



Certificate of Authorisation Application Form

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

EPA Ref. N^o:

(Office use only)

Environmental Protection Agency
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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 Unlicensed 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 Unlicensed Waste Disposal and Recovery Activity) Regulations 2008 (S.I. No. 524 of 2008).

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SECTION A: NON-TECHNICAL SUMMARY

1. Site Location

Tipperary town is a market town, situated in the heart of the Golden Vale and in close proximity to the Glen of Aherlow between the Slievenamuck Hills and Galtee Mountains. The River Ara flows through the town, along the southern boundary of the town's commercial centre, and the town lies at the intersection of the National Primary and Secondary Routes N24 and N74.

The closed landfill is within the town environs and is located in the townland of Carrownreddy. The site is approximately 1.8 hectares in size. It is accessed from the Lake Road, off the R610 Tipperary to Dundrum Road and is currently used as a storage yard for stone and road materials by South Tipperary County Council. There is also a building on-site used for storing salt for winter de-icing.

The lands adjoining the landfill are currently used primarily for low intensity agriculture, grazing horses. Other surrounding land uses include a halting site approximately 200m south of the site. There are further residential developments approximately 250m north east and south east of the site.

2. Site History

The First Edition of the Ordnance Survey c. 1840 indicates a lake, Carrownreddy Lough, immediately to the north of the site, in the 1901 version the Lough has substantially reduced in size. It is thought the site became the town dump circa 1940 and continued in use until the 7th of January 1989 when South Tipperary County Council opened a new landfill in Donohill.

The Carrownreddy landfill operated in a time when Local Authorities did not charge for waste collection, the gate-fees for waste disposal were minimal, there was no weighbridge on-site and there are no records available on the volumes of wastes disposed. Disposal of wastes was largely unregulated and there was no restriction on the types of wastes that could be disposed in Tipperary; at the time, the focus was to provide a waste collection and disposal service and any environmental protection measures were primarily focused on prevention of litter nuisance. The wastes accepted at the site are most likely to have been municipal and commercial/industrial wastes as well as wastewater treatment plant sludge. Trial holes were dug during the Tier 2 stage of the risk assessment and characterised waste as being variable across the site.

3. Hydrogeology and Ecology of the Site

3.1. Hydrogeology of the Site

The closed landfill is underlain by approximately 3-4m of subsoils and, according to the Geological Survey of Ireland (GSI) maps, a regionally important aquifer (karst bedrock). The GSI maps also indicate a poor aquifer within 100m of the site.

The site investigations categorised the underlying subsoils into a number of layers: a thin layer of lacustrine sediments, then a layer of low to moderate permeability boulder clay and gravels, then a layer of low permeability hard clays. Beneath the clay layer is a layer of gravels. Based on the groundwater levels recorded, it is considered that the lower clay layer is a confining one.

The groundwater flow direction was investigated during the Tier 2 and Tier 3 stages of the risk assessment and is discussed in the OCM Tier 3 Report (*section 2.5.3*). The landfill is located at a low point in the local catchment where it appears both groundwater and surface water discharge via the marsh area to a drain to the east of the site. It is considered that the shallow groundwater migrates to the southwest toward Tipperary Town but in during the winter period much of the groundwater recharge is rejected and discharges initially into the marsh and from there to the drain to the east of the landfill. No evidence of swallow holes or other karst features were noted during the risk assessment.

Surface water from the surrounding landscape appears to discharge to the marsh area predominately from two surface water inflows from the west. One outflow from the marsh was observed – into the aforementioned field drain to the east of the marsh. This flows east away from the closed landfill, passes underneath the landfill access road and then flows south towards a recently constructed housing development where it is culverted and eventually discharges to the River Ara.

3.2. Ecology of the Site

An Ecological Assessment of the area surrounding the closed landfill was undertaken in September 2010 by Ecofact. The ecological assessment did not include the closed landfill as it is largely not vegetated and is dominated by large mounds of construction & demolition waste, green waste etc. Any vegetation present consists primarily of recolonising species such as ragwort, thistle, nettle etc and is thought to be of low ecological importance.

The Ecological Assessment focused on the lands surrounding the closed landfill. The survey recorded a number of habitats surrounding the closed landfill; the drainage ditch (FW4), the areas of spoil & bare ground and of recolonising bare ground were reported to be of low local importance and wet-willow-alder-ash woodland (WN6) was reported to be of high local importance. The marsh habitat was reported to be of local ecological importance. No observations or evidence of protected mammals were recorded and it was considered unlikely that the site is important for protected species. The reed swamp/marsh and the wet woodland are important habitats for breeding birds, and one pair of moorhens was observed during the survey. The diversity of species observed in the reed swap/marsh and the drainage ditch is likely to be impacted due to water quality. The invasive species Japanese Knotweed was also observed.

4. Risk Category

Using the Environmental Protection Agency Code of Practice, the site is classified as Class A – high risk due to the risk of leachate migration to surface waters and due to the risk of landfill gas migration, laterally and vertically to receptors.

