

# Guidance on assessing and costing environmental liabilities

Unit cost rates for verification



## Environmental Protection Agency

The Environmental Protection Agency (EPA) is a statutory body responsible for protecting the environment in Ireland. We regulate and police activities that might otherwise cause pollution. We ensure there is solid information on environmental trends so that necessary actions are taken. Our priorities are protecting the Irish environment and ensuring that development is sustainable. The EPA is an independent public body established in July 1993 under the Environmental Protection Agency Act, 1992. Its sponsor in Government is the Department of the Environment, Community and Local Government.

## OUR RESPONSIBILITIES

### LICENSING

We license the following to ensure that their emissions do not endanger human health or harm the environment:

- waste facilities (e.g., landfills, incinerators, waste transfer stations);
- large scale industrial activities (e.g., pharmaceutical manufacturing, cement manufacturing, power plants);
- intensive agriculture;
- the contained use and controlled release of Genetically Modified Organisms (GMOs);
- large petrol storage facilities.
- waste water discharges
- dumping at sea

### NATIONAL ENVIRONMENTAL ENFORCEMENT

- Conducting over 1200 audits and inspections of EPA licensed facilities every year.
- Overseeing local authorities' environmental protection responsibilities in the
- areas of -air, noise, waste, waste-water and water quality.
- Working with local authorities and the Garda' to stamp out illegal waste activity by co-ordinating a national enforcement network, targeting offenders, conducting investigations and overseeing remediation.
- Prosecuting those who flout environmental law and damage the environment as a result of their actions.

### MONITORING, ANALYSING AND REPORTING ON THE ENVIRONMENT

- Monitoring air quality and the quality of rivers, lakes, tidal waters and ground waters; measuring water levels and river flows.
- Independent reporting to inform decision making by national and local government.

### REGULATING IRELAND'S GREENHOUSE GAS EMISSIONS

- Quantifying Ireland's emissions of greenhouse gases in the context of our Kyoto commitments.

- Implementing the Emissions Trading Directive, involving over 100 companies who are major generators of carbon dioxide in Ireland.

### ENVIRONMENTAL RESEARCH AND DEVELOPMENT

- Co-ordinating research on environmental issues (including air and water quality, climate change, biodiversity, environmental technologies).

### STRATEGIC ENVIRONMENTAL ASSESSMENT

- Assessing the impact of plans and programmes on the Irish environment (such as waste management and development plans).

### ENVIRONMENTAL PLANNING, EDUCATION AND GUIDANCE

- Providing guidance to the public and to industry on various environmental topics (including licence applications, waste prevention and environmental regulations).
- Generating greater environmental awareness (through environmental television programmes and primary and secondary schools' resource packs).

### PROACTIVE WASTE MANAGEMENT

- Promoting waste prevention and minimisation projects through the co-ordination of the National Waste Prevention Programme, including input into the implementation of Producer Responsibility Initiatives.
- Enforcing Regulations such as Waste Electrical and Electronic Equipment (WEEE) and Restriction of Hazardous Substances (RoHS) and substances that deplete the ozone layer.
- Developing a National Hazardous Waste Management Plan to prevent and manage hazardous waste.

### MANAGEMENT AND STRUCTURE OF THE EPA

The organisation is managed by a full time Board, consisting of a Director General and four Directors. The work of the EPA is carried out across four offices:

- Office of Climate, Licensing and Resource Use
- Office of Environmental Enforcement
- Office of Environmental Assessment
- Office of Communications and Corporate Services

The EPA is assisted by an Advisory Committee of twelve members who meet several times a year to discuss issues of concern and offer advice to the Board.



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## **Guidance on assessing and costing environmental liabilities**

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This document provides unit costs for closure and restoration/aftercare in Table 1, with landfill specific unit costs given in Table 2. It accompanies the Environmental Protection Agency *Guidance on assessing and costing environmental liabilities* (EPA, 2014).

