FEHILY TIMONEY

CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE & PLANNING

APPENDIX 1

Tier 1 Study

Comhairle Contae Chiarraí

Kerry County Council

Tier 1 Review Report – Listowel

S22 - 02667

November 2013

Prepared by:

Environmental Services,
Kerry County Council.

Seirbhísí Comhshaoil,
Comhairle Contae Chiarraí.

1.0 Contents.

2.0 Introduction.

In 2007 an initial Tier 1 Risk Assessment of all identified unregulated waste disposal sites was undertaken by the Environment Section of Kerry County Council.

The assessment was completed on foot of;

- the Ministerial Direction (WIR 04/05) reminding Local Authorities of their responsibilities under Section 22 of the Waste Management Acts, 1996 to 2005
- the Environmental Protection Agency's Code of Practice (CoP) - Environmental Risk Assessment for Unregulated Waste Disposal Sites.

The site was subsequently registered on the EPA Section 22 Register and given the reference code S22-02656. It was assigned a Moderate Risk (Class B) classification.

A copy of the assessment is included in Attachment No 1 for reference.

This report updates the initial assessment taking cognisance of the guidance within the CoP to review sites on an annual basis and in light of SI 524 of 2008, Waste Management (Certification of Historic Unlicenced Waste Disposal and Recovery Activity) Regulations 2008.

3.0 Risk Assessment Methodology – Tier 1

3.1 Introduction

Tier 1 of the Risk Assessment Methodology - Conceptual Site Model, Risk Screening and Prioritisation includes a preliminary investigation of the site and also comprises the development of a Conceptual Site Model using information obtained from the desk study and site inspection.

The Conceptual Site Model outlines the different Source-Pathway-Receptor (SPR) linkages and provides information for the risk-screening element. The information gleaned from the desk appraisal and walk over survey is summarised in the Attachment No 6.1.

3.2 Risk Screening

Risk screening represents an assessment of the SPR linkages in the conceptual model. The Conceptual Site Model identifies each of the elements of the linkage present for the site and the associated uncertainty.

The Conceptual Site Model will determine whether a site represents (or potentially represents) an unacceptable intrinsic risk to any receptor.

The risk that is being assessed is the intrinsic risk that the activity poses without any mitigation measures having been put in place. The actual risk posed to the environment will be reduced following remediation measures.

3.3 Desk Study (Tier 1 Risk Assessment)

A desk study of the site has been undertaken. The information has been gathered from various sources including:

- Local authority sources including records and interview,
  - ground water vulnerability maps
  - surface water channels
  - aquifer data
  - sources of public water supplies
  - NHA, SAC, SPA register map
- Section 22 register (existing)

- Waste Plans
- Complaints database
- Permit register
- EPA waste reports (including NWD report)
- EPA IPPC facilities
- EPA waste licenced facilities
- An Foras Forbatha reports
- Aerial photography

3.4 Walk Over Survey.

A walk over survey has been conducted on the identified site.

The results have been recorded in Attachment 6.1 and the allocation of scores to the Risk Prioritisation exercise has been amended accordingly.

Typical photographs of the site are included in Attachment 6.2.

4.0 Site Summary.

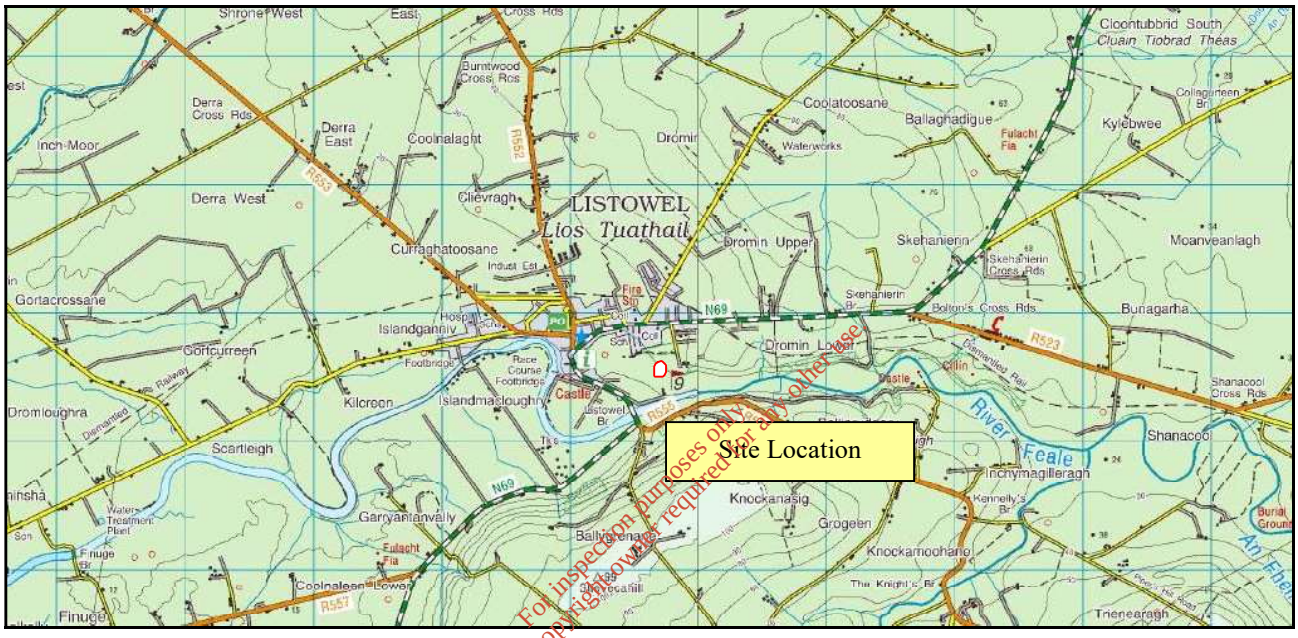
4.1 Location.

