

9 Remediation of landfill sites

- 9.1** Waste is defined in the EU Waste Framework Directives¹ as any substance or object which the holder discards, intends to discard or is required to discard. The processing of waste generally consists of either recovery — which involves extracting useful materials or energy resources from the waste — or disposal which, for non-hazardous waste, involves depositing in landfill sites. A key feature of landfill as a disposal method is that the sites used require ongoing control and long-term oversight to ensure environmental risks are managed when in operation but also after closure.
- 9.2** Responsibilities in relation to the oversight and management of waste in Ireland are spread across a number of public bodies (see Figure 9.1). The Department of Communications, Climate Action and Environment (the Department) has overall responsibility for waste management policy and legislation.²
- 9.3** In a judgement against Ireland in 2005, the European Court of Justice ruled that Ireland was generally and persistently failing to fulfil its obligations under EU Directive 75/442/EEC on waste, as amended by EU Directive 91/156/EC, based on its performance in relation to a number of identified landfill sites.³
- 9.4** The Department established a landfill remediation grant scheme in 2006 to provide capital funding in respect of essential works undertaken on licensed landfill sites which closed (i.e. ceased accepting municipal waste) prior to 1 January 2006. The grants — up to a maximum of 75% of the required outlay — were made available to local authorities with limited resources to assist them to give effect to remediation and aftercare plans agreed with the Environmental Protection Agency (EPA), consistent with the conditions of the relevant licence.
- 9.5** The Department's grant scheme was expanded in April 2018 to fund 100% of the capital costs of the remediation and aftercare of discontinued landfill sites operated by local authorities, private landfills taken into State ownership and illegal dumps as well as the restoration or creation of wetlands to compensate for those previously used as dumps.

Focus of the examination

- 9.6** This examination was undertaken to establish in the context of the remediation grant scheme
- whether the remediation requirements have been assessed for all sites under the management or control of local authorities
 - the cost of landfill remediation to date and the reliability of estimates of future costs in relation to the remaining sites requiring work
 - whether landfill operators are contributing appropriately to the costs of closure, restoration and aftercare of landfills, in line with the 'polluter pays' principle.
- 9.7** The examination was carried out through enquiries and examination of records and data held by the Department and by the EPA. Local authorities are not within the scope of the mandate of the Comptroller and Auditor General.

¹ The EU Waste Framework Directives are implemented in Ireland by the Environmental Protection Agency Act 1992, the Waste Management Acts 1996 and 2001 and the Protection of the Environment Act 2003. Several statutory instruments also deal with specific aspects of EU Directives such as SI No. 390/1979 and SI No. 126/2011.

² The name of the Department is expected to change to the Department of the Environment, Climate and Communications.

³ ECJ case 494/01; judgement issued on 26 April 2005.

- 9.8** A number of specific remediation projects funded wholly or in part by the Department were reviewed as part of the examination. These are summarised in the report as case studies to illustrate the nature of the work involved in landfill remediation, and the administrative challenges that may arise for the Department in ensuring that public funds are used appropriately and to good effect.

Figure 9.1 Overview of roles and responsibilities in relation to waste management

Entity	Area of responsibility
Department of Communications, Climate Action and Environment (the Department)	Overall waste management policy and legislation.
Local authorities	- Waste management within their areas of jurisdiction and operating waste handling facilities, including landfill sites. - Issuing permits for the operation of waste handling facilities. - Powers and obligations to tackle illegal waste activity.
National Waste Collection Permit Office (NWCPO)	Operating from Offaly County Council, it administers the waste collection permit system on behalf of all local authorities.
Regional waste management planning offices (3)	- Coordination of the local authorities' waste management planning function. - Preparation and implementation of the regional waste management plans.
Waste enforcement regional lead authorities (3)	- Coordination of waste enforcement actions within regions. - Setting priorities and common objectives, designed to ensure consistent enforcement of waste legislation within regions. - Work overseen by a national steering committee, established by the Department, with representatives from a range of regulatory authorities.
Environmental Protection Agency (EPA)^a	- Regulatory body for large waste facilities and landfills. - Issues operating licences and inspects the facilities.^b
Office of Environmental Enforcement (an office within the EPA)	- Has functions concerning the implementation and enforcement of environmental legislation. - Supervisory function in respect of the environmental protection activities of local authorities and may take action against a local authority that is not discharging its environmental protection functions properly.

Source: Office of the Comptroller and Auditor General

Notes: a Established under the Environmental Protection Agency Act 1992.

b The Waste Management Act 1996 provides for the licensing and regulation of landfill sites by the EPA. This Act also provided for penalties, monitoring of landfills, and certain duties of local authorities.

