an appropriate assessment in accordance with Article 6(3) of the Habitats Directive (92/43/EEC) should be completed and a copy of the Natura Impact Statement submitted as part of this application. The assessment should consider the following impacts on any European Site(s):

1. The impact of the existing landfill on European sites;
2. The cumulative effects of the project combined with other plans or projects that might impact on the European site or sites;
3. An assessment of the implications of the project for the European site in view of the European site's conservation objectives;
4. The objectives of proposed remediation measures with regard to existing impacts identified in item 1;
5. The impact on the European site of any physical works carried out at the closed landfill as part of the remediation plan;
6. Details of any mitigation measures proposed at or in relation to the European site, including timeframes for the implementation and monitoring of the measures; and
7. Natura Impact Statement conclusion statement. The statement should conclude whether the project will or will not adversely affect the integrity of the European site(s) having regard to its conservation objectives.

While the appropriate assessment is subject to a separate report (the Natura Impact Statement), it should be carried out in tandem with the overall risk assessment. This is to ensure that a holistic approach is undertaken, whereby all relevant appropriate assessment and risk assessment parameters are addressed and to ensure that the remediation measures proposed address all risks identified.

Please refer to the guidance document *'Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities', issued in 2009 by the Department of the Environment, Heritage and Local Government, and revised in 2010 with regard to this assessment. This document is available at: http://www.npws.ie/publications/archive/NPWS_2009_AA_Guidance.pdf*.

**Three copies of the screening report and, where relevant, the Natura Impact Statement shall be submitted. The screening report/Natura Impact Statement shall also be provided on two CD-ROMs in searchable PDF format.**

The Appropriate Assessment (screening and, where relevant, Natura Impact Statement should be submitted as **Attachment E.1.**

# SECTION F: DECLARATION

**Declaration**

I hereby make application for a Certificate of Authorisation pursuant to the provisions of the Waste Management (Certification of Historic Unlicenced Waste Disposal and Recovery Activity) Regulations, 2008 (S.I. No. 524 of 2008).

I certify that the information given in this application is truthful, accurate and complete and the enclosed Risk Assessment is a full and complete representation of all relevant work carried out in relation to the site in question.

I give consent to the EPA to copy this application for its own use and to make it available for inspection and copying by the public, both in the form of paper files available for inspection at EPA offices and via the EPA's website.

This consent relates to this application itself and to any further information or submission, whether provided by me as Applicant, any person acting on the Applicant's behalf, or any other person.

**Signed by :**_____ **Date :**_____
*(on behalf of the organisation)*

**Print signature name:** _____

**Position in organisation:**_____

# SECTION G: JOINT DECLARATION

**Joint Declaration** [Note1]

I hereby make application for a Certificate of Authorisation pursuant to the provisions of the Waste Management (Certification of Historic Unlicenced Waste Disposal and Recovery Activity) Regulations, 2008 (S.I. No. 524 of 2008).

I certify that the information given in this application is truthful, accurate and complete and the enclosed Risk Assessment is a full and complete representation of all relevant work carried out in relation to the site in question.

I give consent to the EPA to copy this application for its own use and to make it available for inspection and copying by the public, both in the form of paper files available for inspection at EPA offices and via the EPA's website.

This consent relates to this application itself and to any further information or submission whether provided by me as Applicant, any person acting on the Applicant's behalf, or any other person.

**Lead Authority**

**Signed by :**_____ **Date :**_____
*(on behalf of the organisation)*

**Print signature name:** _____

**Position in organisation:**_____

**Co-Applicants**

**Signed by :**_____ **Date :**_____
*(on behalf of the organisation)*

**Print signature name:** _____

**Position in organisation:**_____

**Signed by :**_____ **Date :**_____
*(on behalf of the organisation)*

**Print signature name:** _____

**Position in organisation:**_____

**Note 1**: In the case of an application being lodged on behalf of more than one local authority the above declaration must be signed by all applicants.

# APPENDICES: LOCATION OF ATTACHMENTS

The list below sets out the various attachments required under the under the Historic Landfill Application Form and there location within the attached documents.

- **Attachment C.1:** The appropriate scaled drawings and maps showing the site location can be viewed in the document Pike Tier I report.

- **Attachment C.5:** The information relating to the types and quantities of waste deposited can be viewed in the Pike Tier II report under On Site Investigation. It is unknown as to the quantity of waste that has been deposited at the site.

- **Attachment D.1:** This can be found within the Pike Tier I & Tier II Reports.

- **Attachment E.1:** The screening report can be viewed in the Pike Tier II report.

# Landfill Site: Pike Landfill
# Site Reference: 15/N
# Division: North Cork
# Area Office: Fermoy

# TABLE OF CONTENTS

## Introduction

The European Court of Justice ruled on the 26th April 2005 that Ireland was non compliant with the Waste Framework Directive (75/442/EEC) between 1977 and 1997.

A proper and sufficient permitting system for private and local authority landfills had not been in place for the above years in accordance with the Directive.

The EPA prepared the "Code of Practice Environmental Risk Assessment for Unregulated Waste Disposal Sites" in response to the ECJ ruling.

The code came into effect in April 2007 and provided Local Authorities with guidance on:

- The Identification of Unregulated Landfill Sites
- Risk Screening & Prioritisation (Tier I )
- Site Investigations & Verification (Tier II )
- Quantitative Risk Assessment (Tier III)
- Remediation Techniques
- Reporting Requirements



## The Code of Practice Environmental Risk Assessment for Unregulated Waste Disposal Sites

The Code of Practice Environmental Risk Assessment for Unregulated Waste Disposal Sites required All Local Authorities to

1. Identify all landfills within functional area (including public & private).
2. Place all sites on a register in accordance with section 22 of the Waste Management Act (WMA).
3. Carry out risk assessments on each site in accordance with CoP.
4. Carry out a quantitative risk assessment on all Medium and High risk sites
5. Prepare remediation plans in line with risk assessments.
6. Apply to EPA to certify these sites in accordance with SI 524 of 2008
7. Provide verification reports showing successful outcome of remediation works.

## Circular WPRR: 09/08

- Circular WPRR: 09/08 along with S.I. 524 of 2008 were issued on the 22nd December 2008 and required that all Category 1 Landfills (LA operated landfills) be identified and placed on the EPA section 22 register by the 30th June 2009.
    - This has been completed by Cork County Council.
- All Tier I Investigations were also required to be completed by 31st December 2009.
    - Cork County Council has completed this task and placed the findings on the EPA Section 22 register.

## Site Description

Pike Landfill is located in Beachfield, on the north eastern side of Fermoy town. The landfill is situated on the site of the now defunct Fishguard – Rosslare railway line which closed in the 1960s. The railway track ran through a ravine in the ground.

The site was mainly used for the disposal of C&D waste, although some quantities of municipal waste were deposited here by the UDC and the Council. It is believed waste has not been disposed of on the site since 1981/1982. The site is approx 0.3 hectares in size and the present material varies in depth from 2m-9m.Scrub vegetation dominates the site presently.



## Tier I Study

Cork County Council completed a Tier I study on the landfill at Pike in August 2007 in accordance with the "Code of Practice Environmental risk Assessment for Unregulated Waste Disposal Sites "(CoP)" published by the Environmental Protection Agency (EPA).

The Assessment concluded that the site was a Class C – Low Risk site. The Tier II Assessment should focus on possible leachate migration to the locally important Aquifer.

## Tier II Assessment

1. In October 2009, the council commenced a Tier II Assessment for Pike Landfill. This consisted of an Exploratory Phase Investigation and an ensuing Detailed Phase Investigation.

2. The Exploratory Phase included:-
   a) A trial pitting programme to determine the lateral and vertical extent of the fill, the nature of the waste and to establish the nature of the underlying subsoil;

3. The Detailed Phase included:-
   a) The collection and analysis of samples of the waste for waste characterisation; collection and chemical analysis of surface water, leachate and soil samples and collection and geotechnical testing of soil samples.

4. The report found that:

   - The trial pits indicated that depth of waste varied throughout the site. On the western side it ranged between 2.7m – 3.8m, while on the eastern end it was found to be 8m. The material deposited here included clay, stone, gravel, wood, tarmac and metal. Trace amount of domestic waste were encountered.

   - The site is covered with a clay layer about 0.5m – 1m in depth on the western end. The eastern section of the landfill was covered with a layer of sands, gravel and stone. There was no evidence found of the landfill causing any pollution. The waste found within this landfill can be classified as inert.

## Tier III Assessment – Cork County Council

1. The Tier III Assessment involves the review of the Conceptual Site Model (COP) put forward in the Tier I investigation as well as the findings of the Tier II Assessment.

2. The report concluded that:

- The risk posed was Low and therefore a Quantitative Risk Assessment (QRA) was not required. A Quantitative Risk Assessment may be required should the risk be deemed to intrinsically pose a high or moderate risk to the environment or human health.

- This was due to the fact that the waste (Source) was classed as inert, subsequently breaking the Pathway and Receptor linkages. This then allowed the landfill to be classed as Low Risk.

## Conclusions & Recommendations

1. From the findings of the investigations, it can be construed that the site poses a minute risk to human health and the surrounding environment. The site can be confirmed as a Low Risk site and an application for a Certificate of Authorisation can be made for Pike Landfill.

2. The recommendations for the site are to return it to beneficial agricultural use. The site was sold by Cork County Council in 2007 and has since been returned to agricultural use by its owners.

# Land Registry

## County Cork Folio 122321F

### Register of Ownership of Freehold Land

### Part 1(A) - The Property

Note: Unless a note to the contrary appears, neither the description of land in the register nor its identification by reference to the Registry Map is conclusive as to boundaries or extent

For parts transferred see Part 1(B)

| No. | Description | Official Notes |
|---|---|---|
| 1 | The property shown coloured Red as plan(s) BEP93 on the Registry Map,(O.S.35/4) situate in the townland of RATH-HEALY , in the barony of CONDONS and CLANGIBBON , in the Electoral Division of FERMOY RURAL .<br><br>The Registration does not extend to the mines and minerals | From Instrument D2006CK035050Q |



Land Cert Issued: No



Collection No.:

# Land Registry

## County Cork Folio 122321F

### Part 1(B) - Property
### Parts Transferred

| No. | Prop No: | Instrument: | Date: | Area(Hectares): | Plan: | Folio No: |
|---|---|---|---|---|---|---|

# Land Registry

## County Cork Folio 122321F

### Part 2 - Ownership

**Title ABSOLUTE**

| No. | The devolution of the property is subject to the provisions of Part II of the Succession Act, 1965 |
|---|---|
| ~~1~~ | ~~24-JAN-2007 D2006CK035050Q~~ ~~CORK COUNTY COUNCIL (LOCAL AUTHORITY) of County Hall, Cork is full owner.~~<br><br>Cancelled D2007CK021765K 05-JUL-2007 |
| 2 | 05-JUL-2007 D2007CK021765K JOHN RICE of STRAWHALL, FERMOY, COUNTY CORK is full owner as tenant-in-common of 1 undivided 1/2 share(s). |
| 3 | 05-JUL-2007 D2007CK021765K TOM RICE of STRAWHALL, FERMOY, COUNTY CORK is full owner as tenant-in-common of 1 undivided 1/2 share(s). |

# Land Registry

## County Cork Folio 122321F

### Part 3 - Burdens and Notices of Burdens

| No. | Particulars |
|---|---|
| ~~1~~ | ~~The property having been acquired by the registered owner thereof for its statutory purposes is subject to such restrictions against alienation or letting as may be contained in the statutory enactments relating to such property.~~<br>Cancelled D2007CK021765K 05-JUL-2007 |

landdirect.ie

An online service from the Property Registration Authority

main menu | form 17 | owner search | app search | view folio | reques Main Menu copy | map search | account | help | logout

## Identify Features

Folio **CK122321F (1 Plan(s))**

Zoom/Highlight | View Folio | Request Copy

No Pending Applications

Folio Search | Go | Set Map Width




Map Detail | Addresses | Bookmarks | Area Search | Home

Special Registration Map | Official Map Search

Information:Based on centre point
Easting:**581,708** Northing:**599,308**
Map Width:**500M**

| | |
|---|---|
| Townland: | **RATH-HEALY** |
| E.D: | **FERMOY RURAL** |
| Barony: | **CONDONS and CLANGIBBON** |
| County: | **Cork** |

Current mode is: Select

**Current Land Use**

A site visit was carried out on the Pike Road Landfill on 17th July 2012. The site was grassed over and there was no evidence of municipal waste on the surface. The site was sold by Cork County Council in 2007 and has been returned to agricultural use.

**The photos below show the site in its current use:**


1. Photo taken from the eastern boundary facing westwards.

2. Photo taken half way along the site facing west.



3. Photo showing the western boundary in the background.

# Code of Practice Environmental Risk Assessment for Unregulated Waste Disposal Sites

# Tier 1 Study

## Conceptual Site Model, Risk Screening & Prioritisation

## For



**Landfill Site:** **Pike Landfill**
**Site Reference:** **15/N**
**Division:** **North Cork**
**Area Office:** **Fermoy**