The unregulated closed site is located in the townland of Ballygowlogue, Listowel.

The site is bounded on three sides by parkland and to the south by a municipal storage area.

The site is known as Listowel closed landfill.

Site Location



4.2 Site Layout and extent of waste.

The exact footprint of the waste as placed is as yet unknown pending further investigations.

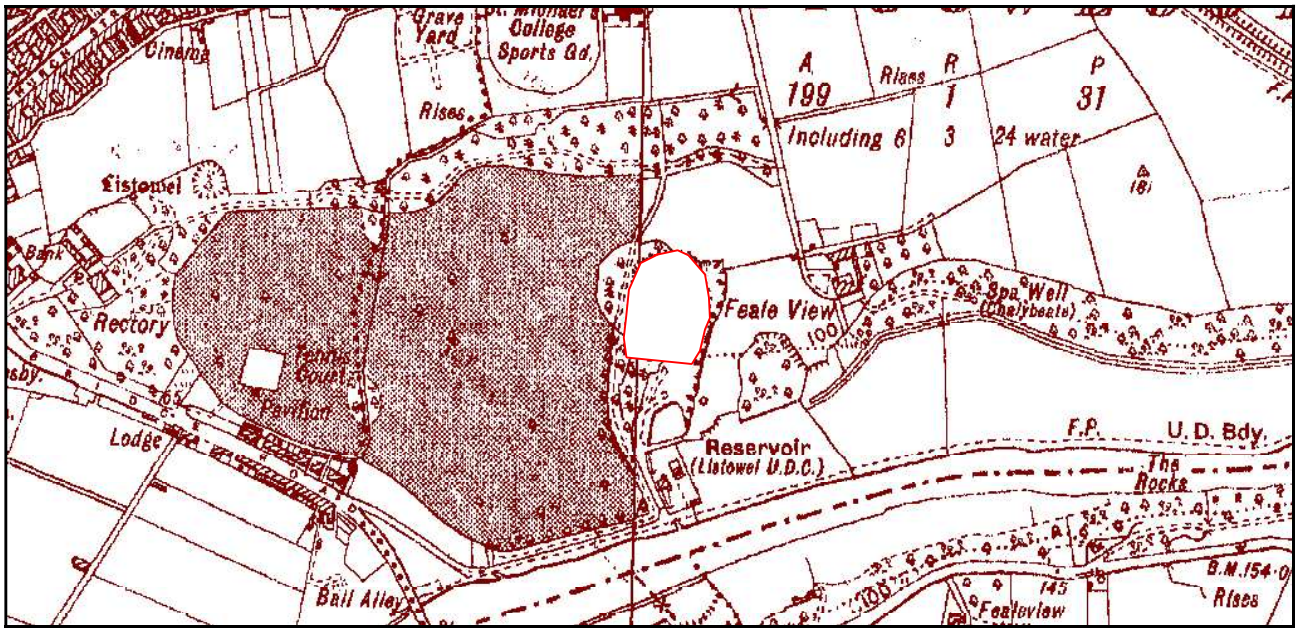
The extent is therefore taken as the full area of location where the activity took place which is approximately 0.75Ha. The An Foras Forbatha Report indicates a footprint 1.01 Ha (this figure is used in the risk assessment).

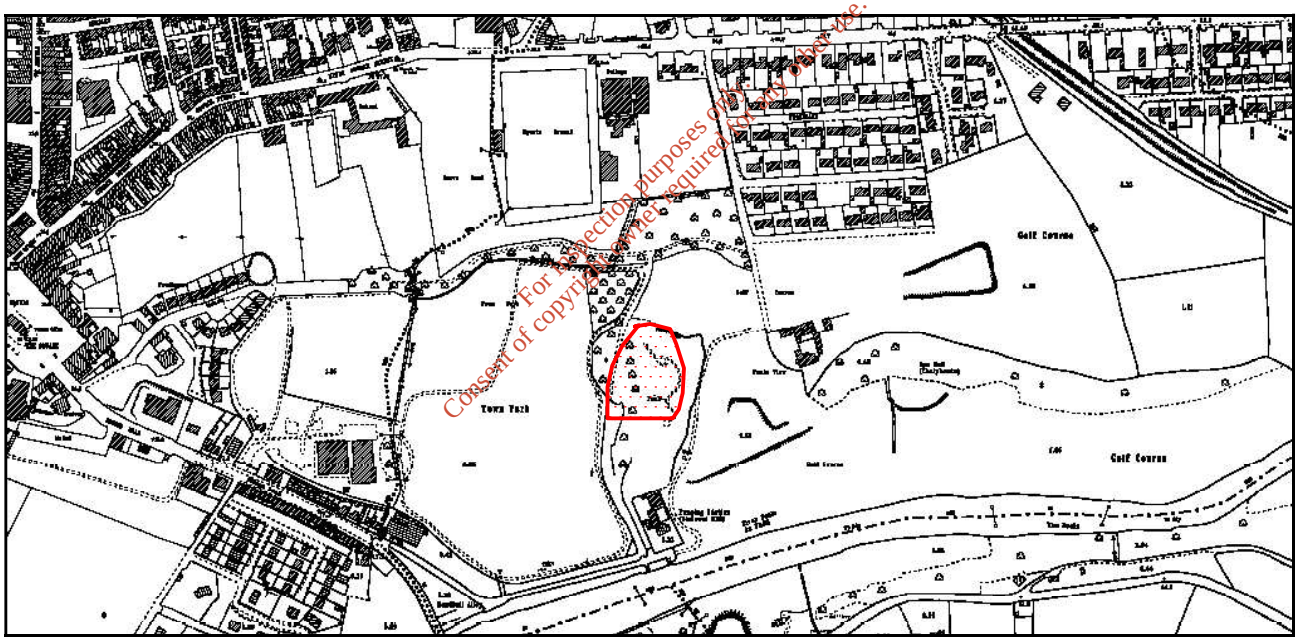
The grid reference to the approximate centre of the property holding is 99,700/133,476

The following layout map outlines the surrounding land use and geographic features.