Identification and assessment of landfill sites

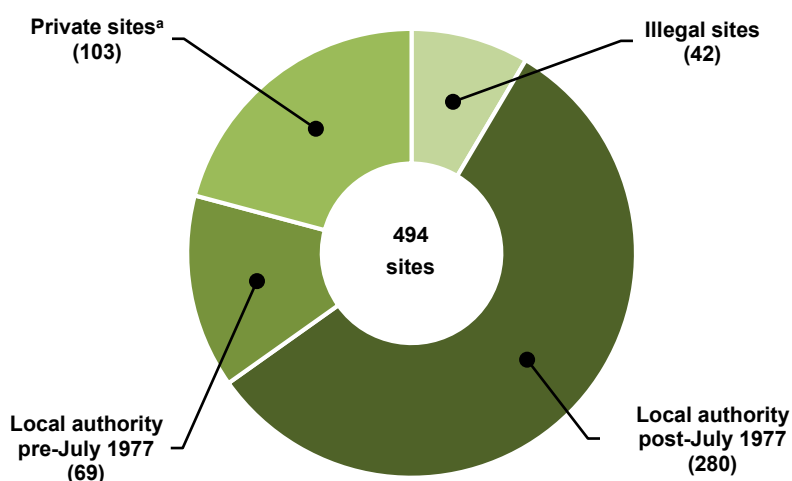
- 9.9** The 1996 Waste Management Act provided for local authorities to identify sites within their jurisdictions at which waste disposal or recovery activities had been carried on, to assess any risk of environmental pollution and to identify remedial measures. As well as municipal landfills, this included unregulated waste disposal sites. However, this requirement was generally not actioned as there was no national standard for the local authorities to follow in assessing risk and in identifying the necessary remediation works. That deficit was addressed in 2007 with the publication by the EPA of a code of practice for environmental risk assessment of unregulated waste disposal sites.
- 9.10** The legal obligations on local authorities for landfills were expanded in 2008.¹ In addition to having to register sites they themselves had operated in the period between July 1977 and March 1997 (at which time the EPA became responsible for licensing and regulating landfill operations) and to carry out an environmental risk assessment, local authorities now had to make applications to the EPA for approval and authorisation of any proposed remediation works.
- 9.11** At July 2020, the total number of identified landfill sites was 611.² This included
- 117 sites licensed and regulated by the EPA since March 1997, and which it continues to monitor — consisting of 64 sites operated by local authorities and 53 operated privately.
 - 494 unregulated sites registered by local authorities on a web-based register established by the EPA.³ Over 70% of the sites are former local authority-operated landfills. Around 21% were privately operated sites, while just over 8% were illegal dump sites (see Figure 9.2).

1 SI No. 524/2008 — Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008.

2 This figure incorporates landfills for different waste types and situations including municipal solid waste, inert waste and landfills attached to industrial facilities e.g. licensed by the EPA as integrated pollution prevention and control activities.

3 The EPA hosts the Waste Management Act Section 22 register. Local authorities are responsible for the completeness and verification of the data entered. It is a dynamic register, updated on an ongoing basis as new information comes to light. It has been agreed that the hosting and management of the register will move from the EPA to the local authorities and work is underway within the NWCPO in Offaly County Council in that regard.

Figure 9.2 Landfill sites on the Section 22 register, as at 31 December 2019



Source: Waste Management Act Section 22 register hosted by the EPA

Note: a Includes 101 private sites licensed under SI No. 390/1979 and two private sites closed before 1980.

Assessment of sites

9.12 The environmental risk assessment of the sites on the Section 22 register involves three progressive stages.

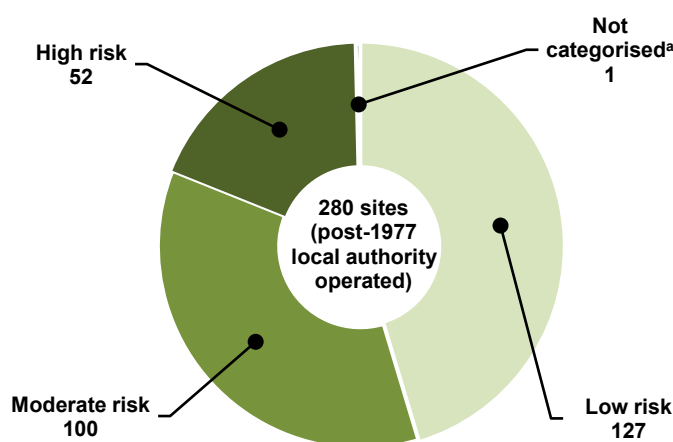
- Tier 1 assessment — development of a conceptual site model and risk assessment — this allows for the categorisation of sites into low, moderate and high risk.
- Tier 2 assessment — more detailed site investigations and testing.
- Tier 3 assessment — refinement of the conceptual site model and completion of a quantitative risk assessment for all moderate and high risk sites.

Risk assessments

9.13 By the end of 2019, all 280 of the post-1977 local authority sites on the Section 22 register had been risk assessed and all but one had been categorised (see Figure 9.3). Over half of the sites were assessed as either high risk or moderate risk.

9.14 Neither the EPA, nor the Department, nor the regional waste management planning offices were able to provide the examination team with complete information on the risk assessment status of the remaining 214 sites on the Section 22 register as at 31 December 2019.

Figure 9.3 Risk rating of post-1977 local authority operated landfill sites



Source: Department of Communications, Climate Action and Environment

Note: a The Department has stated that the actual risk category for one site, which had been risk assessed and remediated as part of a road development, could not be verified by the local authority.