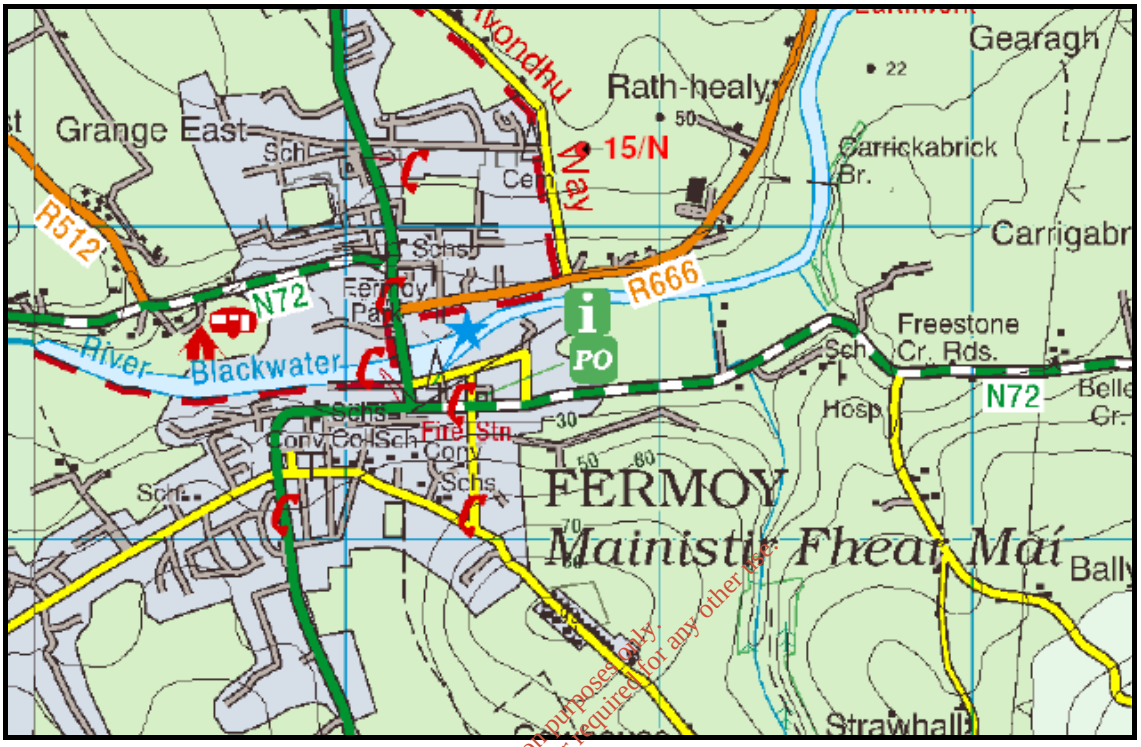
| TIER 1 RISK RATING | LOW |
|---|---|

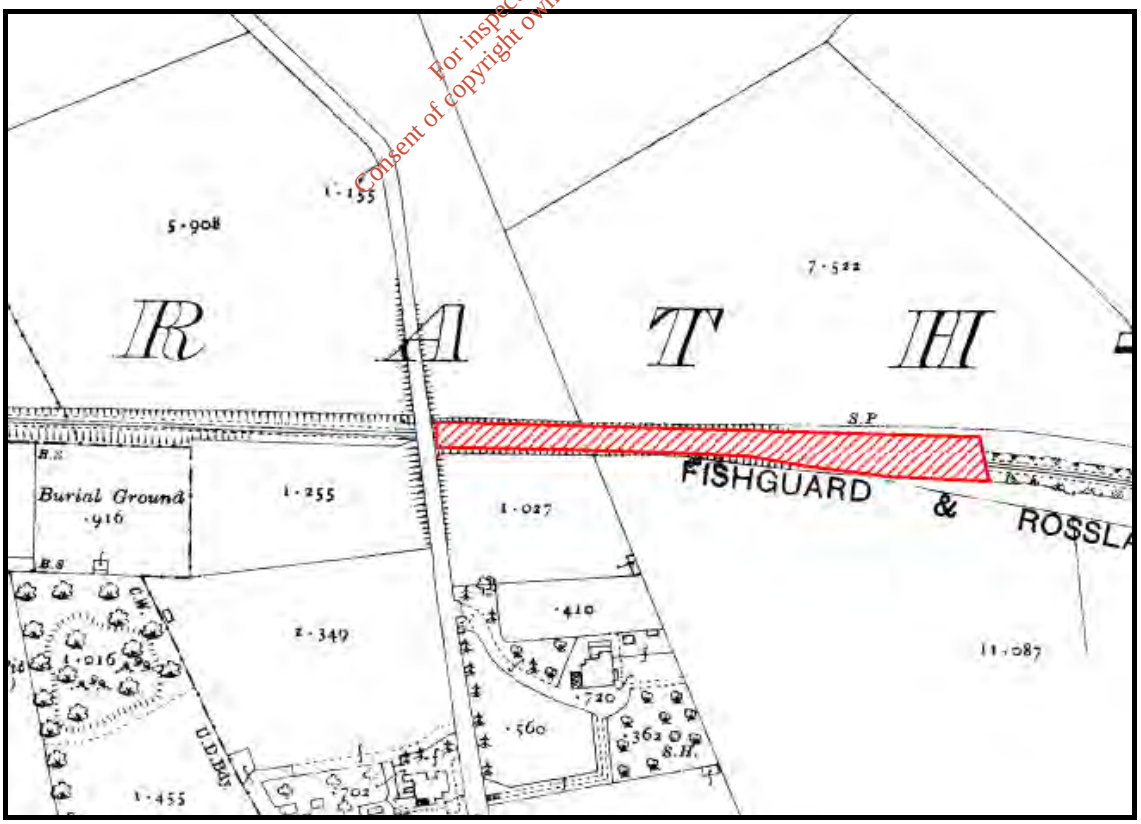
**Report by:** Kieran Coffey
Environment Directorate
Cork County Council
August 2007

# Contents

# Site Summary

Pike Landfill Site is situated on the North Eastern edge of Fermoy town in an area know as Beachfield (GIS Coordinates E181,754, N99,252).






**Location maps for Pike Landfill Site (15/N)**

The Landfill is on the site of an old railway line. The Fishguard – Rosslare railway line closed in the early 60's. The railway track was situated in a ravine in the ground (manmade cut). A bridge to the western side of the site was demolished in 1974 and a road was made on the eastern side of the bridge.

For a few years following the demolishing of the bridge, the railway line (cut) to the west was used mainly for the disposal of construction and demolition waste although minor quantities of municipal waste was disposed of here on occasion by the UDC and the council. Uncontrolled dumping also occurred[1]at this site. It is estimated that the site has not been in use since 1981/1982. The site covers an area of 0.3 hectares and it is estimated that the waste within the site is from 2m deep at the western end up to possibly 9m deep at the eastern end.

**Walkover Survey:**
The site is currently not in use and is wasteland/scrub. There is a cow track half way along the site which runs between the two grazing fields on each side of the site. There is evidence of piles of construction and demolition waste to the east and this end of the site is very uneven. There was no evidence of municipal waste on the surface during the walkover survey apart from one white good. There are four houses within 20m of the site on the western end. The new motorway borders the site on the eastern end of the site. This site is owned by the county council. There are no public water abstraction points in the vicinity of this site. There was no evidence of leachate or gas during the walkover survey.



**Geology:**

The site is located in a region of sandstone till and it is in an area of a locally important aquifer. During the Tier 1 risk screening this site has been identified as having an 4 % risk rating for leachate migration.

**Overall Risk Rating: LOW**

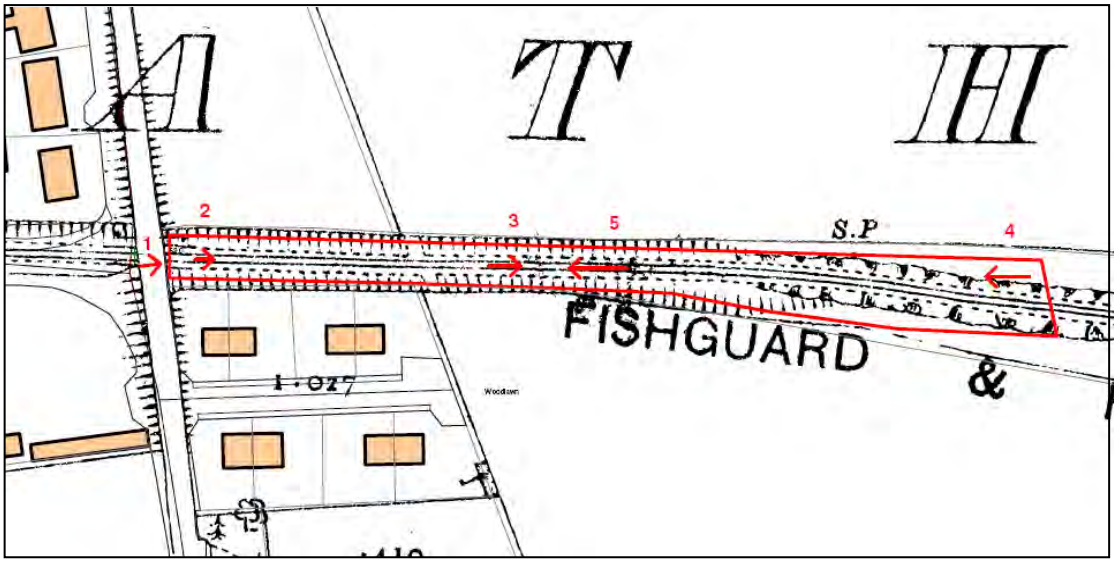
**Recommendations:**

Proceed to Tier 2 – Site Investigation. Attention during Tier 2 investigations should focus on possible leachate migration to the Locally Important Aquifer. It is recommended that this site be flattened and covered with soil and restored to grassland.

**References:**

1. Article in Corkman, August 14th 1981

# Site Photos & Layout Map




**Layout map of positions where photos were taken**




**1. Photo of Entrance to site**


**2. Photo of site facing east**

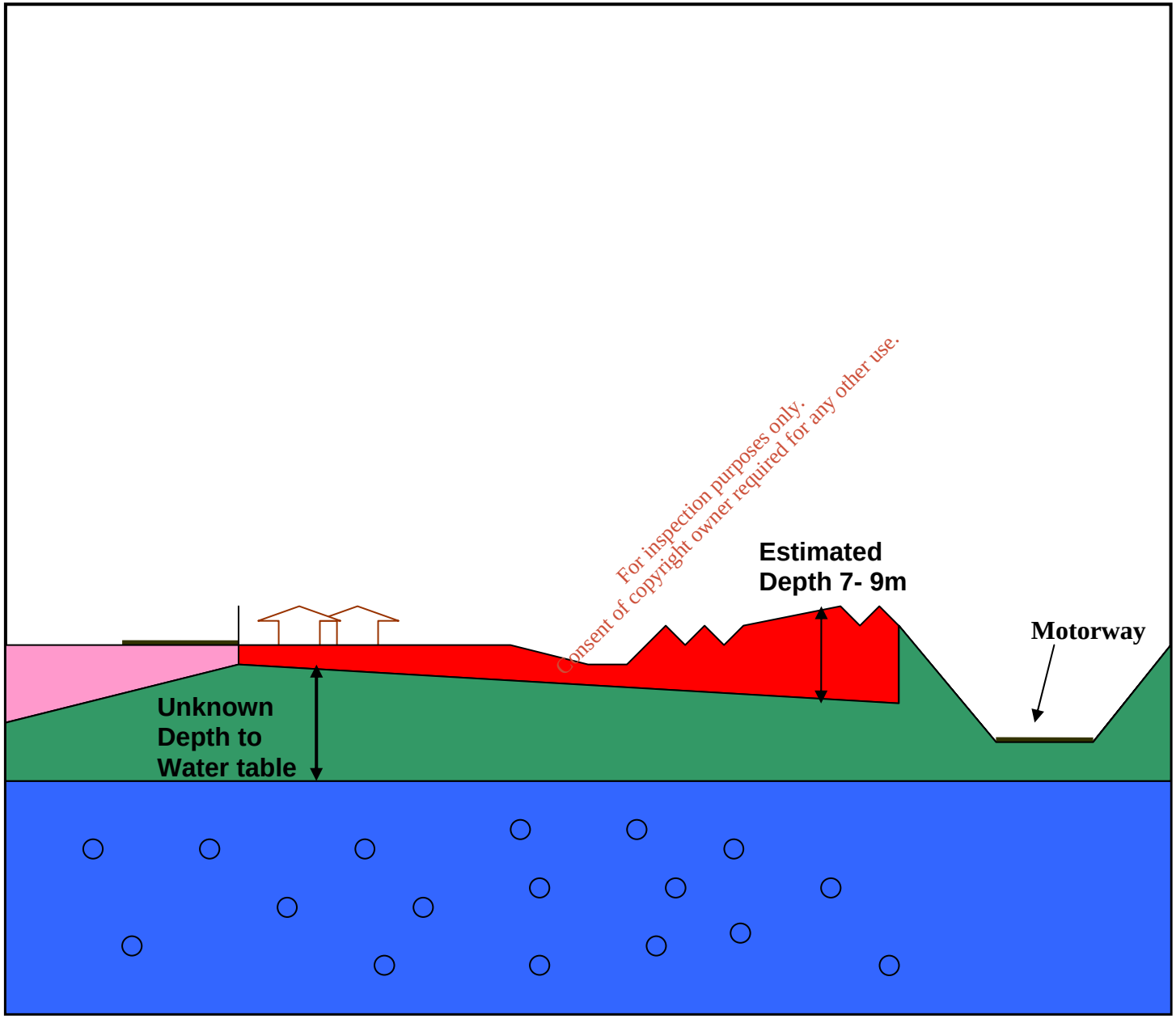



**3. Photo facing east half way along site**


**4. Photo from end of site facing west**




**5. Photo half way along site facing west**






# Conceptual Site Model

**Landfill:** Pike
**Site Ref:** 15/N
**Division:** North Cork
**Area:** Fermoy

**Sources:**

Waste Body

**Receptors:**

Groundwater

Private Dwelling

Grazing Land

Road

Private Drinking Water supplies

**Geology:**

Made Ground

Sandstone till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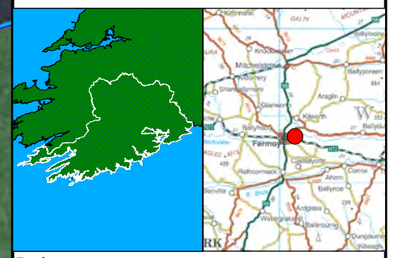

**Project**

***Environmental Risk Assessment for Unregulated Waste disposal Sites***

***Tier 1 Investigation***

**Drawing Description**

**CSM Plan**

**Landfill Name & Ref No:**

**Pike Landfill - 15/N**

**Division:**

**North Cork**

**Area Office:**

**Fermoy**

## Legend

- River
- Landfill Area
- Building

## Issue Details

| | | | |
|---|---|---|---|
| **Drawn:** | KC | **File Ref.** | 15-N CSM Plan |
| **Checked:** | - | | |
| **Approved:** | | | |
| **Scale:** | | **Drawing No.** | **Rev.** |
| **Date:** | 15th Oct 07 | **15/N_CSM** | **0** |

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# 4. Risk Screening & Prioritisation Calculations

## Risk Screening/ Prioritisation

| Table 1a LEACHATE: SOURC/HAZARD SCORING MATRIX | | | |
|---|---|---|---|
| | Waste FOOTPRINT (ha) | | |
| WASTE TYPE | ≤ 1ha | > 1 ≤ 5 ha | > 5ha |
| C&D | 0.5 | 1 | 1.5 |
| Municipal | 5 | 7 | 10 |
| Industrial | 5 | 7 | 10 |
| Pre 1977 sites | 1 | 2 | 3 |

| 1a = | 0.5 |
|---|---|

| Table 1b LANDFILL GAS: SOURC/HAZARD SCORING MATRIX | | | |
|---|---|---|---|
| | Waste FOOTPRINT (ha) | | |
| WASTE TYPE | ≤ 1ha | > 1 ≤ 5 ha | > 5ha |
| C&D | 0.5 | 0.75 | 1 |
| Municipal | 5 | 7 | 10 |
| Industrial | 3 | 5 | 7 |
| Pre 1977 sites | 0.5 | 0.75 | 1 |

| 1b = | 0.5 |
|---|---|



| Table 2a : LEACHATE MIGRATION: PATHWAYS | |
|---|---|
| GROUNDWATER VULNERABILITY (Vertical Pathway) | Points |
| Extreme Vulnerability | 3 |
| High Vulnerability | 2 |
| Moderate Vulnerability | 1 |
| Low Vulnerability | 0.5 |
| High - Low Vulnerability (use where vulnerability not on GIS) | 2 |

| 2a = | 2 |
|---|---|

| Table 2b : LEACHATE MIGRATION: PATHWAYS | |
|---|---|
| GROUNDWATER FLOW REGIME (Horizontal Pathway) | Points |
| Karstified Groundwater Bodies (Rk) | 5 |
| Productive Fissured Bedrock Groundwater Bodies (Rf & Lm) | 3 |
| Gravel Groundwater Bodies (Rg and Lg) | 2 |
| Poorly Productive Bedrock Groundwater Bodies (LI, PI, Pu) | 1 |

| 2b = | 1 |
|---|---|

## Risk Screening/ Prioritisation

| Table 2c : LEACHATE MIGRATION: PATHWAYS | |
|---|---|
| SURFACE WATER DRAINAGE (Surface water pathway) | **Points** |
| Is there a direct connection between drainage ditches associated with the waste body and adjacent surface water body? Yes | 2 |
| If no direct connection | 0 |

| | |
|---|---|
| **2c =** | **0** |

| Table 2d : LANDFILL GAS: PATHWAY | |
|---|---|
| LANDFILL GAS LATERAL MIGRATION POTENTIAL | **Points** |
| Sand and Gravel, Made ground, urban, karst | 3 |
| Bedrock | 2 |
| All other Tills (including limestone, sandstone etc - moderate permabi | 1.5 |
| All Namurian or Irish Sea Tills (low permability) | 1 |
| Clay, Alluvium, Peat | 1 |

