NABERS

The Rules

Waste

Version 2.1 — June 2025

NABERS is administered by the New South Wales Government.

Cover photo: A waste dock with rows of source-separated 660 litre bins awaiting collection.

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1 Introduction

1.1 General

The National Australian Built Environment Rating System (NABERS) is a performance-based rating system managed by the **National Administrator**.

A **NABERS Waste Rating** is an independent benchmark of a building's waste management performance expressed on a star rating scale. It assesses the environmental impact of **operational waste** materials leaving a building by rating the elements that an organisation has control over. This includes how well a building separates and diverts waste generated in the building into streams that can be re-used and recycled, and whether those materials are likely to go to a facility that will recover the materials.

NABERS rating	Performance comparison
6 stars ★★★★★★	Market leading waste management
5 stars ★★★★★	Excellent waste management
3 stars ★★★	Market average waste management

An accredited **NABERS Waste Rating** is awarded when the **National Administrator** certifies a rating completed by an **Assessor**. The **National Administrator** may independently audit the rating and assist in resolving complex technical issues.

This document contains **Rules** for **Assessors** on the topic of waste measurements that are common across all **NABERS Waste Ratings**. It is intended that this document be read alongside *NABERS The Rules — Waste for Offices*.

These **Rules** will supersede the *NABERS The Rules — Waste v2.0, January 2024*.

1.2 Interpretation of the Rules and Rulings

These **Rules** are to be read in conjunction with the respective NABERS **Rulings** as they apply to the specific building type. **Rulings** are used to address specific issues that may arise after the publication of the **Rules**.

Note: **Rules** texts are amended as required by additional **Rulings** which are published on the NABERS website at www.nabers.gov.au.

Where a conflict between these **Rules** and existing **Rulings** is present, the requirements of the **Rulings** take precedence over the **Rules**.

Assessments for an accredited rating must comply with the version of the **Rules** and any relevant **Rulings** current on the day the rating application is lodged to NABERS, unless the **National Administrator** has specifically approved otherwise in writing.

1.3 Situations not covered by the Rules

Assessors must comply with these **Rules** unless prior approval has been sought and approved by the **National Administrator**.

Where appropriate, **Assessors** may contact the **National Administrator** to propose an alternative methodology, outlining the circumstances and rationale. Prior approval for use is required and may be granted conditionally, on a case-by-case basis and at the **National Administrator**'s discretion.

Procedures not contained within these **Rules** may only be used for a particular rating with prior written approval from the **National Administrator**. Approval to use the same procedure must be sought from the **National Administrator** each time it is proposed to be used. Approval is entirely at the discretion of the **National Administrator**. All written correspondence is required as evidence and should be collected prior to lodging the rating.

1.4 How to use this document

The term "**Rules**" refers to a body of works produced by NABERS that specify what must be examined, tested and documented when an **Assessor** conducts a rating. Wherever the term is used in this document from Chapter 3 onwards, it refers to this document, *NABERS The Rules — Waste*. Other **Rules** documents mentioned in the text are distinguished from the present document by the inclusion of their title.

Text appearing **teal** and **bold** is a defined term. Defined terms can be found in Chapter 2 of these **Rules** or in the terms and definitions chapter of the respective **Rules** document.

The following formatting conventions may appear in this text:

⚠ Important requirements and/or instructions are highlighted by an information callout box.

Note: Text appearing with a grey background is explanatory text only and is not to be read as part of the **Rules**.

Example: Text appearing with a green background is intended to demonstrate a worked example of the respective **Rules** section or **Ruling** section.

This is a documentation requirement callout box.

1.5 What is new in this version

A detailed list of the main changes made between this version and the previous version is given in Appendix G.

1.6 Related documents

The following documents, available from the NABERS website, provide further guidance on the **Rules** and **Assessor** responsibilities and should be considered when assessing a building for a NABERS rating:

a) NABERS Waste calculation spreadsheet.

b) Waste data upload spreadsheet for the **NABERS Waste Platform**.

c) For guidance on how to use the **NABERS Waste Platform**, including information on each user type and their access rights, refer to our user support documents.

Assessors must use the latest version of NABERS Rules and **Rulings** that have been referenced within this document. All documents are available on the NABERS website.

2 Terms and definitions

This chapter lists the key terms, and their definitions, that are integral to the proper use of this document.

Term	Definition
aggregator statement	A statement from a **waste aggregator**, describing the sorting activity at their facility and the expected outcome of each material stream after being sorted.
Assessor	An accredited person authorised by the **National Administrator** to conduct **NABERS Waste Ratings**.
Auditor	A person employed by or contracted to the **National Administrator** to perform audits of NABERS rating applications.
base building	Elements that are within the control of the building owner, for the benefit of all tenants. For the purposes of a **NABERS Waste Rating** or **Verification**, the concept of **base building** means only those **waste streams**— a) that are managed by the building owner or management company; and b) where bins for that **waste stream** are provided to most tenants in the building; can be included in the rating.
bin service	Each combination of **waste stream**, equipment type, equipment size and allocated dock, for the bins in a waste collection contract. These are the bins containing the materials that are presented for collection by the **waste collector**. **Example:** a) Eight 240 L [size] general waste [**waste stream**] bins [equipment type] collected from a **site** is one **bin service**. b) Two 660 L general waste bins collected from the same **site** is a different **bin service**.
chain-of-custody	The chronological documentation (or “paper trail”) that records the sequence of custody, control, transfer and disposition of materials. In the context of the **MRS**, this must extend to a **reprocessing facility**.

Term	Definition
circular recycling	**Recovery** process aimed at keeping products and materials in use without degrading their quality or **downcycling** them into lower valued products, thereby retaining the added value in products and avoiding waste generation. **Example:** A product stewardship program whereby items are disassembled into their constituent materials and remanufactured to fulfil the same purpose as the original items.
contamination	Any material found in **recycling** streams that is not where it should be.
contamination audit	An audit of one collection of materials generated on-site for a **bin service** that is not going to landfill.
contamination rate	The ratio of the weight of **contamination** in a **waste stream** to total weight of that **waste stream**.
core waste stream	A **waste stream** that must be included in the **recycling rate** calculation if it is collected from the building.
delivery docket	Collective term for the paperwork generated whenever goods are transferred between links in the **value chain**, regardless of the colloquial term used. Examples include tipping and **delivery dockets**, invoices and receipts, transfer and consignment notes, inbound and outbound registers, or similar.
density audit	An audit of one collection of materials generated on-site for a **bin service** without actual weight data.
downcycling	**Recovery** activities whereby the resource **recovery** value is irrevocably reduced from that of the original materials by the **recovery** process. **Note:** This usually involves combining different materials which previously required energy to separate. For example, melting plastics of different resin codes together so they can no longer be easily separated into their original chemical components.
disposal	The end-of-life management of discarded materials in a landfill or through a chemical or thermal transformation that makes them unavailable for further use. In the context of the **MRS**, this also includes operations which have as a secondary consequence the **recovery** of energy.
linear recycling	Reprocessing of products or components that have become waste, to extract materials with desirable physical properties regardless of the embodied economic value of the existing items.

Term	Definition
	Note: This usually involves shredding existing products into a feedstock that can be used in the manufacturing of new products.
Material Recovery Facility (MRF)	A waste processing facility that takes materials from mixed waste bins and sorts them into their component material streams.
Material Recovery Pathway	The **recovery** outcome for a specific material type. Refers to the combination of material type, sorting needs (bin type) and **recovery** outcome that provides a specific **Material Recovery Value**.
Material Recovery Score (MRS)	A measure of the quality of the end-of-life outcome of waste leaving a commercial building. It is calculated according to the **Material Recovery Values** that have been applied to **bin services** included in the **recycling** calculation.
Material Recovery Value (MRV)	A value between zero and six that is evaluated for each **bin service** based on the criteria of material stream separation, **recovery** outcome quality and pollution potential.
NABERS standard contamination rate	The value that NABERS will apply to waste data to determine the estimated **contamination rate** for a **waste stream** in the absence of a site-specific rate determined from one or more **contamination audits**.
NABERS standard density rate	The value that NABERS will apply to waste data to determine an estimated weight for a bin in the absence of actual weight data, or a site-specific rate determined from one or more **density audits**.
NABERS Waste Platform	The online digital service provided by NABERS for the purpose of tracking customers' waste data. Used by facilities managers to validate building performance over time and by **Assessors** in the calculation of accredited **NABERS Waste Ratings** and **Verifications**.
NABERS Waste Rating	An independent benchmark, according to the system overseen by the **National Administrator**, of a building's **recycling rate** as determined by the weight of all materials managed by the building owners (or their representatives) that leave the **site**.
NABERS Waste Verification	Identical to a **NABERS Waste Rating**, with the exception that no star outcome is awarded due to the absence of an available NABERS benchmark for the relevant building type.
National Administrator	The body responsible for administering NABERS, in particular the following areas:

Term	Definition
	a) Establishing and maintaining the standards and procedures to be followed in all aspects of the operation of the system. b) Determining issues that arise during the operation of the system and the making of ratings. c) Accrediting **Assessors** and awarding accredited ratings in accordance with NABERS standards and procedures. The functions of the **National Administrator** are undertaken by the NSW Government.
normal operating conditions	Where occupancy is representative of the average occupancy of the **rating period**. Confirmation from the operators or managers of the property is required to fulfill this requirement.
operational control	Where the building owner or manager is ultimately responsible for managing a given **waste stream** through their contracts and on-site management practices. Where the owner or manager has a direct or indirect contract with a company to manage a **waste stream**, they have influence over whether items are likely to be diverted from **disposal** or go to the best possible re-use. They do not have control over: a) The commodities market. b) Regulation of the waste industry. c) Where facilities are located. d) Whether a facility has capacity to accept their waste on a given day.
operational waste	Waste generated on-site during the normal operations of a building.
processed engineered fuel (PEF)	A ready-to-use fuel product manufactured from select dry commercial and industrial materials that would otherwise go to landfill, but with calorific value that can be harnessed as an alternative to fossil fuels.
Platform Administrator	The user that has greatest access and control of the **NABERS Waste Platform**. The only user type that can start a rating.
rating period	The 12-month base period for the rating, requiring at least 12 continuous months of acceptable data upon which the rating is based.
reasonable [data]	Waste data that is consistent, plausible, and aligns with expected trends based on—

Term	Definition
	a) observations recorded during the site visit; b) audit results; c) data patterns in weight or bin count; and d) overall waste generation behaviour during the rating period. **Note:** **Reasonable data** may contain anomalies, but these must be explainable, e.g. a significant reduction in bin weight during an end-of-year shutdown period.
recovery	Any end-of-life management process wherein materials that have become waste are prepared to fulfill a purpose in place of new materials that would otherwise have been used for that purpose. In the context of **recycling rates**, this includes waste-to-energy.
recycling	Reprocessing of products or components of products that have become waste, to make new materials.
recycling rate	The ratio of **Total Recovered Materials** to **Total Materials Generated** expressed as a percentage.
reprocessing facility	A facility where sorted materials that have become waste are processed in preparation for reuse. The facility can receive its sorted wastes from **Material Recovery Facilities** and transfer stations, or directly from the producer. **Note:** **Chain-of-custody** evidence that material has been received by the **reprocessing facility** is required to achieve a **Material Recovery Value** of six.
reprocessor statement	Evidence of the activities of the **reprocessing facility** used to support the chosen **Material Recovery Pathway** as a likely outcome for the material after reprocessing, comprising— a) a capability statement or screenshot of a claim from a company website; b) direct communications from the company; c) references to activity licences; or d) recently published figures from an annual report which support that claim.
Rules	Authoritative document produced by the **National Administrator** that specifies what must be covered by an **Assessor** in order to produce a rating.

Term	Definition
Ruling	An authoritative decision by the **National Administrator** which acts as an addition or amendment to the **Rules**.
statement of collection destination	A statement from the **waste collector** specifying the facilities to which 70 % or more of the collections from the building were initially transported, by **waste stream**. **Note:** A **statement of collection destination** from the **waste collector** is the minimum required evidence to achieve a **Material Recovery Value** for a given **waste stream**.
site	The legal boundary of a building that meets the requirements for a specific rating type.
Total Materials Generated	The mass in kilograms, of the contents of every bin, compactor or other waste vessel on **site**, measured at the point of collection prior to removal from the building.
Total Recovered Materials	The mass in kilograms, of the contents of every bin, compactor or other waste vessel on **site** except those which have landfill as a primary **disposal** outcome, measured at the point of collection prior to removal from the building. This figure is adjusted through a **contamination rate**.
value chain	The sequence of actors involved in the full life cycle of a product or material. Similar to the supply chain for the movement of goods from suppliers to customers, but extended in both directions – from initial resource extraction to final resource **recovery** – and focusing on the value that is added at every stage.
waste	Defined according to the legislation at the **site**, but otherwise anything that the holder discards, intends to discard, or is required to discard. **Note:** For reasons of readability, this term is not highlighted throughout this document.
waste aggregator	The operator of a facility used as a collection destination, to which items are delivered for sorting and/or accumulation into separated quantities sufficient for efficient transportation to a **reprocessing facility**. **Note:** A **waste aggregator statement**, from the operator of a facility where items are sorted and/or accumulated, is required to achieve a **Material Recovery Value** of four.

Term	Definition
waste collector	The party responsible for removal of waste items from the building and transporting them from the point of collection to the collection destination.
waste hierarchy	A set of priorities for the efficient use of resources, aimed at retaining their maximum value. The hierarchy is ordered by most preferable: a) Avoid and reduce. b) Reuse. c) Recycle. d) Recover energy. e) Treat. f) Dispose of waste.
waste stream	In the context of waste sorting, this refers to a collection of items or materials that have been gathered together as a category, to facilitate efficient transport towards a common destination facility or material outcome.
whole building	A rating that assesses the entire operations and impact of the building, including the impact of tenants. For the purposes of a **NABERS Waste Rating** or **Verification**, the concept of **whole building** means any **waste stream** in the building can be included in the rating if it meets the measurement criteria.
validity period	The post-certification period during which the rating is valid for up to 12 months. **Note:** See Appendix F for further details.

3 Key concepts and procedures

3.1 General

To obtain a **NABERS Waste Rating** or **Verification** for a building, sufficient data must be uploaded to the **NABERS Waste Platform** and verified by an **Assessor**. Data can be uploaded from a variety of sources including the building owner, building manager, waste **Assessor** or waste management company.

An accredited **NABERS Waste Rating** is awarded when the **National Administrator** certifies a rating that has been completed and lodged in accordance with these **Rules** by the **Assessor.** The **National Administrator** will independently audit the rating and can assist in resolving complex technical issues.

Building owners and managers can use the **NABERS Waste Platform** to track their waste management performance without engaging an **Assessor** but cannot publicly promote a **NABERS Waste Rating** or **Verification** until it has been certified or verified.

3.2 Waste calculations

A fundamental calculation in a **NABERS Waste Rating** or **Verification** is the **recycling rate**. The **recycling rate** is based on 12 months of waste data and measures the extent to which materials leaving the building are diverted from landfill.

The **recycling rate** is calculated as follows:

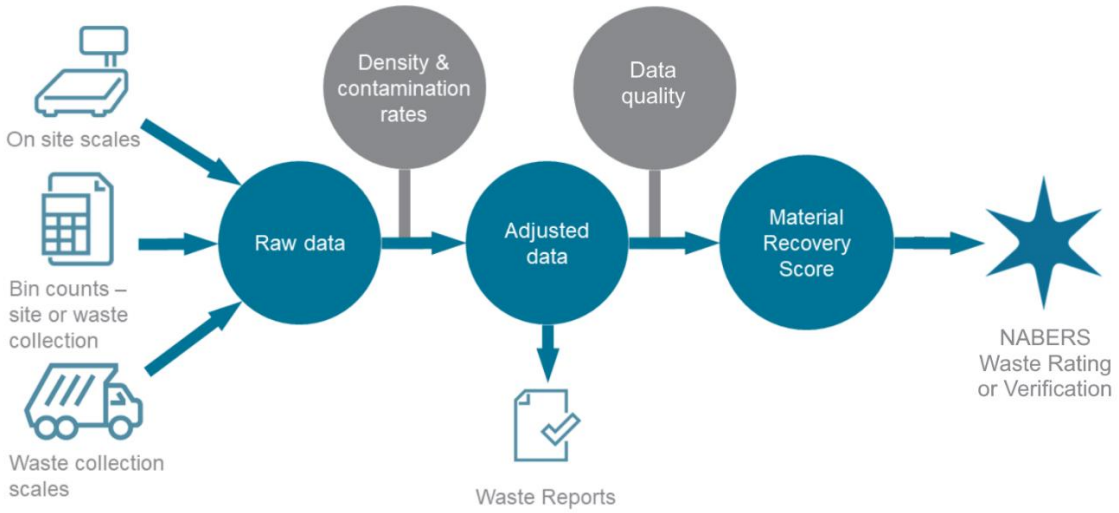
$$RR(\%) = \frac{Total\ Recyclable\ Materials\ (kg)}{Total\ Materials\ Generated\ (kg)}$$

The data used for this calculation can either be the actual weight of bins leaving the premises or a count of bins collected by a **waste collector** multiplied by a NABERS density factor. The **recycling rate** is adjusted by a **contamination rate** applied to each stream, which is determined either by on-site audits, or by the application of a standard **contamination rate** determined by the **National Administrator**.

The **National Administrator** then applies a data quality adjustment to the **recycling rate** reflect the quality of the data used in the rating.

The final adjustment to the rating is the **Material Recovery Score**, which assesses the extent to which materials leaving the building were recovered for beneficial re-use. The **NABERS Waste Rating** or **Verification** methodology is explained in Figure 3.2.

Figure 3.2: Waste Rating methodology



The unit of measurement for the **NABERS Waste Platform** is referred to as a "**bin service**". A **bin service** is the combination of **waste stream**, collection equipment and size, and allocated dock.

Example: If a building has a general waste collection with bins in two sizes—

a) 240 L bins; and

b) 660 L general waste bins;

then it is considered to have two **bin services** for general waste.

By calculating ratings in this way, NABERS encourages building managers to:

a) Provide bins for a range of **waste streams**, encouraging more waste separation and better-quality materials for **recycling**.

b) Put processes in place to reduce the **contamination** of **recycling** streams.

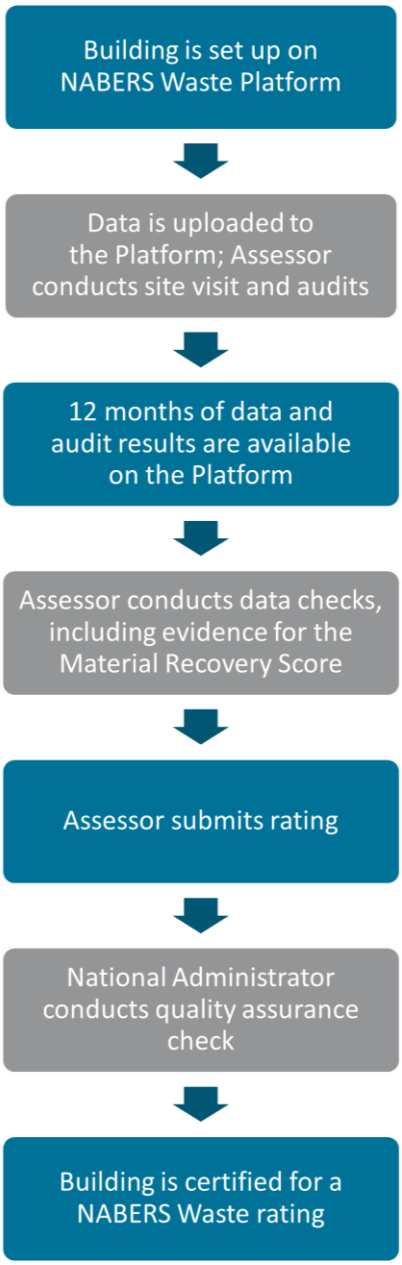
c) Write high quality data requirements into their waste and cleaning contracts.

d) Investigate their downstream supply chains to establish the outcome of resources leaving their building.

3.3 Process overview

The process overview is shown in Figure 3.3.

Figure 3.3: Process overview



A more detailed process map is available in Appendix D.