Actions to mitigate the risk

- 9.15** On completion of the three-tier risk assessment process, local authorities are required to prepare remediation plans to address the risks identified for a site.
- 9.16** In line with Department policy and the regional waste management plans, the primary objective of remediation works is the elimination or management of any environmental risk posed by a waste-impacted site. Three broad strategies are used for remediation of a site.
- The most frequently used approach is to leave the waste deposited in landfills on site. This typically requires installing an engineered cap, a leachate containment or drainage system, and landfill gas extraction structures (gas burned off at a flare, collected for energy generation or released through passive gas vents), with aftercare management of the site extending over many years. The latter includes ongoing management and monitoring for leachate and gas, until the site stabilises and no longer poses a threat to public health or the environment.
 - A less used remediation option is to remove all waste for disposal elsewhere and to fill and restore the landfill site with inert matter.
 - A third option exists where certain waste may be removed from the site, leaving the balance in situ to be managed appropriately.
- 9.17** A Ministerial direction issued in 2005 and the EPA code of practice both specify that for illegal sites identified, remediation requires the removal of all waste except where it is shown that an alternative solution provides greater protection to the environment and the health of the local population.
- 9.18** The site remediation plans prepared by local authorities are assessed for funding purposes in different ways. The approach taken depends on whether the site was operated by the local authority or a private operator and on when it operated.
- 9.19** Remediation plans in respect of local authority landfill sites operated in the period between July 1977 and March 1997 are submitted to the EPA along with applications for certificates of authorisation. Approval is granted by the EPA, via a certificate of authorisation, when it is satisfied that the proposed works and aftercare programmes are suitable and robust. Although 152 of the 280 sites had been assessed as being high or moderate risk, by the end of 2019, the EPA had issued final certificates of authorisation for remediation work in only 11 cases (7% of the 152 sites) (see Figure 9.4). Applications had been received in respect of a further 18 high or moderate risk sites. The EPA informed the examination team that applications in respect of five of those sites were at an advanced stage of certification.
- 9.20** Remediation plans for other types of sites — illegal, private and pre-1977 local authority landfills — must be signed off by a qualified person (either within the local authority or an external consultant) before grant funding can be approved by the Department. There is no central data on the status of remediation of the 214 sites in this category identified up to the end of 2019.

Figure 9.4 Actions in relation to remediation of local authority sites that operated post 1977,^a at 31 December 2019

	High or moderate risk	Low risk and not categorised	All sites
Final certificates of authorisation for remediation work issued	11	2	13
Applications for certificates of authorisation submitted to EPA ^b	18	9	27
Assessment ongoing or no action	123	117	240
All sites	152	128	280

Source: EPA

Notes: a This table relates to sites that operated between July 1977 and March 1997, and that had ceased operations prior to EPA licensing.

b The EPA informed the examination team that five applications were at an advanced stage of certification.

Remediation of EPA regulated sites

- 9.21** From March 1997, the EPA became the regulatory and licensing authority for all operational landfills, whether local authority or privately operated. By end 2019, all but three of the 117 licensed sites had ceased operating (see Figure 9.5). Licences issued were specific to the type of waste which could be deposited and contained technical specifications and conditions to manage the environmental risk. Adherence to the conditions of the licence is subject to ongoing monitoring by the EPA. Licensing infringements may result in prosecution of the landfill operators.
- 9.22** Convictions were secured by the EPA against local authorities on 18 occasions for breaches of licensing conditions, usually concerning odours, nuisance or failure to install adequate infrastructure. Five prosecutions were taken by the EPA in relation to privately-owned licensed landfills, resulting in three convictions, with the Probation Act being applied on two occasions.

Figure 9.5 Status and enforcement activity of sites regulated by the EPA, at 31 December 2019

	Privately owned	Local authority	Total
Closed	50	64	114
Operational	3	—	3
Total number of sites	53	64	117
Prosecutions resulting in a conviction	3	18	21