| | |
|---|---|
| **2d =** | **1.5** |



| Table 2e : LANDFILL GAS: PATHWAY (assuming receptor located above source) | |
|---|---|
| LANDFILL GAS LATERAL MIGRATION POTENTIAL | **Points** |
| Sand and Gravel, Made ground, urban, karst | 5 |
| Bedrock | 3 |
| All other Tills (including limestone, standstone etc - moderate permab | 2 |
| All Namurian or Irish Sea Tills (low permability) | 1 |
| Clay, Alluvium, Peat | 1 |

| | |
|---|---|
| **2e =** | **5** |

| Table 3a : LEACHAGE MIGRATION: *RECEPTORS* | |
|---|---|
| HUMAN PRESENCE (presence of a house indicaates potential private wells) | **Points** |
| On or within 50m of the waste body | 3 |
| Greater than 50m but less than 250m | 2 |
| Greater than 250m but less than 1km from waste body | 1 |
| Greater than 1km of the waste body | 0 |

| | |
|---|---|
| **3a =** | **3** |

## Risk Screening/ Prioritisation

| Table 3b : LEACHAGE MIGRATION: RECEPTORS PROTECTED AREAS (SWDTE or GWDTE) | Points |
|---|---|
| Within 50m of waste body | 3 |
| Greater than 50m but less than 250m of the waste body | 2 |
| Greater than 250m but less than 1km from waste body | 1 |
| Greater than 1km of the waste body | 0 |
| Undesignated sites within 50m of waste body | 1 |
| Undesignated sites greater than 50m but less than 250m | 0.5 |
| Undesignated sites greater than 250m of the waste body | 0 |
| | **3b =** | **1** |

| Table 3c : LEACHAGE MIGRATION: *RECEPTORS* | |
|---|---|
| AQUIFER CATEGORY (resource potential) | **Points** |
| Regionally Important Aquifers (Rk, Rf, Rg) | 5 |
| Locally Important Aquifers (LI, Lm, Lg) | 3 |
| Poor Aquifers (Pl, Pu) | 1 |
| | **3c =** | **3** |



| Table 3d : LEACHAGE MIGRATION: *RECEPTORS* | |
|---|---|
| PUBLIC WATER SUPPLIES (Other than private wells) | **Points** |
| Within 100m of site boundary | **7** |
| Greater than 100m but less than 300m or with in Inner SPA for GW supplies | 5 |
| Greater than 300m but less than 1km or within Outer SPA (SO) for GW supplies | 3 |
| Greater than 1km (karst aquifer) | 3 |
| Greater than 1km (no karst aquifer) | 0 |
| | **3d =** | **0** |

| Table 3e : LEACHAGE MIGRATION: *RECEPTORS* | |
|---|---|
| SURFACE WATER BODIES | **Points** |
| Within 50m of site boundary | 3 |
| Greater than 50m but less than 250m | 2 |
| Greater than 250m but less than 1km | 1 |
| Greater than 1km | 0 |
| | **3e =** | **1** |

## Risk Screening/ Prioritisation

| Table 3f : LEACHAGE MIGRATION: *RECEPTORS* | |
|---|---|
| HUMAN PRESENCE | **Points** |
| On site or within 50m of site boundary | 5 |
| Greater than 50m but less than 150m | 3 |
| Greater than 150m but less than 250m | 1 |
| Greater than 250m | 0.5 |

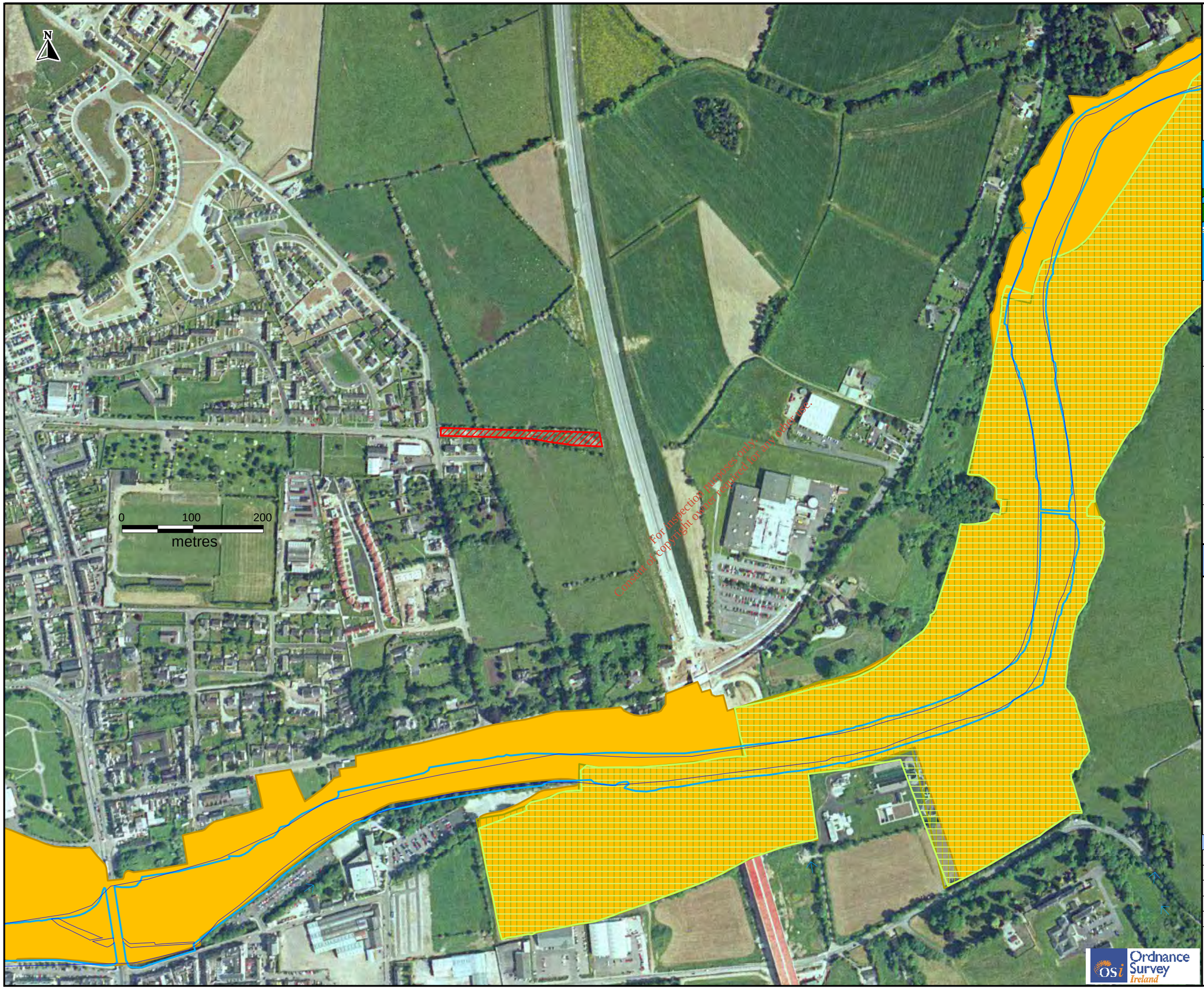
| **3f =** | **5** |
|---|---|

| Calculator | SPR Values | Maximum Score | Normalised Score |
|---|---|---|---|
| **SPR 1 =** | 1.5 | 300 | **1%** |
| **SPR 2 =** | 1.5 | 300 | **1%** |
| **SPR 3 =** | 4.5 | 240 | **2%** |
| **SPR 4 =** | 1.5 | 240 | **1%** |
| **SPR 5 =** | 4.5 | 400 | **1%** |
| **SPR 6 =** | 0 | 560 | **0%** |
| **SPR 7 =** | 1.5 | 240 | **1%** |
| **SPR 8 =** | 0 | 60 | **0%** |
| **SPR 9 =** | 0 | 60 | **0%** |
| **SPR 10 =** | 3.75 | 150 | **3%** |
| **SPR 11 =** | 12.5 | 250 | **5%** |



| Risk Classification | Range of Risk Scores |
|---|---|
| Highest Risk (Class A) | Greater than or equal to 70% for any individual SPR lingage |
| Moderate Risk (Class B) | Between 40-70% for any individual SPR linkage |
| Lowest Risk (Class C) | less than or equal to 40% for any individual SPR linkage |

| **OVERALL RISK RATING** | **LOW** |
|---|---|

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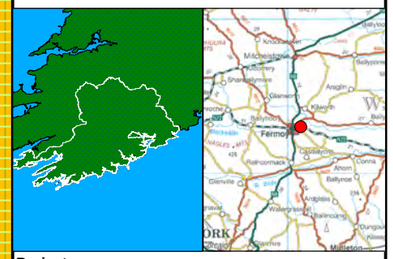

**Project**

***Environmental Risk Assessment for Unregulated Waste disposal Sites***

***Tier 1 Investigation***

**Drawing Description**

**Protected Areas Map**

**Landfill Name & Ref No:**

**Pike Landfill - 15/N**

**Division:**

**North Cork**

**Area Office:**

**Fermoy**

## Legend

- Landfill Area
- SAC
- NHA
- SPA
- National Park
- Nature Reserve
- Rivers

**Issue Details**

| | | | |
|---|---|---|---|
| **Drawn:** | KC | **File Ref.** | 15-N Protected Areas Map |
| **Checked:** | - | | |
| **Approved:** | | | |
| **Scale:** | 1:5,000 | **Drawing No.** | **Rev. 0** |
| **Date:** | Sept 2007 | **15/N_PA1** | |

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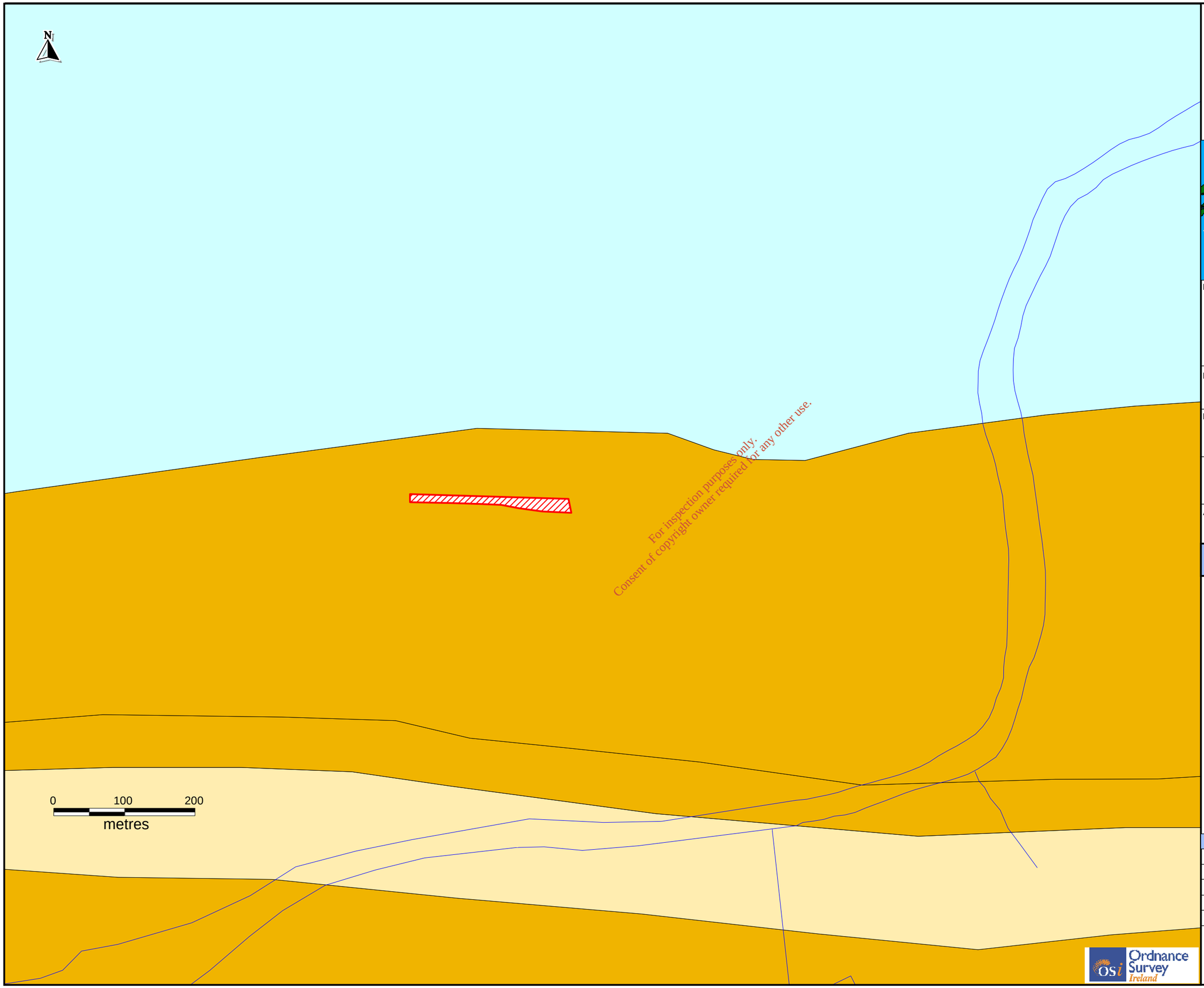


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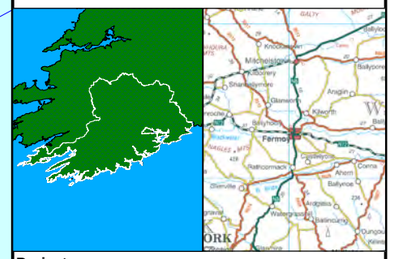

**Project**

***Environmental Risk Assessment for Unregulated Waste disposal Sites***

***Tier 1 Investigation***

**Drawing Description:**

**Aquifer Map**

**Landfill Name & Reference No:**

**Pike Landfill - 08/N**

**Division:**

**North Cork**

**Area Office:**

**Fermoy**

## Legend

Landfill Area

AQUIFER CATEGORY

- LI - Locally Important
- Pending Classification
- PI - Poor Bedrock Aquifers
- Pu - Poor Bedrock Aquifers
- Rf - Regionally Important Aquifer
- Rkd - Regionally Important Karstified Aquifer