The ownership of the site is currently undetermined.

Site Layout





Waste activities had ceased before the completion of the 1998 Waste Management Plan for Kerry.

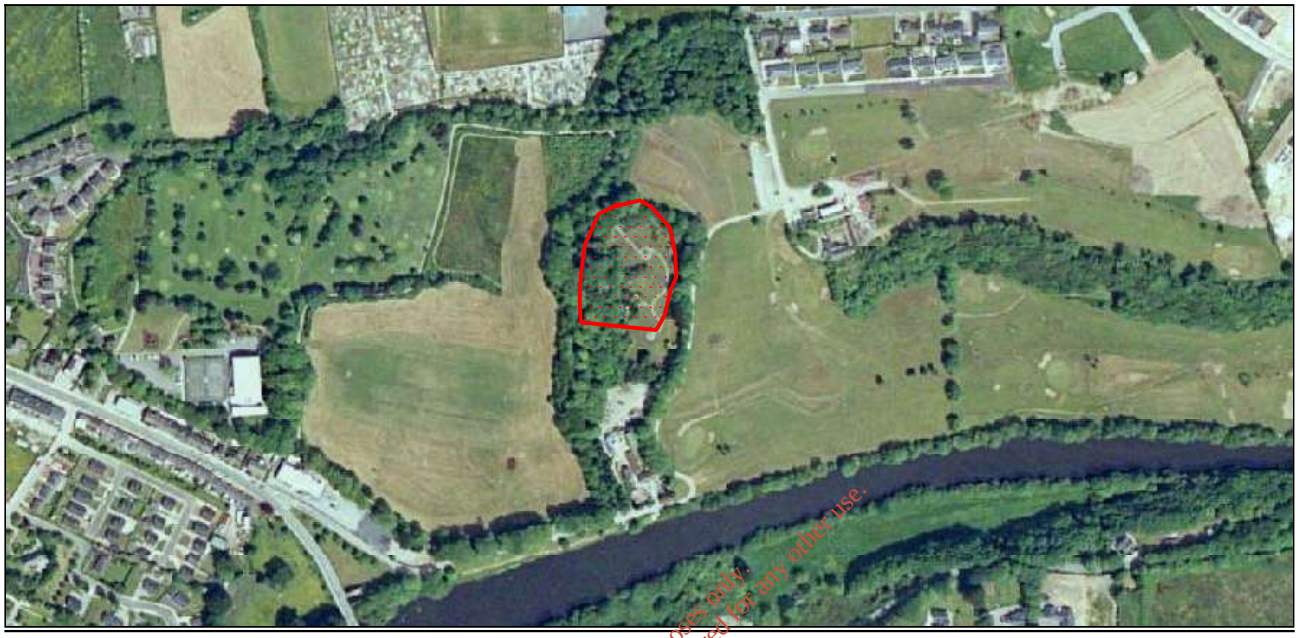
The An Foras Forbartha report on National Database on Waste indicates an annual intake of 1,850 tonnes and 2 years remaining capacity in 1986.

Based on the above this score is used in the Risk Assessment (see Appendix 1)	Table 1A and 1B	Score 5

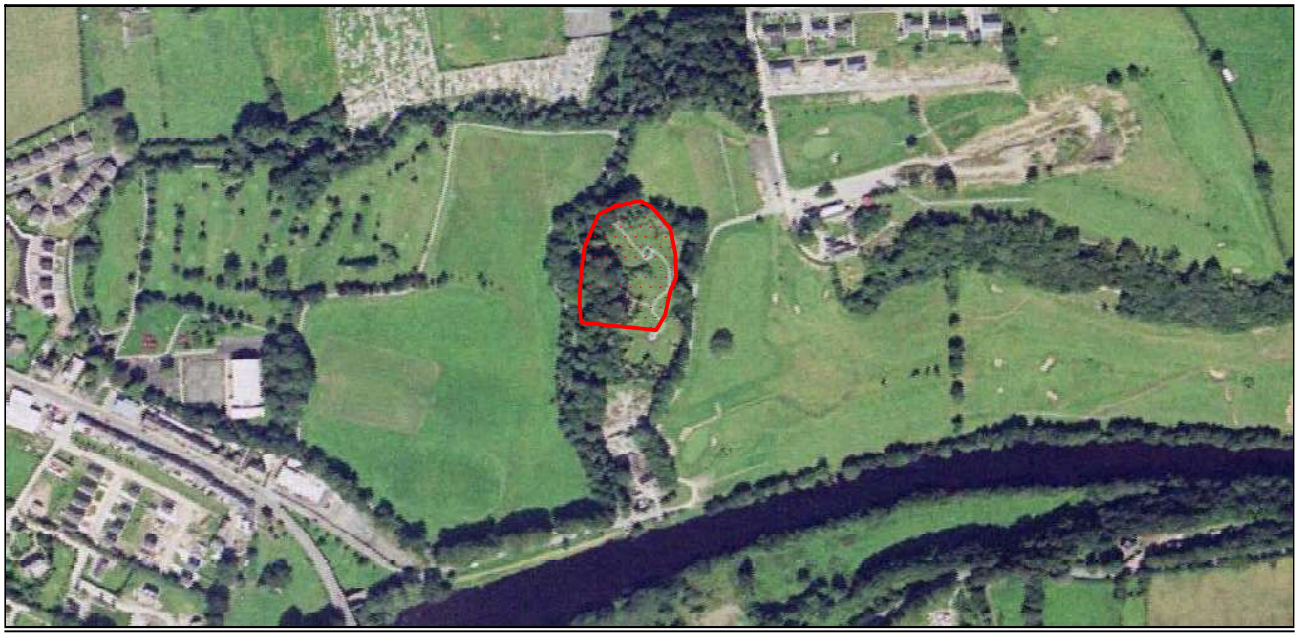
4.3 Available Aerial Photography

There are sets of available aerial photography from 1995 to 2004. These are presented in the following pages