5. Actual and Potential Environmental Impacts

5.1. Surface water

The closest surface water receptor is the marsh area immediately adjacent to the northern section of the closed landfill. It discharges to a field drain approximately 100m from the closed landfill, which eventually discharges to the River Ara. The marsh area appears to provide a natural attenuation of the leachate from the landfill and the impact of the leachate on water quality in the drain is limited; elevated concentrations of ammonia were detected however concentrations of other parameters used to indicate leachate contamination (e.g. chloride, conductivity etc) were not significantly elevated. Iron, manganese and chromium exceed the surface water EQS but may be representative of local background conditions; similar concentrations were detected in the drain upstream of the closed landfill.

It should be noted that the EPA map website ENVision indicate that the site is part of the Fidaghta catchment; this is not accurate and it has been confirmed that surface water from the site discharges to the Ara via the town storm drainage network through the private residential development Rosanna Close and into the storm drain on Rosanna Road. The storm drain enters the river Ara south of the town at X189416 Y135501.

5.2. Groundwater

There is approximately 3-4m of subsoils between the closed landfill and the underlying aquifer. These subsoils form a number of layers: a thin layer of lacustrine sediments, a layer of low to moderate permeability boulder clay and gravels, a layer of low permeability hard clays with a layer of gravels overlying the aquifer. Based on the groundwater levels recorded, it is considered that the lower clay layer is a confining one and the water table in the overlying gravels represents “shallow groundwater”.

Shallow groundwater in the catchment is moving toward a low point in the marsh area and discharging to the marsh. As discussed in section 5.1 above, the marsh discharges to a field drain approximately 100m from the closed landfill and discharges to the River Ara. Groundwater monitoring wells were installed in December 2009, some leachate impacts have been detected. The monitoring data has established that leachate is impacting on the shallow groundwater as the monitoring wells intercept the shallow leachate plume around the landfill area. However these impacts are significantly attenuated with distance from the fill area and there is no evidence of any impact on the public water supply at Cordangan (X 190,522 Y134,311 or the industrial well at Tipperary Co-Op (X189,000 Y135,500) (part of the WFD groundwater monitoring network).

The lateral migration of leachate away from the margins of the landfill is not considered to be significant because of the direction of groundwater flow and the vertical migration of leachate is prevented by the presence of hard low permeability boulder clay underlying the lacustrine sediments beneath the landfill. Given the thickness of the subsoil above the bedrock aquifer, the risk posed to the bedrock aquifer is considered to be low.

5.3. Landfill Gas

During the Tier 1 stage of the Risk Assessment, the potential risk due to landfill gas was calculated as high. While the building on the landfill is used for storage of salt and does not house occupants, it was included as a receptor in the calculation of the risk score for vertical migration of gas, as a precautionary measure, consistent with the Code of Practice recommendations. There are a number of potential receptors within 250m of the closed landfill – a halting site 200m to the south and a permitted, but currently undeveloped residential development approx 200m north east of the site. The lands immediately adjacent the western boundary of the site are zoned for residential development.

The landfill gas monitoring indicates that methane and carbon dioxide are still being generated at significant levels. The monitoring in the wells outside the landfill area identified carbon dioxide levels ranging from 0.1% to 5%, however methane was detected at one monitoring point (MW8) on one occasion. The spike probe survey indicated that gas migration to the north of the landfill is not occurring in the shallow subsurface. The in-situ boulder clay surrounding the waste body has a moderate to low permeability which inhibits gas movement. The water saturated conditions in the marsh also inhibit gas migration, and when water levels drop in dry weather, probably allow passive ventilation. The only area where landfill gas migration is likely to occur is to the south.

The landfill gas remediation measures have been included to minimise the risk of landfill gas migration following the installation of the capping system, to protect future development and have low maintenance requirements.

5.4. Ecology

There are no protected habitats (Natura 2000 sites) within 5km of the site. The Aherlow River, part of the River Suir Special Area of Conservation is approximately 7km from the site.

The ecological survey identified a reed swamp/ marsh habitat with some alder/willow woodland adjacent to the closed landfill. This reed swamp is considered to be providing an important function naturally attenuating the leachate from the closed landfill. While water quality represents a constraint to naturalness or diversity of flora with the marsh habitat, the current community represents a wetland habitat of local ecological importance. This habitat will require

maintenance of a high water table or permanent standing water for its ongoing viability.

An appropriate assessment screening report concludes that the proposed remediation measures will not result in significant impacts on the Natura 2000 site network and did not consider it necessary for the Appropriate Assessment process to proceed to Stage 2.

6. Proposed Remediation

6.1. The objective of the remediation plan is to

- Reduce the volume of leachate generated, by capping the landfill and
- Minimise the risk of gas migration to residential developments

The remediation plan consists of two main elements 1) capping and 2) gas control.

6.2. Capping Proposals

A capping layer is proposed to reduce rainfall infiltration and thereby reducing the volume of leachate generated. The capping layer will also facilitate collection and venting of landfill gas and re-vegetation of site with grass cover.