Rivers

**Issue Details**

| | | | |
|---|---|---|---|
| **Drawn:** KC | | **File Ref.** 15/N | |
| **Checked:** - | | | |
| **Approved:** | | | |
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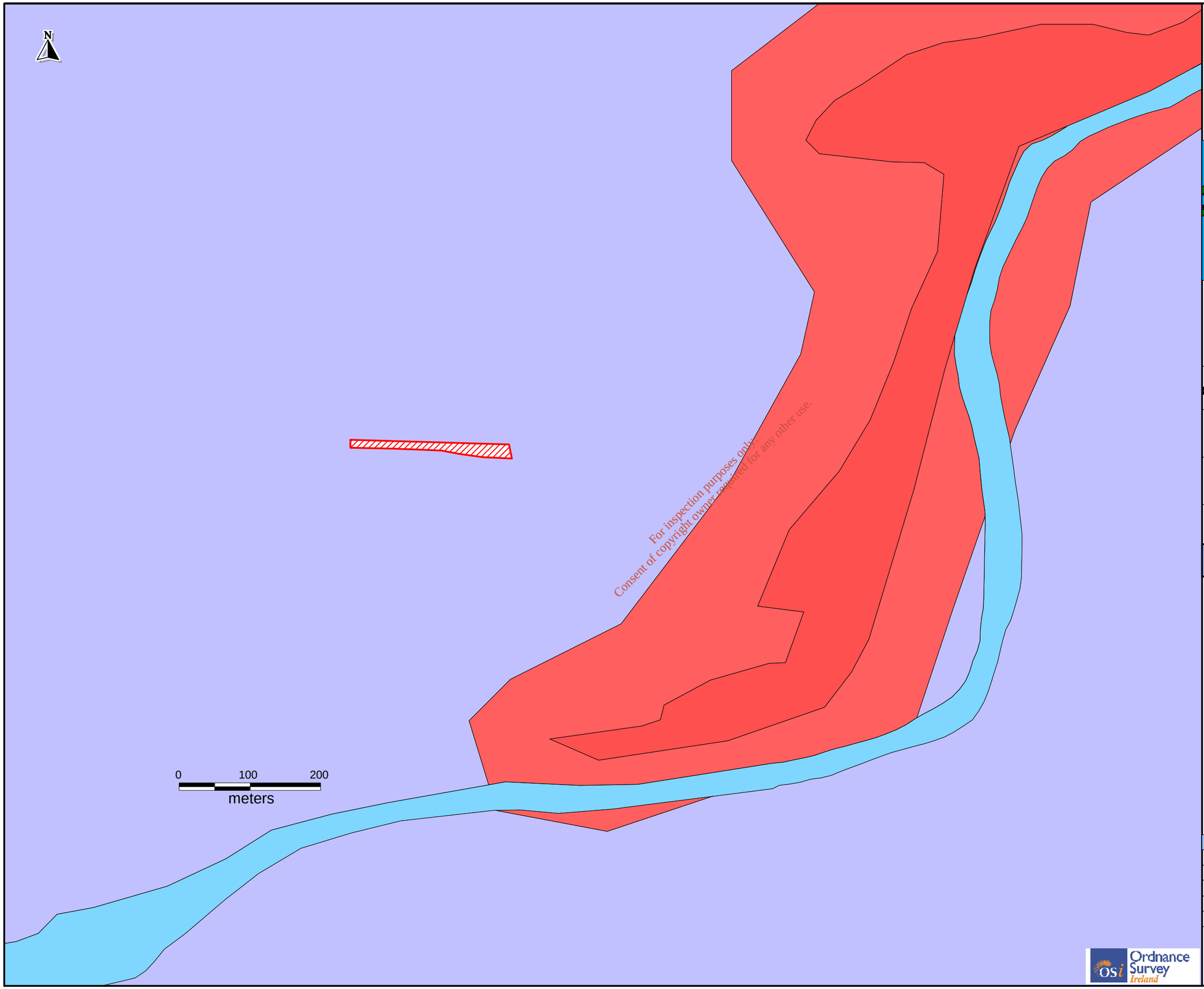


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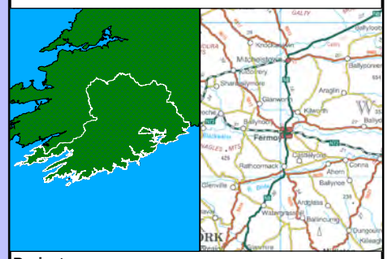

**Project**

***Environmental Risk Assessment for Unregulated Waste disposal Sites***

***Tier 1 Investigation***

**Drawing Description:**

**Groundwater Vulnerability Map**

**Landfill Name & Ref No:**

**Pike Landfill - 15/N**

**Division:**

**North Cork**

**Area Office:**

**Fermoy**

## Legend

Landfill Area

SWRBD_Groundwater Vulnerability

- E (Rock near Surface or Karst)
- E
- H
- HL
- M
- L
- Water

**Issue Details**

| | | | |
|---|---|---|---|
| **Drawn:** | KC | **File Ref.** | |
| **Checked:** | - | **15/N_GV_Rev0** | |
| **Approved:** | | | |
| **Scale:** | 1:5,000 | **Drawing No.** **15/N_GV_0** | **Rev. 0** |
| **Date:** | 11th Sept 2007 | | |

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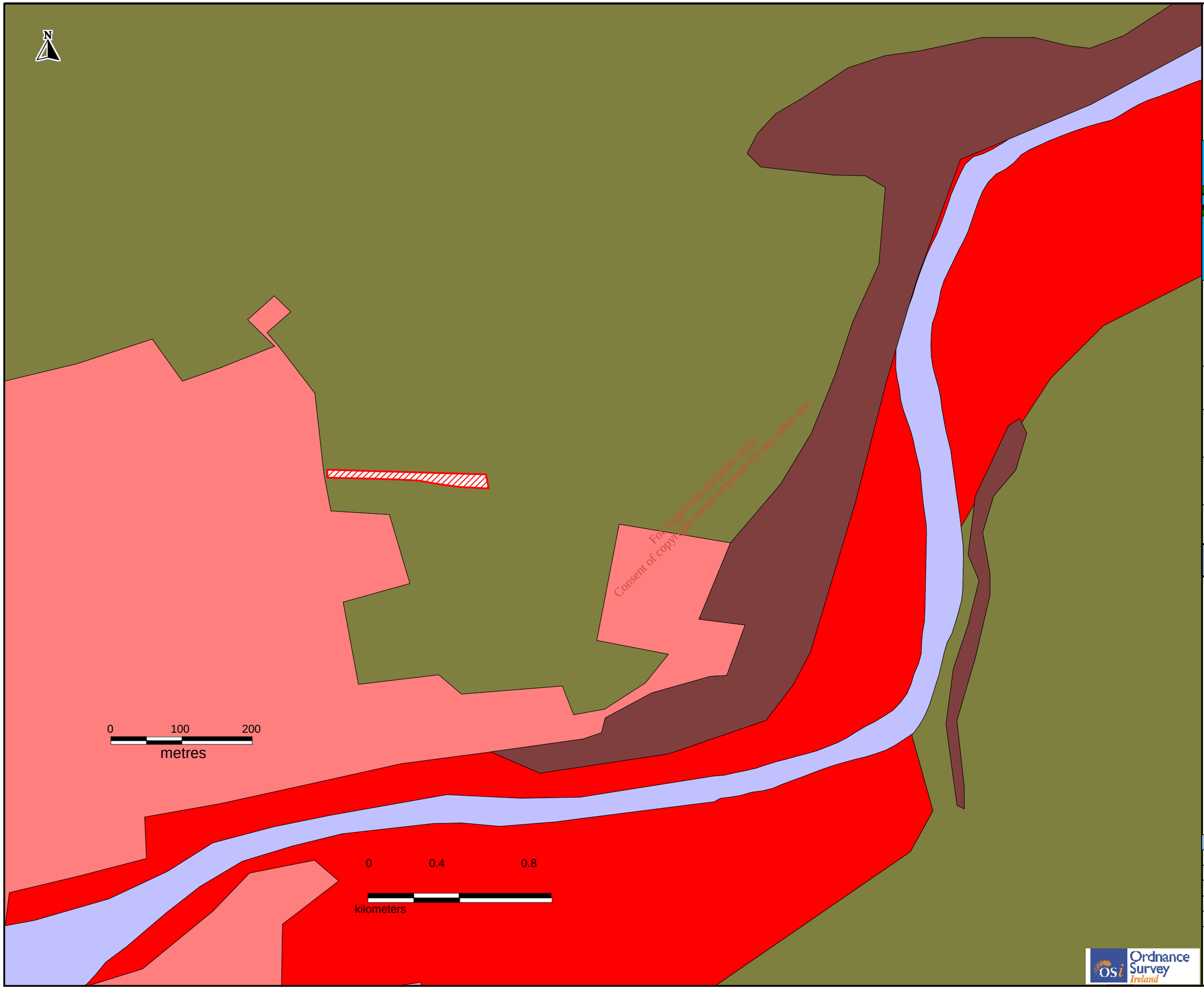


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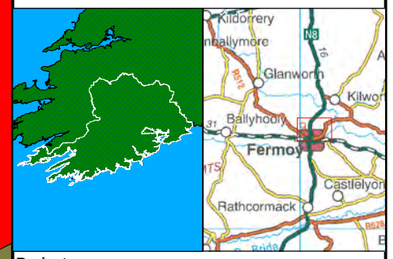


**Project**

***Environmental Risk Assessment for Unregulated Waste disposal Sites***

***Tier 1 Investigation***

**Drawing Description:**

**Subsoils Map**

**Landfill Name & Ref No:**

**Pike Landfill - O8/N**

**Division:**

**North Cork**

**Area Office:**

**Fermoy**

## Legend

Landfill Area

Soil type

| | |
|---|---|
| Alluvium * | MGs |
| BktPt | Msi |
| GDSs | ROCK * |
| GLs | Scree |
| GNSSs | TDCSsS |
| IrSTDSs | TdlMr |
| KaRck | SANDSTONE TILL* |
| L | TLPSsS |
| Made * | TLs |
| Marsh | TNSSs |
| Mbs | Water |
| Mesc | Ws |

**Issue Details**

| | | | |
|---|---|---|---|
| **Drawn:** KC | | **File Ref.** 15-N Subsoil Type | |
| **Checked:** - | | | |
| **Approved:** | | | |
| **Scale:** 1:5,000 | | **Drawing No.** 15/N_ST0 | **Rev. 0** |
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## Code of Practice Environmental Risk Assessment for Unregulated Waste Disposal Sites

# PIKE LANDFILL
# TIER II SITE INVESTIGATION REPORT



| | |
|---|---|
| **Landfill Site:** | **Pike Landfill** |
| **Site Reference:** | **15/N** |
| **Division:** | **North Cork** |
| **Area Office:** | **Fermoy** |

**Report by:** Kieran Coffey
Environment Directorate
Cork County Council
December 2009

# Table of Contents

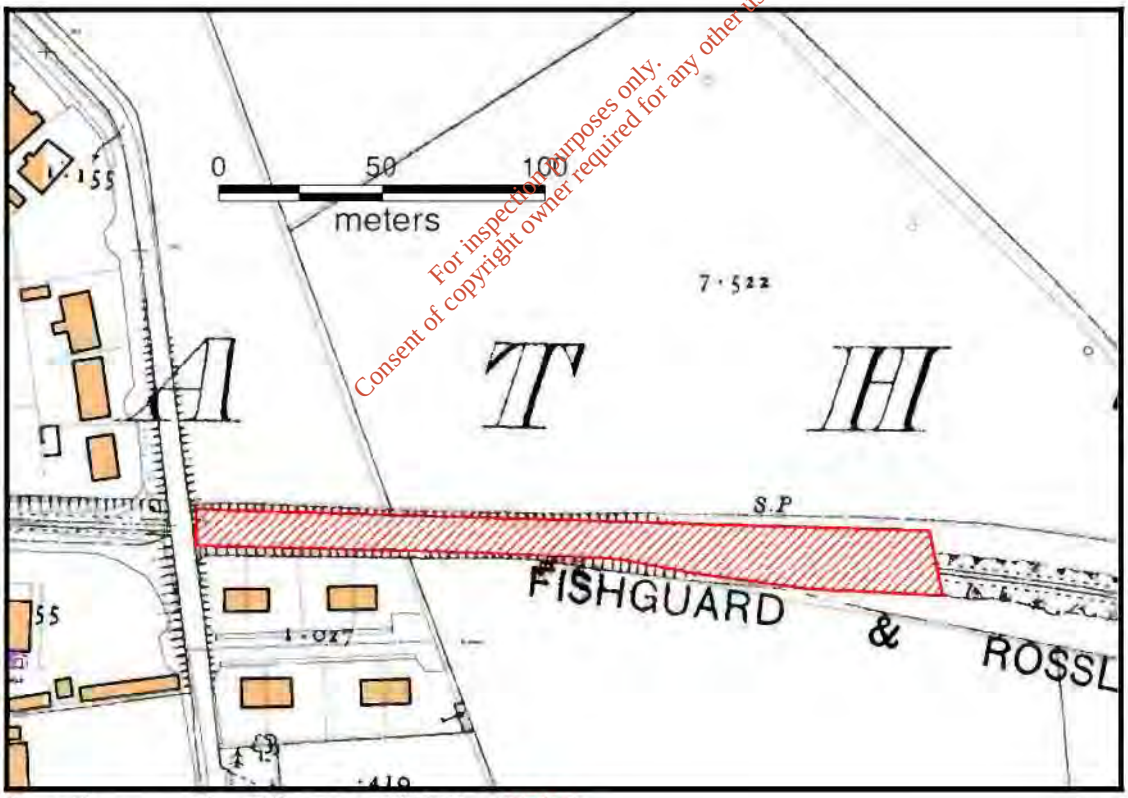
# 1.0 SITE SUMMARY

Cork County Councils Environment Directorate completed a Tier I report and risk assessment on Pike Landfill in August 2007. The Tier I assessment was completed in accordance with the EPA CODE OF PRACTICE Environmental Risk Assessment for Unregulated Waste Disposal Sites. The Tier I Report showed Pike Landfill to be a "Low Risk" site (Copy of Tier I report can be seen in Appendix 3).

A Tier II Exploratory Investigation was organised for this site in October 2009. The purpose of the Tier II Investigation was to confirm the Tier I Risk Rating and answer all questions as set out in 5.2.3 of the Code of Practice. (i.e. Are the conclusions in the Tier I Risk Assessment true and accurate).

# 2.0 SITE INTRODUCTION

Pike Landfill Site is situated on the North Eastern edge of Fermoy town in an area know as Beachfield (GIS Coordinates E181,754, N99,252).






**Location map for Pike Landfill Site (15/N)**

## 2.1 Surrounding Land Use

There are 4No. houses within 20m of the western end of the landfill. The remaining length of the landfill is surrounded on both sides by Agricultural Land and the Eastern end of the landfill is on the boundary of the new Cork-Dublin Motorway.

## 2.2 Site History

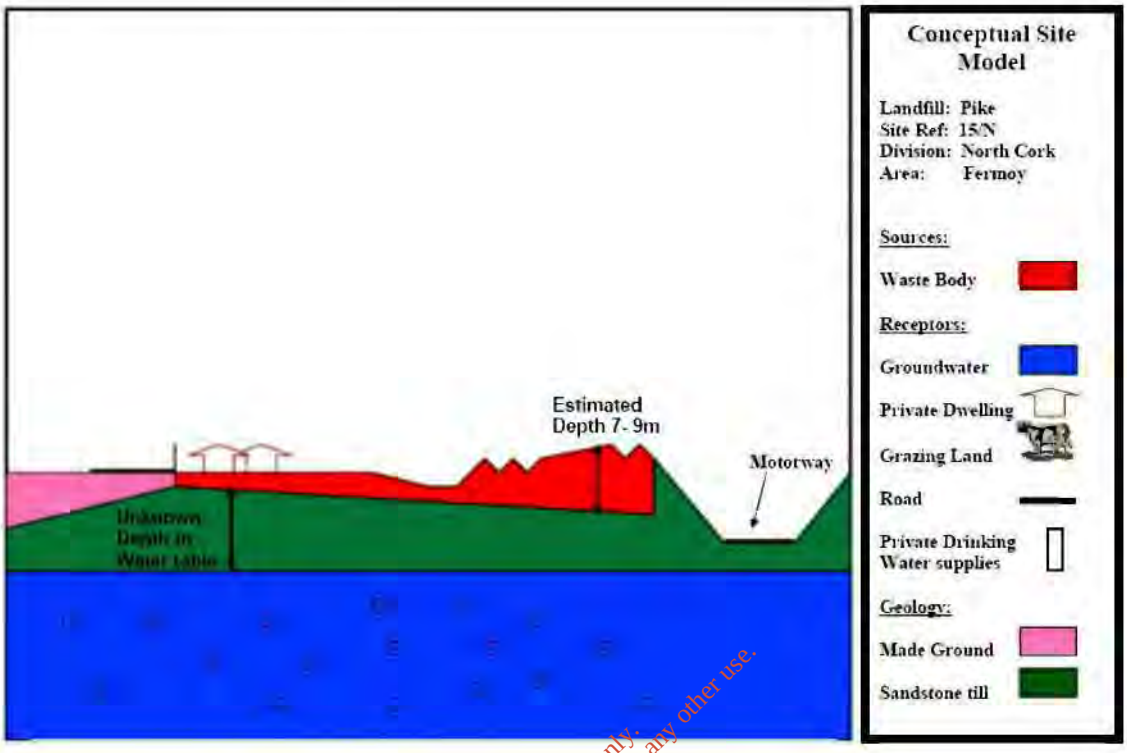
The Landfill is on the site of an old railway line. The Fishguard – Rosslare railway line closed in the early 60's. The railway track was situated in a ravine in the ground (manmade cut). A bridge to the western side of the site was demolished in 1974 and a road was made on the eastern side of the bridge.