Aerial Photography - 2004



Aerial Photography - 2000



Aerial Photography - 1995

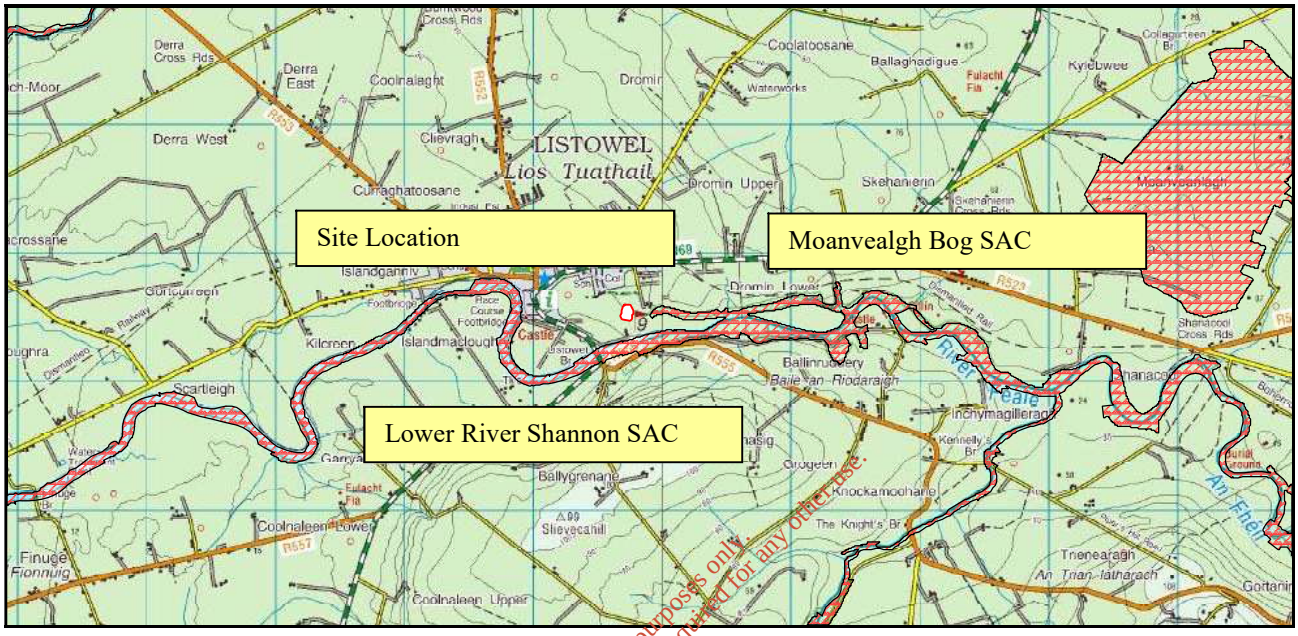
Aerial Photography – Year unknown (source GSI).

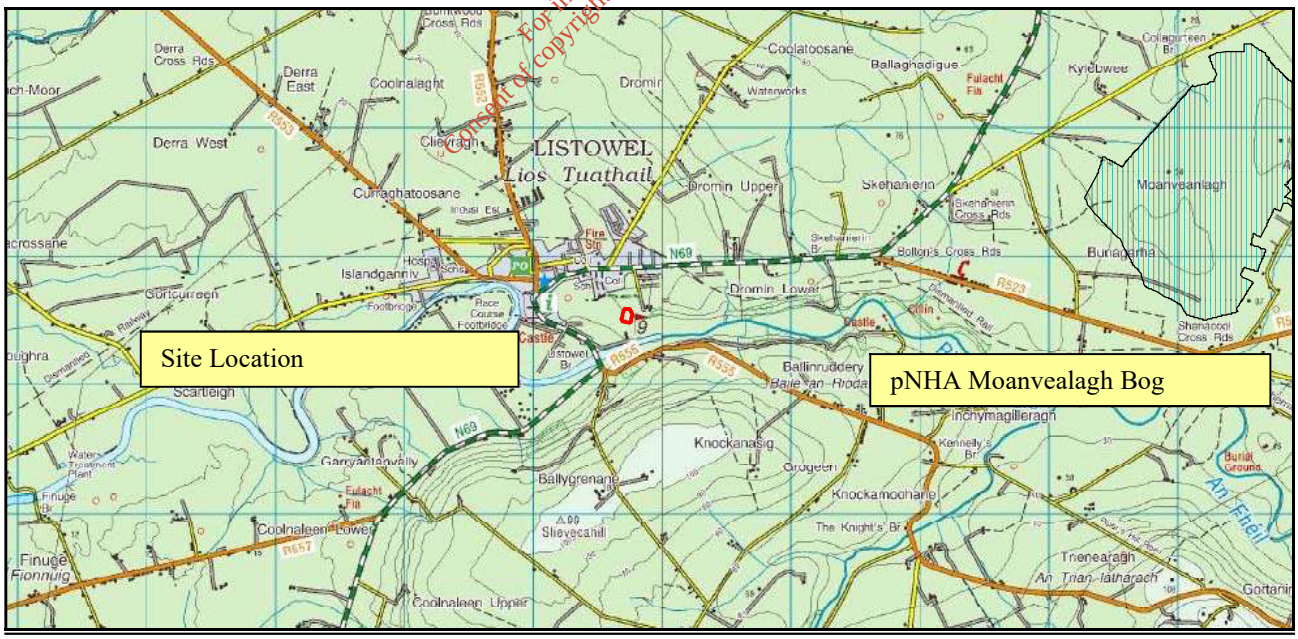
4.4 Designated Sites

The site is 142m from the Lower River Shannon SAC and 3.59km west of Moanvealagh Bog SAC which is also a pNHA.