Source: EPA

Department's expenditure on remediation

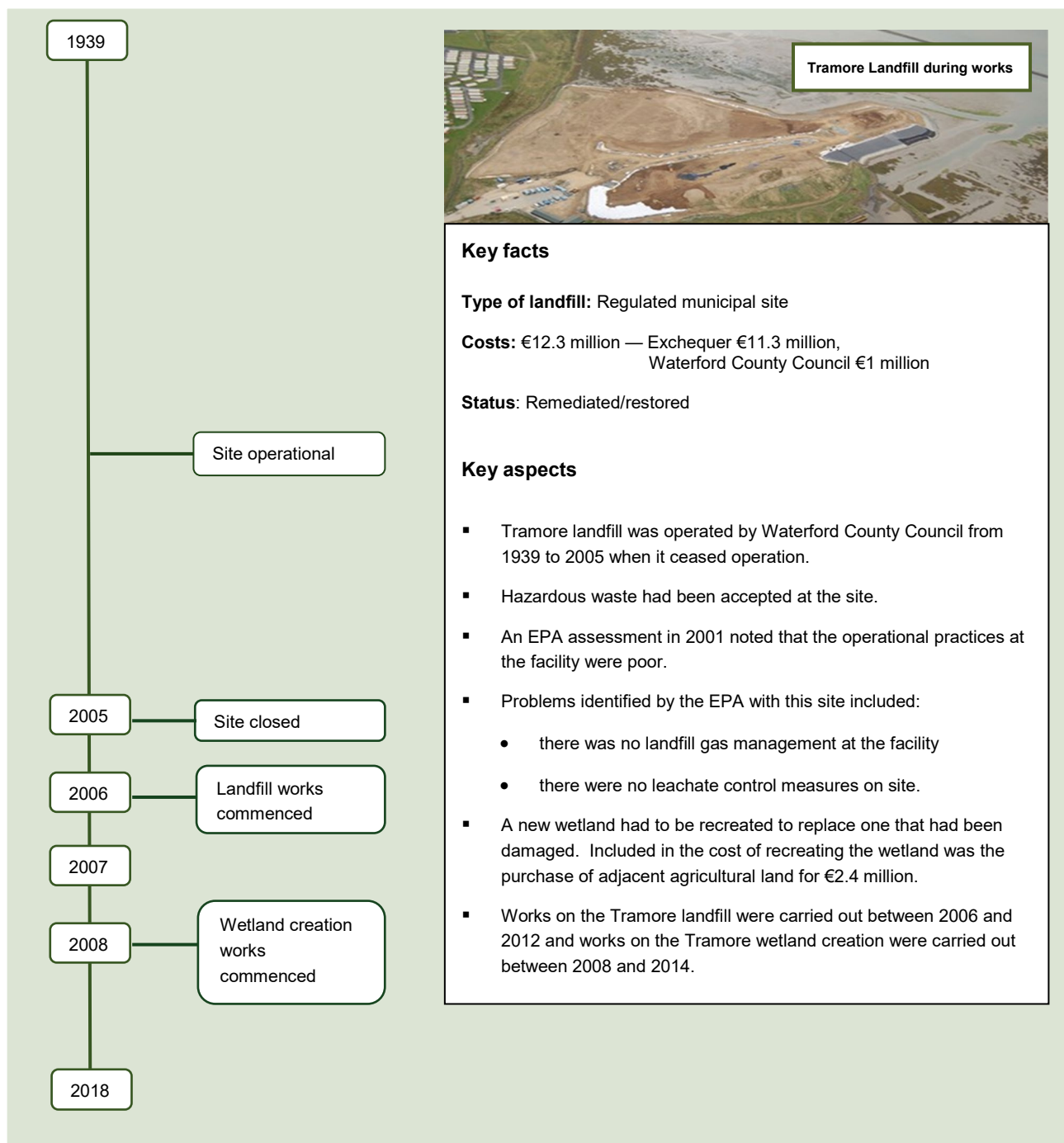
- 9.23** Up to the end of 2019, the Department had provided a total of €158.4 million on landfill remediation of 122 sites. Over four fifths of the expenditure was provided from voted funds, with the balance issuing from the Environment Fund. The level of expenditure for landfill remediation varied significantly between sites.
- 9.24** The Department provided €52.4 million for land remediation at the Haulbowline former industrial site in Cork harbour. In addition to the Department's expenditure, the Department of Agriculture, Food and the Marine spent a further €24.6 million between 2011 and 2019 on remediation of the Haulbowline site. This brings the total funding provision for remediation of that single site to €77 million.
- 9.25** The Department provided over €23.9 million for remediation work on a former licensed commercial landfill site at Kerdiffstown in County Kildare (see Case study 3) and €9.6 million for enforcement action and aftercare works at a licensed and former privately operated landfill site at Kilconnell in County Galway (see Case study 4). The Department estimates that up to a further €68 million may be required to complete remediation work at the Kerdiffstown and Kilconnell sites.
- 9.26** Funding provision to the end of 2019 for remediation of other sites was significantly more modest, at just over €72 million for 119 sites — an average of around €609,000. However, remediation is not yet completed on most of the sites. The total cost of completing ongoing remediation works at sites (other than Kerdiffstown and Kilconnell) has not been estimated.
- 9.27** In addition to unregulated sites identified by local authorities, illegal dumping of waste in 17 sites in Northern Ireland has been identified as having originated from south of the border. Remediation of the problem in 12 of the sites (accounting for an estimated 42% of the illegal waste) has been completed, through removal of the waste and restoration of the sites, at a cost to the Irish State of approximately €8 million.¹ Negotiations with the Northern Ireland authorities on the method of remediation of the remaining five sites are ongoing.
- 9.28** Estimates of potential future remediation costs in relation to other identified landfill sites are not available. The Department has stated that most of these projects are currently undergoing tier 2 and tier 3 risk assessments which will inform the site resolution plan and projected remediation costings are consequently not yet available.

Case study 1: remediation of a regulated local authority landfill involving restoration of wetlands

- 9.29** The case study outlines the process of remediation undertaken at a local authority landfill located at Tramore, County Waterford. The landfill operated for many years, accepting a wide range of waste, including hazardous waste, and the EPA had been critical of aspects of how it was operated.
- 9.30** The remediation works carried out at the landfill site and the adjacent wetland cost a total of €12.3 million, of which €11.3 million came from the Exchequer and the Environment Fund and €1 million came from Waterford County Council. The works undertaken included restoration of damaged wetland habitats (cost €7.6 million) and the remediation of Tramore landfill (cost €4.7 million). All capital remediation works have been completed, and the Tramore landfill is being managed and monitored to protect the environment.

¹ Funding for the payments came from the Environment Fund.