For a few years following the demolishing of the bridge, the railway line (cut) to the west was used mainly for the disposal of construction and demolition waste although minor quantities of municipal waste was disposed of here on occasion by the UDC and the council. Uncontrolled dumping also occurred[1] at this site. It is estimated that the site has not been in use since 1981/1982. The site covers an area of 0.3 hectares and it is estimated that the waste within the site is from 2m deep at the western end up to possibly 9m deep at the eastern end.

## 2.3 Tier I SPR Linkage Score

| Calculator | SPR Values | Maximum Score | Normalised Score |
|---|---|---|---|
| SPR 1 = | 1.5 | 300 | 1% |
| SPR 2 = | 1.5 | 300 | 1% |
| SPR 3 = | 4.5 | 240 | 2% |
| SPR 4 = | 1.5 | 240 | 1% |
| SPR 5 = | 4.5 | 400 | 1% |
| SPR 6 = | 0 | 560 | 0% |
| SPR 7 = | 1.5 | 240 | 1% |
| SPR 8 = | 0 | 60 | 0% |
| SPR 9 = | 0 | 60 | 0% |
| SPR 10 = | 3.75 | 150 | 3% |
| SPR 11 = | 12.5 | 250 | 5% |

## 2.4 Tier I Conceptual Site Model






# 3.0 TIER II SITE INVESTIGATION

## 3.1 OBJECTIVES

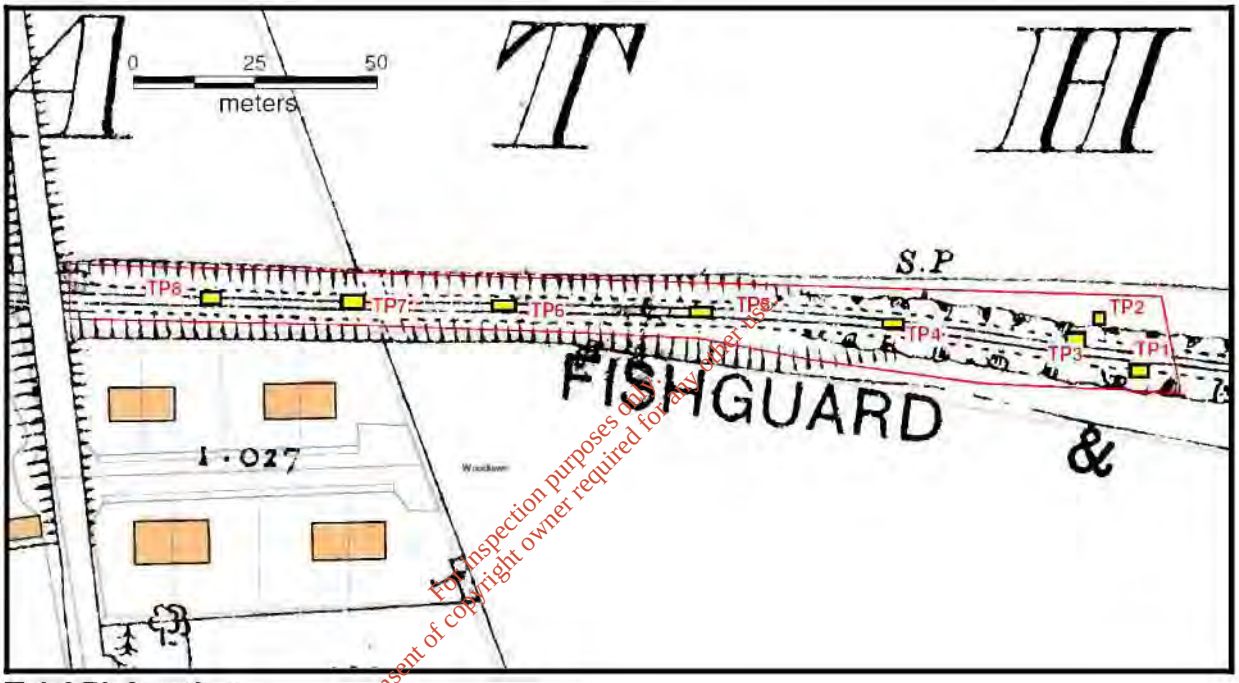
The objective of the investigation was to collect sufficient information (commensurate with the Tier I Risk Rating) to allow an assessment of the environmental risks posed by the landfill. The objectives are summarised as follows:

- Characterise the waste on site
- Delineate the lateral and vertical extent of the waste
- Show if there is evidence of the landfill causing any environmental impacts
- Confirm if the Tier I Conceptual Site Model is valid
- Is the Tier I Risk Screening exercise valid
- Confirm the site is a Low Risk Site
- Verify that the site does not pose a risk to the environment or human health
- Should remedial measures be put in place

## 3.2 SITE INVESTIGATION METHODOLOGY

### 3.2.1 On-Site Investigations

The site investigation comprised the use of 20Tonne Tracked Excavator to dig 8No. Trial Pits throughout the site. The excavation was supervised by a Cork County Council Engineer and each pit was logged in accordance wth BS5930. A judgemental trial pit plan was instigated based on the same BS 5930 code. Trial Pit locations can be seen below.




**Trial Pit locations**



## 3.3 ON-SITE OBSERVATIONS

The majority of the waste was comprised of clay, stones, rocks, boulders, gravel and wood. Minor amounts of metal, tarmac, wood and plastic were found throughout the site and minor amounts of domestic waste was encountered on the western end of the site. A selection of photos from the trial pits are shown below:



**Trial Pit 1**



**Trial Pit 3**

**Trial Pit 4**

**Trial Pit 6**

**Trial Pit 6**

**Trial Pit 8**

**Trial Pit 8**



### 3.3.1 Lateral and Vertical Extent of the Waste

**Lateral:** The trial pitting confirmed that the waste varied in depth from 2.7m to 3.8m at the western end of the site. The depth of the waste increased to 8m at the eastern end of the site (TP2). Trial Pit 1 was abandoned as the trail hole encountered the side of the embankment at 5m bgl.

**Vertical:** The site is covered with a clay layer between 0.5m and 1m deep at the western end of the site. Sands and Gravels and soils and stones were more predominant at the eastern end of the site. Minor amounts of domestic type waste was encountered in Trial Pit No.7 between 1m and 2.5m deep.

### 3.3.2 No Evidence of the Landfill causing Pollution

There was no odour from the waste and no evidence was found that the landfill is causing pollution. No leachate or groundwater was encountered in any of the trial pits. No evidence of landfill gas or VOC's was encountered. Waste from TP6 was sampled and tested in accordance with the Waste Acceptance Criteria (as per EU Decision 2003-33-EU). No pollution concerns were highlighted. A summary of results can be seen below:

## 3.4 SAMPLING AND ANALYSIS

| WASTE SAMPLING PIKE LANDFILL, FERMOY | | | | |
|---|---|---|---|---|
| Date | Parameter | Sample reference | Result | Measurement Units |
| 28/10/2009 | % Dry Matter | Pike TP-06 23/10/09 | 81.75 | % |
| 28/10/2009 | TPH solid (>C10-40) | Pike TP-06 23/10/09 | 379.35 | mg/Kg |
| 28/10/2009 | PRO soil (>C6-12) | Pike TP-06 23/10/09 | <1 | mg/Kg |
| 28/10/2009 | BTEX (soil) | Pike TP-06 23/10/09 | <0.5 | mg/Kg |
| 28/10/2009 | DRO soil (>C10-28) | Pike TP-06 23/10/09 | 252.37 | mg/Kg |
| 28/10/2009 | Faecal Coliforms (Solid) | Pike TP-06 23/10/09 | 2 | no/100ml |
| 28/10/2009 | Total Coliform (Solid) | Pike TP-06 23/10/09 | 80 | no/100ml |
| 28/10/2009 | Conductivity (Leachate) | Pike TP-06 23/10/09 | 361 | -1@25C |
| 28/10/2009 | TOC (Solid) | Pike TP-06 23/10/09 | 4.17 | % |
| 28/10/2009 | DOC (Leachate) | Pike TP-06 23/10/09 | 74.3 | mg/Kg |
| 28/10/2009 | pH (Leachate) | Pike TP-06 23/10/09 | 7.7 | Ph units |
| 28/10/2009 | Ammonia (Leachate) | Pike TP-06 23/10/09 | 9.16 | mg/L as N |
| 28/10/2009 | Chloride (Leachate WAC) | Pike TP-06 23/10/09 | 101.26 | mg/Kg |
| 28/10/2009 | Hardness Bicarbonate (Leachate) | Pike TP-06 23/10/09 | 115 | mg/Kg CaCO3 |
| 28/10/2009 | Iron (Leachate) | Pike TP-06 23/10/09 | 672 | ug/Kg |
| 28/10/2009 | Magnesium (Leachate) | Pike TP-06 23/10/09 | 38 | mg/Kg |
| 28/10/2009 | Manganese (Leachate) | Pike TP-06 23/10/09 | 173 | ug/Kg |
| 28/10/2009 | Nitrate (Leachate) | Pike TP-06 23/10/09 | 14.36 | mg/L as N |
| 28/10/2009 | Potassium (Leachate) | Pike TP-06 23/10/09 | 96 | mg/kg |
| 28/10/2009 | Sodium (Leachate) | Pike TP-06 23/10/09 | 55 | mg/Kg |
| 28/10/2009 | Sulphate (Leachate WAC) | Pike TP-06 23/10/09 | 515.33 | mg/Kg |
| 28/10/2009 | Arsenic (Leachate) | Pike TP-06 23/10/09 | 5 | ug/Kg |
| 28/10/2009 | Boron (Leachate) | Pike TP-06 23/10/09 | <0.02 | ug/Kg |
| 28/10/2009 | Cadmium (Leachate) | Pike TP-06 23/10/09 | <0.1 | ug/Kg |
| 28/10/2009 | Chromium (Leachate) | Pike TP-06 23/10/09 | <1 | ug/Kg |
| 28/10/2009 | Copper (Leachate) | Pike TP-06 23/10/09 | <0.2 | ug/Kg |
| 28/10/2009 | Mercury (Leachate) | Pike TP-06 23/10/09 | <0.02 | ug/Kg |
| 28/10/2009 | Nickel (Leachate) | Pike TP-06 23/10/09 | 27 | ug/Kg |
| 28/10/2009 | Zinc (Leachate) | Pike TP-06 23/10/09 | 353 | ug/Kg |
| 28/10/2009 | Mineral oil by Calculation (solid) | Pike TP-06 23/10/09 | 129.98 | mg/Kg |
| 28/10/2009 | Benzene (Soil) | Pike TP-06 23/10/09 | <0.5 | mg/Kg |
| 28/10/2009 | Toluene (Soil) | Pike TP-06 23/10/09 | <0.5 | mg/Kg |
| 28/10/2009 | Ethylbenzene (Soil) | Pike TP-06 23/10/09 | <0.5 | mg/Kg |
| 28/10/2009 | m-& p-Xylene (Soil) | Pike TP-06 23/10/09 | <0.5 | mg/Kg |
| 28/10/2009 | Alkalinity (Leachate) | Pike TP-06 23/10/09 | 115 | mg/Kg CaCO3 |
| 28/10/2009 | Carbonate (Leachate) | Pike TP-06 23/10/09 | 540 | mg/Kg CaCO3 |
| 28/10/2009 | Nitrite (Leachate) | Pike TP-06 23/10/09 | 1.919 | mg/Kg as N |
| 28/10/2009 | Phosphate Ortho (Leachate) | Pike TP-06 23/10/09 | 0.936 | mg/Kg as P |
| 28/10/2009 | Aluminium leachate | Pike TP-06 23/10/09 | 688 | ug/Kg |
| 28/10/2009 | Nitrogen (Total Oxidised) (Leachate) | Pike TP-06 23/10/09 | 16.28 | mg/Kg as N |

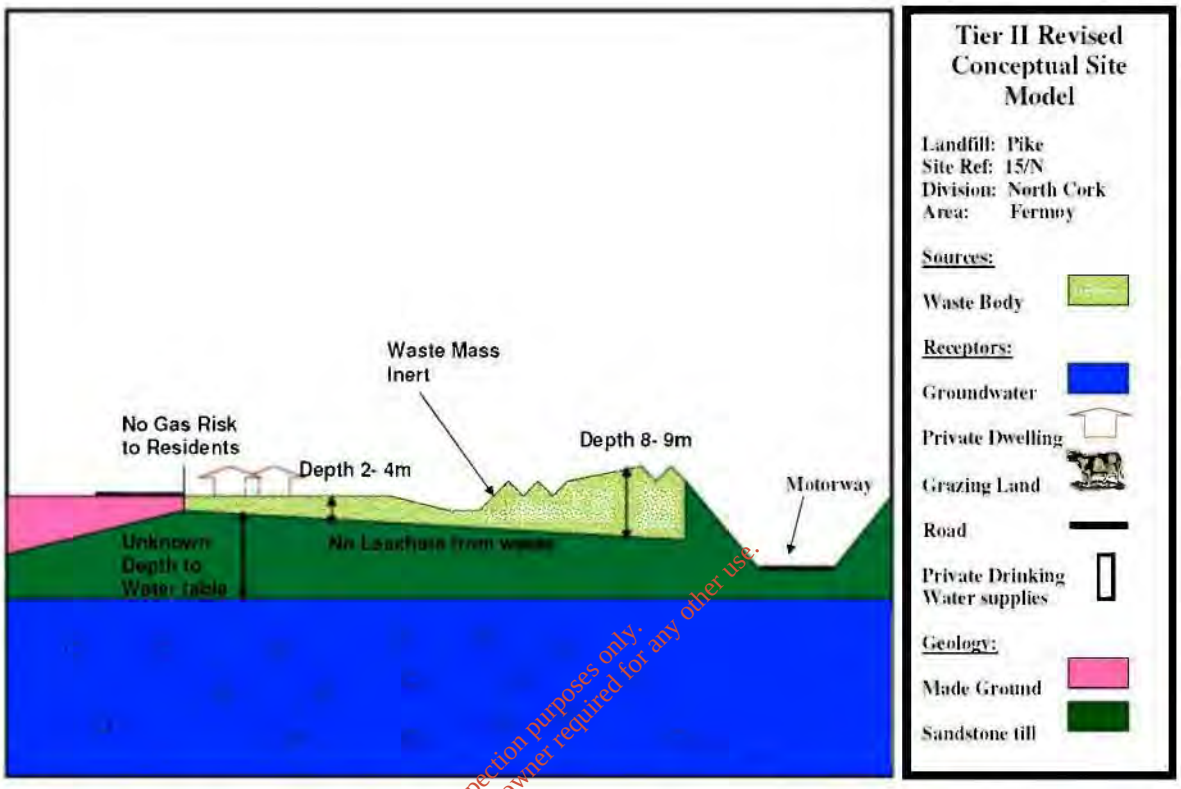
Table 3.1: Trial Pit No.6 Waste Results



### 3.4.1 Interpretation of Waste Results

When the above results are compared to the acceptable leaching limit values from waste as outlined in "Council Decision of 19th December 2002, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of the Annex II to Directive 1999/31/EC" all results fall within criteria for landfills for inert waste except TOC (at 4.17% v's an acceptable limit of 3%). Values higher than 3% are acceptable where DOC (Dissolved Organic Carbon) values are less than 500mg/kg. The DOC result is 74.3 mg/kg so this landfill can be considered to be inert.