3.4 Information required for a rating

The following information is required, as a minimum, for a rating:

a) The address of the premises.

b) The key metric relevant to the sector.

c) The number, size and type of bin for each **waste stream**.

d) 12 months of collection data, by pick-up, for all **core waste stream** services (see Section 6.2).

The following additional information will improve data quality and the **Material Recovery Score**, which in turn may improve the rating result:

1) Actual weights per bin per collection (see Chapter 8 for how NABERS treats data quality) OR a bin **density audit** if weight-based data is not available.
2) A **contamination audit** (Section 7.8).
3) Second source(s) of data for the data verification check (Section 8.5).
4) Information and evidence for the **Material Recovery Pathway** for each bin.
5) Values from composition audits for mixed materials bins.

Individual ratings may require additional information or documentation depending on the circumstances of the building. A more detailed list is included in Chapter 11.

3.5 Roles and responsibilities

The **NABERS Waste Rating** roles and responsibilities are described in Table 3.5.

Table 3.5: NABERS Waste Rating roles and responsibilities

Role	Responsibilities
Platform Administrator	The **Platform Administrator** has full edit and access rights to the **NABERS Waste Platform**, and is responsible for— a) setting up the premises on the **NABERS Waste Platform**; and b) assigning a specific **Assessor** to complete a rating.
Waste Data Provider	The Waste Data Provider can be anyone who has access to relevant data, such as the **waste collector**, cleaning contractor, the building manager, the sustainability manager, or a waste data consultant. They are responsible for uploading waste data to the **NABERS Waste Platform**.
Assessor	The **Assessor** is responsible for lodging the rating as per these **Rules**. This includes: a) Ensuring the data entered in the **NABERS Waste Platform** is correct. This means checking— 1) all **core waste streams** are included; 2) bin configuration on the **NABERS Waste Platform** reflects **site** conditions; 3) data integrity (e.g. the correct procedures for weights and bin counts is being followed and data entry procedures are acceptable);

	4) the data is **reasonable** and there are no unexplained anomalies; and 5) density and **contamination rates** are consistent and match audit results. b) Conducting or supervising waste audits to determine **contamination** and density rates. c) Collecting data to establish building-specific **Material Recovery Values**. **Note:** For the full list of **Assessor** tasks see Appendix D.
National Administrator	The **National Administrator** audits rating data once it has been submitted and provides the NABERS certificate. The **National Administrator** provides technical advice and **rulings**.

4 Waste rating types and buildings

4.1 NABERS Waste Ratings and NABERS Waste Verifications

NABERS ratings are founded on industry-wide benchmarks, so that similar buildings can be fairly compared. While these **Rules** are written to cover a variety of building types, NABERS can only rate buildings where we have developed an appropriate benchmark. Benchmarks for more building types will be developed as NABERS acquires access to further information.

For property types or tenancies where a benchmark has yet to be developed, the **NABERS Waste Verification** may be used. The process and requirements for a **NABERS Waste Verification** are identical to those for a **NABERS Waste Rating**, except that where the Rating provides a star outcome, the Verification provides report results without a star outcome. The **NABERS Waste Verification** is, nevertheless, a useful tool for comparing buildings or tenancies of similar property type.

The outcome of the rating process will thus be either be a single **NABERS Waste Rating** or a **NABERS Waste Verification** for the building or tenancy, depending on the property type and whether a benchmark is available.

Assessors should consult the sector-specific Rules documents for further information regarding each building type that is currently eligible for a **NABERS Waste Rating**.

4.2 Mixed-use buildings

In the case of mixed-use buildings, the “legal boundary” relates to the area of building use related to the type of rating (e.g. **NABERS Waste Rating** for office buildings only considers waste generated in the office section of the building). Proper procedures should be put in place to separate waste data per building type when uploading data to the **NABERS Waste Platform**, by ensuring only bins that come from the section of the building included in the rating scope are recorded in data and audits.

 A summary of building configuration documentation requirements can be found in Section 11.2.1.

5 Waste streams

5.1 General

The **NABERS Waste Rating** or **Verification** is calculated from **operational waste** generated within the boundary of the building and measured as it leaves the boundary of the building as defined in Section 4.2.

Specific **waste streams** (core items) must be included if they are generated on-site, to ensure a robust and meaningful result is calculated. Other **waste streams** (optional items) are included where a building collects that material. These optional **waste streams** can improve the overall **recycling rate**, so a building is encouraged to include verifiable data for these types when seeking a **NABERS Waste Rating** or **Verification**.

5.2 Waste streams by rating scope

5.2.1 General

The **NABERS Waste Rating** and **Verification** scopes vary by property type. This is generally determined by the level of **operational control** the building has over the way waste is managed within the building. For more detail about scopes for each property type, see the relevant sector-specific Rules document.

Assessors are encouraged to seek advice from the **National Administrator** if they are unsure whether a **waste stream** falls under the scope for a particular sector.

5.2.2 Managed waste streams

A **waste stream** that is managed by the building owner or manager is one where they have a direct or indirect contract with a company to manage that **waste stream**. Any **waste stream** deemed to be general waste in Section 5.3 must be included to ensure a fair **NABERS Waste Rating** or **Verification**.

5.2.3 Reliably measured waste streams

Waste streams that are not managed under a direct or indirect contract with the building owner or manager can be included in a **whole building NABERS Waste Rating** or **Verification** where the stream is reliably measured. Examples of such streams often include secure paper, printer cartridges and so forth. This means the **Assessor** is confident the data is as **reasonable** as other data provided for building managed **waste streams**.

5.2.4 Secure paper from buildings

Secure paper in buildings is often difficult to reliably measure as it has specific criteria for collection and handling due the sensitive nature of the contents of the bins.

To include secure paper in a **whole building** rating see Appendix A for measurement methods approved by NABERS. Contact the **National Administrator** if you wish to propose an alternate method for secure paper.

5.3 Core waste streams

Core waste streams are required to be reported in the **NABERS Waste Rating** or **Verification**. These streams are listed in Table 5.3.

Where a building has services for these **waste streams**, they must—

a) set up the **NABERS Waste Platform** for these **waste streams** by configuring the appropriate **bin services**; and

b) upload 12 months of data for each listed **bin service** to the **NABERS Waste Platform** before the **NABERS Waste rating** or **Verification** can be assessed.

An **Assessor** must conduct a **site** visit to—

1) verify that all **core waste streams** generated on-site are correctly configured on the **NABERS Waste Platform**;

2) confirm the building is configured on the **NABERS Waste Platform** to represent its operation; and

3) understand on-site waste practices to confirm the waste data is **reasonable**.

Table 5.3: Core waste streams

Waste stream	Listed on the NABERS Waste Platform as	Description
General waste	General waste	Landfill waste or putrescible waste, this includes waste going to an alternative waste treatment facility or any **waste stream** that has a landfill levy applied to it.
Mixed **recycling**	Dry waste	Also known as inorganic or non-biodegradable, this waste won't rot, decay or disintegrate over time and contains little to no moisture. Besides organic and wet materials, almost no sorting is done within the building's operational boundary. Instead, it is sent to a facility where most waste is diverted from landfill by **recycling** only the most valuable items and converting the rest into fuel for waste-to-energy processes.
	Mixed **recycling**	Also referred to as co-mingled **recycling**, capturing commonly identifiable recyclables. The bin usually has a yellow lid, and can contain— a) paper; b) cardboard; c) glass containers and bottles; d) aluminium, tin and steel cans; and

		e) hard plastic bottles or containers with resin codes 1, 2, 4, 5 and 6. For clarification of what can be included contact the **waste collector** responsible.
	CDS mixed **recycling**	Mixed **recycling** that is well separated and will be accepted by a Container Deposit Scheme.
Paper / Cardboard	Paper and cardboard	Mixed paper and cardboard only, including loose paper, loose cardboard and compacted cardboard (e.g. office paper, newspaper, boxes).
	Cardboard (compacted)	Cardboard only, which has been compacted into bales.
	Paper	Loose paper only (e.g. office paper, newspaper). Does not contain paper with any plastic content (e.g. coffee cups).
	Cardboard	Loose cardboard only.
Organics	Organics	Compostable waste (e.g. food waste, compostable packaging). Can include some green waste (e.g. office flowers), but any bins that are primarily green waste should be listed under that stream.
Plastics	CDS plastic containers	Plastic containers separated to the point they can be accepted by a Container Deposit Scheme.
Glass	Glass	Glass only **waste stream** (e.g. bottles, jars).
	CDS Glass bottles	Glass bottles separated to the point they can be accepted by a Container Deposit Scheme.
	Crushed glass	Glass which is crushed prior to being weighed and picked up.
Metals	CDS aluminium cans	Aluminium cans separated to the point they can be accepted by a Container Deposit Scheme.
Composite	CDS cartons	Cartons separated to the point they can be accepted by a Container Deposit Scheme.

5.4 Optional items

5.4.1 General

The **NABERS Waste Platform** allows for the measurement of 51 **waste streams**. If the building is configured to have bins for these **waste streams** and data is uploaded to the **NABERS Waste Platform** and is not excluded under Section 5.5 of these **Rules**, it will form part of the rating calculation. The inclusion of these items will improve the **recycling rate**, so the inclusion of these items is encouraged.

The **waste streams** listed in Table 5.4.1 are typical examples of optional **waste streams** found in buildings. A full list of **waste streams** is available on the NABERS website.

Table 5.4.1: Optional waste streams

Waste stream	Description
Secure paper	Confidential paper documents which need to be disposed of securely.
Paper towel	Hand towels/paper towels from bathrooms.
Green/garden waste	Garden organics, not food scraps (e.g. sticks and twigs, leaves, flowers, grass clippings, weeds and shrubs).
Soft plastics	Plastic that can be easily scrunched into a ball (e.g. plastic packaging, plastic bags).
Polystyrene	Expanded polystyrene.
Cooking oil	Any type of oil used in food preparation.
Food donations	Food donated to charities, from normal operations of the building, that would otherwise end up in a general **waste stream**. Does not include food donations sourced from occupants of the building as part of a philanthropic activity.
e-waste	Equipment that requires an electrical cord or battery to operate (e.g. televisions, whitegoods, phones, computer equipment, printers, light fittings, etc). Must meet the **Rules** for **operational waste**.
Batteries	Any type of battery, except lead acid batteries from vehicles or similar. These batteries are hazardous waste and should be collected through an approved takeback scheme.
Mobile phones	Mobile phones collected through a reputable mobile phone recycler or donated to a charity.
Light globes / tubes	Any lamps or tubes for example compact fluorescent lamps, fluorescent tubes, LED lamps, etc.

Printer cartridges	Inkjet and laser cartridges, toner bottles, drum kits, fuser kits, fax photocopier or printer cartridges.
Coffee cups	Disposable coffee cups only with lids going into mixed **recycling**.
Coffee pods	Recyclable coffee pods collected as part of a dedicated product stewardship or takeback scheme. Must be returned through a dedicated closed loop process.
Pallets	Heat treated wooden pallets (identified by an International Plant Protection Convention or IPPC stamp), or untreated wooden pallets. Chemically treated pallets are not accepted as recycled in the rating.
Scrap metal	Scrap metal is the combination of waste metal, metallic material and any product that contains metal that is capable of being recycled.
Hard waste	Waste created from the wear and tear of miscellaneous equipment and furniture.

Additional **operational waste streams** may be added. To request a new **waste stream**, contact the **National Administrator**. There is a significant lead time on reviewing requests and adding a new **waste stream**.

5.4.2 How to treat some specific waste streams

5.4.2.1 Coffee pods

Coffee pods can be included in the **recycling rate** if they comply with either of the following:

a) Part of a take-back or closed-loop **recycling** scheme, such as the Nespresso product stewardship scheme. Under this criteria Nespresso branded pods can be included where they are sent back to Nespresso. Other schemes can be included where evidence of similar complete **recycling** outcomes for the packaging and coffee grounds is provided.

b) Contents are separated on-site with the coffee grounds being put into the organics collection, and packaging going to an appropriate **waste stream**.

5.4.2.2 Food donation

Food that is donated to charitable services can be included in the rating. The food must be generated from normal operations in the building, such as an on-site catering service, including corporate functions hosted on-site. Food generated through employee engagement activities such as a food donation drive cannot be included.

As the weight of materials collected through this service is minimal compared to **Total Materials Generated**, a monthly report of weight of food collected from the **site** can be used for the rating.

5.4.2.3 e-waste / Mobile phones

e-waste and mobile phones can be included in the **recycling rate** if they are supplied to a licenced recycler or donated to a registered charity.

5.4.2.4 Coffee cups

A dedicated disposable coffee cup collection can be included as part of the **recycling rate** where the **waste collector** has a contract in place with a facility that can recycle plastic lined cups. The **Assessor** must be able to provide evidence of this.

5.4.2.5 Pallets

Pallets may be included if it can be confirmed that the pallets are free from chemicals and safe for **recycling** or reuse. This can be done by checking the International Plant Protection Convention (IPPC) stamp. Although domestic and single use pallets may not have a stamp, they are generally deemed safe for **recycling** or re-use and can be included. Chemically treated pallets, or pallets constructed from MDF are not accepted as recycled in the rating.

5.4.2.6 Container Deposit Schemes (CDS)

NABERS supports container deposit schemes as being a good option for improved resource **recovery**. A number of **waste streams** have been setup on the **NABERS Waste Platform** to enable this **waste stream** to be captured. They are all labelled with CDS. As the CDS operators count the number of items received by the scheme, and not the total weight or volume, then any data input to these **waste streams** must come from on-site measurements. Scheme operator densities or conversion factors are currently not accepted by NABERS, as per Section 6.6.

5.4.2.7 Dry waste recycling

Dry waste **recycling** is a mixed **recycling** stream used to recover dry, non-putrescible materials in addition to the recyclable fibre or containers targeted by other **recycling** streams. Examples may include textiles, paper towel, and less common plastics. Within this stream, these additional recovered materials are assumed to be converted into **PEF**.

For dry waste to be included as **recycling** in a **NABERS Waste Rating** or **Verification**, the property must be able to demonstrate how the ongoing generation of organic or putrescible waste is accounted for.

To do this, buildings seeking to include dry waste **recycling** in a **NABERS Waste Rating** or **Verification** must also include an organics **recycling** stream if available in the jurisdiction, as well as general waste. Having an organics **recycling** stream present within a property will improve the **recycling rate**, while general waste is required to accept **contamination** from both streams.

As a minimum requirement and depending on service availability at least one of these streams must be present and in use. See Table 5.4.2.7 for details.

Table 5.4.2.7: Requirements to support dry waste recycling

Organics stream available in area	Organics stream not available in area
a) Organics stream present in the occupied areas and in the dock. b) General waste present in the dock. c) Organics, general waste and dry waste all demonstrably functional according to the **Assessor**'s **site** visit, **value chain** research and sense-checking the data. d) Resulting **PEF** used to replace a more carbon intensive fuel source (Section 6.4).	e) General waste present in the occupied areas and in the dock. f) General waste and dry waste both demonstrably functional according to the **Assessor**'s **site** visit, **value chain** research and sense-checking the data. g) Resulting **PEF** used to replace a more carbon intensive fuel source (Section 6.4).

Where **contamination** is identified that is considered unsuitable for either organics or dry waste **recycling**, a general waste service must be available to receive it. If either the organics or general **waste streams** are not present or demonstrably functional where they should be, the dry **waste stream** must be assigned to landfill.

Unrecycled material from dry waste **recycling** is assumed to be recovered via **PEF** unless sent to landfill by the **reprocessing facility**, so the **Assessor** must also either demonstrate the **value chain** requirements of Section 6.4 or assign the stream to landfill.

Dry waste **recycling** has a standard 70 % **contamination rate** applied unless a site-specific audit is carried out by an accredited NABERS **Assessor**.

5.5 Waste streams excluded from the Rating or Verification

The purpose of the rating is to fairly compare **operational waste** from building to building. To meet this objective, some **waste streams** are specifically excluded, for example, grease trap waste.

Assessors should refer to the Rules specific to each sector for the relevant exclusions.

5.6 Confirm on-site waste practices

As part of their rating assessment, an accredited NABERS **Assessor** must conduct a **site** visit to—

a) confirm the **NABERS Waste Platform** configuration represents the actual operation of the building;

b) confirm all **core waste streams** collected from the premises are set up on the **NABERS Waste Platform**;

c) understand on-site waste practices to confirm the waste data is **reasonable**; and

d) count bins collected and tally empty bins.

This **site** visit can be conducted at the same time as any planned audits.

6 Rating or Verification requirements

6.1 General

This section sets out:

a) Waste measurement requirements.

b) How the **NABERS Waste Platform** calculates total weight of materials and total weight of recyclable materials.

6.2 Data requirements

6.2.1 General

A **NABERS Waste Rating** or **Verification** requires data for every container of **operational waste** collected from a building. This data can either be—

a) the weight of the contents of the container; or

b) a count of the number of containers collected.

Data is required per collection, per **waste stream**, per equipment type and size. The data template for the rating is available from the NABERS website.

A **NABERS Waste Rating** or **Verification** also requires data for a minimum of 90 % collections in a 12-month period for each **core waste streams** identified as generated on-site.

Data can be sourced from a—

1) building cleaning contractor;

2) **waste collector**;

3) security contractor; or

4) waste consultant.

The minimum requirement of 90 % of **core waste streams** does not include days on which waste is not collected.

Example: A **site** has its general waste collected four times per week and the building operates year-round. Therefore, approximately 4 × 52 = 208 collections are expected annually. A minimum of 90 % × 208 = 187 collections would meet the data requirements in this section.

6.2.2 Primary data source

The primary data source for each **bin service** is the source used to generate the 12 months of data required for the rating. A rating may have different primary data sources for different **waste streams**.

6.3 Methods of waste measurement

A summary of waste measurement documentation requirements can be found in Section 11.2.2.

6.3.1 Standard points of collection

The **NABERS Waste Rating** or **Verification** rates the building as a whole system. This means building managers and cleaners can improve the quality of materials generated by tenants of the building before they are collected by a waste management company. For this reason, the rating measures waste as it leaves the building, specifically at the point where bins or equipment are presented for collection by a waste truck.

Weight measurements and bin tallies must be taken at this point in the process, in a way that guarantees that the count reflects the actual number of bins serviced and the weight reflects what actually ends up in the truck.

6.3.2 Floor-by-floor or tenant waste weighing process

In a property where the waste is weighed by floor or by tenant, the point of measurement will continue to be the point at which bins or other equipment are presented ready for a waste truck to collect. Cleaners may continue to weigh the outputs from each tenancy separately (and are encouraged to do so to report individual tenant performance), however this information cannot be used as primary data to represent building performance for a building-wide **NABERS Waste Rating**.

The primary weight data used to report the waste leaving the building must be the total weight of each **bin service** presented for collection, after being filled by the cleaners and before being emptied by the **waste collector**. The bin count will be the number of bins the **waste collector** empties.

This ensures a consistent approach across all NABERS ratings and reduces the opportunity for manual handling errors.

For the **contamination audit** and composition audit the process is the same as in Chapter 7. The **Assessor** is to carry out the audit at point of pick-up once the cleaners have put the waste in the bins. The **Assessor** will still need to confirm two sources of bin count for the data verification.

6.3.3 Non-standard points of collection

For most buildings it is simple to identify the point of collection and ensure measurements are taken at this stage in the process. However, in some buildings, especially mixed-use, it may be less straightforward. In these cases, a process map, or procedure for handling waste may be used to determine an appropriate point of measurement.

If in doubt, **Assessors** should contact the **National Administrator** to confirm that the point of measurement is correct for the rating.

For the following technologies, the point of collection is defined as being the time at which collection bins are emptied into the machine:

a) On-site bio-digester that is emptied through a trade waste outlet.

b) Pulpmaster™ or other maceration device.

c) Dehydrator.

d) On-site organics treatment unit that is owned and operated by a third party, including the removal of any products of the unit.

6.4 Energy from waste

In keeping with the **waste hierarchy**, NABERS regards **waste streams** that are sent to a licenced facility for the purposes of creating energy as diversion from landfill, and hence will allow them to be included in the **recycling rate** calculation. However, these **waste streams** must meet one of the following criteria:

The waste is being used to replace a more carbon intensive fuel source, for example, dry waste used in a cement kiln to replace coal.