Operators preparing closure plans, restoration/aftercare plans and environmental liabilities risk assessments must determine the costs themselves from previous experience, relevant suppliers and contractors or from recognised experts who are familiar with such costs. All costs included in the reports should be site-specific, suitably referenced and verifiable. The unit rates given here are not intended to substitute for the requirement for the operator to determine costs, but are provided to assist in validating the site-specific costings. The unit costs are published separately from the main guidance document to facilitate future updates. In the interim, the costs can be updated to future years through index linking. Guidance in this regard is provided in section 2.7 of the main guidance document.

**Table 1:** Unit costs for closure and restoration/aftercare

Phase	Item Description	Unit	Low range (€)	High range (€)
Decontamination	<b>Daily costs</b>			
	Cleaning contractor – building (1 supervisor)	day	335.00	490.00
	Cleaning contractor – building (3 general operatives)	day	1,050.00	1,600.00
	Cleaning contractor – plant decontamination (1 supervisor)	day	335.00	490.00
	Cleaning contractor – plant decontamination (5 general operatives)	day	1,880.00	2,380.00
	Cleaning contractor – tank decontamination (jet vacuum road tanker, 2–3 general operatives)	day	1,100.00	1,670.00
	<b>Unit costs</b>			
	Tank decontamination 1–5 tonne	item	1,235.00	3,250.00
	Tank decontamination 5–20 tonne	item	1,935.00	3,650.00
	Tank decontamination 20–50 tonne	item	4,750.00	7,400.00
	Tank decontamination 50–100 tonne	item	7,900.00	12,650.00
	Other decontamination costs			
	Off-site transport and disposal/recovery of residual fuels	tonne	117.00	145.00
	Off-site transport and disposal/recovery of interceptor sludge	tonne	102.00	150.00
	Drain jetting 100–300 mm	m	1.90	2.50
Drain jetting 300–600 mm	m	1.90	2.50	
Drain CCTV survey	m	1.70	2.75	

Phase	Item Description	Unit	Low range (€)	High range (€)
Decommissioning	<b>Daily costs</b>			
	Decommissioning contractor – plant (1 supervisor)	day	450.00	600.00
	Decommissioning contractor – plant (3 general operatives)	day	1,500.00	2,100.00
	<b>Unit costs</b>			
	Tank decommissioning 1–5 tonne	item	2,000.00	3,000.00
	Tank decommissioning 5–20 tonne	item	4,000.00	5,000.00
	Tank decommissioning 20–50 tonne	item	8,000.00	10,000.00
	Tank decommissioning 50–100 tonne	item	14,000.00	20,000.00
	Crane including driver (50 tonne crane)	day	800.00	1,200.00
Waste disposal/ recovery	<b>Recovery/disposal gate fee (excluding transport)</b>			
	Waste oils	tonne	70.00	100.00
	Used batteries	tonne	20.00	50.00
	Lamps/bulbs	tonne	20.00	120.00
	Chemicals			
	Solvents (recovery as use as solvent)	tonne	0.00	300.00
	Solvents (recovery as use as fuel)	tonne	0.00	50.00
	Solvents (disposal)	tonne	120.00	800.00
	Acids/bases	tonne	250.00	800.00
	Asbestos-contaminated soils	tonne	300.00	450.00
	Asbestos-containing materials	tonne	300.00	650.00
	PCBs	tonne	1,000.00	4,000.00
	Solid hazardous, e.g. adsorbents, PPE, filters, contaminated drums	tonne	600.00	800.00
	Inert soils	tonne	1.50	5.00
	Non-hazardous soils (upper end relates to disposal to landfill)	tonne	20.00	80.00
	Hazardous soils (upper end relates to disposal to landfill)	tonne	120.00	150.00
	Rubble (concrete, bricks, tiles, ceramic)	tonne	1.50	4.50
	Municipal solid waste (landfill disposal, including levy)	tonne	110.00	120.00
	Sludge from WWTP			
	Sludge (composting)	tonne	35.00	80.00
	Sludge (incineration)	tonne	100.00	200.00
	Transport cost	tonne		
	Solid non-hazardous (20 tonne loads, assuming 100 km each-way trip)	tonne	15.00	60.00
Demolition	Demolition of building containing (no hazardous building material) (volume of building)	m <sup>3</sup>	16.00	20.00