The designation is current to September 2011.

Designated Sites





Based on the above this score is used in the Risk Assessment (see Appendix 1)	Table 3B	Score 2

4.5 Water Resources

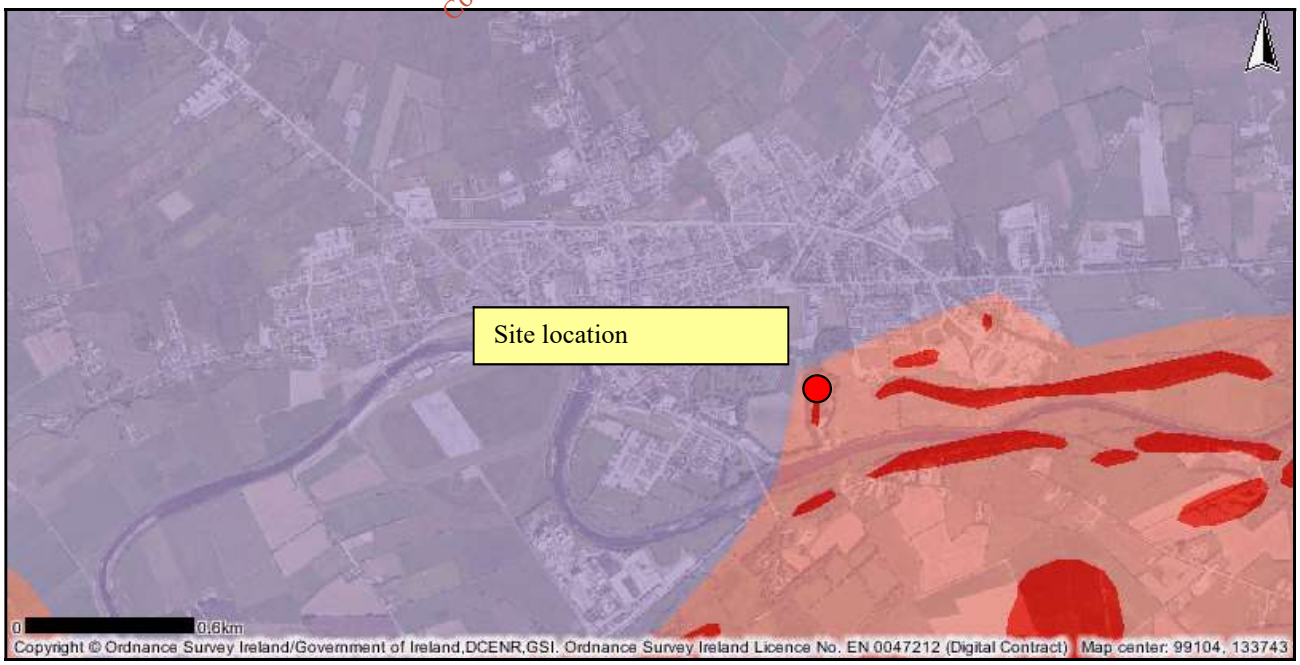
The site is located 3.59 km from the edge of Scartleigh surface water abstraction point and within 140m of the disused Listowel Town Source. As a precaution the Listowel Town Supply is taken as being in operation.

It should be noted that if a score of 3 was entered for 3D and all other scores remain the same the class of site would be calculated, based on the risk screening, as MODERATE in SPR 5 only

Based on the above this score is used in the Risk Assessment (see Appendix 1)	Table 3D	Score 7