The stream is diverted towards an anaerobic digestion facility.

The stream is a bio-mass based **waste stream** (e.g. bagasse, timber mill wastes).

With the exception of anaerobic digestion, it is assumed that any **waste stream** that meets these criteria will be incinerated, and must therefore have a **Material Recovery Value** of zero applied to it.

If a **waste stream** cannot be demonstrated to meet any of these criteria, then it must be allocated as “landfill” on the **NABERS Waste Platform** ratings page.

Landfill gas capture cannot be included as landfill diversion when calculating a **NABERS Waste Rating** or **Verification**.

6.5 Waste streams sent to landfill

The **NABERS Waste Rating** process assumes that all wastes listed as General Waste on the **NABERS Waste Platform** are sent to landfill, and that all other **waste streams** are not. This assumption is fundamental to the rating calculation.

The **NABERS Waste Platform** allows data for specialist collection **waste streams** to be uploaded for the **Whole Building** rating. However not all **waste streams** that are available on the **NABERS Waste Platform** are able to be recovered in all regions in Australia. A building may collect a **waste stream** and upload this data to the **NABERS Waste Platform** for their reporting purposes, but the materials are not actually recovered. These **waste streams** must be allocated as landfill, not **recycling**.

Where an **Assessor** has concerns that a **waste stream** is not being recovered for beneficial re-use as per the **waste hierarchy**, they must confirm with the **waste collector** that the material has been collected and taken to either—

a) a **recovery** or **reprocessing facility**;

b) a transfer station;

c) a **Material Recovery Facility**; or

d) a registered charity.

If there is no evidence that the **waste stream** is collected and taken to one of these destinations, or the **Assessor** has reasonable doubt that it has instead gone into landfill, then they must indicate this on the **NABERS Waste Platform** rating page, so the waste can be correctly allocated under the rating.

6.6 Summary of waste measurement methods

The allowable weight calculation methods for a **NABERS Waste Rating** or **Verification** are given in order of decreasing data quality in Table 6.6. Ideally a **NABERS Waste Rating** or **Verification** will be calculated from actual measurements of the weight of material collected. Alternative estimation methods allow for a bin count to be multiplied by an actual or average density of materials for a **bin service** to determine an approximate weight. The data for a particular **bin service** can be a mix of the three methods listed in this section.

When calculating a **NABERS Waste Rating** or **Verification**, the **NABERS Waste Platform** applies a data quality factor to collections that use methods other than the actual weight method (see Chapter 8 for more information on the data quality adjustment).

The **NABERS Waste Platform** automatically determines which method has been used based on uploaded data. Different methods can be used for different **waste streams**, and within a single **waste stream**.

⚠ NABERS does not accept a calculated weight for any collection. Weight values are only accepted where the bin or other container has been measured on scales.

Prior to uploading data to the **NABERS Waste Platform**, **Assessors** must not calculate a weight by multiplying bin count by a density factor, and must check that any reports received from **waste collectors** do not include such calculations. The exception to this is the aggregation of collections described in Section 6.3.2. Section 8.3.2 has more detail on how **Assessors** must check for this situation.

Table 6.6: Weight calculation methods

Method	Method description
Actual weight	Bins collected from the **site** are weighed by properly calibrated scales, either on-site, on-vehicle or at the waste facility.
Site-specific density applied to number of bins	Number of bins collected from the **site** is tallied, but not weighed. A least one **density audit** is conducted to calculate a density factor for a **bin service**. One of these audits must be completed by an accredited **Assessor**.

NABERS standard density applied to number of bins	Number of bins collected from the **site** are tallied, but not weighed. No site-specific **density audit** is conducted. A **NABERS standard density rate** is used to determine weight.

The remainder of this section sets out how weights are calculated. Appropriate evidence is required to verify that the methods listed in Section 6.6 have been applied correctly.

6.7 Method 1: Actual weight measurements

6.7.1 General

Actual weight means that a bin, as presented for collection from the **site**, is weighed prior to, or during, collection. The recorded weight must be the contents of the bin only, the weight of the equipment must be removed from the measurement.

Actual weight does not mean “agreed weights” or any other calculations to determine a weight for the bin.

Weight measurements might be recorded via—

a) on-site scales used to weigh bins prior to collection;

b) the **waste collector**’s on-vehicle scales;

c) use of weighbridge – acceptable for compactors and other large containers only; or

d) on-site equipment with built-in scales. (Readings can be taken from a visual display, once per operational day, at the same time every day.)

Table 6.7.1 describes Method 1 for weight calculation – Actual weight measurements.

Table 6.7.1: Weight calculation method 1 – Actual weight measurements

Step	Procedure
Required data	Weight of each bin collected from **site**.
Data source	**Waste collector** report. Report generated from on-site scales.
Calculation	The **NABERS Waste Platform** generates a sum of individual bin weights to determine the total weight. *Total weight = Σ bin weights*
Evidence	Evidence to verify weights uploaded to the **NABERS Waste Platform**. Any one or more of the following: a) Receipts recording individual bin weights and size. b) **Waste collector** invoices. c) Cleaner bin tallies. d) Automated bin readers.

	e) Weighbridge dockets. f) Evidence of scale calibration to appropriate standards.

All weighing devices used must be supported by evidence of calibration tests conducted at least annually. The sensitivity of the scales must be appropriate to the weight of waste being measured.

During the **site** visit the **Assessor** must observe the weighing procedure to confirm its reliability (see Section 8.3.2).

6.7.2 Liquid waste collected and measured in litres

When liquid waste is being collected and measured in litres through a calibrated system, such as cooking oil and pulped organic waste, a conversion factor of 1:1 can be applied to determine the weight of the waste in kilograms.

6.7.3 Mandatory actual weights

Bin densities for the following **waste streams** can vary substantially, so NABERS has determined that a density calculation method is outside an allowable error for a rating. If the following **waste streams** are reported for a NABERS rating, then actual weights are required. Density methods (Methods 2 and 3) cannot be used.

a) Batteries.
b) Coffee cups.
c) Coffee pods.
d) End of life products.
e) e-waste.
f) Food donation.
g) Green waste.
h) Hard waste.
i) HDPE.
j) Light globes and tubes (lamps).
k) Mobile phones.
l) Pallets.
m) PET.
n) Polypropylene.
o) Printer cartridges.
p) Scrap metal.

6.8 Method 2: Site-specific density with bin numbers

6.8.1 General

This method is the preferred option when actual measured weights cannot be provided. Site-specific waste densities and bin volumes are used to calculate bin weight.

Table 6.8.1 describes Method 2 for weight calculation – Site-specific density with bin numbers.

Table 6.8.1: Weight calculation method 2 – Site-specific density with bin numbers

Step	Procedure
Required data	Count of bins collected from the **site**. A site-specific density rate calculated by either of the following: a) Density data collected through an audit (see Section 7.6.1 for details): 1) Weight of an empty bin, or the average of a number of empty bins. 2) Total weight of bins for each **bin service** (or a sample if bins exceed 25 in total). b) Calculating the density from weight values (see Section 6.8.2 for details).
Data source	Bin count: a) **Waste collector** report. b) Report generated from on-site cleaner bin tally. Density data: Audit information.
Calculation	The **NABERS Waste Platform** generates a sum of individual bins multiplied by site-specific density for that **bin service** to determine the total weight. The **NABERS Waste Platform** also calculates the density from the audit input page. *Total weight = bin count × bin volume × density*
Evidence	Evidence to verify data uploaded to the **NABERS Waste Platform**. Any one or more of the following: a) Receipts recording bin numbers picked up and size. b) Tally of bin numbers picked up by size. At least one **site density audit**.

At least one site-specific **density audit** is required under this method during the **rating period**, or up to 120 days after the **rating period**. If multiple **site** audits are carried out, the **NABERS Waste Platform** applies the average of all audits uploaded. Note that the data quality requirements set out in Section 8.2 require a minimum of two **density audit** values to achieve a "good" data quality score for this method.

Site density audits for a **NABERS Waste Rating** are required to be completed separately for each **bin service**. For example, if you have a mixture of 240 L and 660 L bins for cardboard at your dock, then audit results are required for each bin size.

See Section 7.9 for **density audit** methodology.

6.8.2 Calculating a site-specific density value from existing weight values

Where a **bin service** has weight values for 50 % or more of collections, and these collections meet the requirements of Section 8.3.2, then **Assessors** may calculate site-specific density figures to meet the requirements for a good data quality level as follows:

a) Download data on all collections for that bin service in the **rating period** (can be accessed from the dashboard on the **NABERS Waste Platform**).

b) Find the first full 30-day period with weight values in it and the last full 30-day period with weight values in it, that comply with Section 6.2 of these **Rules**.

c) Calculate the total weight of collections in these periods and also the number of bins that were collected.

d) Determine the weight of a single bin as per Step 3 of Section 7.9.

e) Input that data to the audit page on the **NABERS Waste Platform**, using the end date of the 30-day period as the "date of the audit".

6.9 Method 3: NABERS standard densities with bin numbers

When measured weights cannot be provided and site-specific waste densities are not available, NABERS will use its standard densities to calculate the weight of material collected.

Table 6.9 describes Method 3 for weight calculation – NABERS standard densities with bin numbers.

Table 6.9: Weight calculation method 3 – NABERS standard densities with bin numbers

Step	Procedure
Required data	Count of bins collected from the **site**.
Data source	**Waste collector** report. Report generated from on-site cleaner bin count.
Calculation	Sum of individual bins multiplied by **NABERS standard density rate** for that **waste stream** to determine the total weight.

	Total weight = bin count × bin volume × density
Evidence	Evidence to verify data uploaded to the **NABERS Waste Platform**. Any one or more of the following: a) Receipts recording bin numbers picked up and size. b) Tally of bin numbers picked up by size.

6.10 Non-standard measurement methods

6.10.1 Secure paper

Data for secure paper bins is often difficult to collect as these bins are managed separately to other **waste streams** due to the sensitive nature of the contents of the bin.

Where it is not possible to weigh each bin prior to collection, or to obtain a reliable bin count, see Appendix A: Secure paper measurement protocols.

6.10.2 Pulpmaster™ machines

NABERS has determined that additional water added to this machine is negligible and so it does not need to be accounted for. If the measurement method complies with methods described in Sections 6.6 to 6.9 inclusive, then it is acceptable for the rating.

Where Method 2 is used to determine weight values (see Section 6.8) and a bin count is used as the measurement method, then a minimum of four density measurements must be made during the **rating period** in order for the service to achieve a data quality rating of "good" (see Section 8.2).

6.11 Data completeness for a rating

6.11.1 General

A **NABERS Waste Rating** or **Verification** requires data for a minimum of 90 % of collections in a 12-month period for each **core waste stream** identified as generated on-site. This requirement reflects real-world conditions where bin collections are not uniform across 12 months.

A data completeness check is performed by the **NABERS Waste Platform** against NABERS standard minimum collection frequencies for each possible **bin service** configuration. If insufficient data is available on the **NABERS Waste Platform** then the rating cannot proceed. This check is only applied to **core waste streams**.

6.11.2 Adding a waste stream during the rating period

A new **bin service** can be added during a **rating period**, where this waste was not previously collected in the building, or the equipment type is changed (e.g. a new bin size). The **Assessor** should contact the **National Administrator** where new **waste streams** were added during the **rating period** to request that the rating proceed. Evidence of changes to **bin services**, such as contract variations or emails, must be supplied.

6.11.3 Missing data

Where less than a full data set is supplied, NABERS will not compensate for the missing data. The **NABERS Waste Rating** and **Verification** methods do not allow for interpolation of data by an **Assessor** where data is missing.

6.12 Adjusting the weight for contamination

A **contamination rate** for each **bin service** is applied to data uploaded to the **NABERS Waste Platform**. This rate adjusts the calculation to determine a true value for the **recycling rate** by determining the weight of materials in the **recycling** stream that are sent to landfill by a **waste collector**. This weight is subtracted from the **Total Recovered Materials**.

The **contamination rate** is determined through one or more **contamination audits**, with the average used to determine the **contamination rate**.

$$Contamination\ Rate = \frac{\sum weight\ of\ contaminated\ items\ (kg)}{\sum weight\ of\ bin\ contents\ (kg)}$$

The following **waste streams** will not have a **contamination** adjustment applied to them:

a) General waste.
b) Secure paper.
c) Green waste.
d) e-waste.
e) Batteries.
f) Mobile phones.
g) Light globe/tubes.
h) Printer cartridges.
i) Coffee pods.
j) Food donation.
k) Crushed glass.
l) Cooking oil.
m) Pallets.
n) Scrap metal.
o) Hard waste.

7 Waste audit methods

7.1 General

The **NABERS Waste Rating** and **Verification** both use three types of audits to improve the rating's accuracy: an audit of **contamination rates** for **recycling** streams, a bin **density audit** to determine site-specific weight values, and a composition audit to determine material splits for mixed waste bins. The first two audits increase data certainty for a specific building, which improves the data quality score for a **NABERS Waste Rating** or **Verification**. The third one is required for the **Material Recovery Score** for a building.

Neither the **contamination** or **density audits** are required for a rating, as NABERS will apply standard values if an audit is not completed for a relevant **bin service**. However, this has repercussions for the rating results.

NABERS strongly advises all buildings to complete at least one audit of each type for each **bin service**, conducted or supervised by an accredited **Assessor** in each **rating period**, and an additional **density audit** completed by someone trained in audit procedures. Data quality corrections will be applied to any **bin service** that has not had at least one of either **contamination** or **density audit** types conducted during the **rating period**. See Chapter 8 for data quality **Rules**.

Additional audits can be completed throughout the **rating period** to improve data accuracy. The average results of audits uploaded to the **NABERS Waste Platform** will be applied to the building's waste data.

Audits are conducted on bins as presented for collection. This means that a building can perform any operations it deems appropriate to sort or consolidate its waste prior to collection. The **NABERS Waste Rating** or **Verification** assesses the efforts of the building as a whole, not the behaviour of tenants, and good waste management practice may include cleaners removing obvious **contamination** from bins.

To clarify, whatever activities are carried out within the boundary of the property prior to the waste being picked up is acceptable and is considered part of the building's waste management practices. This may include high levels of manual and automated sorting prior to collection.

7.2 Types of audit

A **contamination audit** is an audit of (typically) one day of materials generated on-site for a specific **bin service** of any **waste stream** that is not going to landfill. The purpose of this audit is to ensure materials recorded as recycled by a building are being diverted from landfill by the **waste collector**, based on their standard procedures. NABERS does not require a **contamination audit** of any waste type going to landfill (sometimes known as an opportunity or a leakage audit).

The **density audit** is an audit of (typically) one day of materials generated on-site for a specific **bin service** where weight data for that service does not exist. The purpose of the **density audit** is to get a better estimate of the weight of every bin collected from the building, including bins going to landfill.

A composition audit is an audit of (typically) one day of materials generated on site for a specific **bin service** for any mixed **waste stream**. The purpose of this audit is to determine building-specific material splits for the **Material Recovery Score** calculation (see Chapter 9), and should only be completed if Section 9.2 has been met or is likely to be met, otherwise building-specific values for mixed bin material composition cannot be used. It only needs to be completed on bins with mixed contents where those contents will have different material **recovery** outcomes.

Note that audits are performed on bins of each service as they are represented at the point of collection. Hence, depending on collection frequency, audited bins may contain more than one days' worth of waste. This is acceptable because the audit captures the way the bins are actually being used in the context of the building's typical operation. See Section 7.5.1 for more information on sorting.

For the remainder of this section "an audit" refers to any of these methods for a specific **bin service**.

7.3 Waste streams by audit type

Some **waste streams** are excluded from a particular type of audit, usually because the **contamination rates** for that waste are very low, or the rating requires a weight to be entered on the **NABERS Waste Platform** (see Section 6.7.3).

The following table indicates whether a **waste stream** should be audited for either **contamination** or density for the rating. Composition audits have not been included in this table, as most bins will not need to be audited. Where additional **waste streams** are only applicable to a specific sector, these are set out in the relevant specific Rules document. Table 7.3 states the audits by **waste stream**.

Table 7.3: Audits by waste stream

Waste stream	Stream auditable for:		Reason (if no)
	contamination?	density?	
General waste	No	Yes	There is no **contamination** in **waste streams** that go to landfill.
Mixed **recycling**	Yes	Yes	
Paper and cardboard (all variants)	Yes	Yes	
Secure paper	No	Yes	Typically low **contamination** and difficult to audit.

Paper towel	Yes	Yes	
Organics	Yes	Yes	
Green / garden waste	No	No	Low **contamination** and difficult to audit; Rating requires weight data.
Food donation	No	No	Typically very low **contamination**; Rating requires weight data.
Soft plastics	Yes	Yes	
Dry waste	Yes	Yes	
e-waste	No	No	Typically very low **contamination**; Rating requires weight data.
Batteries	No	No	Typically very low **contamination**; Rating requires weight data.
Mobile phones	No	No	Typically very low **contamination**; Rating requires weight data.
Light globes / tubes	No	No	Typically very low **contamination**; Rating requires weight data.
Coffee cups	No	No	Typically very low **contamination**; Rating requires weight data.
Coffee pods	No	No	Typically very low **contamination**; Rating requires weight data.
Printer cartridges	No	No	Typically very low **contamination**; Rating requires weight data.
CDS – all streams	Yes	Yes	
Crushed glass	No	No	Typically very low **contamination**; Rating requires weight data.
Glass	Yes	Yes	
Cooking oil	No	Yes	Typically very low **contamination** and difficult to audit.
Polystyrene	Yes	Yes	
Scrap metal	No	No	Typically very low **contamination**; Rating requires weight data.

Hard waste	No	No	Typically very low **contamination**; Rating requires weight data.
Pallets	No	No	Typically very low **contamination**; Rating requires weight data.

7.4 Who can complete an audit?

Audits can be completed by suitably qualified and trained individuals at the discretion of the building manager. An accredited **Assessor** must be physically present at a minimum of one **contamination** and **density audit** for the data quality adjustment (see Chapter 8), and one composition audit for **MRS** results.

Any audits not completed or supervised by an **Assessor** must be checked by an **Assessor**. The **Assessor** must confirm that correct procedures were followed (e.g. used a weight-based method, not a visual assessment method) and the results are in line with what would be reasonably expected. If the **Assessor** finds any issues with the procedures or results, the audit will be deemed unacceptable and cannot be used for rating purposes.

7.5 When can an audit be completed?

7.5.1 General

Audits can be conducted on any normal operating day within the 12-month **rating period**, or up to 120 days after the end of the **rating period**. An audit conducted in the 120-day period may be re-used in a subsequent rating where it falls within that **rating period**.

The **Assessor** does not have to complete an audit of every **bin service** or every **waste stream** on the **site** on the same day. However, an audit of an entire single **bin service** must be completed in a single day. **Contamination** and **density audits** do not have to be completed at the same time, but this is advised for efficiency.

The audit must reflect **normal operating conditions** in the building. To increase the likelihood of this, the audit must be conducted on a normal operating day.

The only people that should be notified of the audit date are those who are necessary for the safe and smooth operation of the audit. For instance, building managers to arrange access to the **site**, cleaning manager to advise when bins are finalised and when the **waste collector** usually arrives, and potentially the **waste collector** if extra time is needed to conduct the audit.

Pre-sorting of **waste streams** by cleaning staff is allowed if it occurs regularly as part of an ongoing continuous improvement activity. The **Assessor** can ask a member of the cleaning staff if any observed pre-sorting happens regularly as part of standard practice. If it is determined that pre-sorting has been specifically scheduled to manipulate audit outcomes, the audit data should not be uploaded to the **NABERS Waste Platform**.