Phase	Item Description	Unit	Low range (€)	High range (€)
Site investigation	Environmental consultant	day	500.00	900.00
	Trial pits	unit	90.00	100.00
	Monitoring well drilling & installation <10 m	unit	550.00	750.00
	Monitoring well drilling & installation 10–20 m	unit	1,600.00	1,900.00
	Topographical survey and report	day	400.00	600.00
	Slope stability assessment and report	unit	1,500.00	3,000.00
	Geophysical survey	unit	2,250.00	4,200.00
Remediation of contaminated land	Excavation of soil	m <sup>3</sup>	1.50	4.50
	Excavation of contaminated soil	m <sup>3</sup>	1.50	5.00
	Restoration (import and spreading of suitable inert soil)	m <sup>3</sup>	6.00	12.00
	Temporary bunded stockpile area	m <sup>3</sup>	2.50	5.00
Environmental monitoring	Landfill gas monitoring (LFG analyser)	well	7.00	10.00
	Other ground gas monitoring (borehole headspace testing for VOC)	well	180.00	220.00
	Soil & solid (sampling & analysis)	sample	100.00	160.00
	Leachate monitoring (landfill manual suite)	sample	70.00	70.00
	Surface water monitoring (sampling & analysis as per table c.2 of EPA landfill monitoring manual, 2003)	sample	120.00	150.00
	Groundwater monitoring (sampling & analysis as per table c.2 of EPA landfill monitoring manual, 2003)	sample	130.00	160.00
	Noise monitoring (allows for 5–10 locations)	event	2,000.00	3,000.00
	Ecological surveying (initial screening survey and report)	event	1,500.00	2,000.00
	Waste sampling and analysis (WAC suite as per tables 2.1.2 and 2.1.2.2 of Council Decision 2003/33/EC). Costs could be much higher if additional analysis is required.	sample	400.00	400.00

Phase	Item Description	Unit	Low range (€)	High range (€)
Environmental reporting	Routine environmental reporting (AER etc.)	event	1,500.00	3,500.00
	Environmental consultant closure audit and report	unit	5,000.00	10,000.00
Other costs	24 hour security (2 shifts)	month	10,000.00	16,000.00
	Fence with patrol (once per day)	month	1,500.00	2,500.00
	Camera control (excl. capital cost)	month	500.00	850.00
	Water	m <sup>3</sup>	1.60	3.00
	Daytime rate	kWh	0.21	0.21
	Nighttime rate	kWh	0.11	0.11
	Infrastructure (gates, barriers, etc.)	unit	5,000.00	8,500.00
	Drainage maintenance	m	0.50	2.00
	20 tonne tracked machine with driver (without fuel)	week	800.00	900.00
	6 tonne dumper (without fuel)	week	250.00	350.00
	Kerosene	litre	0.90	1.00
	Gas oil (green)	litre	0.95	1.05
	Auto diesel	litre	1.50	1.55
	Pest control	month	85.00	125.00
	Replacement fish (salmon/brown trout) (low refers to 0+ fish; high to 2+ fish)	fish	0.65	3.50
	Closure and surrender	Surrender of the licence to the EPA (refer to EPA website for current rates)	unit	1,904.00



