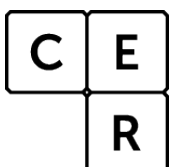
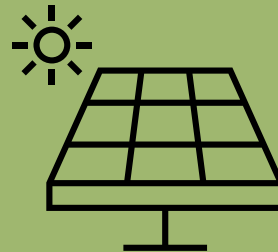
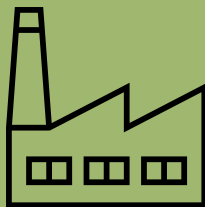
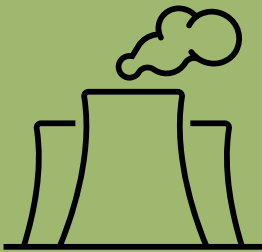


Landfill site plan and verification requirements

Methods 2 and 3

Published July 2021. In force from 2020–21
onwards.





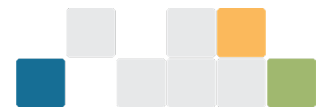
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Please note: Minor stylistic and formatting changes were made in July 2023 and August 2024



Term	Meaning
NGER	National Greenhouse and Energy Reporting
NGER Act	<i>National Greenhouse and Energy Reporting Act 2007</i>
NGER Legislation	NGER Act, NGER Measurement Determination and NGER Regulations
NGER Measurement Determination	National Greenhouse and Energy Reporting (Measurement) Determination 2008
NGER Regulations	National Greenhouse and Energy Reporting Regulations 2008



1. Emissions of methane released from landfills

The National Greenhouse and Energy Reporting (Measurement) Determination 2008 (NGER Measurement Determination) sets out how to estimate emissions of greenhouse gases from the source 'Solid waste disposal on land'.

Section 5.17 of the NGER Measurement Determination requires the operator of the landfill to prepare a **site plan** of the landfill if they are estimating methane emissions using Method 2 (see section 5.15 'Method 2—methane released by landfill (other than from flaring of methane)' or Method 3 (see section 5.18 'Method 3—methane released from solid waste at landfills (other than from flaring of methane)').

The NGER Measurement Determination requires that the site plan must be consistent with the provisions of this document, and, where the landfill has more than one sub-facility zone, the site plan must show the boundaries of each sub-facility zone.

Once the site plan has been prepared, Methods 2 and 3 require the operator of the landfill to select a representative zone with the sub-facility zone (see section 5.17A of the NGER Measurement Determination). After this is done, the operator must arrange for an independent expert to certify certain matters in relation to the zone, and prepare a written report for the zone (see section 5.17B of the NGER Measurement Determination). The NGER Measurement Determination requires that the expert report include the details specified in this document.

1.1 Requirements for landfill site plans

The operator of the landfill must prepare a site plan of the landfill before methane generated from the landfill can be estimated using Methods 2 or 3.

The site plan must include the following information:

- a description of basic site characteristics:
 - » the planned life of the facility and permitted volumes of waste disposal
 - » the exact boundaries of the waste disposal area
 - » containment design (liner and capping)
 - » fill process (for example, phased or cell; landfill or landraise)
 - » side slopes and edges
 - » any fissures or weak points in the cap where emissions may be high
- spatial mapping of permanent and temporary capped zones and uncapped zones
- spatial mapping of volumes, mass and age of waste disposed at the facility
- description of gas control systems:
 - » locations of wells and their capacity and other relevant attributes
 - » gas monitoring points
 - » density of well sub-systems
 - » description of flares (location, timing and gas capacities)
- leachate management systems
 - » leachate towers, sumps, riser systems (including recirculation)



- » leachate monitoring points
- » presence of former co-disposal systems (e.g. liquid disposal trenches)
- the boundaries of all sub-facility and representative zones
- any other features of the facility that could impact on flux box locations or the capacity of a representative zone to be representative of the facility.

1.2 Engagement of an independent expert

After the operator of the landfill has selected a representative zone for a sub-facility zone, the operator of the landfill must arrange for an independent expert to certify, in writing, that:

- the boundaries of the representative zone are appropriate for the purpose of obtaining accurate and representative estimates of the methane being generated by the representative zone
- the representative zone is representative of the sub-facility zone.

The independent expert must also prepare a written report for the representative zone that includes the details specified in section 1.3 of this document.

The operator of the facility must enter into a written agreement with the expert, which may be by an exchange of letters, specifying the terms governing the preparation of a report providing an assessment on the selection of the representative zone.

1.3 Expert reports on representative zones

The written report must contain all information which the operator, and others likely to rely on the report, would reasonably require, and reasonably expect to find in the report, for the purpose of making an informed decision about the representativeness of the selected zone.

Accordingly, the report should include as a minimum:

- a description of the relevant aspects of the facility
- an account of the material history of the facility, including the volume, mass, age and types of waste in the representative zone
- an assessment as to the degree of uniformity of moisture levels between the representative zone and the remainder of the landfill, taking into account the technologies and processes used in the representative zone that affect moisture levels compared with other parts of the facility including the use of leachate recirculation and cell size
- an assessment of the degree of uniformity of the depth of waste, taking into account the results of volumetric surveys conducted for the site, if any have been conducted.

The independent expert's report must also provide an assessment as to whether the boundaries of the representative zone are appropriate. The boundaries of the zone should define the volume of waste that is generating the gas captured by the collection system within the representative zone.

- For any given point on the boundary, the location of the boundary should be located by determining a distance between two adjacent wells - one well internal to the selected area and one well external to the selected area - which is proportional to the relative landfill gas flow rate of each well recorded over the test period. The data used must have been recorded during periods of operation of the collection system that reflect normal operating conditions (i.e. consistent with the operation of the system on days of flux box measurement). There must be no significant net flow of landfill gas across the representative zone boundary when the measurements are made.



- For zones with vertical well systems in place, the boundary can be assumed to be a vertical surface extending from the landfill surface to the base of the waste.
- For zones with horizontal well systems in place, the representative zone may be estimated on the zone of influence of the horizontal well system.

Detailed technical information and data should be included in the report if their understanding is important to any of the required assessments. Explanations of unusual or new technical processes and activities that may be material to the understanding of the assessment should be included, where commercial confidentiality considerations allow.

Experts must not rely uncritically on the data and other information provided, either by the operator of the facility or obtained otherwise. They must undertake suitable checks, enquiries, analyses and verification procedures to establish reasonable grounds for establishing the soundness of the contents and conclusions of the report.

The expert must either certify that the representative zone has been selected in accordance with the requirements set out in this document and the NGER Measurement Determination, or the contrary, and personally sign the report.

More information

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