7.5.2 Normal operating conditions

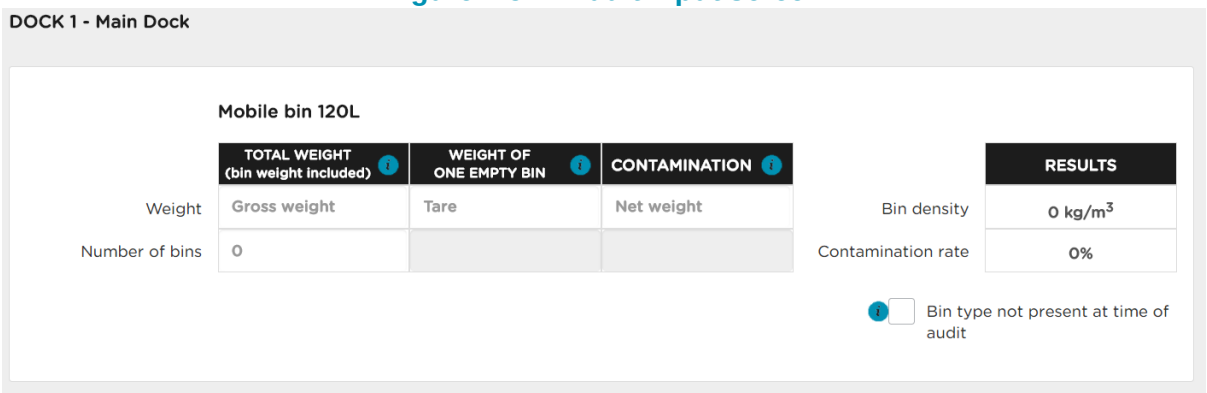
The **Assessor** must confirm that the day of auditing will be a normal operational day for that property. A normal operational day is a day where the occupancy is representative of the average occupancy of the **rating period**. Confirmation from the operators or managers of the property is required to fulfill this requirement.

If occupancy has reduced, the **Assessor** must confirm with building management that waste services have also been reduced in line with the occupancy reduction. This will ensure that the bins maintain a viable level for auditing. If the **Assessor** determines that the volumes of waste are too small to give accurate results, they must not include those results in the rating.

If there is any uncertainty regarding volume of waste and/or reduction of occupancy, contact the **National Administrator**.

Figure 7.5.2 displays the audit input screen.

Figure 7.5.2: Audit input screen



Note: To ensure the accuracy of a **density audit**, review the bins presented for auditing against the data from earlier collections to confirm it is representative. This will ensure that the density applied to the annual data is as accurate as possible. For **contamination audits**, ensure that there is sufficient waste present to give a representative result. Examples of abnormal operational days could be a property undergoing large construction works, tenant relocations or major maintenance works.

7.6 Data required for audit calculations

7.6.1 Contamination and density audits

The **NABERS Waste Platform** calculates the **contamination** and **density rates** when the following information is uploaded (per **bin service** being audited):

a) Sum of the weight of all bins containing a representative volume of waste (Gross weight).

b) Average weight of one or more empty bins (Tare of one bin).

c) Sum of total **contamination** (Net weight).

d) Number of bins weighed during the audit.

Sections 7.8 and 7.9 set out the audit methodology to determine these figures.

Results are displayed in the results table. The **NABERS Waste Platform** applies the results to waste collection data once the audit is saved in the following way:

1) If a rating is generated then any audits that occur during the **rating period**, or within 120 days after the end of the **rating period** are applied to waste collection data.
2) When the **NABERS Waste Platform** dashboard is set to a specific date range then any audits that occur during that time period will be applied to the collection data. If a building wishes to use the **NABERS Waste Platform** as a reporting tool (and not just for rating purposes) then more frequent audits are encouraged for data reporting consistency.

A summary of **contamination** and **density audit** documentation requirements can be found in Section 11.2.3.

7.6.2 Composition audits

It is mandatory to input data on the composition audit page of the **NABERS Waste Platform** for any **recycling** stream seeking to obtain a **Material Recovery Score**.

The following information is required for each stream being audited for composition:

a) Sum of the weight and count of all bins containing a representative volume of waste to be audited.
b) Weight of every empty bin/sorting container, or the average weight of several empty bins/sorting containers of each size used in the audit.
c) Count of every bin/sorting container of each size used to separate materials.
d) Sum of total weight of each identified material type within the stream.
e) Sum of the total weight of all **contamination**.
f) Date of the audit and name of the person who conducted the audit.

Section 7.10 sets out the audit methodology to determine these figures.

Further guidance is available on the NABERS website.

7.7 Planning a waste audit

7.7.1 Steps

Prior to commencing an audit, the **Assessor** should:

a) Confirm client requirements, and ensure they understand NABERS audit procedure requirements.
b) Gather preliminary data about the building and its waste.
c) Arrange a suitable audit date and time with the building manager. Select a normal operating day, when all **waste streams** to be audited are collected. See guidance on “Normal Operating Day” for a commercial building (Section 7.5).

d) Secure access to the building. Consider that most bins are removed from floors and collected by the **waste collector** after business hours, so this may require special access and notification of security. Confirm vehicle parking arrangements and access roads to the loading dock.

e) Produce a pre-work safety assessment. Confirm PPE is up-to-date and ready.

f) Ensure scales to be used in the audit are calibrated appropriately and evidence of calibration is kept.

g) Confirm with the customer, that the **waste collector**'s operations team has been notified not to arrive at the building until the audit is completed.

h) If a compactor or similar immobile waste receptacle is present on-site, arrange with the cleaning team to divert bins in advance as per Section 7.11.3.

7.7.2 Required preliminary data

Table 7.7.2 describes the preliminary audit data.

Table 7.7.2: Preliminary audit data

Source of data	Data type
From the **NABERS Waste Platform**	a) **Waste streams** in the building. b) **Waste collector**(s) used for each **waste stream**. c) Bin types, sizes and number of bins for each **waste stream**.
From building contact	a) Contact details for **waste collector**. b) Collection timing/frequency for all bins.
From **waste collector**	a) Collection/drop-off facilities.
From **waste collector** or designated waste facility	At time of audit: a) Materials accepted as recyclable and materials considered to be contaminants in each **waste stream**. Where the **waste collector** and waste facility disagree on which items are considered to be **contamination**, then, for the purposes of consistency in the rating, the waste facility's information takes precedence.

7.7.3 Representative sample

The following sampling method applies to **sites** with a large number of bins in a single **bin service**.

If a single **bin service** uses more than 25 bins, then apply the Slovin's Formula to determine the total number of bins to be audited. The Slovin's Formula is:

$$n = \frac{N}{1 + Ne^2}$$

where *n* is the sample size, *N* is the population size and *e* is the margin of error.

The **NABERS Waste Rating** and **Verification** methods require a 90 % confidence interval to be used, so *e* is 0.1. The results should be rounded up to the nearest whole integer. If the formula provides a result of less than 25, then a minimum of 25 bins must be sampled.

Example: Building XYZ is a large commercial tower building with 56 floors. Each floor has a small waste bin in the kitchen and three waste stations located around the floor. Every night the cleaners empty these bins into 240 L bins which are stored in the dock ready for collection every second day. On average a floor fills up ¾ of a bin every two days, so usually 42 bins are presented for collection to the building's **waste collector**.

The **Assessor** has been asked to do a waste **density audit** for the building's **NABERS Waste Rating**. She sees that there are more than 25 general waste bins in the dock and determines that the sampling method can be applied. Using Slovin's Formula she determines that *n* = 29.6, so 30 bins should be audited:

$$n = \frac{42}{1 + 42 \times 0.1^2} = 29.58$$

7.8 Contamination audit procedure

The following steps should be applied when carrying out a **contamination audit**:

1) Identify **recycling** bins associated with all **recycling** streams listed at the **site** that are included in the data set.

⚠ Bins from retail tenants that meet the definition requirements for an office building must be included.

Where a mixed-use building has determined they cannot separate retail waste bins, then these must be included in the audit.

For each **bin service**:

2) Weigh an empty bin and record this weight. If you have time and access to a number of empty bins, then weigh a few and take the average of these bins.
3) Weigh all bins that contain materials at the point where it is collected by the **waste collector**, such as at a loading dock. Record this number. The **contamination** weight does not have to be recorded per bin, instead the **Assessor** can consolidate the total quantity of **contamination** for a **bin service** into a single weight.
4) Separate the contaminants of each bin/receptacle and weigh them. Record this number. If items are present but the scale records the item as zero due to its increment settings, then the weight must be recorded as the lowest possible non-zero increment.
5) Take pictures of each bin audit.
6) Verify that the information looks consistent with existing data for the **site**, including bin weights.

7) Upload the information to the **NABERS Waste Platform** which will calculate the **contamination rate**.

Note 1: Steps 6 to 7 can be performed off **site**.

Note 2: Large immobile waste receptacles, such as steel front lift skid bins and skips, do not require weighing as a standard industry weight can be applied. The contents still need to be weighed for both **contamination** and **density audits**.

For waste in bags, the weight of the bag must be included as waste (and **contamination** if required).

If there is any uncertainty, the **Assessor** may contact the **National Administrator** for clarification.

Where a **site** does not have a daily collection, and pickups for different **waste streams** occur on different days of the week, so that a single "presented for collection" day cannot be achieved, then Step 3 is amended to state that a **contamination audit** can be completed on a partially filled bin prior to it being ready for collection by a **waste collector**. The bin must be over a third filled (estimated volume based on a visual assessment of the size of the bin). This allowance DOES NOT apply to a **density audit**, which must still be completed when bins are presented for collection.

7.9 Density audit procedure

The **density audit** procedure is as follows:

1) Identify bins associated with all **waste streams** listed at the **site** that are included in the data set and use bin counts as their data source.

⚠ Bins from retail tenants that meet the definition requirements for an office building must be included.

Where a mixed-use building has determined they cannot separate retail waste bins, then these must be included in the audit.

For each **waste stream** and bin size/equipment type:

2) Record the bin size (volume).
3) Weigh an empty bin and record this weight. If you have time and access to a number of empty bins, then weigh a few and take the average of these bins.
4) Weigh all bins that contain materials at the point where it is collected by the **waste collector**, such as at a loading dock. Record this number.
5) Take pictures of each bin audit.
6) Verify that the information looks consistent with existing data for the **site**, including bin weights.
7) Upload the information to the **NABERS Waste Platform** which will calculate the density.

Steps 6 to 7 can be performed off **site**.

7.10 Composition audit procedure

7.10.1 General

This audit only applies if a **bin service** meets requirements of Section 9.2.1 (70 % of collections verified) and Section 9.3.2 (contents will subsequently be sorted into pathways with different **Material Recovery Values**). The composition audit method is very similar to the **contamination audit**, and both audits can be completed at the same time. The procedure is as follows:

1) First, complete Steps 1-7 of the **contamination audit** procedure, as per Section 7.8.
2) Of the remaining contents which excludes **contamination**, separate them into appropriate material streams, based on either information from the waste facility that receives the material, or on reasonable industry research into the most likely **Material Recovery Pathways**. Weigh each material stream. Record this number.
3) Take pictures of each bin audit.
4) Verify that the information looks consistent with existing data for the **site**, including bin weights.
5) Calculate the percentage of each recyclable waste type by weight.
6) Input the calculated composition percentages.

Steps 4 to 5 can be performed off **site**.

7.10.2 Variations to the method

Variation to Step 2: The composition weight does not have to be recorded per bin, instead the **Assessor** can consolidate the total quantity of each material stream for a **bin service** into a single weight.

7.11 Auditing compactors, skips and bales

7.11.1 General

Compactors, skip bins and bales present a specific challenge for on-site auditing as it is not feasible to empty a compactor or skip, or to pull apart a bale. The methods described below set out how to determine **contamination rates** for compactors and bales.

7.11.2 Compactor density audit

In general **density audits** should not be required for a compactor, as data Method 1 should be the most common data option, through the widespread availability of weighbridges for waste of this size. If the **contamination audit** method described below is not possible at the **site** being audited, contact the **National Administrator** before lodging your rating to discuss alternatives.

7.11.3 Compactor contamination audit procedure

This method requires all waste that would normally be placed into the compactor to be audited before it is placed in the compactor. This method will require communication with the **site** cleaning company so relevant bins, or their contents, can be placed in a designated area throughout the day to be audited before being placed into compactor as usual.

This method describes the **contamination audit** method only, but can be adapted for a **density audit** method if weights are not able to be obtained:

1) Identify compactors associated with all **recycling** streams in the building.
2) For each compactor, arrange for all bins (or their contents) to be placed in a designated area throughout the day for auditing prior to being placed in the compactor.
3) There are two ways to do an audit:
    i) Option 1: Conduct an audit of each bin that would have been emptied into the compactor as outlined in the standard **contamination audit** methodology of the **Rules** (Section 7.8).
    ii) Option 2: If all waste from bins that would usually have been emptied into the compactor has been combined in one location (for instance the bins were emptied as they were needed elsewhere), record the weight of all waste and the weight of all contaminants.
4) Take pictures of each bin and the compactor, including contaminants and scales.
5) Verify that the information looks consistent with existing data for the **site**, including bin/compactor weights.
6) Upload the information to the **NABERS Waste Platform** which will calculate the **contamination rate**.

7.11.4 Compactor composition audit procedure

Assessors should follow the **contamination audit** procedure in Section 7.11.3 with the following additional steps:

1) Sort recoverable material into appropriate categories of waste type.
2) Record the total weight of each, being sure to measure the weight of all empty sorting containers and account for these by subtracting them.
3) Calculate the percentage of each recyclable waste type by weight and enter the result.

7.11.5 Auditing baled recycling

Recycling streams that are baled can be audited with a visual assessment. Photos of all visible faces of the bale are required to justify the assessment. Persons conducting the audit are not required to pull the bale apart for an actual content weigh-off, as this presents a range of health and safety issues and creates substantial work for cleaners or the **Assessor** to re-bale the **recycling**.

7.12 Auditing a bin service used as an overflow service

Where a **bin service** is specifically used as overflow in the case that another **bin service** is full (e.g. some 240 L bins are reserved in case the main 660 L bins are full) and so are not presented for collection on the night of the audit, then the **contamination** results of the main **bin service** can also be applied to that overflow **bin service**. If there is more than one main **bin service**, then the **contamination rate** of the overflow service is a weighted average of the measured **contamination rate**.

If the overflow **bin service** is presented for collection on the night of the audit then normal audit practices apply.

8 Data quality

8.1 General

Waste data is not yet as accurate and trusted as energy and water bill data, and the industry is in transition from bin lifts to measured weight as the basis for reporting. This chapter sets out how the **NABERS Waste Platform** processes uploaded data, and instances where **Assessors** must amend data if it fails a data verification check.

8.2 Data quality adjustment

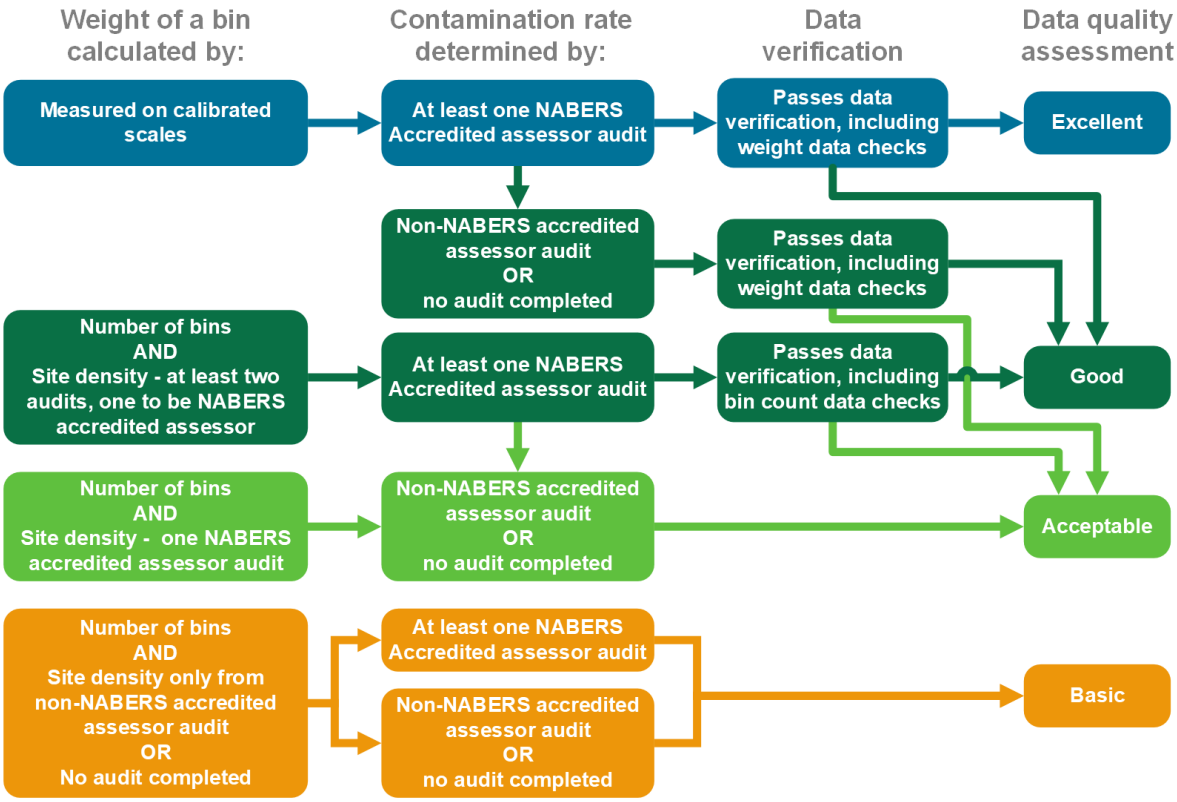
The most accurate waste data for a rating is determined by Method 1 (actual weight of all bins collected from the **site** at point of collection) combined with **site** weight-specific **contamination rates** obtained through a NABERS-assessed **contamination audit** (see Chapter 7).

NABERS recognises it is not always possible to provide this level of data quality for all collections. A NABERS rating can be assessed from lower quality sources, such as number of bins collected for that **waste stream**. In these cases, data for the rating is adjusted by applying a data quality factor to account for the level of confidence in the data.

The data quality categories are shown in Figure 8.2. Data rated as excellent will be accepted as true. All other data will be weighted for uncertainty.

Data quality categories are applied to each individual waste collection, not an overall category for the data set. The **NABERS Waste Platform** performs the data quality adjustment, no action is required from **NABERS Waste Platform** users or **Assessors**, other than to ensure the best available data is uploaded to the **NABERS Waste Platform**.

Figure 8.2: Data quality category schematic



The data quality adjustment is only applied at the point of rating. This means the **recycling rate** shown on the dashboard does not contain the data quality adjustment, so cannot be used to predict the final star rating. The star rating can only be determined once the **Assessor** has completed all data checks.

8.3 Verifying data

8.3.1 General

For **waste streams** with any data that is likely to be assessed as 'excellent' or 'good' under the data quality scheme (see Figure 8.2), NABERS accredited **Assessors** should perform the data quality checks as set out below. The purpose of these checks is to test the accuracy of the primary data source.

If these checks are not completed then the rating can proceed, but a data quality factor will be applied.

The following checks can be completed in any order, however, NABERS recommends they proceed as per this list as this will reduce workload if a **waste stream** does not pass the simpler checks.

8.3.2 Testing weight-based data

Some waste providers supply weight-based reporting, but the weights may not be accurate as the contractor is supplying a calculated weight based on bin lifts and a density calculation.

This situation should be tested as follows:

Test 1: Reporting agreed weights

Check whether the waste contract states that reporting can come from “agreed weights” or “agreed densities”.

If the contract contains this clause, and there is not sufficient evidence that all weight data for a **bin service** entered on the **NABERS Waste Platform** represents actual weights, then the **bin service**(s) does not pass the data verification check.

The **Assessor** must delete affected weight data on the **NABERS Waste Platform** and re-upload those collections as just bin counts, so the **NABERS Waste Platform** recognises the data as either Method 2 or 3.

Test 2: Check for unreliable data

Table 8.3.2 shows how the test for an unreliable data check – weight-based is performed.

Table 8.3.2: Unreliable data check – weight-based data

Unreliable data pattern	Data check
The same weight is collected repeatedly over the **rating period**.	The same weight is reported five or more times in a single month for weights ≥ 25 kg, or seven or more times for weights < 25 kg. This check should consider the sensitivity of the scales used to weigh the bins (see Section 6.7), and whether or not this is a **reasonable data** pattern.
Weights reported as actual weights have repeating density factors applied.	Bin density repeats five or more times across the year within the same **waste stream**.