**Table 2:** Landfill specific unit costs for closure and restoration/aftercare

Description	Unit	Inert Landfill		Non-Haz. Landfill		Hazardous Landfill		Common Rates	
		Low range (€)	High range (€)	Low range (€)	High range (€)	Low range (€)	High range (€)	Low range (€)	High range (€)
<b>Final capping:</b>									
Costs based on Fig. 10.1 Landfill Manuals – Landfill Site Design (EPA, 2000). Range depending on specification and logistical factors.	m <sup>2</sup>	14.00	17.00	31.00	35.00	36.00	39.50		
Inert landfill – capping thickness of 1.00 m (200 mm regulating layer, 650 mm subsoil layer and 150–300 mm topsoil).									
Non-hazardous landfill – 200 mm regulating layer, 850 mm subsoil layer, 150–300 mm topsoil, surface water geocomposite, 1 mm HDPE liner and gas geocomposite layer.									
Hazardous landfill – similar specification to the hazardous landfill with an additional 1 mm HDPE liner incorporated.									
<b>Gas flaring unit installation/management:</b>									
250–2500 m <sup>3</sup> /h size range (enclosed)	item							100,000	600,000
Quarterly services (excluding parts)	item							1,000	1,200
Capping gas management	year							12,000	16,000
Landfill gas monitoring (sampling as per Table C.4 of EPA Landfill Monitoring Manual, 2003)	well							7.00	10.00
Flare monitoring (sampling & analysis as per Table C.5 of EPA Landfill Monitoring Manual, 2003)	event							2,000	3,000
<b>Leachate management/transport and disposal:</b>									
Leachate recirculation	m <sup>2</sup>							1.00	1.20
Leachate tankering	tonne							10.00	20.00
Leachate disposal	tonne							10.00	35.00
Leachate monitoring (sampling & analysis as per Table C.2 of EPA Landfill Monitoring Manual, 2003)	sample							130.00	160.00
Landfill manager	year			125,000	145,000				
General operative	year			60,000	70,000				



## An Ghníomhaireacht um Chaomhnú Comhshaoil

Is í an Ghníomhaireacht um Chaomhnú Comhshaoil (EPA) comhlachta reachtúil a chosnaíonn an comhshaoil do mhuintir na tíre go léir. Rialaímid agus déanaimid maoirsiú ar ghníomhaíochtaí a d'fhéadfadh truailliú a chruthú murach sin. Cinntímid go bhfuil eolas cruinn ann ar threochtaí comhshaoil ionas go nglactar aon chéim is gá. Is iad na príomh-nithe a bhfuilimid gníomhach leo ná comhshaoil na hÉireann a chosaint agus cinntiú go bhfuil forbairt inbhuanaithe. Is comhlacht poiblí neamhspleách í an Ghníomhaireacht um Chaomhnú Comhshaoil (EPA) a bunaíodh i mí Iúil 1993 faoin Acht fán nGníomhaireacht um Chaomhnú Comhshaoil 1992. Ó thaobh an Rialtais, is í an Roinn Comhshaoil, Pobal agus Rialtais Áitiúil.

## ÁR bhFREAGRACHTAÍ

### CEADÚNÚ

- Bíonn ceadúnais á n-eisiúint againn i gcomhair na nithe seo a leanas chun a chinntiú nach mbíonn astuithe uathu ag cur sláinte an phobail ná an comhshaoil i mbaol:
- áiseanna dramhaíola (m.sh., líonadh talún, loisceoirí, stáisiúin aistrithe dramhaíola);
- gníomhaíochtaí tionsclaíocha ar scála mór (m.sh., déantúsaíocht cógaisíochta, déantúsaíocht stroighne, stáisiúin chumhachta);
- diantalmhaíocht;
- úsáid faoi shrian agus scaoileadh smachtaithe Orgánach Géinathraithe (GMO);
- mór-áiseanna stórais peitreal.
- scardadh dramhuisce
- dumpáil mara

### FEIDHMIÚ COMHSHAOIL NÁISIÚNTA

- Stiúradh os cionn 2,000 iniúchadh agus cigireacht de áiseanna a fuair ceadúnas ón nGníomhaireacht gach bliain.
- Maoirsiú freagrachtaí cosanta comhshaoil údarás áitiúla thar sé earnáil aer, fuaim, dramhaíl, dramhuisce agus caighdeán uisce.
- Obair le húdarás áitiúla agus leis na Gardaí chun stop a chur le gníomhaíocht mhídhleathach dramhaíola trí comhordú a dhéanamh ar líonra forfheidhmithe náisiúnta, díriú isteach ar chiontóirí, stiúradh fiosrúcháin agus maoirsiú leigheas na bhfadhbanna.
- An dlí a chur orthu siúd a bhriseann dlí comhshaoil agus a dhéanann dochar don chomhshaoil mar thoradh ar a gníomhaíochtaí.