## 3.5 RE-ASSESSMENT OF TIER I CONCEPTUAL SITE MODEL AND RISK SCREENING






A revised Tier II Conceptual Site Model was prepared. The revised CSM confirms that the Tier I Risk Screening Exercise was valid (i.e. Low Risk and the waste being confirmed as being inert).

# 4.0 CONCLUSIONS AND RECOMMENDATIONS

**Conclusions:** Based on observations during the exploratory investigation, the Trial Pit Logs, photos and testing of the waste it is concluded that the Tier I Risk Assessment is correct and that this site poses No or a very limited risk to the environment or human health.

Ris*k* Categor*y*: This site is confirmed as a Low Risk site.

*L*andfill *G*as: No risk based on types of waste observed.

**G**roundwater: The waste is regarded as inert with minor amounts of domestic waste. No leaching was evident and the groundwater was not encountered. It is concluded that there is a limited or no risk to the groundwater from this site.

*S*urface Water: There are no surface water features adjacent to this landfill.

*SAC,NHA,SPA*: There are no protected areas immediately adjacent to this site (approx 300m away). There is no risk from this site to these protected areas.

**Recommendations:**

- The Tier II Investigation of this site confirmed that all the *S*ource Path*w*ay Receptor *L*inkages are Low (All below 6%).

There is No or very limited risk from this landfill site. It is recommended that the site be returned to beneficial agricultural use. This should include seeding of the site with a minimum rate of 40 grams per square meter of certified quality grass seed in accordance with the EPA Manual "Landfill Site Design and Restoration and Aftercare" (EPA, 1999).

When the above plan is completed an application should be made by Cork County Council to the EPA to have Pike Landfill Certified as per S.I. No. 524 of 2008 Waste Management Regulations 2008 (i.e. Certification of Historic Unlicenced Waste Disposal and Recovery Activity).

# Appendix 1

## Tier I Risk Assessment

# Code of Practice Environmental Risk Assessment for Unregulated Waste Disposal Sites

# Tier 1 Study

## Conceptual Site Model, Risk Screening & Prioritisation

## For



| | |
|---|---|
| **Landfill Site:** | **Pike Landfill** |
| **Site Reference:** | **15/N** |
| **Division:** | **North Cork** |
| **Area Office:** | **Fermoy** |

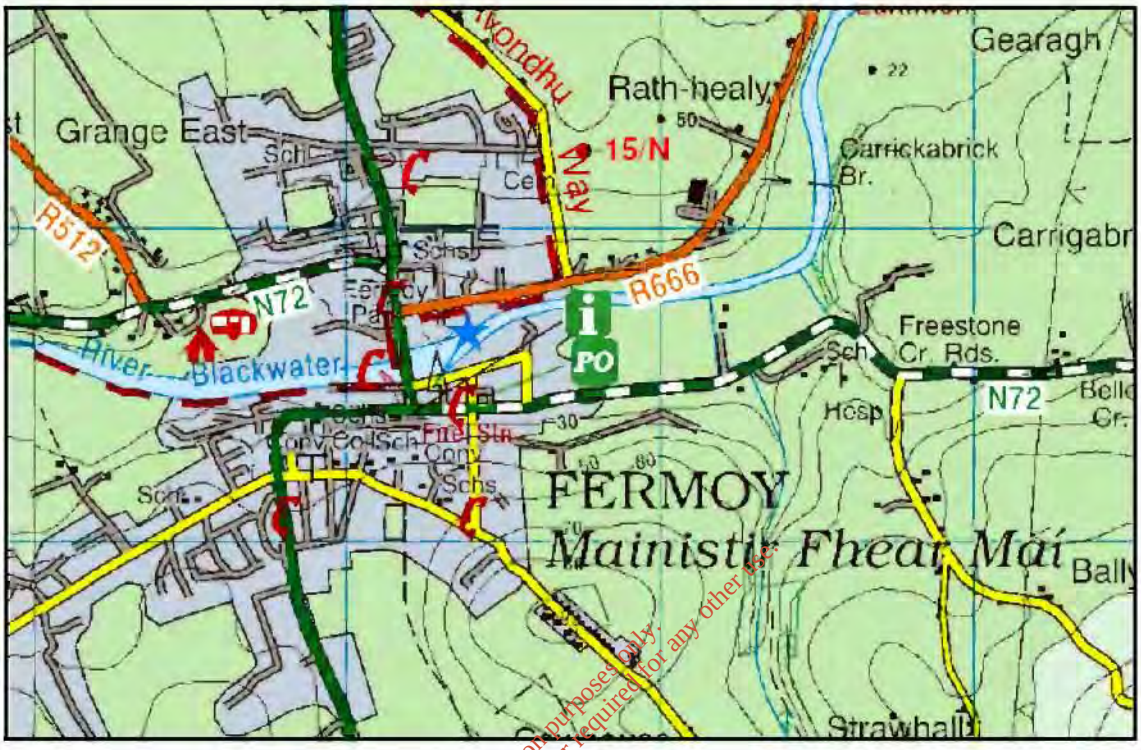
| TIER 1 RISK RATING | LOW |
|---|---|

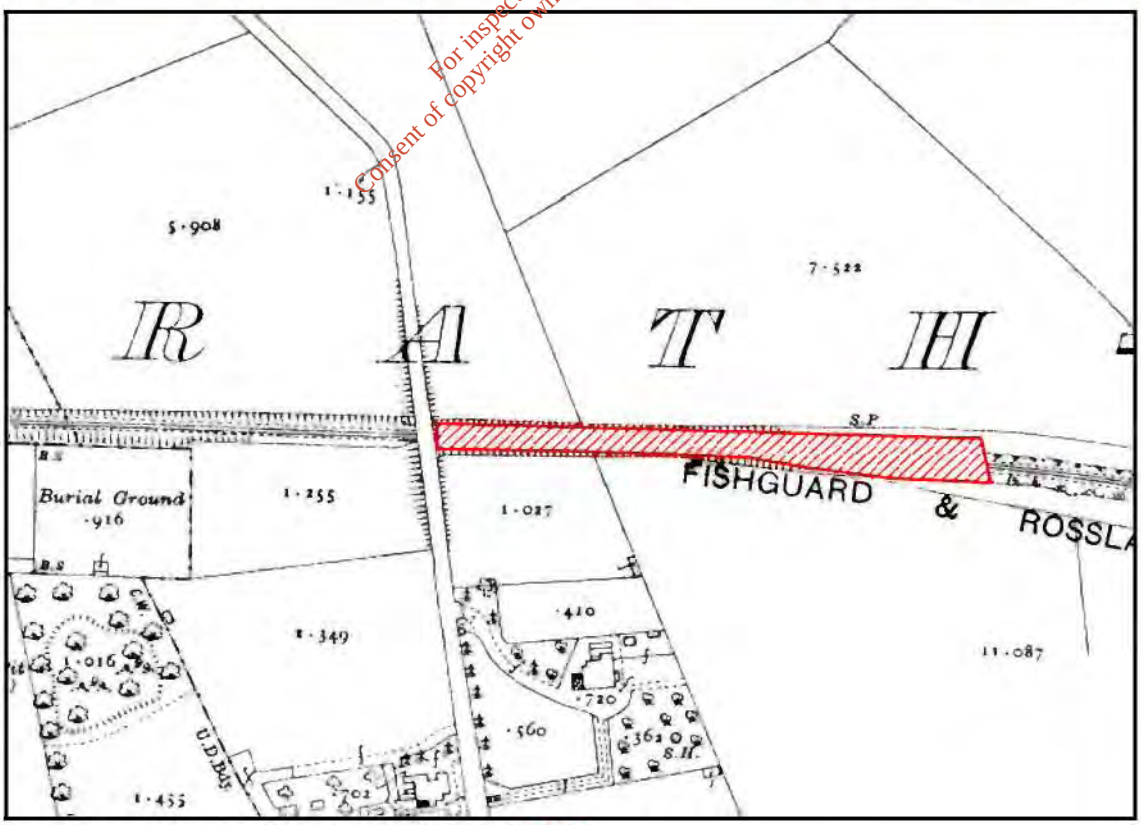
**Report by:** Kieran Coffey
Environment Directorate
Cork County Council
August 2007

# Contents

# Site Summary

Pike Landfill Site is situated on the North Eastern edge of Fermoy town in an area know as Beachfield (GIS Coordinates E181,754, N99,252).






**Location maps for Pike Landfill Site (15/N)**

The Landfill is on the site of an old railway line. The Fishguard – Rosslare railway line closed in the early 60's. The railway track was situated in a ravine in the ground (manmade cut). A bridge to the western side of the site was demolished in 1974 and a road was made on the eastern side of the bridge.

For a few years following the demolishing of the bridge, the railway line (cut) to the west was used mainly for the disposal of construction and demolition waste although minor quantities of municipal waste was disposed of here on occasion by the UDC and the council. Uncontrolled dumping also occurred[1] at this site. It is estimated that the site has not been in use since 1981/1982. The site covers an area of 0.3 hectares and it is estimated that the waste within the site is from 2m deep at the western end up to possibly 9m deep at the eastern end.

**Walkover Survey:**

The site is currently not in use and is wasteland/scrub. There is a cow track half way along the site which runs between the two grazing fields on each side of the site. There is evidence of piles of construction and demolition waste to the east and this end of the site is very uneven. There was no evidence of municipal waste on the surface during the walkover survey apart from one white good. There are four houses within 20m of the site on the western end. The new motorway borders the site on the eastern end of the site. This site is owned by the county council. There are no public water abstraction points in the vicinity of this site. There was no evidence of leachate or gas during the walkover survey.



**Geology:**

The site is located in a region of sandstone till and it is in an area of a locally important aquifer. During the Tier 1 risk screening this site has been identified as having an 4 % risk rating for leachate migration.

**Overall Risk Rating:** LOW

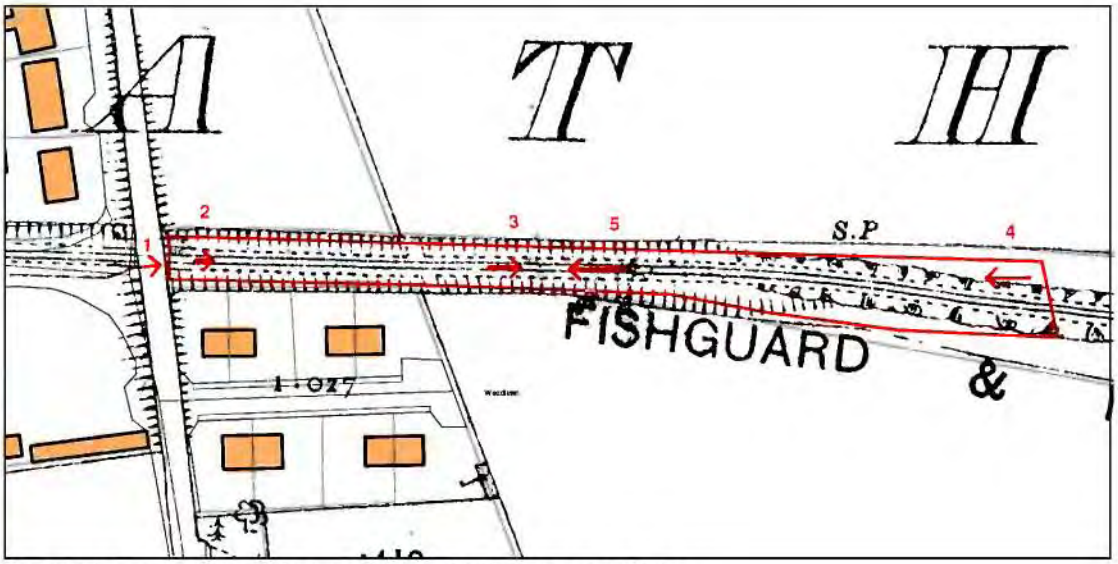
**Recommendations:**

Proceed to Tier 2 – Site Investigation. Attention during Tier 2 investigations should focus on possible leachate migration to the Locally Important Aquifer. It is recommended that this site be flattened and covered with soil and restored to grassland.

**References:**

1. Article in Corkman, August 14th 1981

# Site Photos & Layout Map




Layout map of positions where photos were taken




1. Photo of Entrance to site


**2. Photo of site facing east**

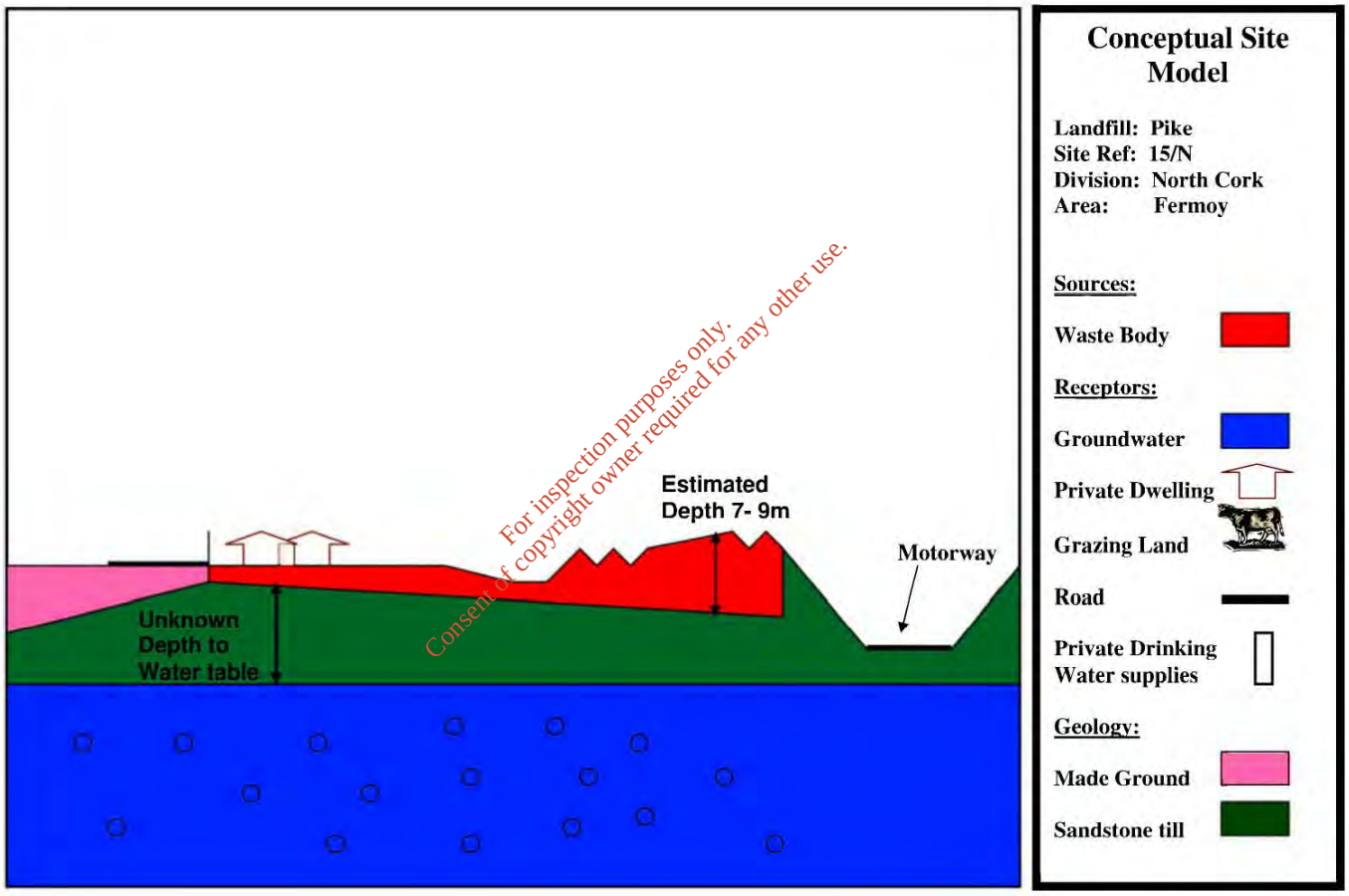



**3. Photo facing east half way along site**


**4. Photo from end of site facing west**




**5. Photo half way along site facing west**






**Cork County Council**

Environment Directorate
Cork County Council
Inniscarra
Co Cork

**Environment Directorate**

Project
***Environmental Risk Assessment for Unregulated Waste disposal Sites***

***Tier 1 Investigation***

Drawing Description
**CSM Plan**

Landfill Name & Ref No:
**Pike Landfill - 15/N**

Division:
**North Cork**

Area Office:
**Fermoy**

***Legend***

- River
- Landfill Area
- Building

**Issue Details**

| | |
|---|---|
| Drawn: KC | File Ref. |
| Checked: - | 15-N CSM Plan |
| Approved: | |
| Scale: | Rev. |
| Date: 15th Oct 07 | 0 |