If these patterns are observed in any **bin service** then the **Assessor** must either—

a) establish that the data is **reasonable**, through evidence of on-site collection practices; or

b) delete all affected weight data for that **bin service** on the **NABERS Waste Platform** and re-upload those collections as just bin counts so the **NABERS Waste Platform** recognises the data as either Method 2 or 3.

To check for the listed unreliable data patterns, the **Assessor** must download all data for the **rating period** as a spreadsheet (this can be easily done from the dashboard), and perform the following steps:

1) Sort data by Waste type, then Equipment then Size to create **bin services**.

2) In Column L copy the following formula into Row 2: =I2/H2/G2 (to create the formula Bin density = bin weight / number of bins collected / bin volume).

3) Copy this formula down the column so it applies to each row.

4) For each distinct **bin service**, visually check each criterion listed above where there are a small number of rows per **bin service**, or—

i) highlight data in Column I (Weight picked up (kg)) and apply conditional formatting “Duplicate values”;

ii) see if any **bin service** meets the first unreliable data pattern listed above;

iii) highlight cells in Column L (with the density factor calculation above) and apply conditional formatting “Duplicate values”; and

iv) see if any **bin service** meets the second unreliable data pattern listed above.

Test 3: Observe weighing procedure

The **Assessor** must observe the weighing procedure in situ to determine that the procedure is likely to result in reliable weights being recorded. Practices to look for include the following:

i) Scales are calibrated.

ii) An empty bin weight has been accounted for in the recording procedure.

iii) Weights are reliably recorded.

iv) Bins are rolled onto scales in a way that their true weight will be recorded. That is, all wheels are on the scales, neither the bin or scales are resting on a wall, etc.

v) The weighing procedure must occur post any on-site activities which are designed to improve the **recycling rate**.

If bin weights are generated from on-truck scales, and the truck automatically records this weight, then the weighing procedure may be checked via CCTV footage.

If any of these checks are failed during the period of observation, then the building does not pass the data verification check. The **Assessor** must record any adverse observations and seek advice from the **National Administrator**.

8.3.3 Testing bin count-based data

For all **waste streams** included in the rating which rely on bin counts as their weight calculation method and are listed as requiring a data verification check on the ratings page (those that meet the requirements for “good” in the data quality scores, see Figure 8.2), the following checks must be conducted.

Table 8.3.3 shows how the test for an unreliable data check – bin count-based data is performed.

Table 8.3.3: Unreliable data check – bin count based data

Unreliable data pattern	Data check
The number of bins collected on weekends or public holidays is very close to the daily average number of bins collected across the year.	Bins collected on two or more public holidays (or the day after if waste for a building is typically collected early morning) across the **rating period** are more than half the daily average for that **bin service** across 12 months.

The same number of bins is collected for a large portion of the year	The same number of bins collected is reported for more than 60 % of collections for a **bin service** over 12 months
There are regularly more bins collected than listed on the **NABERS Waste Platform**	There are more bins reported as collected than listed in the **NABERS Waste Platform** for more than 20 % of collections for a **bin service**.

If these patterns are observed in any **bin service** then the **Assessor** must either—

a) establish that the data is **reasonable**, through evidence of on-site collection practices; or

b) adjust the data on the **NABERS Waste Platform** to reflect actual practice; or

c) indicate this on the **NABERS Waste Platform** during the rating assessment by choosing “no” on the data verification check.

To check for the listed unreliable data patterns, the **Assessor** must download all data for the **rating period** as a spreadsheet (this can be easily done from the dashboard), and perform the following steps:

1) Scroll through data looking for public holidays (e.g. 01 Jan or 25 Apr). See if any **bin service** meets the first unreliable data pattern listed above.

2) Sort data by Waste type, then Equipment then Size and then date to create **bin services**.

3) For each distinct **bin service**, visually check each criterion listed above where there are a small number of rows per **bin service**, or—

   i) highlight data in Column H (units collected) and apply conditional formatting “Duplicate values”;

   ii) see if any **bin service** meets the second unreliable data pattern listed above;

   iii) remove formatting;

   iv) highlight cells in Column H (units collected) and apply conditional formatting “Greater than” and apply the number of bins configured on the **NABERS Waste Platform** for that service; and

   v) see if any **bin service** meets the third unreliable data pattern listed above.

8.3.4 Testing against an independent data source

For a given **bin service** that meets the criteria to be assessed as “excellent” or “good” (see Figure 8.2), the **Assessor** needs to check the primary source of data (defined in Section 6.2.2) with a secondary one, for a full month, for every collection on that month. The second data source must be an independent count of the number, size and type of bins presented for collection each day. Bin count data is a mandatory field, in addition to weight data, so will be available to the **Assessor**.

This second source is compared to the primary source, using a weighted average method to determine the variance, with an allowed discrepancy of 20 %. Since this is a complicated procedure to explain, a spreadsheet has been developed. It is available on the NABERS website.

The process is:

a) Obtain a comparable second data source for bin counts.

b) Use the NABERS Waste calculation spreadsheet to determine the weighted average of absolute variations for each collection.

c) Compare the weighted average result with the allowed threshold.

d) If the **bin service** is within the allowed threshold, then it passes this test.

8.3.5 GECA Waste Collection Services Standard

Where a **bin service** is covered by a GECA Waste Collection Services Standard, then this **bin service** will meet the requirements for:

a) Section 8.3.3 Test 3: Observe weighing procedure.

b) Section 8.3.4 Testing an independent data source.

The **Assessor** must note any service that meets this requirement in the provided text boxes on the ratings page for the relevant rating.

This rule does not exempt an **Assessor** from observing on-site procedures to be confident that the waste data is **reasonable**, under Section 5.6 “Confirm on-site waste practices”. Refer to the GECA website for more detail.

8.4 Secondary data sources

8.4.1 General

The check described in Section 8.3.4 requires two sources of data for bin counts. This section sets out the criteria for these second sources of data for various building and equipment operations.

8.4.2 Data from waste or cleaning contractor

In this case the primary data source is bin lifts reported by either the **waste collector** or the building’s cleaning contractor.

The following sources can be used if they are independent of the original source:

a) Bin tallies from a:

1) Cleaning contractor.

2) **Waste collector**.

3) Security contractor.

4) Waste consultant.

5) Building manager.

6) Automatic bin weigher.

7) The building owner's or building manager's sustainability team or facilities team.

b) CCTV video.

8.4.3 Secondary data source for bins emptied into a compactor or other on-site aggregating equipment

Where an **Assessor** is unable to confirm a secondary source of data for a **core waste stream** that is placed into a compactor or other aggregating equipment, but can confirm that all other **bin services** from that **core waste stream** have passed the independent data source test (Section 8.3.4) of these **Rules**, and the data is from the same primary source, then that **bin service** can be deemed to have also passed Section 8.3.4 of these **Rules**.

If the **waste stream** is one of the optional **waste streams**, then at least 75 % of all other **bin services** from the same primary data source must pass the independent data source test for all of them to also pass Section 8.3.4.

8.4.4 Amending a second source of data

Assessors are allowed to make specific amendments to a second source of data to enable a more accurate comparison with a primary source. Amendments can be made in the following situations:

a) Where bins are tallied before midnight but collected the following morning before the building opens. In this situation, on-site bin tallies can be shifted forward a day, so they match the date of the **waste collector** bin counts they relate to.

b) Similarly, where bins are tallied on a Friday but collected the following Monday because the service only operates on weekdays. In this situation, on-site bin tallies can be shifted forward one business day to they match the date of the **waste collector** bin counts they relate to.

c) Where bins are taken to the dock regardless of contents, but only presented for collection periodically. In this situation, bin tallies for days between collections can be summed to the day they are collected.

If the second source of data is altered, then this must be described (how and why) in the comment field of the NABERS Waste calculation spreadsheet.

8.4.5 Description of an automatic bin weighing system

A cleaning contractor's count or **waste collector**'s count can be verified by using an automatic bin weighing system that includes the following:

a) A system where the "**bin service**" is recognised when it is on the scale's platform through RFID, QR code, barcode or similar, and the weight (excluding the tare) and waste type is automatically transmitted to a computer system, or a cloud-based system.

b) The system does not allow the front-end user to manually enter weights or edit data, aside from deletion of accidental duplicates or incorrect entries.

c) An annual validation of the system will be required in addition to the calibration of the scales.

If there is any uncertainty, the **Assessor** may contact the **National Administrator** for clarification.

8.5 Passing the data verification check

8.5.1 General

If a **bin service** passes all required checks in Section 8.3 then record it as passing the data verification check on the rating page, otherwise record it as not passing.

If weight data is removed due to unreliable patterns (Section 8.3.2), the amended data should be reevaluated. If it meets the criteria in Sections 8.3.3 and 8.3.4, then it passes the data verification check. The **Assessor** must keep a record of checks and the results.

8.5.2 Assessor discretion

If the **Assessor** has any concerns about the data beyond the tests described in Section 8.3, they can choose to not pass that data for the data verification check. The reasons for this decision should be recorded for quality assurance and auditing purposes.

A summary of data verification check documentation requirements can be found in Section 11.2.4.

9 Material Recovery Score

9.1 Purpose and function

9.1.1 General

A **Material Recovery Score (MRS)** may be applied to each **NABERS Waste Rating** or **Verification** to measure the amount of **recycling** that is deemed to achieve a circular outcome. The score adjusts the rating to reflect the documented **recovery** outcomes of materials leaving the building and recognises a building's contribution to better resource **recovery** by rewarding higher-value **recovery** of materials.

The **Material Recovery Score** is calculated using **Material Recovery Values** that are applied to each **bin service** that is included in the **recycling** calculation. These values are determined by the **Assessor** according to the guidelines described in Section 9.3.

A building can improve its **Material Recovery Score** by investigating its supply chain, documenting the end outcomes of materials leaving the building and applying a site-specific value to each **bin service** during the rating calculation.

The **Assessor**, working with the building owners and managers, can decide if they are going to investigate a value for all **bin services**, or some of the **bin services**.

This score is determined according to a framework that aligns with the Global Reporting Initiative standard for waste reporting and assesses each material treatment pathway according to its likely outcome.

9.1.2 Operational control of supply chain outcomes

NABERS measures elements that are within the **operational control** of the building being rated. In terms of waste management, a commercial building owner has control over whether their contracts and on-site management practices are likely to result in the materials going to the highest value outcome.

They do not have control over—

a) the commodities market;

b) regulation of the waste industry;

c) where facilities are located; or

d) whether a facility has capacity to accept their waste.

Thus, the method does not rate specific facilities, and does not rate on a collection-by-collection basis.

9.2 Minimum requirements for the Material Recovery Score

9.2.1 General

The minimum requirement for a building-specific **Material Recovery Score** is a statement from the **waste collector** that 70 % or more of the collections of a **bin service** were received by a specific facility licenced to accept the waste. If this is not possible, then a building-specific value cannot be allocated to that **bin service**. The following facility types are allowed as a collection destination:

a) A remanufacturing, reprocessing or energy **recovery** facility.

b) A **Materials Recovery Facility**.

c) A registered charity.

d) A transfer station.

e) A collection point such as a business-managed take back program.

Where the usual facility is unavailable for a collection, alternate facilities that meet these criteria are allowed to be included in the 70 % threshold.

9.2.2 Evidence of next collection point

The accepted evidence of next collection point is a **statement of collection destination**. This can be one of the following:

a) The **waste collector** has supplied sufficient collection-level information used to populate the field, “Processing Facility sent to (Optional)” of the NABERS Waste data template (Column I).

b) The **waste collector** supplies a report with a breakdown of the facilities to which 70 % or more of collections of each **waste stream** from the building were transported. This report may be on company letterhead or sent via email from an appropriate person from the company.

The name, address, type of facility and licence number (if applicable) of each facility must be provided as part of the **statement of collection destination**.

9.2.3 Verifying the destination

The **Assessor** must obtain a random sample of primary evidence to verify the **statement of collection destination**. The required period is two separate weeks in the **rating period**, with evidence for every collection recorded in each of those weeks.

Required primary evidence is **delivery dockets** from the receiving facility.

Where a GECA waste collection services certification is in place for the **site**, this meets the verification requirements.

9.3 Determining building-specific Material Recovery Values

9.3.1 General

To determine a building-specific **Material Recovery Score**, the **Assessor** must verify the most likely outcome of the waste leaving the building (see Section 9.3.2). NABERS has compiled a list of standard **Material Recovery Pathways** (see Appendix C) which can be used as guidance for **Assessors** in determining **Material Recovery Values** specific to the outcomes of materials leaving each building.

The **Assessor** will require the following information to determine the **Material Recovery Value** for a **bin service**:

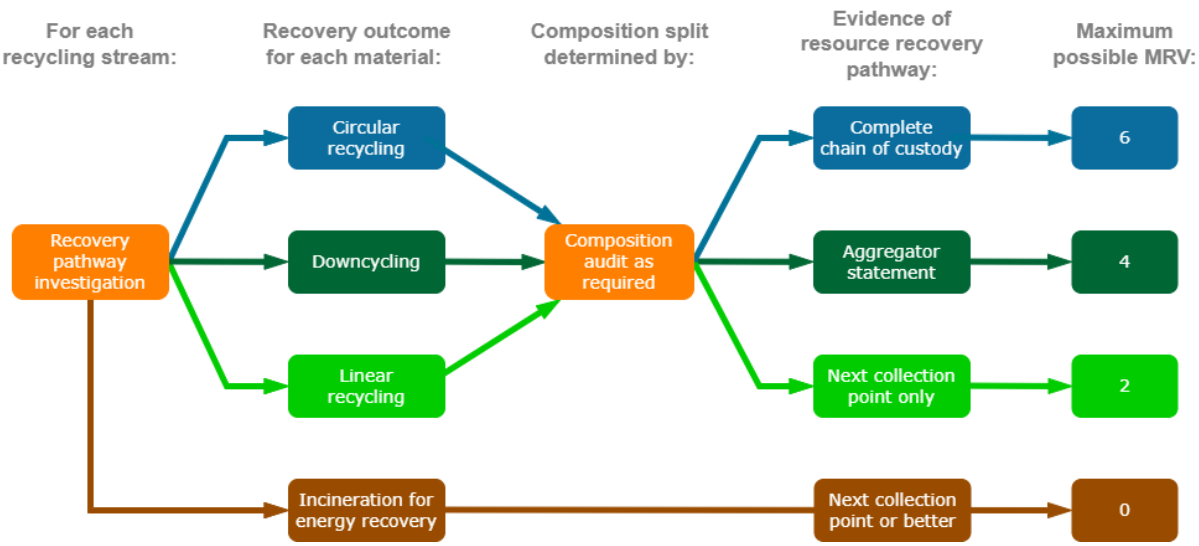
a) Percentage splits of materials from mixed waste bins. This would be determined by a composition audit of the materials in the bin. These percentages must be entered into the **NABERS Waste Platform**.

b) Evidence from a **reprocessing facility** or **waste collector** that 70 % or more of the collections for the year went to a specified **recovery** outcome (see Section 9.2.1).

c) Suggested **Material Recovery Value** referenced from the NABERS table of values (see Appendix C), which accounts for both the quality of the resource **recovery** outcome of **waste streams** as well as the quality of evidence available to demonstrate this outcome.

The results of this assessment are determined from data that the **Assessor** inputs to the Ratings and Audit pages on the **NABERS Waste Platform** and shown in Figure 9.3.1.

Figure 9.3.1: MRS data quality schematic



Example: Material Recovery Values

Waste type	Recovery pathway	Available points	Evidence obtained	MRV to use
Organic waste mixed food waste	Anaerobic digestion with gas capture	6	Full **chain-of-custody**	6
Organic waste mixed food waste	Anaerobic digestion with gas capture	6	**Aggregator statement**	4
Organic waste mixed food waste	Anaerobic digestion with gas capture	6	Next collection point only	2
Glass containers	Crushed for sand replacement	4	Full **chain-of-custody**	4

9.3.2 Material Recovery Value – Establishing a recovery pathway

Material Recovery Values are applied by material category and type, which describe the nature of the material(s) that are recovered ready for re-use or re-processing. The **Material Recovery Value** is determined by considering:

a) The nature of the **waste stream** in which the material is collected from the **site**. Streams are either:

   1) Source separated so that no further sorting is required to re-use or re-process the material. An example of this is a bin that only contains cardboard, or only organics.

   2) A mixed stream where contents of the bin will need to be sorted before they can be re-used or re-processed. An example of this is the mixed **recycling** or co-mingled bin that is common across Australia.

b) The resource **recovery** outcome for the **waste stream**. This value describes what happens to the material at the next stage of its lifecycle. Examples include: **circular recycling**; **linear recycling**; **downcycling**; **recovery** via unverified pathways; and **disposal**.

c) The quality of evidence available to demonstrate the resource **recovery** outcome. Refer to Appendix C: Material Recovery Pathways for a list of identified materials with suggested **recovery** pathways.

This information is input to the **NABERS Waste Platform** composition audit page for all **waste streams**.

To determine the final **recovery** score, the **Assessor** must first establish the most likely outcome for the contents of the bin. This can be achieved using:

   1) Full **chain-of-custody** documentation that evidences the journey of materials through each stage of the supply chain until they reach the point of re-use or re-processing. This should also include a **reprocessor statement**.

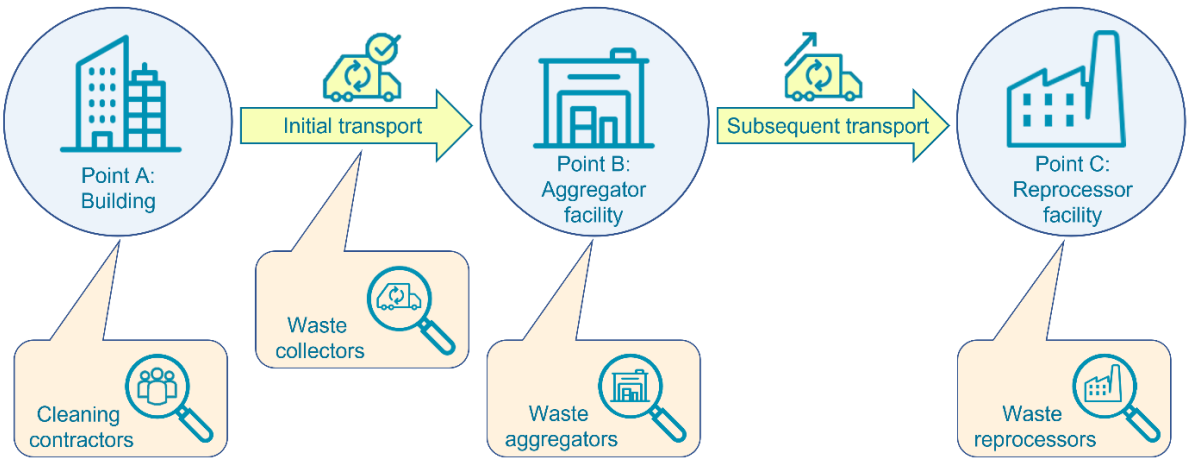
2) An **aggregator statement** (specifically, a facility operator and not a transport company) of most likely end point based on a description of their existing supply chain.

3) Research into overall trends in Australian waste management, with justification for the decision to choose a specific value.

Note: Option 3 is not available for all **recovery** pathways. See Appendix C for pathways this applies to.

Figure 9.3.2 illustrates the sources of evidence at each point in a standard model.

Figure 9.3.2: Material value chain schematic



Note: NABERS recognises that specific arrangements may vary from **site** to **site** due to differences in commercial contracts and service provider business structures. Occasionally a single service provider may fulfil more than one of the roles represented above.

⚠ Where the **waste aggregator** is also the **waste collector**, or the reprocessor is also the **waste aggregator** and/or the **waste collector**, it is acceptable to claim the higher evidence value if the related evidence requirements are met.

For each stream the **Assessor** is applying the **MRS** to, if neither full **chain-of-custody** level documentation nor an **aggregator statement** are available, the **Assessor** should select "next collection point" from the dropdown menu on the Rating page.

The level of evidence will affect each **Material Recovery Value**. More reliable evidence will provide a better result. If a building has a direct relationship with the **reprocessing facility** this should be straightforward. This is only likely to be the case for single material type **waste streams** where the facility is located in Australia, for example, cardboard.