5.6 Groundwater vulnerability and aquifer

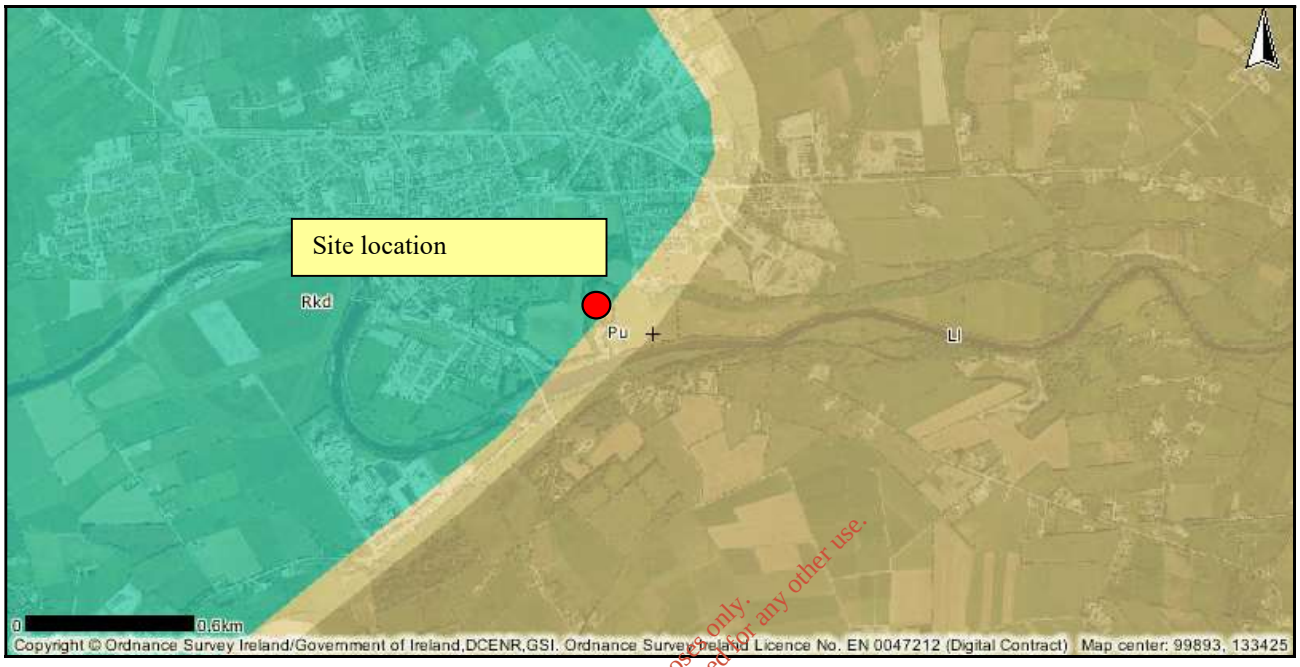
Groundwater Vulnerability



The site is located in an area that is high (HL).

Based on the above this score is used in the Risk Assessment (see Appendix 1)	Table 2A	Score 2

Aquifer Status

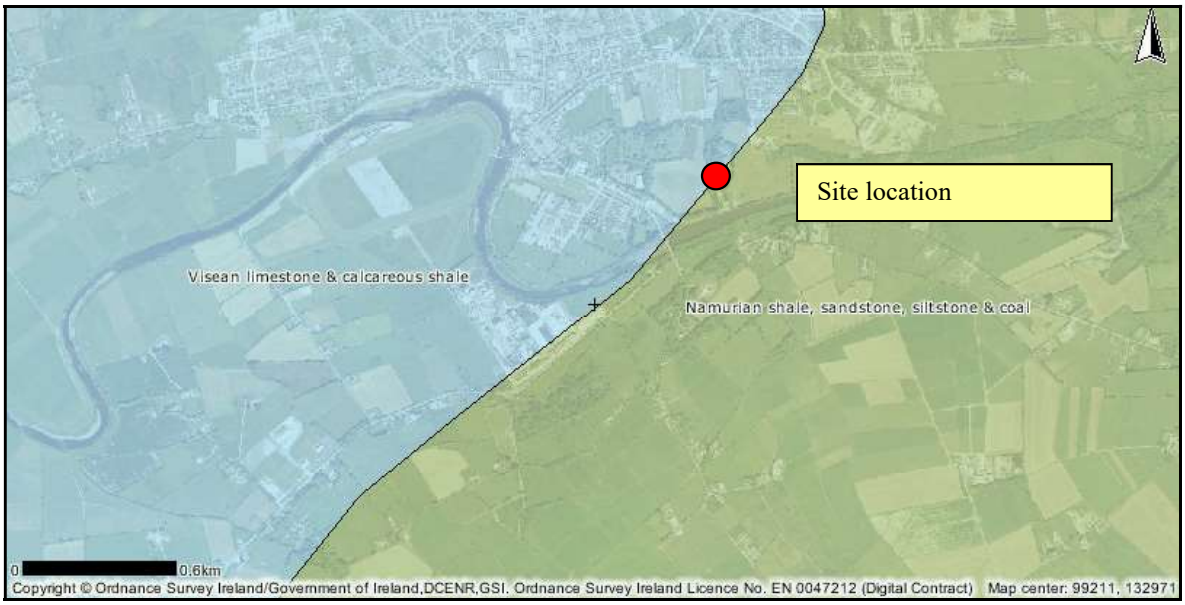


The Rkd status implied that the bedrock aquifer is regionally important – this is conservative designation.

Based on the above this score is used in the Risk Assessment (see Appendix 1)	Table 3C	Score 5

Based on the above this score is used in the Risk Assessment (see Appendix 1)	Table 2B	Score 5

Bedrock Geology



4.7 Surface water.

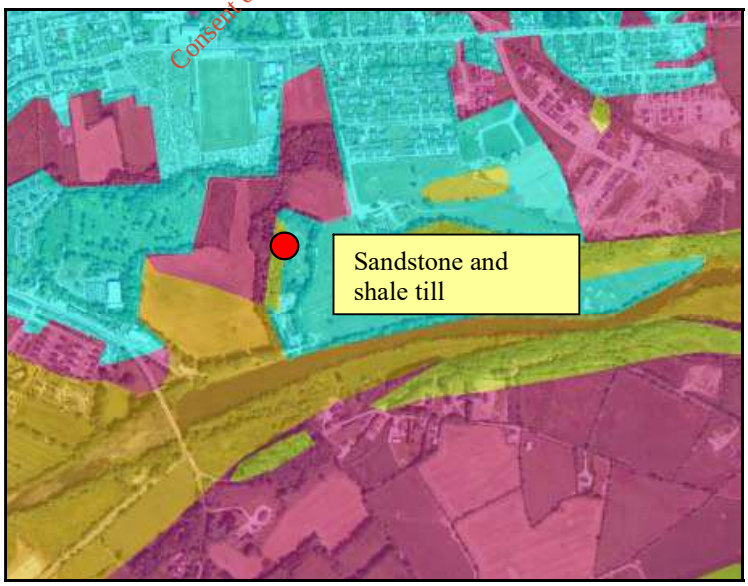
The River Feale is within 150m of the edge of the site. There is no direct drainage ditch.

Based on the above this score is used in the Risk Assessment (see Appendix 1)	Table 2C	Score 0

Based on the above this score is used in the Risk Assessment (see Appendix 1)	Table 3E	Score 2

Soil Types

Sub-soil Categorisation



4.8 Landfill Gas

Reference to the location map indicates that the closest domestic dwellings is approximately 200 m from the site.