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# 4. Risk Screening & Prioritisation Calculations

## Risk Screening/ Prioritisation

| Table 1a LEACHATE: SOURC/HAZARD SCORING MATRIX | | | |
|---|---|---|---|
| | Waste FOOTPRINT (ha) | | |
| WASTE TYPE | ≤ 1ha | > 1 ≤ 5 ha | > 5ha |
| C&D | 0.5 | 1 | 1.5 |
| Municipal | 5 | 7 | 10 |
| Industrial | 5 | 7 | 10 |
| Pre 1977 sites | 1 | 2 | 3 |

| 1a = | 0.5 |
|---|---|

| Table 1b LANDFILL GAS: SOURC/HAZARD SCORING MATRIX | | | |
|---|---|---|---|
| | Waste FOOTPRINT (ha) | | |
| WASTE TYPE | ≤ 1ha | > 1 ≤ 5 ha | > 5ha |
| C&D | 0.5 | 0.75 | 1 |
| Municipal | 5 | 7 | 10 |
| Industrial | 3 | 5 | 7 |
| Pre 1977 sites | 0.5 | 0.75 | 1 |

| 1b = | 0.5 |
|---|---|



| Table 2a : LEACHATE MIGRATION: PATHWAYS | |
|---|---|
| GROUNDWATER VULNERABILITY (Vertical Pathway) | Points |
| Extreme Vulnerability | 3 |
| High Vulnerability | 2 |
| Moderate Vulnerability | 1 |
| Low Vulnerability | 0.5 |
| High - Low Vulnerability (use where vulnerability not on GIS) | 2 |

| 2a = | 2 |
|---|---|

| Table 2b : LEACHATE MIGRATION: PATHWAYS | |
|---|---|
| GROUNDWATER FLOW REGIME (Horizontal Pathway) | Points |
| Karstified Groundwater Bodies (Rk) | 5 |
| Productive Fissured Bedrock Groundwater Bodies (Rf & Lm) | 3 |
| Gravel Groundwater Bodies (Rg and Lg) | 2 |
| Poorly Productive Bedrock Groundwater Bodies (Ll, Pl, Pu) | 1 |

| 2b = | 1 |
|---|---|

## Risk Screening/ Prioritisation

| Table 2c : LEACHATE MIGRATION: PATHWAYS | |
|---|---|
| SURFACE WATER DRAINAGE (Surface water pathway) | Points |
| Is there a direct connection between drainage ditches associated with the waste body and adjacent surface water body? Yes | 2 |
| If no direct connection | 0 |

| 2c = | 0 |
|---|---|

| Table 2d : LANDFILL GAS: PATHWAY | |
|---|---|
| LANDFILL GAS LATERAL MIGRATION POTENTIAL | Points |
| Sand and Gravel, Made ground, urban, karst | 3 |
| Bedrock | 2 |
| All other Tills (including limestone, sandstone etc - moderate permabi | 1.5 |
| All Namurian or Irish Sea Tills (low permability) | 1 |
| Clay, Alluvium, Peat | 1 |

| 2d = | 1.5 |
|---|---|



| Table 2e : LANDFILL GAS: PATHWAY (assuming receptor located above source) | |
|---|---|
| LANDFILL GAS LATERAL MIGRATION POTENTIAL | Points |
| Sand and Gravel, Made ground, urban, karst | 5 |
| Bedrock | 3 |
| All other Tills (including limestone, standstone etc - moderate permab | 2 |
| All Namurian or Irish Sea Tills (low permability) | 1 |
| Clay, Alluvium, Peat | 1 |

| 2e = | 5 |
|---|---|

| Table 3a : LEACHAGE MIGRATION: *RECEPTORS* | |
|---|---|
| HUMAN PRESENCE (presence of a house indicaates potential private wells) | Points |
| On or within 50m of the waste body | 3 |
| Greater than 50m but less than 250m | 2 |
| Greater than 250m but less than 1km from waste body | 1 |
| Greater than 1km of the waste body | 0 |

| 3a = | 3 |
|---|---|

## Risk Screening/ Prioritisation

| Table 3b : LEACHAGE MIGRATION: RECEPTORS PROTECTED AREAS (SWDTE or GWDTE) | Points |
|---|---|
| Within 50m of waste body | 3 |
| Greater than 50m but less than 250m of the waste body | 2 |
| Greater than 250m but less than 1km from waste body | 1 |
| Greater than 1km of the waste body | 0 |
| Undesignated sites within 50m of waste body | 1 |
| Undesignated sites greater than 50m but less than 250m | 0.5 |
| Undesignated sites greater than 250m of the waste body | 0 |
| | **3b =** | **1** |

| Table 3c : LEACHAGE MIGRATION: *RECEPTORS* | |
|---|---|
| AQUIFER CATEGORY (resource potential) | Points |
| Regionally Important Aquifers (Rk, Rf, Rg) | 5 |
| Locally Important Aquifers (Ll, Lm, Lg) | 3 |
| Poor Aquifers (Pl, Pu) | 1 |
| | **3c =** | **3** |



| Table 3d : LEACHAGE MIGRATION: *RECEPTORS* | |
|---|---|
| PUBLIC WATER SUPPLIES (Other than private wells) | Points |
| Within 100m of site boundary | 7 |
| Greater than 100m but less than 300m or with in Inner SPA for GW supplies | 5 |
| Greater than 300m but less than 1km or within Outer SPA (SO) for GW supplies | 3 |
| Greater than 1km (karst aquifer) | 3 |
| Greater than 1km (no karst aquifer) | 0 |
| | **3d =** | **0** |

| Table 3e : LEACHAGE MIGRATION: *RECEPTORS* | |
|---|---|
| SURFACE WATER BODIES | Points |
| Within 50m of site boundary | 3 |
| Greater than 50m but less than 250m | 2 |
| Greater than 250m but less than 1km | 1 |
| Greater than 1km | 0 |
| | **3e =** | **1** |

## Risk Screening/ Prioritisation

| Table 3f : LEACHAGE MIGRATION: RECEPTORS | |
|---|---|
| HUMAN PRESENCE | Points |
| On site or within 50m of site boundary | 5 |
| Greater than 50m but less than 150m | 3 |
| Greater than 150m but less than 250m | 1 |
| Greater than 250m | 0.5 |

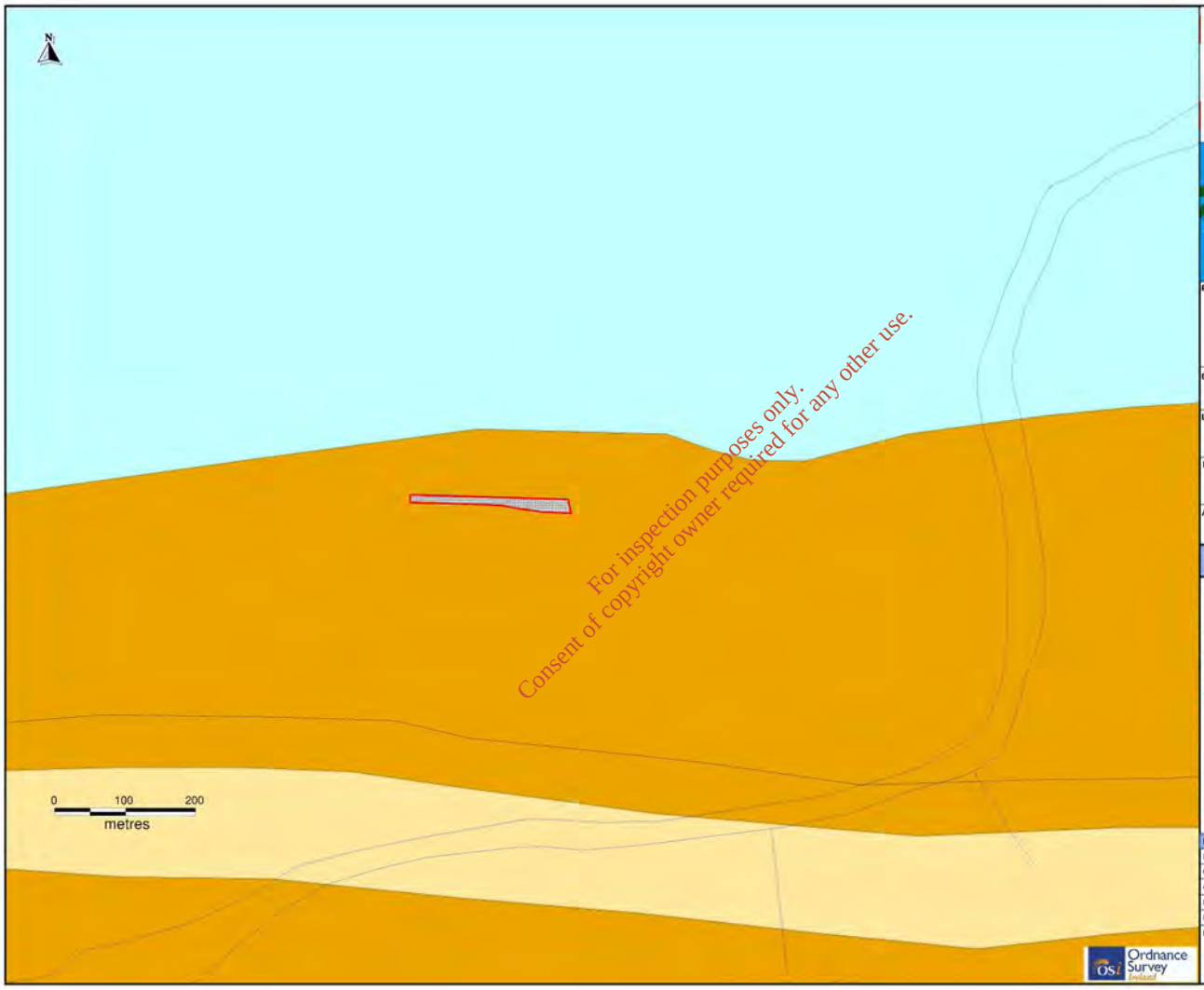
| 3f = | 5 |
|---|---|

| Calculator | SPR Values | Maximum Score | Normalised Score |
|---|---|---|---|
| SPR 1 = | 1.5 | 300 | 1% |
| SPR 2 = | 1.5 | 300 | 1% |
| SPR 3 = | 4.5 | 240 | 2% |
| SPR 4 = | 1.5 | 240 | 1% |
| SPR 5 = | 4.5 | 400 | 1% |
| SPR 6 = | 0 | 560 | 0% |
| SPR 7 = | 1.5 | 240 | 1% |
| SPR 8 = | 0 | 60 | 0% |
| SPR 9 = | 0 | 60 | 0% |
| SPR 10 = | 3.75 | 150 | 3% |
| SPR 11 = | 12.5 | 250 | 5% |



| Risk Classification | Range of Risk Scores |
|---|---|
| Highest Risk (Class A) | Greater than or equal to 70% for any individual SPR linkage |
| Moderate Risk (Class B) | Between 40-70% for any individual SPR linkage |
| Lowest Risk (Class C) | less than or equal to 40% for any individual SPR linkage |

| OVERALL RISK RATING | LOW |
|---|---|






**Cork County Council**

Environment Directorate

Project

***Environmental Risk Assessment for Unregulated Waste disposal Sites***

***Tier 1 Investigation***

Drawing Description:

**Aquifer Map**

Landfill Name & Reference No:

**Pike Landfill - 08/N**

Division:

**North Cork**

Area Office:

**Fermoy**

***Legend***

Landfill Area

AQUIFER CATEGORY

- LI - Locally Important
- Pending Classification
- Pl - Poor Bedrock Aquifers
- Pu - Poor Bedrock Aquifers
- Rf - Regionally Important Aquifer
- Rkd - Regionally Important Karstified Aquifer

Rivers

**Issue Details**

| | | | |
|---|---|---|---|
| Drawn: | KC | File Ref. | |
| Checked: | | 15/N | |
| Approved: | | | |
| Scale: | 1:5,000 | Drawing No. 15N_AC_0 | Rev. 0 |
| Date: | 11th Sept 2007 | | |