Case study 1 Tramore — Waterford County Council

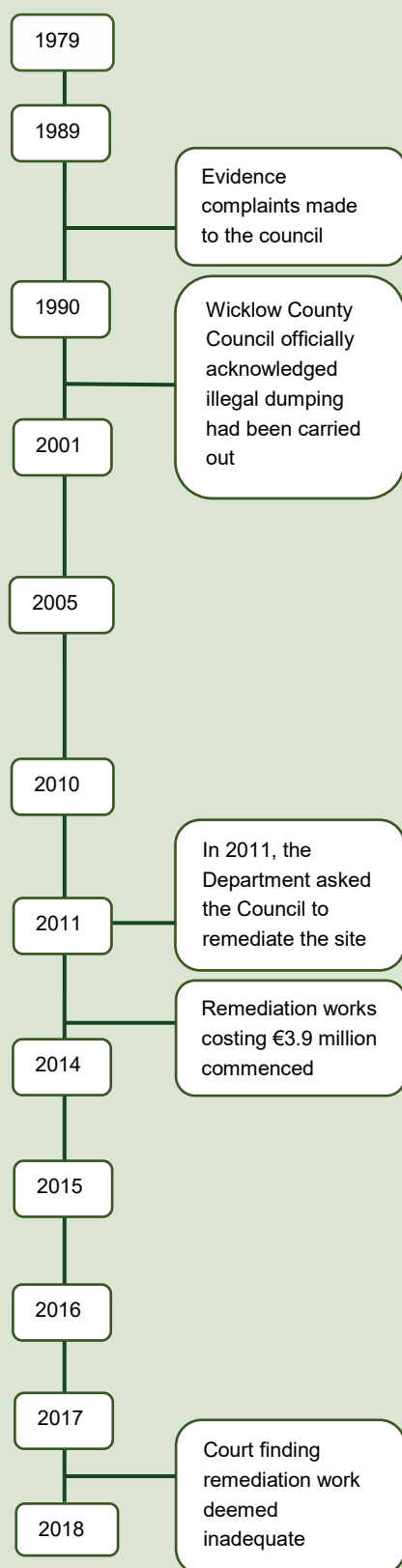


Source: Office of the Comptroller and Auditor General

Case study 2: remediation of illegal waste site

- 9.31** The case study outlines the circumstances of a landfill remediation project undertaken at Whitestown in County Wicklow, where large quantities of waste were illegally deposited over many years up to 2001. The illegal dump at Whitestown was cited in the 2005 European Court of Justice case as an example in which Ireland was failing to fulfil its obligations under the 1975 Waste Framework Directive.
- 9.32** In 2005, Wicklow County Council sought to have the polluters and the then owners rectify the site and a licence issued by the EPA specified that all non-inert waste was to be removed off-site. A number of criminal convictions resulted from investigations undertaken by the Council.
- 9.33** In 2008, the subsequent owners of the site commenced legal proceedings seeking orders requiring the Council to remediate the site on the basis that the Council and its agents (amongst others) had, over many years, illegally deposited waste on the site. In 2011, the Department asked the Council to remediate the site as a matter of priority. The Department took the decision to underwrite the Council's costs for the remediation because of the risk of pollution and to avoid further EU infringement proceedings, including potential daily fines.
- 9.34** The Council, working with the EPA, established a technical working group to oversee the proposed programme of site investigation, risk assessment and remediation works. The working group recommended and the Department agreed to leave much of the waste at Whitestown on site. Following a tender competition, the remediation works undertaken on behalf of the Council were completed in 2015 at a cost of €3.9 million.
- 9.35** On foot of legal proceedings subsequently taken by the owners of the site against the Council, the High Court found that the remediation undertaken at Whitestown was not in compliance with EU law and that the remediation methodology was flawed, resulting in hazardous waste being mixed with other waste, and potential contamination of the site. In addition, the need for ongoing monitoring of the landfill site means that the Council cannot state when it will be in a position to hand the site back to its owners. The Court ordered the Council to remove to a licensed waste disposal facility all waste (and all soil or other materials contaminated or potentially contaminated by such waste) from all areas of the site including areas that were already the subject of attempted remediation, and to appropriately fill and landscape the site with inert matter sourced elsewhere.
- 9.36** The Department has stated that the costs of the required remediation work at the Whitestown site are not yet known and that Wicklow County Council has been contacted regularly to provide updates on on-going works and to submit a new site resolution plan. The Department has not received further remediation plans or a site resolution plan and no further funding application has been made by Wicklow County Council. The Department is not a party to the High Court proceedings.

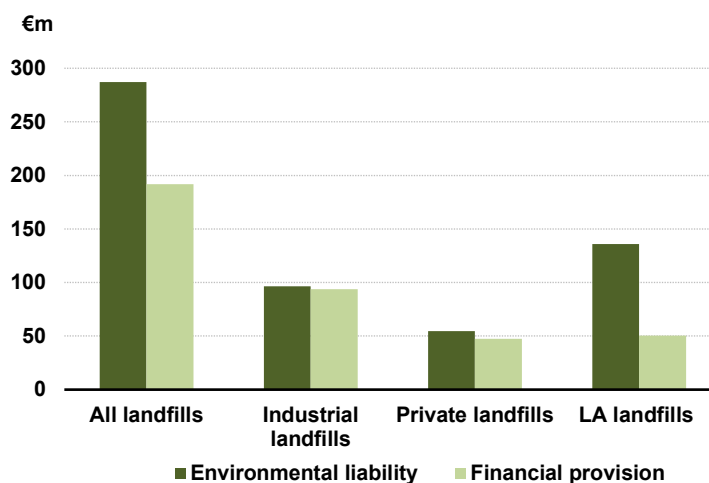
Case study 2 Whitestown — Wicklow County Council

**Key facts****Type of landfill:** Illegal**Costs to date:** €4.1 million**Status:** Site resolution plan awaited**Key aspects/future costs**

- The site has been described as the largest illegal dump discovered in the State and was operated from 1979 until late 2001.
- Waste including domestic, hospital, industrial and construction waste had been dumped illegally at this site. Some of the construction waste came from civil engineering works undertaken by or on behalf of local authorities, including toxic tarmacadam and road spoil.
- The site was cited in the 2005 European Court of Justice judgement in Case C 494/01 as an example of Ireland's failure to comply with the 1975 Waste Framework Directive.
- Remediation work was carried out on the site commencing in 2013, at a cost to the Department of €3.9 million.
- The owner of the site (Brownfield Restoration (Ireland) Limited) took a legal case against Wicklow County Council alleging that the Council did not carry out a proper remediation of the site.
- The High Court found in 2017 that remediation work carried out by the Council in 2014 had been deficient.
- Following the High Court decision, a tier 1 environmental risk assessment was completed in February 2019. The assessment indicated that the site is high risk.
- Site investigation is currently underway and it is expected that a site remediation plan will be completed and circulated to relevant stakeholders before the end of November 2020.
- The Department has no detail on the final costs to remediate the site.
- As at 31 December 2019, the State has spent €0.2 million on site investigations and in developing a remediation plan.