There is no dwelling above the footprint of the waste.

Based on the above this score is used in the Risk Assessment (see Appendix 1)	Table 2D	Score 3
Based on the above this score is used in the Risk Assessment (see Appendix 1)	Table 2E	Score 0
Based on the above this score is used in the Risk Assessment (see Appendix 1)	Table 3A	Score 2
Based on the above this score is used in the Risk Assessment (see Appendix 1)	Table 3F	Score 1

5.0 Conclusions.

Summary of Risk Screening

The following tables set out the scores used in the risk screening exercise and the results of that exercise.

Summary of Risk Screening Scores

	Table	Description	Score
Source	1A	Leachate; source/hazard scoring matrix	5.0
	1B	Landfill gas; source/hazard scoring matrix	5.0
Pathway	2A	Leachate migration; pathways (gw vulnerability)	2.0
	2B	Leachate migration; pathways (gw flow)	5.0
	2C	Leachate migration; pathways (sw pathway)	0.0
	2D	Landfill gas; lateral migration	3.0
	2E	Landfill gas; upward migration	0.0
Receptor	3A	Leacahte migration; receptors, human	2.0
	3B	Leacahte migration; receptors, protected areas	2.0
	3C	Leacahte migration; receptors, acquifers	5.0
	3D	Leacahte migration; receptors, puibic water supply	7.0
	3E	Leacahte migration; receptors, surface water	2.0
	3F	Landfill gas; receptor, human presence	1.0

Summary of SPR Linkages.

		SPR score	Max	Normalised	Risk
SPR 1	1a * (2a + 2b + 2c) * 3e	70	300	23%	LOW
SPR 2	1a * (2a + 2b + 2c) * 3b	70	300	23%	LOW
SPR 3	1a * (2a + 2b) * 3a	70	240	29%	LOW
SPR 4	1a * (2a + 2b) * 3b	70	240	29%	LOW
SPR 5	1a * (2a + 2b) * 3c	175	400	44%	MODERATE
SPR 6	1a * (2a + 2b) * 3d	245	560	44%	MODERATE
SPR 7	1a * (2a + 2b) * 3e	70	240	29%	LOW
SPR 8	1a * 2c * 3e	0	60	0%	LOW
SPR 9	1a * 2c * 3b	0	60	0%	LOW
SPR 10	1b * 2d *3f	15	150	10%	LOW
SPR 11	1b * 2e *3f	0	250	0%	LOW

Based on the above assessment this is a MODERATE RISK CLASS B Site

Based upon the desktop appraisal and walk over survey the calculated risk associated with this site is Moderate.

6.0 Attachments

6.1 Risk Screening, Information Sources and Walk Over Survey
6.2 Typical Photographs (walk over survey, 2013)
6.3 Risk Assessment 2007

Attachment 6.1; Risk Screening, Information Sources and Walk Over Survey

Site Reference	**S22 - 02667** **Listowel**

1. Site Information check list

Authorisation	None - registered on EPA S22 register as S22-02667
Site Name	Listowel landfill
Address of townland	Ballygowlogue
Address 1	Listowel
County	Kerry
LA functional area	Kerry County Council
Location Map	Yes
Easting	99700
Northing	133476
Source of information	KCC Sources
Owner/occupier	Undetermined
Waste activity	Disposal
Estimated tonnage of waste	20 year life (assumed) at 1,850 pa - < 40,000 tonnes
Hazardous waste present or unknown	Unknown
Verificatin method	
Known Impacts	
Year opened	
Year closed	1988 (to be confimed)
Status	
Containment, total/partial/none	Partial (capping)
Containment, base liner	None
Containment, capping	Partial clay capping
LFG management	None
Leachate collection	None
Vector map reference	

2. Sources of information check list

Local authority sources	Yes
LA records and knowledge	Yes
Section 22 register (existing)	Yes
Waste Plans	Yes (no entry)
Special Waste Plans	
Section 55 notices	
Section 18 notices	
Complaints database (LA, EPA)	
LA permit register	
Toxic and Dangerous waste register	
Waste oils register	
Derelict buildings register	
Planning files	
LA quarries register	
EPA sources	
EPA waste reports (incl NWD report)	Yes
EPA IPPC facilities	
EPA waste licenced faciiltes	
IPPC reports	
EPA applicant files	
Other sources	
An Foras Forbatha reports	Yes
Trade directories	
GSI quarries directory	
Aerial photopgraphy	Yes
Remote sensing	
Aerial survey	
Newspaper advertisment	

Walkover Survey Checklist	***Comment***
Site	Listowel
What is current landuse	Parkland
What are the neighbouring land uses	Amenity
What is the size of the site	Approx 1 Ha
What is the topography	Undulating
Are there potential receptors (if yes - details)	Yes
Houses	Approx 200m
Surface water features (if yes distance and direction of flow)	Yes - River Feale
Any wetland or protected area	Yes
Public water supplies	Yes - now closed
Private wells	No
Services	None visible
Other buildings	Storage yard
Other	
Are there any potential sources of contamination (if yes give details)	
Surface waste (if yes what type)	None
Surface ponding of leachate	None

Leachate seepage	None
Landfill gas odours	None
Are there any outfalls to surface water	None
Are there any signs of impact on the environment (if yes take photographic evidence)	
Vegetation die off, bare ground	None
Leachate seepage	None
Odours	None
Litter	None
Gas bubling thrthrough water	None
Signs of settlement, subsidence water logged areas	None
Drainage or hydraulic issues	None
Downstream water quality appears poorer than upstream water quality	
Are there any indications of remedial measures (provide details)	Area has been filled in and landscaped
Capping	Yes - sub soil
Landfill gas collection	No
Leachate collection	None
Describe fences and security features (if any)	None, part of parkland
Any other relevant information	
Site name and reference;	Listowel, S22 - 02667
Date of inspection;	October 25th 2013
Walk over survey by;	Conor Culloo