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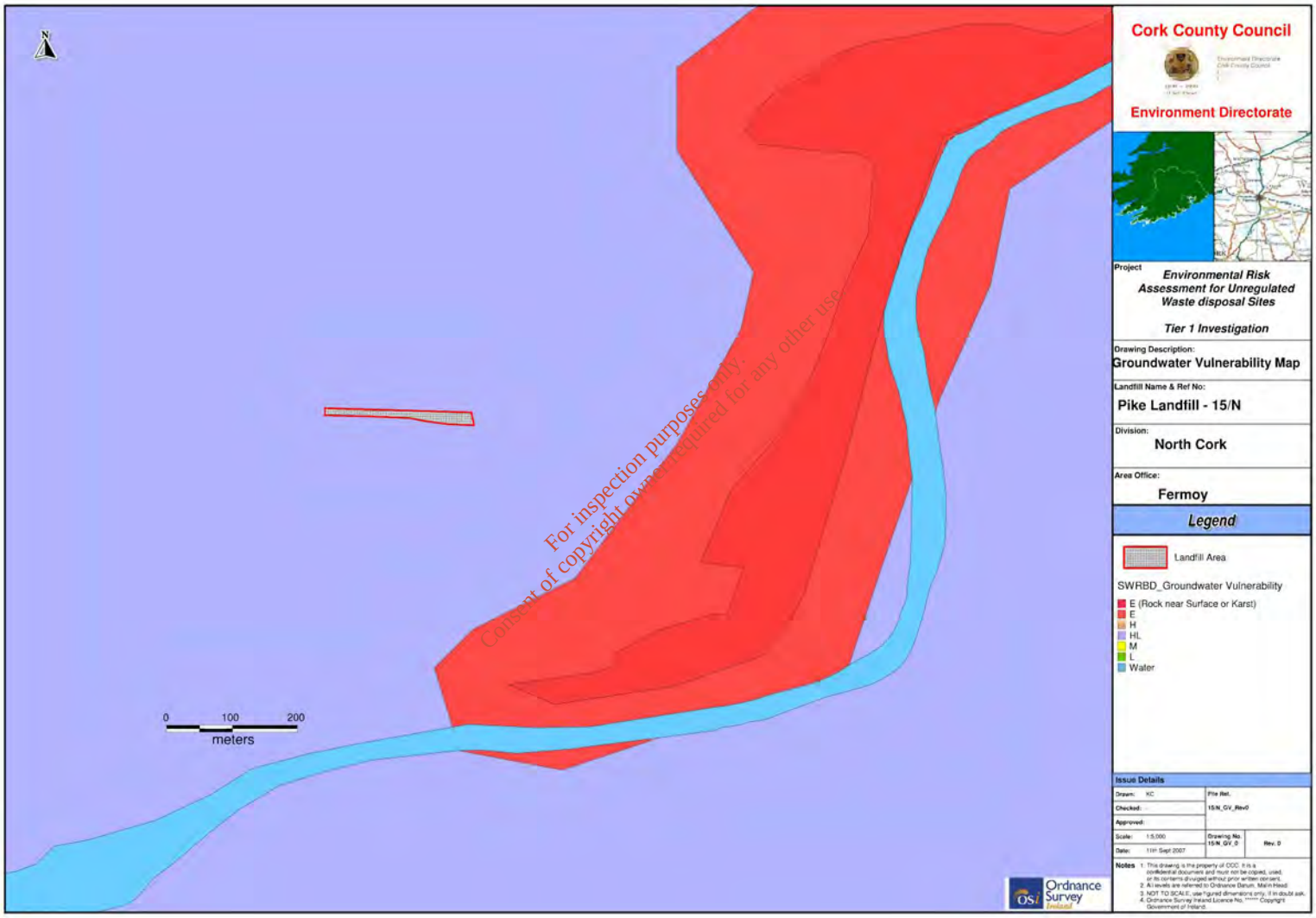

# Appendix 2

## Trial Pit Logs

# Trial Pit Number: TP-1

Project: Fermoy Tier 2

Completion Depth: 5m

Location: Fermoy, Co. Cork

Groundwater entry:

| Depth (m) | Lithology Description | Lithology | Soil Sample Depth (m) | PID Readings (ppm) |
|---|---|---|---|---|
| 0 | Ground Surface | | | |
| | ***Fill***<br>Clay with minor amounts of C&D waste comprising stones, rocks, boulder, ocassional fragments of metal.<br><br>Trial hole dry to completion depth. | | Composite Sample | 0ppm |
| 5 | ***Rock***<br>Bedrock. | | | |



Excavation Method: Track Mounted Excvator

Supervisor: Kieran Coffey

Excavation Date: 27/10/2009

Sheet: 1 of 1

# Trial Pit Number: TP-2

Project: Fermoy Tier 2

Completion Depth: 2m

Location: Fermoy, Co. Cork

Groundwater entry: -

| Depth (m) | Lithology Description | Lithology | Soil Sample Depth (m) | PID Readings (ppm) |
|---|---|---|---|---|
| 0 | Ground Surface | | | |
| | ***Fill***<br>Clay with cobbles and boulders.<br><br>Trial hole dry to completion depth. | | Composite Sample | 0ppm |
| 1 | | | | |
| 2 | ***Rock***<br>Bedrock. | | | |



Excavation Method: Track Mounted Excvator

Supervisor: Kieran Coffey

Excavation Date: 27/10/2009

Sheet: 1 of 1

# Trial Pit Number: TP-3

Project: Fermoy Tier 2

Completion Depth: 8m

Location: Fermoy, Co. Cork

Groundwater entry:

| Depth (m) | Lithology Description | Lithology | Soil Sample Depth (m) | PID Readings (ppm) |
|---|---|---|---|---|
| 0 | Ground Surface | | | |
| | ***Gravel***<br>Gravels. | | | |
| 1 | | | | |
| 2 | ***Gravel***<br>Gravels and rock with minor amounts of C&D waste. | | | |
| 3 | | | | |
| 4 | ***Clay***<br>Clay with minor amounts of plastics.<br><br>Trial hole dry to completion. | | Composite Sample | 0ppm |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |



Excavation Method: Track Mounted Excvator

Supervisor: Kieran Coffey

Excavation Date: 27/10/2009

Sheet: 1 of 1

# Trial Pit Number: TP-4

Project: Fermoy Tier 2

Completion Depth: 6m

Location: Fermoy, Co. Cork

Groundwater entry:

| Depth (m) | Lithology Description | Lithology | Soil Sample Depth (m) | PID Readings (ppm) |
|---|---|---|---|---|
| 0 | Ground Surface | | | |
| | ***Clay***<br>Clay with rock, tarmac, gravels and minor amounts of metal waste.<br><br>Trial hole dry to completion. | | Composite Sample | 0ppm |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |



Excavation Method: Track Mounted Excvator

Supervisor: Kieran Coffey

Excavation Date: 27/10/2009

Sheet: 1 of 1

# Trial Pit Number: TP-5

Project: Fermoy Tier 2

Completion Depth: 4m

Location: Fermoy, Co. Cork

Groundwater entry:

| Depth (m) | Lithology Description | Lithology | Soil Sample Depth (m) | PID Readings (ppm) |
|---|---|---|---|---|
| 0 | Ground Surface | | | |
| | ***Clay***<br>Clay with rock, tarmac, gravels, wood, pipes and minor amounts of metal waste.<br><br>Trial hole dry to completion. | | Composite Sample | 0ppm |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |



Excavation Method: Track Mounted Excvator

Supervisor: Kieran Coffey

Excavation Date: 27/10/2009

Sheet: 1 of 1

# Trial Pit Number: TP-6

Project: Fermoy Tier 2

Completion Depth: 4.4m

Location: Fermoy, Co. Cork

Groundwater entry:

| Depth (m) | Lithology Description | Lithology | Soil Sample Depth (m) | PID Readings (ppm) |
|---|---|---|---|---|
| 0 | Ground Surface | | | |
| | ***Clay***<br>Clay cover. | | | |
| | Clay with wood, plastics and glass.<br><br>Trial hole dry to completion. | | Composite Sample | 0ppm |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |



Excavation Method: Track Mounted Excvator

Supervisor: Kieran Coffey

Excavation Date: 27/10/2009

Sheet: 1 of 1

# Trial Pit Number: TP-7

Project: Fermoy Tier 2

Completion Depth: 2.7m

Location: Fermoy, Co. Cork

Groundwater entry:

| Depth (m) | Lithology Description | Lithology | Soil Sample Depth (m) | PID Readings (ppm) |
|---|---|---|---|---|
| 0 | Ground Surface | | | |
| | ***Clay***<br>Clay cover. | | | |
| 1 | ***Clay***<br>Clay with waste inlcuding metal and plastics.<br><br>Trial hole dry to completion. | | Composite Sample | 0ppm |
| 2 | ***Rock***<br>Bedrock. | | | |
| 3 | | | | |



Excavation Method: Track Mounted Excvator

Supervisor: Kieran Coffey

Excavation Date: 27/10/2009

Sheet: 1 of 1

# Trial Pit Number: TP-8

Project: Fermoy Tier 2

Completion Depth: 3.8m

Location: Fermoy, Co. Cork

Groundwater entry:

| Depth (m) | Lithology Description | Lithology | Soil Sample Depth (m) | PID Readings (ppm) |
|---|---|---|---|---|
| 0 | Ground Surface | | | |
| | C D<br>C&D waste including rock, clay and bricks.<br><br>Trial hole dry to completion. | | Composite Sample | 0ppm |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |



Excavation Method: Track Mounted Excvator

Supervisor: Kieran Coffey

Excavation Date: 27/10/2009

Sheet: 1 of 1

# Appendix 3

## Laboratory Reports

**EURO**
**environmental services**

Environmental Science & Management
Water,Soil & Air Testing

Unit 35,
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A copy of this certificate is available on www.euroenv.ie

| | | | |
|---|---|---|---|
| *Customer* | Kieran Coffey<br>Cork County Council<br>Inniscarra Waterworks<br>Iniscarra<br>Co Cork | *Lab Report Ref. No.* | 1128/024/05 |
| | | *Date of Receipt* | 28/10/2009 |
| | | *Date Testing Commenced* | 28/10/2009 |
| | | *Received or Collected* | Courier: Brefni |
| | | *Condition on Receipt* | Acceptable |
| *Customer PO* | 430521 | *Date of Report* | 12/11/2009 |
| *Customer Ref* | Pike TP-06 23/10/09 | *Sample Type* | Soil |

# CERTIFICATE OF ANALYSIS

| Test Parameter | SOP | Analytical Technique | Result | Units | Acc. |
|---|---|---|---|---|---|
| % Dry Matter | 302 | Drying @ 104 C | 81.75 | % | |
| Alkalinity (Leachate) | 102 | Colorimetry | 115 | ng/Kg CaCO3 | |
| Aluminium leachate | 224 | ICP-OES | 688 | ug/Kg | |
| Ammonia (Leachate) | 114 | Colorimetry | 9.16 | mg/L as N | |
| Arsenic (Leachate) | 128 | ICPMS | 5 | ug/Kg | |
| Benzene (Soil) | 198 | GC-FID | <0.5 | mg/Kg | |
| Boron (Leachate) | 177 | ICPMS | <0.02 | ug/Kg | |
| BTEX (soil) | 198 | GC-FID | <0.5 | mg/Kg | |
| Cadmium (Leachate) | 128 | ICPMS | <0.1 | ug/Kg | |
| Carbonate (Leachate) | 102 | Colorimetry | 540 | ng/Kg CaCO3 | |
| Chloride (Leachate WAC) | 190 | IC | 101.26 | mg/Kg | |
| Chromium (Leachate) | 128 | ICPMS | <1 | ug/Kg | |
| Conductivity (Leachate) | 0 | Electrometry | 361 | -1@25C | |
| Copper (Leachate) | 128 | ICPMS | <0.2 | ug/Kg | |
| DRO soil (>C10-28) | 319 | GC-FID | 252.37 | mg/Kg | |
| Ethylbenzene (Soil) | 198 | GC-FID | <0.5 | mg/Kg | |
| Faecal Coliforms (Solid) | 140 | Filtration/ Incubation 44C/ 24 | 2 | no/100ml | |
| Hardness Bicarbonate (Leachate) | 0 | Calculation | 151 | ng/Kg CaCO3 | |
| Iron (Leachate) | 128 | ICPMS | 672 | ug/Kg | |
| m-& p-Xylene (Soil) | 198 | GC-FID | <0.5 | mg/Kg | |
| Magnesium (Leachate) | 128 | ICPMS | 38 | mg/Kg | |
| Manganese (Leachate) | 128 | ICPMS | 173 | ug/Kg | |
| Mercury (Leachate) | 128 | ICPMS | <0.02 | ug/Kg | |
| Mineral oil by Calculation (solid) | 327 | GC-FID | 129.98 | mg/Kg | |
| Nickel (Leachate) | 128 | ICPMS | 27 | ug/Kg | |



***Signed :*** DHeslin ***Date :*** 12/11/09

***Donna Heslin - Laboratory Manager***

Acc. : Accredited Parameters by ISO 17025:2005

All organic results are analysed as received and all results are corrected for dry weight at 104 C
Results shall not be reproduced, except in full, without the approval of EURO environmental services
Results contained in this report relate only to the samples tested

**EURO**
**environmental services**

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Water,Soil & Air Testing

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A copy of this certificate is available on www.euroenv.ie

| | | | |
|---|---|---|---|
| *Customer* | Kieran Coffey<br>Cork County Council<br>Inniscarra Waterworks<br>Iniscarra<br>Co Cork | *Lab Report Ref. No.* | 1128/024/05 |
| | | *Date of Receipt* | 28/10/2009 |
| | | *Date Testing Commenced* | 28/10/2009 |
| | | *Received or Collected* | Courier: Brefni |
| | | *Condition on Receipt* | Acceptable |
| *Customer PO* | 430521 | *Date of Report* | 12/11/2009 |
| *Customer Ref* | Pike TP-06 23/10/09 | *Sample Type* | Soil |

# CERTIFICATE OF ANALYSIS

| Test Parameter | SOP | Analytical Technique | Result | Units | Acc. |
|---|---|---|---|---|---|
| Nitrate (Leachate) | 103 | Colorimetry | 14.36 | mg/L as N | |
| Nitrite (Leachate) | 118 | Colorimetry | 1.919 | mg/Kg as N | |
| Nitrogen (Total Oxidised) (Leachat | 151 | Colorimetry | 16.28 | mg/Kg as N | |
| pH (Leachate) | 128 | Electrometry | 7.7 | Ph units | |
| Phosphate Ortho (Leachate) | 117 | Digestion/ Colorimetry | 0.936 | mg/Kg as P | |
| Potassium (Leachate) | 128 | ICPMS | 96 | mg/kg | |
| PRO soil (>C6-12) | 320 | GC-FID | <1 | mg/Kg | |
| Sodium (Leachate) | 128 | ICPMS | 55 | mg/Kg | |
| Sulphate (Leachate WAC) | 190 | IC | 515.33 | mg/Kg | |
| TOC (Solid) | 315 | TOC Analyser | 4.718 | % | |
| Toluene (Soil) | 198 | GC-FID | <0.5 | mg/Kg | |
| Total Coliform (Solid) | 140 | Filtration/ Incubation 37C/ 24 | 80 | no/100ml | |
| TPH solid (>C10-40) | 317 | GC-FID | 379.35 | mg/Kg | |
| Zinc (Leachate) | 128 | ICPMS | 353 | ug/Kg | |



**Signed :** DHeslin **Date :** 12/11/09

***Donna Heslin - Laboratory Manager***

Acc. : Accredited Parameters by ISO 17025:2005

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EURO environmental services

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Web: www.euroenv.ie
email: info@euroenv.ie

| | | | |
|---|---|---|---|
| *Customer* | Kieran Coffey<br>Cork County Council<br>Inniscarra Waterworks<br>Iniscarra<br>Co Cork | *Lab Report Ref. No.* | 1128/033/01 |
| | | *Date of Receipt* | 04/01/2010 |
| | | *Date Testing Commenced* | 04/01/2010 |
| | | *Received or Collected* | Delivered by Customer |
| | | *Condition on Receipt* | Acceptable |
| *Customer PO* | | *Date of Report* | 05/01/2010 |
| *Customer Ref* | Pike TP-06 23/10/09 | *Sample Type* | Other |

# CERTIFICATE OF ANALYSIS

| Test Parameter | SOP | Analytical Technique | Result | Units | Acc. |
|---|---|---|---|---|---|
| Dissolved Organic Carbon (Leachat | 316 | TOC Analyser | 74.3 | mg/Kg | |



***Web Certificate*** ***Date : 05/01/2010***

***Donna Heslin - Laboratory Manager***

Acc. : Accredited Parameters by ISO 17025:2005

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