The capping layer proposed consists of

- 0.15m of topsoil
- 0.5m of subsoil
- 0.3m drainage layer (hydraulic conductivity of 1×10^{-4} m/s)
- 0.6m engineered clay layer (hydraulic conductivity of 1×10^{-9} m/s)
- 0.3m gas collection layer

6.3. Gas Control measures

Gas control measures include a gas collection system, passive vents installed in the waste body and a cut-off trench installed outside the landfill footprint around the south western, southern and south eastern edges of the fill area. The gas collection layer will allow for gas flow towards the vents and to vent to atmosphere. The cut-off trench will intercept gas migration to potential receptors.

The gas collection layer is incorporated into the capping system. The proposed cut-off trench is 2m below ground level and set back 2m from the waste body.

6.4. Timescale for Remediation Works

As funding has not been allocated for the remediation of this landfill, it is not possible to confirm when works are likely to commence. It is expected that the remediation works will be carried out on a phased basis. Phase 1 of the measures is likely to consist of the gas control measures and it is estimated that the works

involved will take 2 to 4 weeks. Phase 2 will consist of the works involved in the capping layer, which will take approximately 4 to 6 weeks.

Once funding has been provided a comprehensive design and specification plan is required which will detail the specifications for materials and the quality control and assurance methods necessary.

Full details of the Preliminary Remedial Action Plan are contained in Appendix 3 of the Tier 3 Report.

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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*:	South Tipperary County Council
Address:	Environment Section
	County Hall
	Emmett Street
	Clonmel, Co. Tipperary
Tel:	052-6134455
Fax:	052-6134391
e-mail:	environment@southtippcoco.ie

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

Name and Address for Correspondence

Name*:	Denis Holland, Senior Engineer
Address:	Environment Section
	County Hall
	Emmett Street,
	Clonmel, Co. Tipperary
Tel:	052-6134455
Fax:	052-6124355
e-mail:	denis.holland@southtippcoco.ie

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

Co-Applicant's Details

Name*:	
Address:	
Tel:	
Fax:	
e-mail:	

*This should be the name of a local authority, other than the lead authority, where a site lies in more than one local authority functional area.

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:	Sean Moran
Qualification:	M.SC., P.Geol. Eur. Geol.
Professional Body:	Institute of Geologists of Ireland (I.G.I)
Address:	O'Callaghan Moran & Associates,
	Granary House,
	Rutland Street,
	Cork
Tel:	021-4321521
Fax:	021-4321522
e-mail:	info@ocallaghanmoran.com

Interest in Site

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

Landowner	<input type="checkbox"/>
Landowner (part)	<input checked="" type="checkbox"/>
Not Landowner	<input type="checkbox"/>

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

Name:	Tipperary Town Council
Address:	Dan Breen House
	Tipperary Town
	Co. Tipperary
Tel:	062-80700
Fax:	062-52670
e-mail:	

Name:	
Address:	
Tel:	
Fax:	
e-mail:	

Name:	
Address:	
Tel:	
Fax:	
e-mail:	

Name:	
Address:	
Tel:	
Fax:	
e-mail:	

B.2. Fees

Appropriate Fee (€5,000) Included	Yes	No
	X	

SECTION C: SITE DETAILS

C.1. Site Location

Name:	Tipperary Closed landfill
Address*:	Carrownreddy,
	Tipperary Town
	Co. Tipperary
Tel:	None
Fax:	None
e-mail:	None

* Include any townland

Attachment C.1. should contain appropriately scaled drawings or maps ($\leq A3$) 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?	<input checked="" type="checkbox"/>
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Provide the unique code assigned to the site in the Section 22 Register

Site Code	S22-02565
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Provide a six-digit National Grid Reference for the site location

Grid Reference	189396	E	136792	N
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C.3. Risk Category

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

Class A (High)	<input checked="" type="checkbox"/>
Class B (Moderate)	<input type="checkbox"/>
Class C (Low)	<input type="checkbox"/>

*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 situate.

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 that the types and quantities of waste have been recorded on the online Section 22 Register at www.epa.ie/uwsr and that the information recorded represents 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
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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, any site (whether low, moderate or high risk) which may have an impact on a Natura 2000 site (SPA or SAC) must be subject to screening for Appropriate Assessment in accordance with Article 6(3) of the Habitats Directive (92/43/EEC). The results of any such screening must be submitted as part of this application.

Where screening has determined that an appropriate assessment is required, an appropriate assessment must be completed and a copy of said assessment submitted as part of this application. The assessment should consider the following impacts on the designated site:

1. The impact of the existing landfill;
2. The objectives of proposed remediation measures with regard to existing impacts identified in item 1; and
3. The impact of any physical works carried out at the site as part of the remediation plan.

While the appropriate assessment is subject to a separate report, it should be carried out in tandem with the overall risk assessment. This is to ensure an 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 NPWS guidance document '*Appropriate Assessment of Plans and Projects in Ireland*' with regard to this assessment.

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

The Appropriate Assessment (screening or full assessment as appropriate) 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 Unlicensed 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 : _____
(on behalf of the organisation)

Date : 25/11/11

Print signature name: Denis Holland

Position in organisation: Senior Engineer, Environment & Water Services

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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 Unlicensed 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.