



Waste levy – Measuring waste tonnages

This is part of a series of fact sheets on disposal facility obligations under the Waste Minimisation Act 2008

What needs to be measured

The Waste Minimisation Act 2008 (WMA) requires disposal facility operators to measure waste that is disposed of at their facility. An operator must measure:

Gross tonnage	the total tonnage of waste or diverted material that enters the facility
Diverted tonnage	the tonnage of waste or diverted material that enters the facility but is reused, recycled or removed from the facility within six months of it arriving

The measurement of diverted tonnage must include waste previously measured as gross tonnage. Diverted tonnage may include waste deliberately burnt at the facility to recover energy from it but not waste burnt at the facility to destroy it.

These tonnages are used to calculate **net tonnage**, which is the tonnage used by the Ministry to calculate the levy owed by the disposal facility. Net tonnage is the gross tonnage minus diverted tonnage.

A common error in the calculation process is including only waste in the gross tonnage. Instead, all material should be included under the gross tonnage, including materials that are later intended for recycling or recovery (that is, diversion).

Ways to measure waste

Gross tonnage must be measured either by weighbridge, volume conversion or average tonnage. Diverted tonnage must be measured only by weighbridge or volume conversion.

Measuring by weighbridge

If there is a compliant and functioning weighbridge at a disposal facility, the gross tonnage and diverted tonnage that enters the facility must be weighed using the weighbridge.

In any other case, an operator may measure gross and diverted tonnage using any other compliant weighbridge (such as an off-site weighbridge).

If an operator does not have access to a compliant weighbridge, they may use a conversion factor to convert the volume of waste or diverted material into weight (discussed below).

A compliant weighbridge must be compliant with the Weights and Measures Act 1987 and display a mark of verification. For more information on weighbridges see [the Trading Standards website](#).

Using the volume conversion method

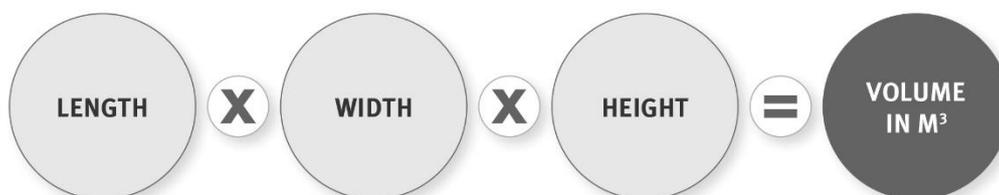
An operator must use the volume conversion method if they do not have access to a compliant weighbridge. The volume conversion method uses the assessed volume of material and conversion factors in this formula to calculate gross or diverted tonnage:



You can measure assessed volume using:

- a compliant measuring instrument such as a tape measure, to measure the volume of waste in the container, for example, physically measuring the dimensions of a container or skip bin
- estimating the volume as accurately as possible, such as estimating the volume of a gardening bag full of green waste
- using information on the volume capacity of types of vehicles.

When measuring volume using a measuring instrument, you should use the following formula:



If you are assessing volume, you need to have records showing how the volume was assessed.

Once you have assessed the volume, choose the most appropriate conversion factor, These are listed in [Schedule 1 of the Regulations](#) or [appendix 1](#) of this factsheet. You will need to assess the waste being deposited and choose the relevant conversion factor using the description of the waste in the schedule. The categories are broad so choose the most appropriate category of waste and record your decision.

Example 1: Car boot with rubbish from clean-up at home

- Car arrives at the disposal facility.
 - Volume capacity (in cubic metres) of car boot is measured using a measuring instrument.
 - The relevant conversion factor in Regulations for waste carried in rubbish bags or cars – 0.130 tonnes/m³ – is applied.
 - The tonnage of waste to be disposed of is: Volume of car boot (m³) x 0.130 tonnes/m³.
- A record that captures the above is created.

Using the average tonnage system

An average tonnage system allows you to weigh a sample of the vehicles delivering waste to the disposal facility and calculate an average weight of waste carried either for specific types of vehicles set out in [appendix 2](#).

To use an average tonnage system, you must first get approval from the Ministry for the Environment through the [Online Waste Levy System](#). Average tonnage can only be used to calculate gross tonnage, not diverted tonnage. The volume-conversion system or an off-site weighbridge should be used to calculate diverted tonnage once the materials have been bulked up and are diverted from the site.

The most straightforward way to calculate the average load weight is by weighing several vehicle loads, either at random or consecutively.

The load weight of each vehicle must be worked out by weighing the vehicle before and after the waste has been dropped off. Operators can use either an on-site or off-site weighbridge or conversion factor. We strongly recommend you use a weighbridge.