Financial provision for remediation costs

- 9.37** Under Irish environmental law, the EPA requires licensees to make adequate financial provision to manage the potential environmental liabilities which may occur as a result of their licensed activities. Financial provision is a requirement of the Landfill Directive 1999/31/EC which came into effect from July 2009 and involves putting in place a financial instrument or other approved financial provision to cover the full cost of responding and remedial measures if an incident occurs, and/or the costs of closure, decommissioning, restoration, aftercare and management. The provisions apply to a total of 63 sites, including 50 that have operated after July 2009 and 13 local authority sites closed before July 2009 where the EPA has required financial provision to be put in place due to some contamination on the site. Different arrangements apply depending on whether the site is privately owned or operated by the local authority.
- **Private/industrial sites (25)** — Drawing on lessons learned where financial provisions proved inadequate or failed in a legal challenge, the EPA has in recent years strengthened its requirements in respect of all landfills, particularly privately operated/industrial landfills, including those which have closed. Once environmental liability costings are agreed with the EPA, the options for the operators in question include the putting in place of secured funds, on-demand bonds and environmental impairment insurance policies.
 - **Local authority sites (38)** — For local authority sites operating since July 2009, the relevant local authorities have been asked to project the cost of the closure, restoration and aftercare works for the sites and to provide the EPA with a written agreement accepting liability for undertaking the works. Once the potential liability has been agreed, the local authority may make
 - special reserve to meet all liabilities arising, or
 - establish special reserve to partially meet the liability and provide an undertaking that the balance of funding will come from borrowings and annual budgets, or
 - give an undertaking to finance all liabilities as they arise from annual budgets and borrowings.
- 9.38** Financial provision agreements are now in place in respect of
- eight of 13 private landfills — covering 87% of the estimated environmental liability
 - ten of 12 industrial landfills — covering 97% of the estimated environmental liability
 - four of 38 local authority landfills — covering 37% of the estimated environmental liability.
- 9.39** As at 31 August 2020, the value of financial provisions in place in relation to environmental liabilities associated with incidents and closure/aftercare at all licensed landfills stood at €191.7 million — €141.2 million for privately operated/industrial landfills and €50.5 million for local authority licensed landfills (see Figure 9.6).

Figure 9.6 Environmental liability and financial provision for landfill sites

Source: Office of the Comptroller and Auditor General

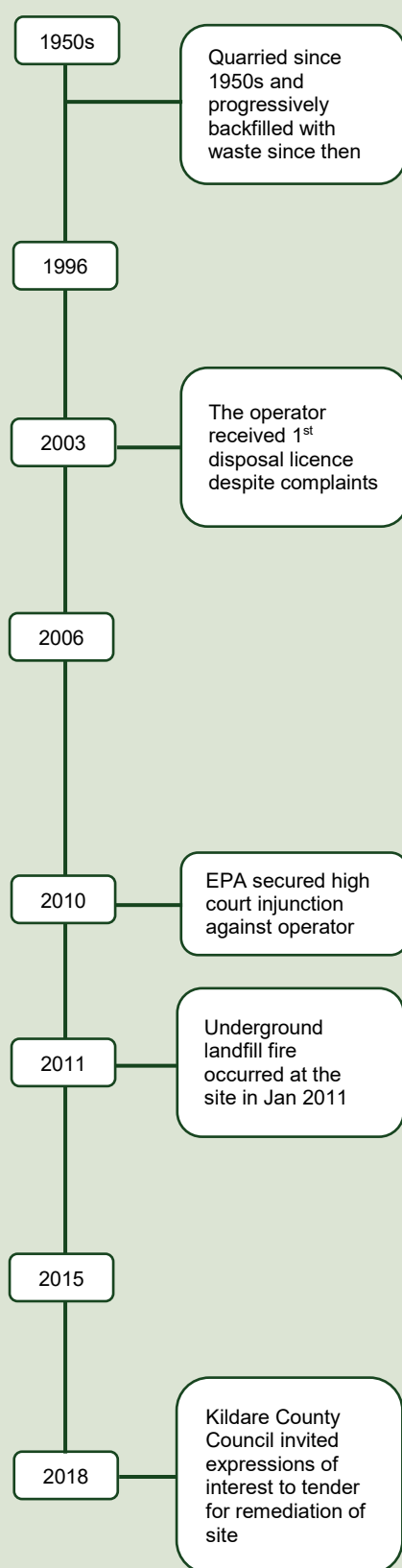
Case study 3: remediation of a regulated private landfill

- 9.40** The case study relates to a privately-owned landfill at Kerdiffstown, County Kildare that had operated commercially over many years. The operator was found to be in breach of the terms of the licence on several occasions. In February 2011, the EPA took possession of the site because of concerns for public health and safety. Ownership of the site now resides with Kildare County Council and in March 2019 the EPA granted the Council a licence to manage the site.
- 9.41** By the end of 2019, a total of €23.9 million had been provided by the Department to meet the costs of enforcement actions, securing the site and carrying out preparatory works for remediation. The cost for the remaining remediation works and for the proposed end use of the site as a public recreational park is estimated at €50 million. The procurement process to award a tender for these additional works is on-going with a view to awarding a contract in the latter half of 2020.
- 9.42** Criminal proceedings are underway. In earlier proceedings taken by the EPA against the operators, the High Court set aside limited liability protection in order to impose personal liability on company officers. A fine of €20 million was imposed in 2015 but this has not been paid.