Where a stream is a highly traded commodity into an overseas market this will be more difficult, for example some plastics sourced from a mixed **recycling** bin.

A summary of **Material Recovery Score** documentation requirements can be found in Section 11.2.5.

9.3.3 Mixed bin composition splits

A mixed bin is any **bin service** where the contents of the bin will need to be sorted before they can be recovered for re-use or **recycling**. Such **waste streams** include the mixed **recycling waste stream**, or any **waste stream** sent to a **Material Recovery Facility** or other sorting facility.

A combined paper and cardboard bin may be considered as a mixed bin if the paper and cardboard are separated for different outcomes. If they are not, then this is a single source bin.

The contents of the bin are allocated **Material Recovery Values** dependent on the outcome of the materials. To determine the appropriate splits, the **Assessor** will need to receive information from the **Material Recovery Facility** or sorting facility as to the materials they sort a bin into.

Once these categories are known then the percentage to be allocated to each split can be determined by a composition audit (see Section 7.10). The audit must be performed or supervised by an **Assessor** for the results to be valid.

10 Applying for a Rating or Verification

10.1 General

A **NABERS Waste Rating** or **Verification** is a benchmark of the **operational waste** management performance of a building. This section sets out how to lodge a rating and the requirements around rating validity and evidence.

10.2 Lodging a Rating or Verification

The process to lodge a rating starts with the **Platform Administrator** appointing an accredited **Assessor** to conduct a rating through the rating page on the **NABERS Waste Platform**. The rating page on the **NABERS Waste Platform** is then unlocked for that specific **Assessor** who can proceed to lodge the rating. See Appendix D for all tasks required prior to lodging a rating.

Data used for a rating is locked once a rating is submitted to the customer for authorisation. No further changes to the data will be allowed.

A rating is required to comply with the **Rules** that are current at the time of lodgement. **Assessors** are advised to seek advice and request a **Ruling** (if needed) prior to lodging ratings that may require one.

All accredited assessments undergo quality assurance checks by the **National Administrator** before they are certified. A small percentage also go through an external audit, which is more comprehensive than the quality assurance check.

10.3 Rating period

All data used to assess the waste management performance of a building for a rating must come from a continuous 12-month period. This is the "**rating period**" for the building. The **NABERS Waste Rating** or **Verification** does not allow for estimates of missing data.

10.4 Validity period

A NABERS rating is based on a 12-month **rating period**. Once certified, the rating is valid for up to 12 months — this is called the **validity period**.

It takes time for the **Assessor** to complete a rating, therefore 120 days is given to lodge the rating after the end of the **rating period**. The **validity period** of a rating cannot extend past 485 days from the end of the **rating period**, to ensure all ratings are based on current data.

The **Assessor** must respond to all questions from the **National Administrator** within 10 working days to avoid impacting the validity of the rating.

More information on the **rating period**, **validity period** and time limits for submission can be found in Appendix F.

10.5 Re-rating a building

A building can have only one **NABERS Waste Rating** or **Verification** for a given period. If an **Assessor** wants to complete a new rating on a building that already has a rating attached to it, the rating will be replaced.

The new rating will replace the existing rating immediately upon certification. This will remove the existing rating's remaining **validity period**. Building owners might choose to do this if the new rating is better than the existing rating.

10.6 Rating multiple buildings at the same time

A NABERS rating must be completed for individual buildings where practicable. Rating multiple buildings together is not accurate or equitable for the buildings involved; one of the buildings may be high performing and another may be a poor performer. The high performing building will not be recognised, and it will hide the inefficiencies of the poor performing building.

Multiple buildings may be rated together in certain sectors. Refer to the relevant sector-specific Rules for more information.

10.7 Acceptable data and records

An assessment for an accredited **NABERS Waste Rating** or **Verification** must be based on the data specified in the **Rules** (including applicable **rulings**) or as directed by the **National Administrator**.

10.8 Technical clarifications

Assessors may contact the **National Administrator** if they want to clarify how to apply the **Rules** to a specific rating. **National Administrators** may provide interpretation of the **Rules**, or they may recommend a method to be followed that is not stated in the **Rules** but aligns with its intention. This would not require a change to the **Rules**.

The approved procedure can only be used once for the specific rating. Written correspondence from the **National Administrator** must be used as proof of approval to amend the procedure.

10.9 Rulings

A **ruling** is a change to the **Rules** made by the **National Administrator**.

An **Assessor** may propose a **ruling** by providing all of the following:

a) An explanation of the situation. The explanation must include the reason the **Rules** are unsuitable.

b) An explanation of the proposed new method and any required calculations or procedures.

c) An analysis of the uncertainty or error involved in the method.

d) Data for the proposed **ruling** based on measurements or records which have been independently verified.

Proposals will be assessed by the **National Administrator** by following the Tool Enhancement Assessment. A copy of this framework is available on the NABERS website.

Current NABERS Waste technical **rulings** which amend these **Rules** can be found on the NABERS website.

Once a **ruling** is published on the NABERS website it is effective from that date and becomes part of these **Rules**. A **ruling** always takes priority if there is a conflict with any other section of these **Rules**. If there is a conflict between **rulings** the most recent one takes precedence.

These **Rules** will be updated when appropriate to incorporate any new **rulings** or major changes to the **NABERS Waste Rating** scheme.

11 Evidence for a Rating or Verification

11.1 General

The **Assessor** must collect the following sets of evidence when completing a **NABERS Waste Rating** or **Verification**:

a) Written or digital evidence must be collected for each **waste stream** picked up from the building to confirm that—

   1) all **core waste streams** generated in the building have been included; and

   2) all optional **waste streams** included in the rating were generated in the building.

b) Evidence as listed in the Waste measurements section (Chapter 6).

c) Evidence as listed in the Waste audit methods section (Chapter 7).

d) Evidence as listed in the **Material Recovery Score** section (Chapter 9).

The rest of this section is provided as a summary of required evidence. It may not be exhaustive. If other sections of the **Rules** require evidence that is not listed here, then that evidence must also be collected by the **Assessor**.

11.2 Summary of required evidence

11.2.1 Evidence required for Chapter 4: Waste rating types and buildings

Data from facilities managers on which **waste collectors** they use for which **waste stream**, how many bins are covered by the contract and how often they are collected. Includes:

a) Photos of bins in situ taken during the **site** visit.

b) Evidence of contract/service variations for any **bin services** added or removed during the **rating period**.

c) Evidence that a single building approach is not possible for a multi-building **site** as per Section 10.6.

d) Contracts or other evidence demonstrating that all included **waste streams** are managed by the building (for a **base building** rating only).

11.2.2 Evidence required for Chapter 6: Rating or Verification requirements

Table 11.2.2 outlines the required evidence for weight data.

Table 11.2.2: Required evidence for weight data

Method	Evidence required
Method 1	Evidence to verify weights uploaded to the **NABERS Waste Platform**. Any one or more of the following: a) Receipts recording individual bin weights and size. b) **Waste collector** invoices. c) Cleaner bin count. d) Automated bin readers. e) Weighbridge dockets. Evidence of scale calibration to appropriate standards.
Method 2	Evidence to verify data uploaded to the **NABERS Waste Platform**. Any one or more of the following: a) Receipts recording bin numbers picked up and size. b) The count of bin numbers picked up by size. At least one **site density audit**.
Method 3	Evidence to verify data uploaded to the **NABERS Waste Platform**. Any one or more of the following: a) Receipts recording bin numbers picked up and size. b) The count of bin numbers picked up and size.

11.2.3 Evidence required for Section 7.6.1: Contamination and density audits

All of the following evidence is required:

a) Completed audit spreadsheet recording—
   1) average weight of one or more empty bins (Tare of one bin);
   2) sum of the weight of all bins (Gross weight);
   3) sum of total **contamination** (Net weight);
   4) number of empty bins; and
   5) number of bins with waste.

b) Photos of each bin and separated **contamination**.

c) Data from **waste collectors** on allowed contaminants and **contamination rates**, and compactor **contamination rates**.

d) Evidence that bins are only used for a specific building type (in the case of a mixed-use building).

11.2.4 Evidence required for Section 8.5: Passing the data verification check

All of the following evidence is required:

a) Evidence of scale calibration.

b) If data fails the unreliable data check, but is deemed to be **reasonable** given the building configuration and practice, then evidence to support this decision.

c) Evidence for bin count data comparison, including the spreadsheet used to perform the calculation.

11.2.5 Evidence required for Chapter 9: Material Recovery Score

All of the following evidence is required:

a) Evidence to establish that 70 % of collections went to an allowed destination.

b) Evidence for chosen **Material Recovery Values**.

c) Evidence for **composition audit** results including photos and a completed audit spreadsheet or other data collection method.

In the **NABERS Waste Platform**, 'evidence of next collection point' addresses where materials are initially delivered and can be provided by building management, the cleaning contractor, or **waste collector**. It includes:

1) A report outlining the primary and secondary facilities to which materials are initially delivered and the claimed subsequent **recovery** pathway for each material

2) A statement from the **waste collector** that at least 70 % of materials collected from the building during the **rating period** were delivered to the named facilities.

3) **Delivery dockets** for at least two weeks of collections (core streams) or reports from the **waste collector** for least 70 % of the claimed collections (non-core streams).

In the **NABERS Waste Platform**, 'evidence of waste aggregation' includes the evidence requirements of next collection point plus **delivery dockets** evidencing at least 70 % of A to B transport for the material (see Figure 9.3.2). It also indicates where items are subsequently delivered using an **aggregator statement**, which can only be provided by the **waste aggregator**.

Full **chain-of-custody** evidence includes the evidence requirements of **aggregator statement** plus **delivery dockets** evidencing at least 70 % of B to C transport for the material (see Figure 9.3.2). It also indicates what happens to the material using a **reprocessor statement**, which can only be provided by the **reprocessing facility**.

11.3 Keeping records

Assessors must keep all records that relate to information used in the rating, in case of future rating audit by the **National Administrator**. This includes records of assumptions.

All records must be kept for seven years from the date the rating application was lodged.

The records kept for audit purposes must be the actual documents used for the assessment or verified copies. Summaries are not acceptable.

The records kept by **Assessors** must be to such a standard that it would be possible for another **Assessor** or an **Auditor** to accurately repeat the rating from only the documents provided.

Appendix A Secure paper measurement protocols

A.1 General

Secure paper is often difficult to reliably measure as it has specific criteria for collection and handling due the sensitive nature of the contents of the bins.

The following situations do not meet the requirements for a reliable measurement of this stream:

a) Invoices that list the number of bins on the floor as the basis of billing.

b) Reports that list the number of bins as the only information and then calculates a weight based on this figure.

c) Reports that provide a weight per standard period, such as month or week.

The following methods are allowed under the **Rules** to determine a weight for these bins. The data quality **Rules** in Chapter 8 still apply to these methods.

Methods are listed in order of preference: choose the method that is most feasible for the building being rated. NABERS may consider other methods where they are shown to give a reliable weight over a 12-month period. Contact the **National Administrator** for a determination on alternate measurement methods.

A.2 Method 1: Bin weights

This method is exactly the same as Method 1 in the **Rules**. Specifically, all bins are weighed on calibrated scales either in the building or on the collection truck. All evidence requirements are the same.

A.3 Method 2: Bin count with density factor

This method is exactly the same as Method 2 in the **Rules**. Specifically, all bins are counted by a reliable source, with appropriate evidence, and one or more **density audits** are conducted as per the method set out in Section 7.9.

Pay particular attention to the requirement for the audit to be conducted “at point of collection”. In this case this means the bins can be weighed on the floor of the building, just before they are due to be collected by the secure paper contractor.

Appropriate evidence for this method is not an invoice with total bins serviced by the contract, as that does not guarantee those bins were collected.

Reliable sources for this method include:

a) Cleaners that remove the bins from the tenant floors.

b) Security personnel who allow the secure paper contractor into the building and take a count of collected bins.

Where a **density audit** cannot be conducted, then the **NABERS standard density rate** for secure paper will be used by the **NABERS Waste Platform**.

A.4 Method 3: On-floor bin count with quarterly density audit

Where individual collections cannot be logged, then the following method may be used.

Facilities managers or cleaners perform a regular count of secure paper bins on each floor. Collection frequency can be sourced from an appropriate person in each tenancy. This person should be either an office manager, or the contract manager for the secure paper collection. This statement must be executed by the tenant.

Four **density audits** must be conducted under this method. If audit data is collected by the tenant, then evidence of training in the method, and a checklist for the procedure should be made available to the **Assessor**.

Any sampling applied to this method under Section 7.7.3 are per tenancy, not per building. Only tenancies that comply with these requirements can be counted for this method. No extrapolation of data to tenancies that do not provide data is allowed.

Use of this method must always fail the data quality checks in Section 8.3 as accurate data is not available.

A.5 Method 4: Tenant statement with quarterly density audit

Where accurate bin counts cannot be obtained due to access to secure tenant floors, the following method is allowed.

A statement on the total number of bins present throughout the year, and frequency of collection, can be sourced from an appropriate person in each tenancy. This person should be either an office manager, or the contract manager for the secure paper collection. This statement must be executed by the tenant.

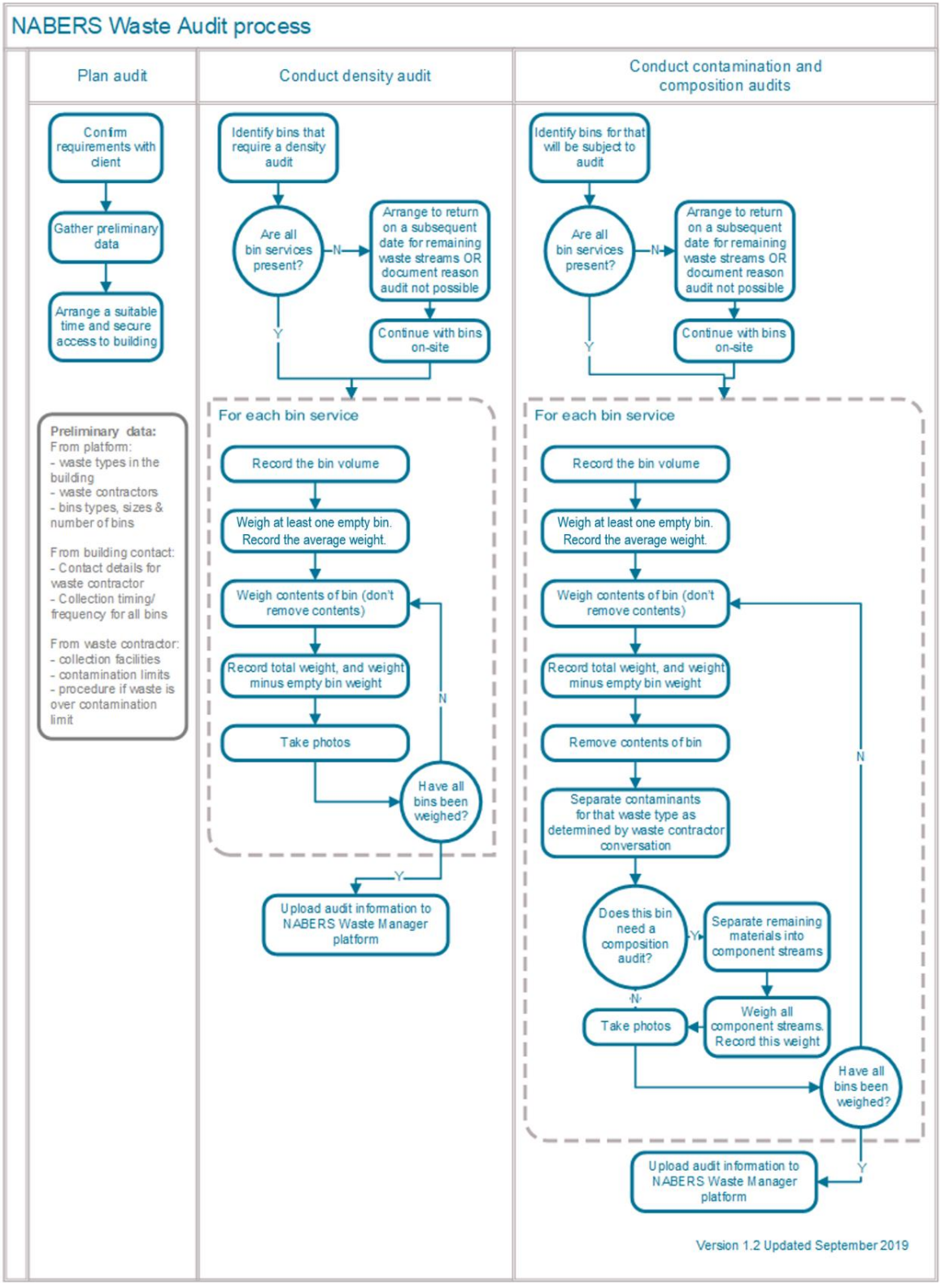
Four **density audits** must be conducted under this method. If audit data is collected by the tenant, then evidence of training in the method, and a checklist for the procedure should be made available to the **Assessor**.

Any sampling applied to this method under Section 7.7.3 are per tenancy, not per building. Only tenancies that comply with these requirements can be counted for this method. No extrapolation of data to tenancies that do not provide data is allowed.

Use of this method must always fail the data quality checks in Section 8.3 as accurate data is not available.

Appendix B Audit process

Figure B: Audit process



Appendix C Material Recovery Pathways

Tables C1 to C9 provide the available **Material Recovery Pathways** for various material streams, and detail of situations in which particular outcomes can be chosen. The available points should be modified according to the level of available evidence before use as a **Material Recovery Value** (see Section 9.3.2). The intent of this list is to act as a guide and may be subject to change due to ongoing innovations.

Incinerated can only be chosen as a material pathway if it meets the requirements of Section 6.4 on energy from waste.