SPR Linkages - Risk Screening

Table	*Description*	*Score*			*SPR*	*Max*	*Normalised*	*Risk*
1A	Leachate; source/hazard scoring matrix	5.0	SPR 1	1a * (2a + 2b + 2c) *	70	300	23%	LOW
1B	Landfill gas; source/hazard scoring matrix	5.0	SPR 2	1a * (2a + 2b + 2c) *	70	300	23%	LOW
			SPR 3	1a * (2a + 2b) * 3a	70	240	29%	LOW
2A	Leachate migration; pathways (gw vulnerability)	2.0	SPR 4	1a * (2a + 2b) * 3b	70	240	29%	LOW
2B	Leachate migration; pathways (gw flow)	5.0	SPR 5	1a * (2a + 2b) * 3c	175	400	44%	MODERATE
2C	Leachate migration; pathways (sw pathway)	0.0	SPR 6	1a * (2a + 2b) * 3d	245	560	44%	MODERATE
2D	Landfill gas; lateral migration	3.0	SPR 7	1a * (2a + 2b) * 3e	70	240	29%	LOW
2E	Landfill gas; upward migration	0.0	SPR 8	1a * 2c * 3e	0	60	0%	LOW
			SPR 9	1a * 2c * 3b	0	60	0%	LOW
3A	Leacahte migration; receptors, human	2.0	SPR 10	1b * 2d *3f	15	150	10%	LOW
3B	Leacahte migration; receptors, protected areas	2.0	SPR 11	1b * 2e *3f	0	250	0%	LOW
3C	Leacahte migration; receptors, acquifers	5.0						
3D	Leacahte migration; receptors, puiblic water supply	7.0						
3E	Leacahte migration; receptors, surface water	2.0						
3F	Landfill gas; receptor, human presence	1.0						

Attachment 6.2; Typical Photographs (walk over survey, 2013)

LISTOWEL

Environmental risk assessment for unregulated waste disposal sites

	SPR linkage score	Maximum linkage score	Normalised score %
SPR1	84	300	28.00
SPR2	84	300	28.00
SPR3	56	240	23.33
SPR4	56	240	23.33
SPR5	28	400	7.00
SPR6	0	560	0.00
SPR7	56	240	23.33
SPR8	28	60	46.67
SPR9	28	60	46.67
SPR10	21	150	14.00
SPR11	0	250	0.00

Table no.	Score	Rationale
Table 1a, Leachate hazard	7	Municipal waste >1 ha & <5 ha
Table 1b, Landfill gas hazard	7	Municipal waste >1 ha & <5 ha
Table 2a, Leachate migration, GW vulnerability	3	Extreme
Table 2b, Leachate migration, GW flow regime	1	Poorly productive
Table 2c, Leachate migration SW drainage	2	direct contact with SW body
Table 2d, Landfill gas Lateral migration	3	made ground
Table 2e, Landfill gas Vertical Migration	0	No structures present above waste body
Table 3a, Leachate migration Human presence	2	dwelling house > 50m and <250m from waste body
Table 3b, Leachate migration Protected areas	2	SAC/River Feale 110m from waste body
Table 3c, Leachate migration Aquifer category	1	Poor aquifer as per GSI website
Table 3d, Leachate migration Public water supplies	0	Public water source >1km no karst aquifer
Table 3e, Leachate migration Surface water bodies	2	SW body 110m from waste body
Table 3f, Landfill gas Human presence	1	Human presence >150m & <250m

Conclusion

Medium risk (class B) site as 2 SPR linkages are greater than 40%, less than 70%.

APPENDIX 2: Walkover Survey Checklist

Listowel

99, 727
133, 538

Walkover Survey Checklist		
Information	Checked	Comment (include distances from site boundary)
1. What is current Land Use?	✓	"Garden of Europe" Town Park
2. What are the neighbouring Land Uses?	✓	Town park, Golf Course & Town Council Yard.
3. What is the size of the site?	✓	1.01HA
4. What is the topography?	✓	landscaped garden
5. Are there potential receptors (if yes, give details)?	✓	
Houses	✓	≈ 150m away
Surface water features (if yes, distance and direction of flow)	✓	110m away R. Feale
Any wetland or protected areas	✓	110m away SAC (R. Feale)
Public Water Supplies	✓	
Private Wells	✓	
Services	✓	Playing fields & Golf Course
Other buildings	✓	Town Council Building ≈ 450m away
Other	✓	Golf Club House ≈ 100m away
6. Are there any potential sources of contamination (if yes, give details)?		Possibly
Surface waste (if yes, what type?)	✓	None observed, no samples taken
Surface ponding of leachate	✓	None observed
Leachate seepage	✓	" "
Landfill gas odours	✓	" "
7. *Are there any outfalls to surface water?* (If yes, are there discharges and what is the nature of the discharge?)	✓	None observed
8. Are there any signs of impact on the environment? (If yes, take photographic evidence)	✓	No
Vegetation die off, bare ground	✓	No
Leachate seepages	✓	No
Odours	✓	No
Litter	✓	No
Gas bubbling through water	✓	No
Signs of settlement,	✓	No

subsidence, water logged areas	✓	No
Drainage or hydraulic issues	✓	No
Downstream water quality appears poorer than upstream water quality	✓	Un determined
9. Are there any indications of remedial measures? (Provide details)	✓	
Capping	✓	Yes
Landfill gas collection	✓	No
Leachate collection	✓	No
Monitoring wells	✓	No
10. Describe fences and security features (if any)	✓	None, public access as site is part of Town park.
Any other relevant information?		
		Site well capped.

Listowel

SCALE 1 : 5,000

100 0 100 200 300

METERS

N

Listowel