Case study 4: takeover of regulated waste management facility following receivership

- 9.43** The case study is an example of a more recently established landfill, operating commercially since 2005 at Kilconnell in County Galway under a licence issued by the EPA. A substantial financial provision to cover liabilities arising in the event of closure, remediation and aftercare was a condition of the licence. A receiver was appointed to the company in 2013.
- 9.44** The EPA encountered difficulties in the release of the financial provision and the High Court ruled against the EPA in a case taken against the operator, its bank and the receiver. A negotiated settlement with the bank of €2 million was subsequently achieved. Based on current assessments, the cost of site closure works and long term monitoring is estimated at €17.8 million.

Case study 3 Kerdiffstown — Kildare County Council

**Key facts**

Type of landfill: Licensed private landfill site

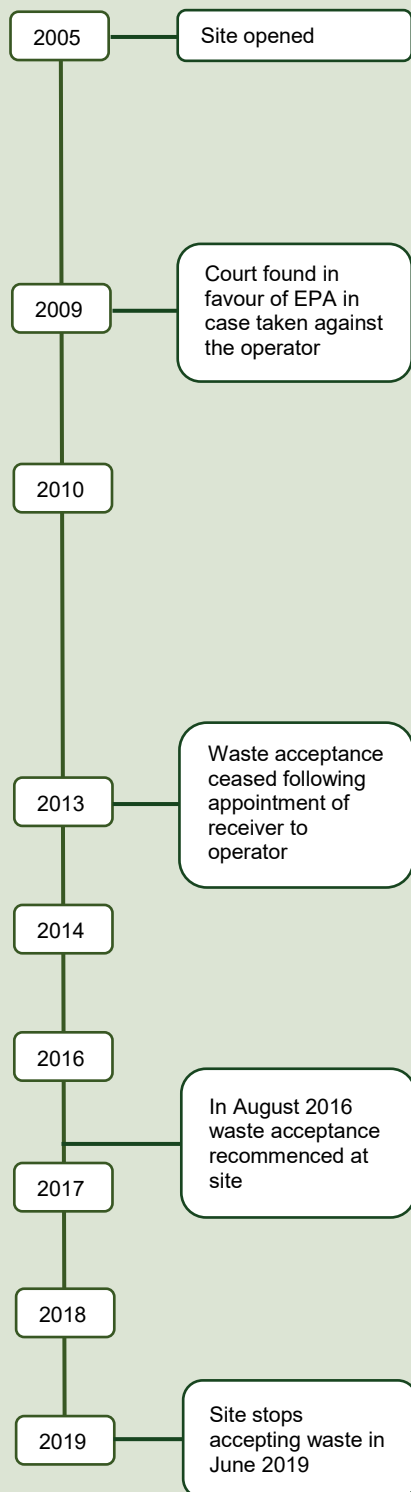
Costs to date: €23.9 million

Status: Under remediation

Key aspects/future costs

- The site was originally a sand and gravel quarry which has been progressively backfilled with waste since the 1950s. The site was operated under a local authority waste permit, and later by a waste licence for structural waste issued by the EPA in 2003.
- The operator was found to be in breach of the terms of the licence on several occasions with breaches ranging from security and management of the site to the type of waste being accepted.
- In 2010, the EPA secured a High Court injunction against the operator of the site. The operator of the facility vacated the site soon after.
- In January 2011, a major fire ignited at the site which took 30 days to bring under control.
- Because of concerns for public health and safety and for the environment, the EPA exercised its statutory powers and took possession of the site.
- Ownership of the site transferred to Kildare County Council in June 2015.
- On foot of a file prepared by the EPA, a criminal case taken by the Director of Public Prosecutions against the landowner concluded in 2015 with fines of €20 million imposed. The fine, which was payable to the Exchequer, has not been paid as the company in question has no assets.
- As at 31 December 2019, the State has spent €23.9 million on enforcement actions and securing and remediating the site.
- The estimated cost for remediation and the proposed end use of a public recreational park is €50 million. The procurement process to award a successful tender for these works is ongoing with a view to awarding a contract later in 2020.

Case study 4 Kilconnell — Galway County Council

**Key facts**

Type of landfill: private landfill — greenfield site turned into a landfill under licence issued by the EPA from December 2005

Costs to date: €9.6 million

Status: Closed in 2020 with requirement for ongoing aftercare

Key aspects/future costs

- In 2005, a commercial operator opened the Kilconnell landfill, under a waste licence issued by the EPA.
- A condition of the licence was that the operator make adequate financial provision for potential liabilities in the event of closure, aftercare and remedial measures in the event of an incident.
- The landfill accepted waste from December 2005 to May 2013 at a rate of 100,000 tonnes per annum for disposal and up to 27,320 tonnes per annum of engineering material for recovery purposes.
- The landfill ceased to operate in May 2013 when a receiver was appointed to the operating company.
- In July 2013, the EPA exercised its powers to enter the site and appointed Galway County Council as agents and authorised officers on an emergency basis. In 2015, Galway County Council took over the site.
- In August 2016, waste acceptance recommenced with the landfill under the control of Galway County Council. The site ceased operations in March 2020 and is no longer active.
- The EPA had legal difficulties in enforcing the financial provision in relation to the site.
- The High Court ruled against the EPA in a case brought against the operators, their bank and the receiver to release the financial provision set aside for the purpose of financing the closure, remediation and after care of the site.
- The EPA appealed the High Court decision to the Supreme Court. The appeal was withdrawn when a settlement was agreed with the bank.
- Based on current assessments, the cost of site closure works and long term monitoring (for 30 years) is estimated at €17.8 million.