### MONATÓIREACHT, ANAILÍS AGUS TUAIRISCIÚ AR AN GCOMHSHAOIL

- Monatóireacht ar chaighdeán aeir agus caighdeáin aibhneacha, locha, uiscí taoide agus uiscí talaimh; leibhéil agus sruth aibhneacha a thomhas.
- Tuairisciú neamhspleách chun cabhrú le rialtais náisiúnta agus áitiúla cinntiú a dhéanamh.

### RIALÚ ASTUITHE GÁIS CEAPTHA TEASA NA HÉIREANN

- Cainníochtú astuithe gáis ceaptha teasa na hÉireann i

gcomhthéacs ár dtiomantas Kyoto.

- Cur i bhfeidhm na Treorach um Thrádáil Astuithe, a bhfuil baint aige le hos cionn 100 cuideachta atá ina mórghineadóirí dé-ocsaíd charbóin in Éirinn.

### TAIGHDE AGUS FORBAIRT COMHSHAOIL

- Taighde ar shaincheisteanna comhshaoil a chomhordú (cosúil le caighdeán aeir agus uisce, athrú aeráide, bithéagsúlacht, teicneolaíochtaí comhshaoil).

### MEASÚNÚ STRAITÉISEACH COMHSHAOIL

- Ag déanamh measúnú ar thionchar phleananna agus chláracha ar chomhshaoil na hÉireann (cosúil le plananna bainistíochta dramhaíola agus forbartha).

### PLEANÁIL, OIDEACHAS AGUS TREOIR CHOMHSHAOIL

- Treoir a thabhairt don phobal agus do thionscal ar cheisteanna comhshaoil éagsúla (m.sh., iarratais ar cheadúnais, seachaint dramhaíola agus rialacháin chomhshaoil).
- Eolas níos fearr ar an gcomhshaoil a scaipeadh (trí cláracha teilifíse comhshaoil agus pacáistí acmhainne do bhunscoileanna agus do mheánscoileanna).

### BAINISTÍOCHT DRAMHAÍOLA FHORGHNÍOMHACH

- Cur chun cinn seachaint agus laghdú dramhaíola trí chomhordú An Chláir Náisiúnta um Chosc Dramhaíola, lena n-áirítear cur i bhfeidhm na dTionscnamh Freagrachta Táirgeoirí.
- Cur i bhfeidhm Rialachán ar nós na treoracha maidir le Trealamh Leictreach agus Leictreonach Caite agus le Srianadh Substaintí Guaiseacha agus substaintí a dhéanann ídiú ar an gcrios ózóin.
- Plean Náisiúnta Bainistíochta um Dramhaíl Ghuaiseach a fhorbairt chun dramhaíl ghuaiseach a sheachaint agus a bhainistiú.

### STRUCHTÚR NA GNÍOMHAIREACHTA

Bunaíodh an Ghníomhaireacht i 1993 chun comhshaoil na hÉireann a chosaint. Tá an eagraíocht á bhainistiú ag Bord lánaimseartha, ar a bhfuil Príomhstíúrthóir agus ceithre Stíúrthóir. Tá obair na Ghníomhaireachta ar siúl trí ceithre Oifig:

- An Oifig Aeráide, Ceadúnaithe agus Úsáide Acmhainní
- An Oifig um Fhorfheidhmiúchán Comhshaoil
- An Oifig um Measúnacht Comhshaoil
- An Oifig Cumarsáide agus Seirbhísí Corparáide

Tá Coiste Comhairleach ag an nGníomhaireacht le cabhrú léi. Tá dáréag ball air agus tagann siad le chéile cúpla uair in aghaidh na bliana le plé a dhéanamh ar cheisteanna ar ábhar imní iad agus le comhairle a thabhairt don Bhord.



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