Table C1: Composites

Stream description	Material outcome	Available points
Coffee cups	New coffee cup product	6
Coffee cups	Converted to other composite product	4
Coffee cups	Partially recycled, linear	2
Coffee cups	Incinerated with energy **recovery**	0
Liquid paper board	Converted to composite plastic product	4
Liquid paper board	Partially recycled, linear	2
Liquid paper board	Incinerated with energy **recovery**	0

Table C2: e-waste

Stream description	Material outcome	Available points
e-waste as a bulk item	Refurbished and reused	6
e-waste as a bulk item	Entire stream evidenced post-sorting in preparation for **recycling**	6
e-waste as a bulk item	Separated at a licenced facility for complete **recovery**	4
e-waste as a bulk item	Partially recycled, linear	2

Batteries	Treated appropriately at a licenced facility	6
Light globes	Treated appropriately licenced facility	6
Printer cartridges	Refurbished	6
Printer cartridges	Downcycled	4

Table C3: Glass

Stream description	Material outcome	Available points
Glass Containers	Fully recycled new glass container product	6
Glass Containers	Collected and washed for reuse	6
Glass Containers	Crushed for sand replacement	4

Table C4: Plastic

Stream description	Material outcome	Available points
Plastic Rigid sorted by type and resin code	Fully recycled new single plastic product	6
Plastic Rigid sorted by type and resin code	Downcycled	4
Plastic Rigid sorted by type and resin code	Partially recycled linear	2
Plastic Rigid sorted by type and resin code	Incinerated with energy **recovery**	0
Plastic Mixed/Other	Downcycled	4
Plastic Mixed/Other	Partially recycled linear	2
Plastic Mixed/Other	Incinerated with energy **recovery**	0
Plastic Soft plastic colour sorted	Fully recycled new soft/colour sorted plastic product	6
Plastic Soft plastic colour sorted	Downcycled	4

Plastic Soft plastic colour sorted	Partially recycled linear	2
Plastic Soft plastic colour sorted	Incinerated with energy **recovery**	0
Plastic Soft plastic mixed	Downcycled	4
Plastic Soft plastic mixed	Partially recycled linear	2
Plastic Soft plastic mixed	Incinerated with energy **recovery**	0

Table C5: Paper and Cardboard

Stream description	Material outcome	Available points
Paper or Cardboard sorted by grade	Fully recycled new paper or cardboard product (same grade)	6
Paper or Cardboard sorted by grade	New mixed paper and / or cardboard grade product	4
Paper or Cardboard sorted by grade	Used in compost or other organics process	4
Paper or Cardboard sorted by grade	Incinerated with energy **recovery**	0
Mixed paper and/or cardboard	New mixed paper and/or cardboard grade product	4
Mixed paper and/or cardboard	Used in compost or other organics process	4
Mixed paper and/or cardboard	Partially recycled, linear	2
Mixed paper and/or cardboard	Incinerated with energy **recovery**	0

Table C6: Food waste

Stream description	Material outcome	Available points
Organic waste Food	Food donation service consumed by humans or animals	6
Organic waste fish/meat/bone/ tallow	Rendered for fish/meat/bone/tallow by-products	6
Organic waste cooking oil	Stockfeed via quality assurance accredited supplier	6
Organic waste cooking oil	Biofuel incinerated with energy **recovery**	0
Organic waste mixed food waste	Anaerobic digestion with gas capture	6
Organic waste mixed food waste	Composted	6
Organic waste mixed food waste	On-site dehydrator then composted	6
Organic waste mixed food waste	Anaerobic digestion flared	4
Organic waste mixed food waste	Pre-treatment to trade waste / sewer, downcycled **recovery**	4
Organic waste mixed food waste	Pre-treatment to trade waste / sewer, unverified downstream **recovery**	2
Organic waste mixed food waste	Pre-treatment to trade waste / sewer, no downstream **recovery**	0
Organic waste mixed food waste	Anaerobic digestion with uncontrolled fugitive emissions	0
Australian certified compostable packaging	Composted by industrial processes	6
Coffee pods	All components separated and fully recycled	6
Coffee pods	Downcycled	4
Coffee pods	Partially recycled linear	2

Table C7: Green waste and timber

Stream description	Material outcome	Available points
Green garden waste	Chipped and applied to land	6
Green garden waste	Chipped for wood by-products	6
Green garden waste	Composted	6
Green garden waste	Incinerated	0
Timber pallets	Chipped and applied to land	6
Timber pallets	Refurbished	6
Timber pallets	Chipped for wood by-products	4
Timber pallets	Incinerated with energy **recovery**	0

Table C8: Metals

Stream description	Material outcome	Available points
Metals aluminium separated	Fully recycled new aluminium product	6
Metals ferrous separated	Fully recycled new ferrous metal product	6
Metals other separated	Fully recycled new metal product	6
Metals, mixed scrap	Separated at a licenced facility for complete **recovery**	4
Metals, mixed scrap	Partially recycled, linear	2

Table C9: Textiles

Stream description	Material outcome	Available points
Textiles	Resold as whole garment / textile	6
Textiles	Separated and remanufactured for complete **recovery**	6
Textiles	Downcycled	4

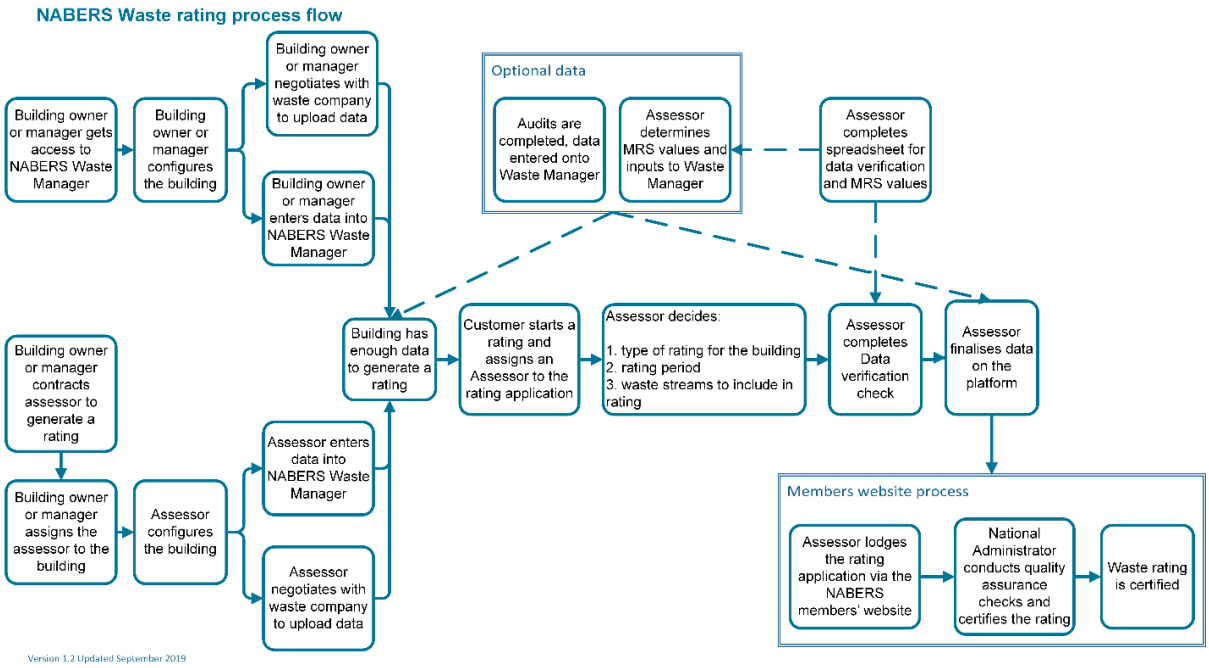
Textiles	Separated and shredded for use in compost or other organics process	4
Textiles	Incinerated with energy **recovery**	0

Appendix D Process to lodge a Waste Rating

D.1 General

This section describes the stages to prepare to lodge a **NABERS Waste Rating**. It provides a step-by-step guide for a typical rating process. Where this section conflicts with text in the main body of this document, the main body takes precedence. Figure D.1 shows the overall process for a **NABERS Waste Rating**.

Figure D.1: Overall process for a Waste Rating



There are six stages:

1) **NABERS Waste Platform** configuration.
2) Preliminary evidence collection.
3) **Site** visit and audits.
4) Confirm and verify data.
5) Final checks and rating submission.
6) Certification.

D.2 Roles

Assessor – A technical expert accredited by NABERS as able to assess buildings for specific ratings. The only person who can lodge a rating.

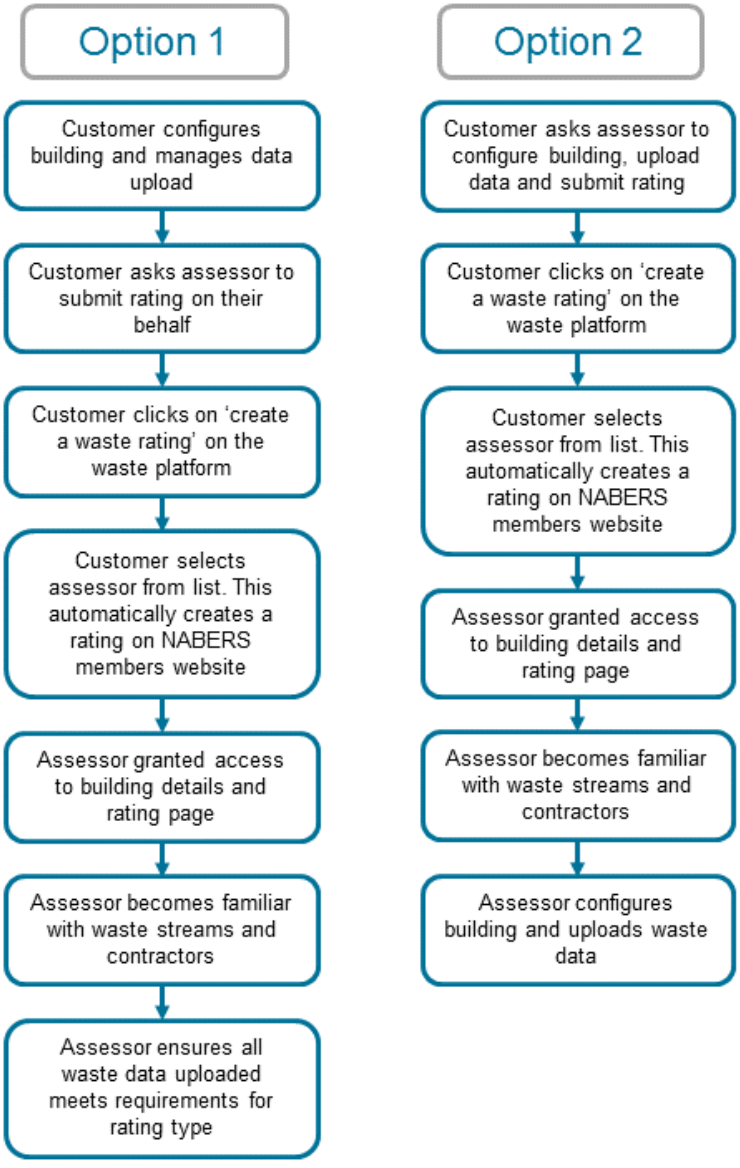
Customer – The person who commissions a rating and agrees to certify the final rating. This is usually an employee of the building owner company or building management company.

National Administrator – A member of the team that administers NABERS.

D.3 Platform configuration

Ensure the **NABERS Waste Platform** is correctly setup to reflect the building's waste management configuration. Figure D.3 shows the 'Platform configuration' step.

Figure D.3: Platform configuration step



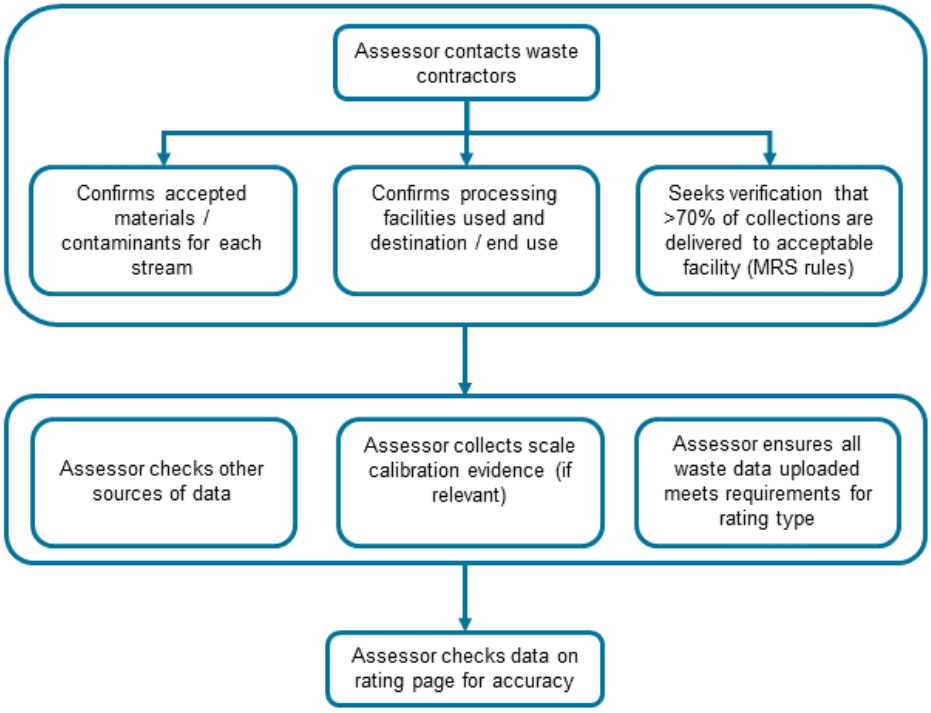
An **Assessor** could also be asked to conduct a rating that is a combination of these two options. For example, a building may be configured but has had little or no data uploaded.

For either option data can also be uploaded by a **waste collector**, a cleaning contractor or a waste data consultant.

D.4 Preliminary evidence collection

Gather all information needed for the rating prior to the **site** visit and any waste audits. Figure D.4 shows the 'Preliminary evidence collection' step.

Figure D.4: Preliminary evidence collection step



Assessors need to confirm that:

a) Uploaded data looks correct and **reasonable** at this stage. For example, if seeking a **base building** rating there is evidence that uploaded data is for waste managed by the building, not tenants (e.g. invoices).

b) If scales are used to generate weight data, there is evidence they have been appropriately calibrated. Calibration evidence should be retained with other supporting documentation.

D.5 Site visit and audits

Ensure the **NABERS Waste Platform** reflects on-site building conditions, including building-specific **contamination rates**.

A NABERS accredited **Assessor** must conduct a **site** visit to:

a) Confirm **NABERS Waste Platform** configuration represents actual operation.

b) Confirm all **core waste streams** collected from the premises are set up on the **NABERS Waste Platform**.

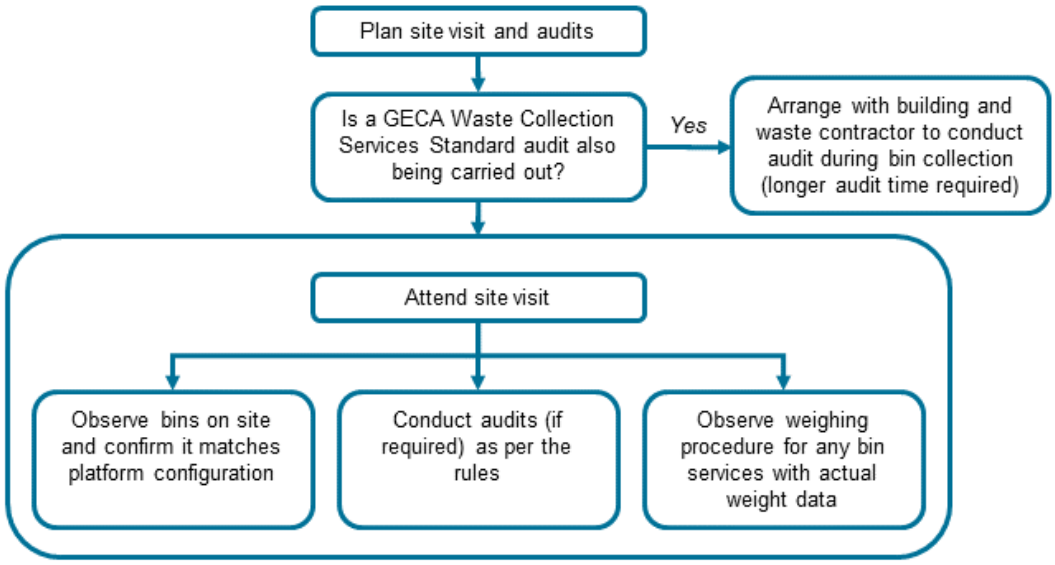
c) Understand on-site waste practices to confirm the waste data is **reasonable**.

d) Perform or oversee audits (if required).

e) Count bins collected and count empty bins.

The **site** visit must establish that the data presented reflects actual practice. Figure D.5 shows the '**Site** visit and audits' step.

Figure D.5: Site visit and audits step



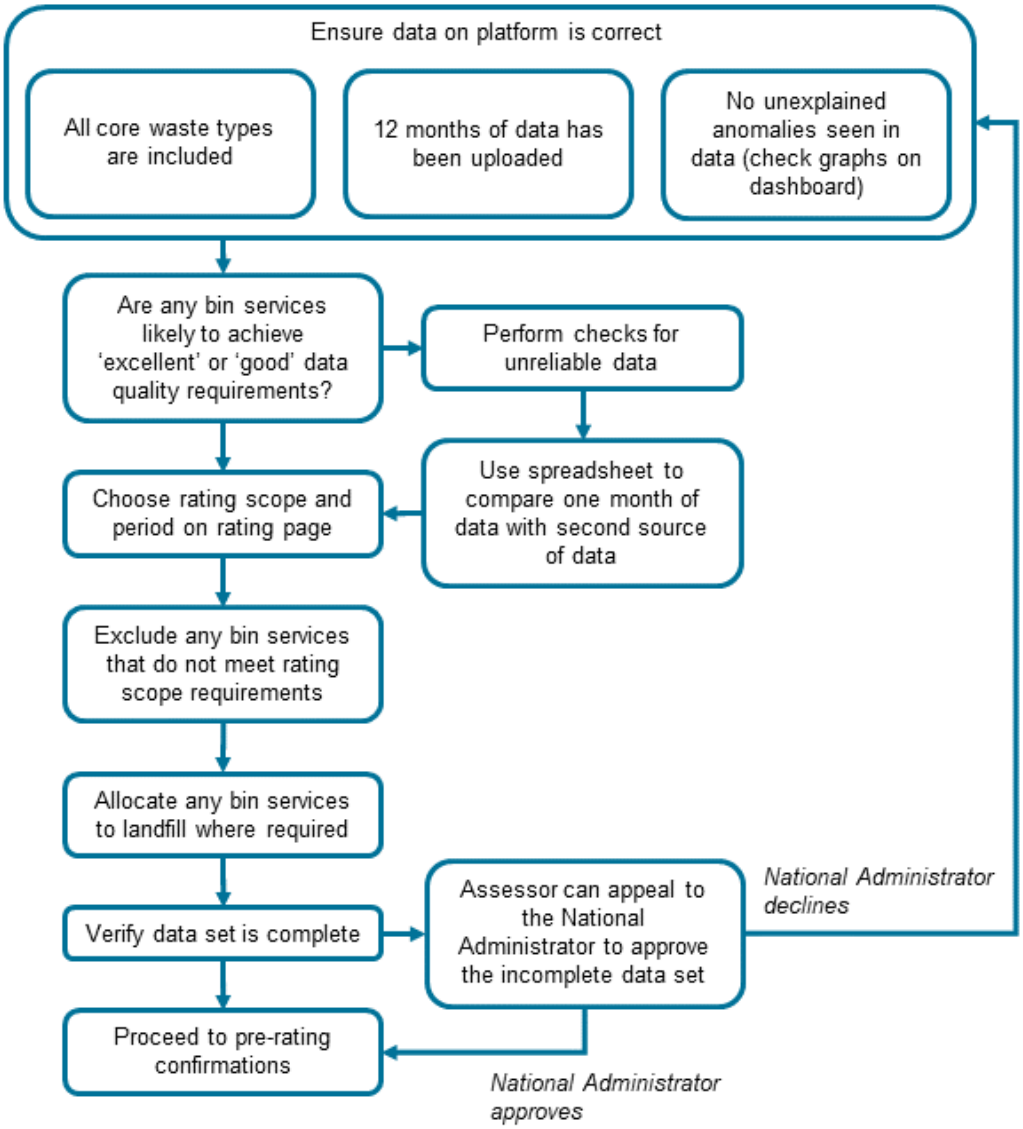
A building can get a rating without completing any waste audits; however, this will reduce the data quality factor and affect the rating. An **Assessor** must still conduct a **site** visit to confirm that on-site bins match the **NABERS Waste Platform** configuration, and to establish any evidence required for data quality checks. Ideally the desktop checks have been completed, so the **Assessor** can verify any discrepancies.

If a GECA audit is being conducted alongside a **NABERS Waste Rating**, extra time will be required for an audit to allow for an interview with **waste collector** staff, regular NABERS audits and observation of contractor processes. Speak to GECA about specific requirements.

D.6 Confirm and verify data

Check all data is **reasonable** and correct prior to lodging the rating. Figure D.6 shows the 'Confirm and verify data' step.

Figure D.6: Confirm and verify data step

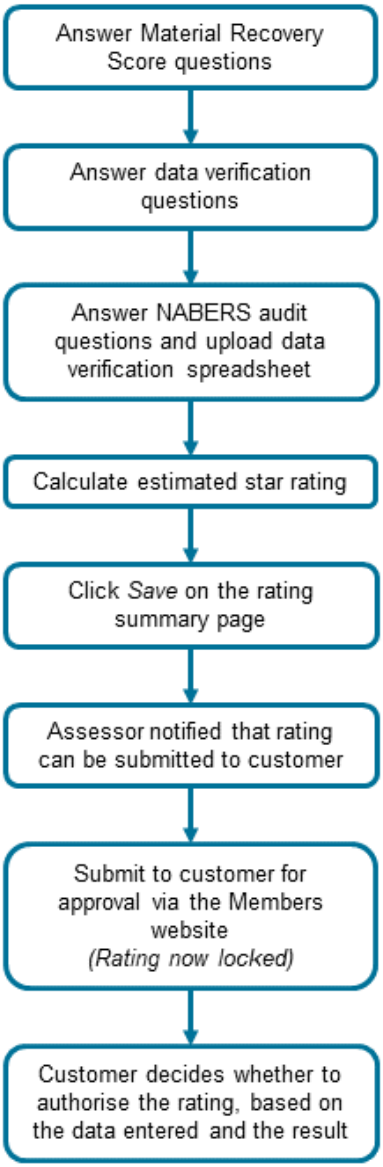


The second source of data check can be completed at any point in the process. Since it is the more laborious of the three steps in the data verification check, we recommend it is done after the **site** visit, in case the weighing procedure does not pass the check.