The average load weight is then calculated by dividing the sum of the net load weights by the number of vehicles surveyed.

What to do with measurements?

The WMA requires disposal facility operators to keep the original records of the tonnages of waste and diverted material. These records are used when the Ministry audits a disposal facility. It is an offence under the WMA for a disposal facility to fail to keep accurate records.

The measurements are also included in the monthly or annual returns a disposal facility operator provides to the Ministry. These returns are used by the Ministry to calculate how much levy is owed by a disposal facility operator.

Please see [the Waste levy: Filing a waste return](#) factsheet for more information.

Appendix 1 – Conversion factors

Type of waste or diverted material	Description of waste or diverted material	Conversion factor
Waste or material in rubbish bags or carried in cars	Small loads (0.5 cubic metres or less) of uncompacted general waste or material, including bags of domestic and commercial refuse Or Waste or material for diversion that is similar in density to loose and uncompacted recyclable containers, such as cans and plastic bottles	0.130 tonnes (130 kg)/cubic metre
Uncompacted general waste or material	Larger loads (more than 0.5 cubic metres) of uncompacted waste or material from residential, commercial, industrial, construction and demolition (excluding clean fill) and landscaping activities Or Waste or material for diversion that is similar in density to timber or uncompacted cardboard and paper	0.200 tonnes (200 kg)/cubic metre
Compacted waste or material	Waste or material carried in a compacted state (including in kerbside collection compactors, stationary compactors and front-end loaders) and compacted bulk waste or material from transfer stations Or Waste or material for diversion that is similar in density to whole glass bottles and loose light-gauge scrap metal	0.320 tonnes (320 kg)/cubic metre
High-density waste or material	Waste or material composed of materials with a specific gravity greater than 1.0 (for example, concrete and masonry rubble, clay, soil, slags, sludges (including biosolids), ash, foundry sand, pomace (fruit pulp) and abattoir waste) Or Waste or material for diversion that is similar in density to crushed glass	1.500 tonnes (1500 kg)/cubic metre

Appendix 2 – Average tonnage vehicles

Class	Description
MA (Passenger car) 	A passenger vehicle (other than a Class MB or Class MC vehicle) that has no more than nine seats (including the driver's seat)
MB (Forward control passenger vehicle) 	A passenger vehicle (other than a Class MC vehicle): <ol style="list-style-type: none"> a. that has no more than nine seats (including the driver's seat), and b. in which the centre of the steering wheel is in the forward quarter of the vehicle's total length
MC (Off-road passenger vehicle) 	A passenger vehicle, designed with special features for off-road operation, that has no more than nine seats (including the driver's seat), and that: <ol style="list-style-type: none"> a. has four-wheel drive, and b. has at least four of the following characteristics when the vehicle is unladen on a level surface and the front wheels are parallel to the vehicle's longitudinal centreline and the tyres are inflated to the vehicle manufacturer's recommended pressure: <ol style="list-style-type: none"> i. an approach angle of not less than 28 deg ii. a breakover angle of not less than 14 deg iii. a departure angle of not less than 20 deg iv. a running clearance of not less than 200 mm v. a front-axle clearance, rear-axle clearance, or suspension clearance of not less than 175 mm
Omnibus	A passenger vehicle that has more than nine seats (including the driver's seat). An omnibus comprising two or more non-separable but articulated units shall be considered as a single vehicle.
MD 1	An omnibus that has a gross vehicle mass not exceeding 3.5 tonnes and not more than 12 seats
MD 2	An omnibus that has a gross vehicle mass not exceeding 3.5 tonnes and more than 12 seats
Goods vehicle	A motor vehicle that: <ol style="list-style-type: none"> a. is constructed primarily for the carriage of goods, and b. either: <ol style="list-style-type: none"> i. has at least four wheels, or ii. has three wheels and a gross vehicle mass exceeding 1 tonne

Class	Description
	<p>For the purpose of this description:</p> <ul style="list-style-type: none"> a. a vehicle that is constructed for both the carriage of goods and passengers shall be considered primarily for the carriage of goods if the number of seats multiplied by 68 kg is less than 50% of the difference between the gross vehicle mass and the unladen mass b. the equipment and installations carried on special purpose vehicles not designed for the carriage of passengers shall be considered to be goods c. a goods vehicle that has two or more non-separable but articulated units shall be considered to be a single vehicle
NA (Light goods vehicle)	A goods vehicle that has a gross vehicle mass not exceeding 3.5 tonnes
NB (Medium goods vehicle)	A goods vehicle that has a gross vehicle mass exceeding 3.5 tonnes but not exceeding 12 tonnes
NC (Heavy goods vehicle)	A goods vehicle that has a gross vehicle mass exceeding 12 tonnes



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