Conclusions and recommendations

- 9.45** Waste management in Ireland has undergone significant structural change in the last two decades. There has been a move away from almost total reliance on landfill to the present situation where considerable quantities of waste are recycled or recovered, and there is significant reliance on incineration of non-recyclable waste. This is reflected in the steady decline in the number of operating landfills — just three were operational in 2019. Notwithstanding this change, the past reliance on landfills means that remediation and ongoing monitoring of closed sites will remain a significant cost into future years.
- 9.46** A total of 611 landfill sites have been identified. Almost all of these have now ceased operations. The sites are very diverse in terms of their regulation and operation, reflecting changing statutory arrangements over the past five decades, against a backdrop of progressively tightening EU waste management requirements and the threat of fines for non-compliance. A consequence of the changing arrangements is that responsibility for the oversight and remediation of the sites is dispersed among many agencies.

Recommendation 9.1

The Department should conduct a comprehensive review of governance arrangements related to landfill sites to ensure that responsibilities for oversight and monitoring of landfill sites are clearly defined and assigned to ensure that appropriate steps to eliminate risks to the environment and communities are taken in a timely and efficient manner.

Accounting Officer's response

Agreed.

Extensive work has already been undertaken to improve governance arrangements for the landfill remediation programme including the appointment of regional coordinators in the local authority sector and the establishment of a steering group in 2019. The steering group, chaired by the Department and supported by the regional waste planning offices, meets quarterly to review project progress, allocation and drawdown of funds, and to identify and respond to emerging policy and operational issues. It is proposed to finalise a memorandum of understanding with the EPA and local authority sector (by the end of March 2021) which will set out the agreed roles and objectives for each body in the delivery and management of the national response to landfill sites to ensure a continued and consistent response to mitigating any environmental risk posed by landfill sites.

- 9.47** Monitoring environmental risk factors associated with landfill sites is important in ensuring that the environment is protected and remediation costs are minimised.
- 9.48** The EPA monitors environmental risk factors on an ongoing basis on the 117 landfill sites it has licensed and regulated since March 1997 (64 operated by local authorities and 53 privately operated). By the end of 2019, only three privately operated landfills were still in operation.

- 9.49** The EPA does not monitor environmental risk factors at the remaining 494 landfills that have been identified by the local authorities and are registered on an EPA-hosted database.
- 9.50** More than half (152) of the 280 sites operated by local authorities and subsequently closed between June 1977 and March 1997 have been assessed as of either moderate or high risk. Remediation plans have been submitted to the EPA, as part of applications for certificates of authorisation, in respect of only 29 (19%) of these. Certificates of authorisation have been issued in respect of only 11 sites (7%).
- 9.51** Neither the EPA, nor the Department, nor the regional waste management planning offices were able to provide the examination team with complete information on the risk assessment status of the remaining 214 sites on the register as at 31 December 2019 which included pre-1977 local authority sites, private sites and illegal sites.

Recommendation 9.2

The Department should develop proposals for ensuring that all outstanding risk assessments are completed on a timely basis and that remediation plans are put in place as a matter of priority in respect of those landfill sites which are assessed as of either moderate or high risk.

Accounting Officer's response

Agreed.

The completion of outstanding risk assessments and the putting in place of appropriate remediation plans is a priority for the Department and local authorities. This work is significantly advanced and ongoing at local authority level, monitored by the steering group. Information on historic and legacy landfill sites is set out in the existing regional waste management plans (RWMPs) from 2015 and a comprehensive update will be included in the next set of RWMPs which are due to be published in 2021.

- 9.52** A total of €77 million was expended by central government departments on remediation of the Haulbowline site. In addition, under a grant scheme that applied to sites that closed before April 2009, the Department has expended nearly €106 million in support of local authorities undertaking remediation works on 121 landfill sites. Works on 22 sites have been completed. On two of the larger sites (Kerdiffstown and Kilconnell) where work is ongoing, the Department projects grant funding of a further €68 million will be required. There is no estimate of the expenditure that may be required by local authorities in relation to the remaining sites where remediation is ongoing.

Recommendation 9.3

The Department should develop medium term estimates of the future costs associated with landfill remediation.

Accounting Officer's response

Agreed.

The Department has well established cost estimates for a number of sites, such as Kerdiffstown and Kilconnell and the development of medium term estimates of other future costs will be a key output for the steering group.

- 9.53** Financial provision arrangements as part of EPA licensing are intended to ensure that there will be sufficient resources available to fund restoration and aftercare costs when landfill sites close, or when pollution incidents occur during operation.
- 9.54** Kilconnell landfill is an example of where the financial provision arrangement in place failed to provide the funds required to meet closure and aftercare costs. Instead, the Department is having to fund substantial costs associated with closure, remediation and ongoing monitoring of the site.
- 9.55** The EPA has taken action to improve the value and robustness of the financial provisions put in place in respect of all landfills, particularly privately operated/industrial landfills. As at the end of August 2020, for the 22 privately operated/industrial landfills for which projected environmental liability costings had been agreed, financial provisions were in place to cover more than 93% of those costings. Nevertheless, there remains a gap of €10 million between the environmental liabilities costed and the financial provisions put in place for privately operated/industrial landfills.