D.7 Final checks and rating submission

Complete rating process on the **NABERS Waste Platform**. Figure D.7 shows 'Final checks and rating submission' step.

Figure D.7: Final checks and rating submission step



If the calculated rating does not appear to accurately reflect the **site**'s **recycling rate**, check and confirm:

a) Uploaded data is correct.

b) All **waste streams** managed by the building are included.

c) Data is correct.

d) Data verification check has been correctly input.

If the above data is not correct, **Assessors** can check the following to try to improve the rating results:

1) Upload data on additional **waste streams** managed by the building.

2) Conduct density or **contamination audits** on any **waste streams** not previously audited.

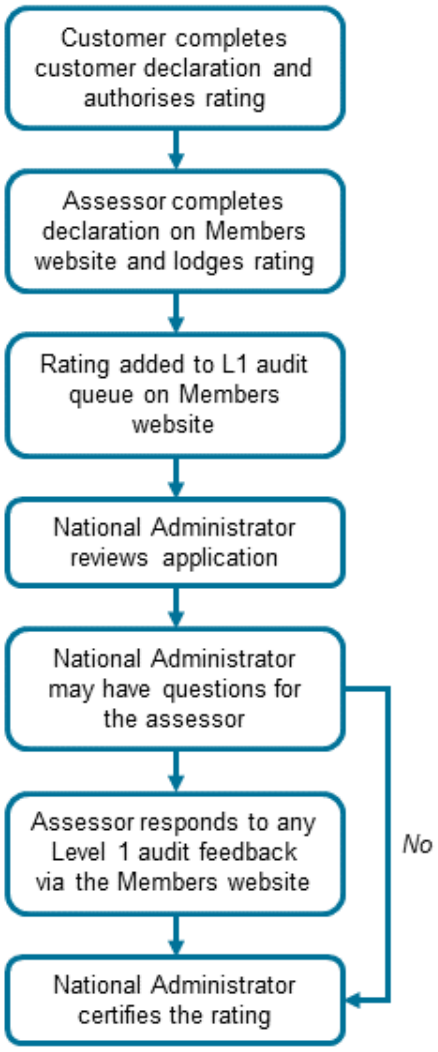
3) Amend the data verification check with correct data and/or find an alternate second source of data for comparison.

4) Input values for the **Material Recovery Score** element of the rating.

D.8 Certification

Finalise the rating and have it certified by NABERS. Figure D.8 shows the 'Certification' step.

Figure D.8: Certification step



The customer of the **NABERS Waste Rating** will need to log in to the Members website to complete the Customer Declaration and approve the rating. They received their password for the website via email when their NABERS customer account was created. If they cannot find the email with these details, customers can reset their passwords on the Members website, or the **National Administrator** can have a new password sent to the customer via email.

The full process for a customer to authorise a rating is:

a) Login to NABERS Members website.

b) Select the Ratings tab.

c) Select Assessments in Progress.

d) Find the relevant rating in the list and select Open rating from the right-hand side of the row.

e) Review key points.

f) Complete the customer declaration tick boxes.

g) Select Authorise to complete the authorisation process – this returns the rating to the **Assessor** to lodge with NABERS.

h) If the rating has errors or omissions, the customer can also click Decline to return the rating to draft for editing.

The **National Administrator** processes 95 % of ratings within 10 business days of them being lodged. After a Level 1 audit, the **National Administrator** often has questions for the **Assessor** to better understand the building, process and rating results.

Responses to **National Administrator** questions are submitted via the NABERS Members website.

Once the rating has been approved, the **Assessor** can no longer edit anything on the **NABERS Waste Platform** and can only see the rating results page.

The customer can also view the rating results and can continue to edit and upload data that does not affect the **rating period**.

Appendix E Waste stream reference table

Note: This Appendix should be read in conjunction with relevant sector-specific Waste Rules, where additional **core waste streams** may be required.

Table E provides the **Waste stream** reference table.

Table E: Waste stream reference table

Bin Type	NABERS standard density rate (kg/m^3)	NABERS standard contamination rate (%)	Allowed waste measurement methods	Core waste stream
General waste	105	N/A	Any	Y
Mixed **recycling**	60	30	Any	Y
Paper and cardboard (mixed stream)	50	5	Any	Y
Paper	90	5	Any	Y
Cardboard	35	2	Any	Y
Cardboard (compacted)	90	2	Any	Y
Secure paper	80	N/A	Any	N
Paper towel	50	5	Any	N
Organics	280	2	Any	Y
Green / garden waste	N/A	N/A	Weight only	N
Food donation	N/A	N/A	Weight only	N
Soft plastics	25	2	Any	N
Dry waste	70	70	Any	Y
e-waste	N/A	N/A	Weight only	N

Batteries	N/A	N/A	Weight only	N
Mobile phones	N/A	N/A	Weight only	N
Light globes and tubes (lamps)	N/A	N/A	Weight only	N
Coffee cups	N/A	5	Weight only	N
Coffee pods	N/A	N/A	Weight only	N
Printer cartridges	N/A	N/A	Weight only	N
CDS mixed **recycling**	53	2	Any	Y
CDS plastic containers	25	2	Any	Y
CDS aluminium cans	27	2	Any	Y
CDS glass bottles	200	2	Any	Y
CDS cartons	30	2	Any	Y
Glass	200	2	Any	Y
Crushed glass	N/A	N/A	Weight only	Y
Cooking oil	910	N/A	Any	N
Polystyrene	15	2	Any	N
Scrap metal	N/A	N/A	Weight only	N
Hard waste	N/A	N/A	Weight only	N
Pallets	N/A	N/A	Weight only	N

Appendix F Rating period

F.1 Allowance for lodgement

F.1.1 General

A NABERS rating is based on 12 months of **acceptable data**, called the **rating period**. Once certified, the rating is valid for up to 12 months, called the **validity period**.

It can take time for an **Assessor** to complete a rating. Therefore, a period of 120 calendar days is given to lodge the rating after the end of the **rating period**. Ratings lodged after the 120 calendar days will have a reduced **validity period** to ensure all ratings are based on current data.

Sections F.1.2 and F.1.3 provide examples of this principle.

F.1.2 Scenario 1

A NABERS rating is lodged with the **National Administrator** within 120 calendar days of the end of the **rating period**. It will be valid for 365 days from the date of certification: see Figure F.1.2.

Example: The process for date of certification will be as follows:

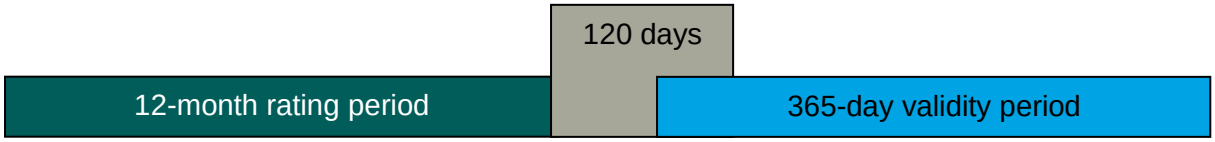
a) The **rating period** is 1 January 2024 to 31 December 2024. The due date is therefore 30 April 2025.

b) The **Assessor** lodges the rating on 1 February 2025, and the **National Administrator** certifies it on 5 February 2025. This is before the due date.

c) The rating will therefore be valid for 365 days from the date of certification (5 February 2025).

d) The **validity period** will be 5 February 2025 to 4 February 2026.

Figure F.1.2: Rating lodged within 120 days of end of rating period



F.1.3 Scenario 2

A NABERS rating is lodged with the **National Administrator** more than 120 calendar days after the end of the **rating period**. It will be valid for 365 days from the end of the **rating period**: see Figure F.1.3.

Example: The process for date of certification will be as follows:

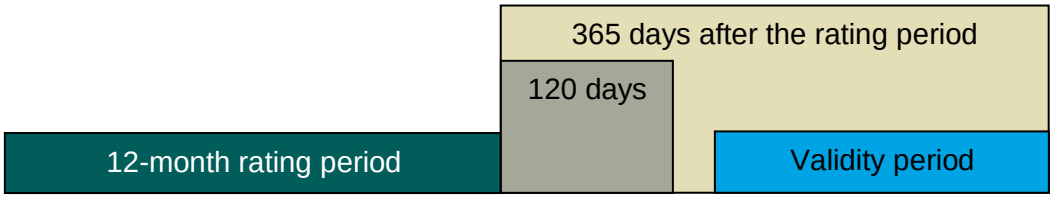
a) The **rating period** is 1 January 2024 to 31 December 2024. The due date is therefore 30 April 2025.

b) The **Assessor** lodges the rating on 1 June 2025, and the **National Administrator** certifies it on 6 June 2025. The rating was lodged after the due date.

c) The rating will therefore be valid for 365 days from the end of the **rating period** (31 December 2024).

d) The **validity period** will be 6 June 2025 to 31 December 2025.

Figure F.1.3: A rating lodged after 120 days from end of rating period



F.2 Allowance for responses

F.2.1 General

Assessors are given 120 days after the **rating period** to lodge ratings with the **National Administrator**. The **Assessor** should allow 10 working days within this 120-day period for a response from the **National Administrator.**

As ratings are based on current data, the **validity period** cannot not exceed 485 days from the end of the **rating period**. This means that if an **Assessor** lodges a rating towards the end of the 120-day period and it is certified after the due date because of processing and response time, the **validity period** may be less than 365 days.

Section F.2.2 provides an example of this principle.

F.2.2 Scenario

A NABERS rating is lodged with the **National Administrator** one day before the lodgement due date (120 days from the end of the **rating period**). The **National Administrator** takes 7 calendar days to complete quality assurance checks, and the **Assessor** takes 6 calendar days to respond to queries that arose from the quality assurance checks. The rating will be valid for 485 days from the end of the **rating period**: see Figure F.2.2.

Example: The process for date of certification will be as follows:

a) The **rating period** is 1 January 2024 to 31 December 2024. The due date is therefore 30 April 2025.

b) The **Assessor** lodges the rating on 29 April 2025, 119 days after the end of the **rating period**. This is before the due date.

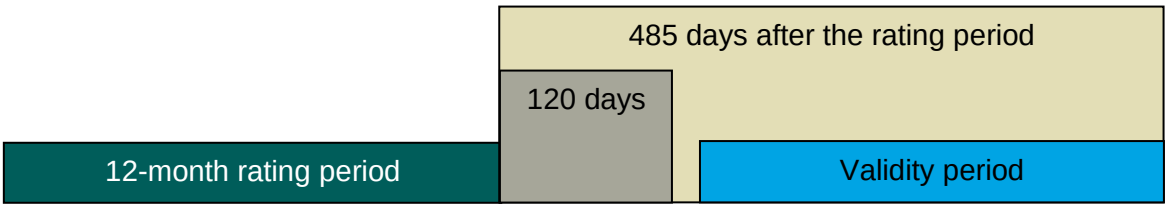
c) The **National Administrator** responds on 6 May 2025 requesting further clarification.

d) The **Assessor** responds on 12 May 2025 and the rating is certified the same day on 12 May 2025.

e) The **validity period** cannot extend past 485 days from the end of the rating period (30 April 2026).

f) The **validity period** will therefore be 12 May 2025 to 30 April 2026 (353 days from the date of certification).

Figure F.2.2: A rating lodged before, but certified after 120 days from the end of the rating period



F.3 Lodging successive ratings

When a new rating of the same type is certified for a premises which already has a current rating, the new rating will replace the current rating.

There will be loss of the existing rating's remaining **validity period**, see Figure F.3.

Figure F.3: Existing rating replaced by new rating

Appendix G List of changes

The following tables list the changes to the content of *NABERS The Rules — Waste v2.0 (January 2024)* in order to produce this version 2.1.

Chapter 1: Introduction		
Version 2.0 (old version)	**Version 2.1** (current version)	**Changes made**
1.1 General		Removed reference to unpublished *Waste for Hospitals*.
1.2 Interpretation of the Rules and Rulings		Updated in line with NABERS template.
1.3 Situations not covered by the Rules		Updated in line with NABERS template.
1.4 How to use this document		Updated in line with NABERS template.
1.5 What is new in this version		Included latest changes.
1.6 Related documents		Updated in line with NABERS template.

Chapter 2: Terms and definitions		
Version 2.0 (old version)	**Version 2.1** (current version)	**Changes made**
2 Terms and definitions		Added the following definitions: a) aggregator statement b) Assessor c) Auditor d) delivery docket e) density audit f) reasonable g) value chain h) validity period

	Removed definitions for NABERS Waste Assessor and waste aggregator statement. Included contract in the definition of bin service. Included capability statement in the definition of reprocessor statement. Included sorting activity description in the definition of aggregator statement.

Chapter 4: Waste rating types and buildings		
Version 2.0 (old version)	**Version 2.1** (current version)	**Changes made**
4.1 NABERS Waste Ratings and NABERS Waste Verifications		Added tenancies to the description of waste verification.

Chapter 5: Waste streams		
Version 2.0 (old version)	**Version 2.1** (current version)	**Changes made**
5.3 Core waste streams		Updated Dry waste definition and moved it from General waste category into mixed recycling category to align with the NABERS Waste Platform at this time. Subject to further review. Added resin codes to the definition of Mixed recycling.
5.4.2.7 Dry waste recycling		Included— a) assumption of conversion to PEF within dry waste recycling definition; b) requirement to comply with 6.4 or assign the stream to landfill; and c) requirement for both organics and general waste streams to be present and functional (where available).

Chapter 6: Rating or verification requirements		
Version 2.0 (old version)	**Version 2.1** (current version)	**Changes made**
6.3.3 Floor-by-floor or tenant waste weighing process	6.3.2 Floor-by-floor or tenant waste weighing process	Section renumbered. Deleted references to previously allowed manual handling data aggregation technique and clarified that tenant-by-tenant data is now deemed inappropriate for use as primary data to extrapolate building-wide results.
6.3.2 Non-standard points of collection	6.3.3 Non-standard points of collection	Section renumbered.

Chapter 7: Waste audit methods		
Version 2.0 (old version)	**Version 2.1** (current version)	**Changes made**
7.3 Waste streams by audit type		Updated audit requirements for paper towel and coffee cups.
7.7.1 Steps		Included bin diversion procedure in waste audit planning steps.

Chapter 8: Data quality		
Version 2.0 (old version)	**Version 2.1** (current version)	**Changes made**
8.2 Data quality adjustment		Updated figure.
8.4.4 Amending a second source of data		Included weekday-only service in the allowed data manipulation.
8.4.5 Description of an automatic bin weighing system		Allowed deletion of flagged duplicates or incorrect entries.

Chapter 9: Material Recovery Score		
Version 2.0 (old version)	**Version 2.1** (current version)	**Changes made**
9.3.2 Material Recovery Value – Establishing a recovery pathway		Included reprocessor statement.

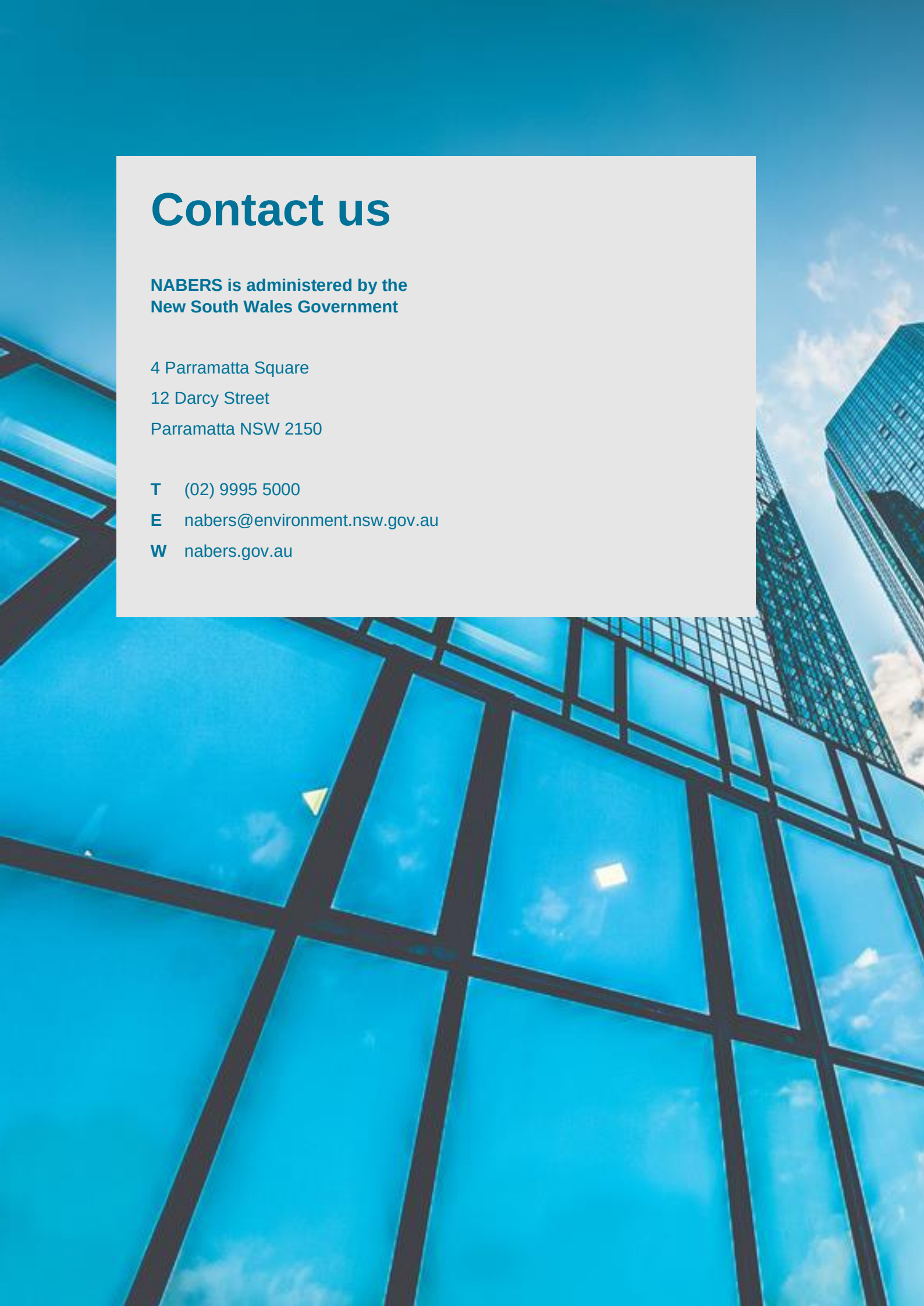
Chapter 10: Applying for a Rating or Verification		
Version 2.0 (old version)	**Version 2.1** (current version)	**Changes made**
10.4 Validity period		Updated to align with the current platform functionality.
10.5 Quality assurance check	N/A	Section removed and subsequent sections renumbered. Content moved into Section 10.4 Validity period.

Chapter 11: Evidence for a Rating or Verification		
Version 2.0 (old version)	**Version 2.1** (current version)	**Changes made**
11.2.6 Section 9: Establishing a material recovery pathway	N/A	Section combined into Section 11.2.5 Evidence required for Chapter 9: Material Recovery Score.

Appendix F: Rating period		
Version 2.0 (old version)	**Version 2.1** (current version)	**Changes made**
F.2 Allowance for responses		Updated to align with the current platform functionality.

F.3 Adjusting the rating period	N/A	Section removed.
F.4 Lodging successive ratings	F.3 Lodging successive ratings	Combined sections F.4.1 General and F.4.2 Option 1: Replace into main section. Removed sections F.4.3 Option 2: Renew, F.4.4 Scenario 1 and F.4.5 Scenario 2.

Appendix G: List of changes		
Version 2.0 (old version)	**Version 2.1** (current version)	**Changes made**
Appendix G List of changes		Included latest changes.



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