

Resource Recovery – CONCRETE – Collection and Transportation

This guide provides good-practice advice to improve recovery rates for concrete from construction and demolition (C&D) sites.

The aim is to assist collection and transportation services to adopt practices that:

- maximise the amount of concrete diverted from landfill and cleanfill
- minimise contamination in the collection and transportation phase
- meet the requirements of the C&D client and the recycling operator
- are consistent with the Aggregate and Quarry Association of New Zealand's *Best Practice New Zealand Guideline for the Supply of Recycled Concrete Materials for Use in Pavements and Other Civil Works* (www.aqa.org.nz/documents/Recycled%20Best%20Practice%202010.pdf).

This guideline covers:

- finding good markets for waste concrete
- collection and transportation services
- health and safety hurdles
- resources and contacts
- other guidelines in this series.



Demolition of Northern Roller Milling Company building,
Ward Demolition, Auckland.

Read the REBRI Resource Recovery – All Waste Types – Collection and Transportation guide for more detail on methods for separating wastes, developing contracts with clients, meeting expectations of the recycling operators and building industry, disposing of waste appropriately and transporting materials safely and efficiently.

Finding good markets for waste concrete

Waste concrete includes concrete, brick, masonry roof tile (concrete or terracotta), ceramic tile or rock.

You need to find good sustainable markets for concrete wastes and understand the specifications of your clients in terms of the characteristics of the crushed product.

Crushed concrete aggregate can be used anywhere natural aggregate is currently used, including:

- loose on driveways, for unsealed hard stand and in landscaping
- as a base course for footpaths, roading, driveways and other asphalted or sealed surfaces
- as a base course under building foundations
- in civil works such as stopbanks, earth bunds, soakage pits, drainage channels and beds for pipe works and cabling.

Concrete blocks and bricks can be reused

- Blocks of concrete are used for stabilising slopes, river banks and foreshores. The size and type of blocks vary with each project.
- Bricks are reused in fences, landscaping and construction.

Bricks salvaged for reuse, Ward Resource Recovery, Auckland.



Know your markets

You won't be in business long without securing a sustainable market for crushed concrete aggregate. The market depends heavily on the price of natural aggregate, so it pays to do your homework. Here are a few suggestions for starting your search.

- Use local waste-recycling directories (www.branz.co.nz/REBRI_Recycling_Directory), the Yellow Pages (www.yellowpages.co.nz), the Waste Exchange (www.nothrow.co.nz) and buy recycled directories (www.zerowaste.org.nz) to identify the demand for crushed concrete aggregate. These change often, so it pays to keep checking.
- Network with businesses and councils with an interest in sustainability. Join organisations such as the Sustainable Business Network (www.sustainable.org.nz) or the Waste Management Institute of New Zealand (www.wasteminz.org.nz).
- Do business with recycling operators and other agencies that follow the REBRI Guide to C&D Resource Recovery or are accredited to a nationally recognised environmental management programme such as ISO14001 or Enviro-Mark® NZ. This way, you can have greater assurance that they are working to good environmental standards and are doing what they say they do.

Understand the requirements of your clients

Clients will have their own specifications for waste concrete, which will depend on the end use of the product. Here are a few tips.

- Always get clear written instructions from your clients on their specifications for crushed concrete aggregate.
- Concrete, brick, masonry roof tile (concrete or terracotta), ceramic tile or rock are acceptable materials for crushing and recycling for civil works. The AQA Recycled Concrete Guidelines have specifications for the quality of these materials. In general:
 - crushed concrete should be crushed from clean, hard, durable and angular fragments of concrete
 - some 'old' concrete products are too hard-wearing on some crushing machines and will not be accepted by operators
 - some concrete products are too soft to meet reuse specifications after crushing and will not be accepted by operators
 - bricks should be kiln-fired clay bricks, which may have cement or lime mortar adhering to them
 - roof tiles should be concrete or baked clay tiles, which may be glazed.
- Obtain specifications from earth stabilisation clients for concrete pieces. Things to check include:
 - types of concrete and rubble, size of concrete pieces and amount of pre-processing
 - acceptable levels of bricks and tile and contamination such as glass, metal, soil etc.
 - minimum or maximum quantities accepted.

- Do not accept asbestos for recycling, crushing or reuse.
- Use the REBRI Waste Transfer Form to confirm to clients the source and nature of the concrete products provided.

Collection and transportation services

Provide your C&D clients with good information to maximise the quality of materials

To maximise the quality of materials you collect and transport, your C&D clients need to understand your specifications. If you provide good information and an efficient collection system, clients should be able to give you a quality product.



- Give clear instructions to your C&D clients on your specifications. Many companies have a contract with their client in which the specifications are clearly stated along with any unacceptable materials.
- Visit the site prior to renovation or demolition and identify concrete and rubble suitable for recycling/crushing. Provide clear instructions to the client to keep the poor-quality product and contaminants separate.
- Separating concrete on-site increases the recovery for reuse compared to off-site sorting facilities because it is easier to separate contamination such as soil and vegetation.
- Check and remove contamination prior to transportation.
- Use the RONZ recycling symbols for concrete to provide clear signage on containers (downloadable from www.wasteminz.org.nz/pubs/ronz-symbols).
- Include a list of unacceptable materials on the containers. Be specific (for example, “No soil or plant matter”).

Transportation services and methods

Refer to the REBRI Resource Recovery – All Waste Types – Collection and Transportation guide for general transportation guidelines.

- When providing a skip service, only use half-size skips for concrete to avoid overfilling the standard-size skips, which aren't designed for the weight of the concrete. Alternatively, provide custom-made skips that have been designed for the weight of concrete.
- For large volumes of concrete, provide tipper trucks at the point of demolition/pulverisation.
- Excavators used in demolition can be used to fill skips or trucks.



Ward Demolition, Auckland, provides custom-designed skips for concrete collection.

Health and safety

Good practice wouldn't be complete without considering the effects of your operation on the health and safety of you and your workers. Read the REBRI Resource Recovery – All Waste Types – Collection and Transportation guide for an overview of the issues.

Resources and contacts

Relevant legislation and regulations

- Health and Safety in Employment Act 1992
- Local Government Act 2002
- Transport Act 1962
- Transport Amendment Act 1997
- Resource Management Act 1991
- Regional and district plans
- District bylaws.

Links, resources and contacts

- Resource Recovery in the Building and Related Industries (REBRI) www.rebri.org.nz
- Aggregate and Quarry Association of New Zealand www.aqa.org.nz
- New Zealand Transport Agency www.nzta.govt.nz
- Zero Waste www.zerowaste.org.nz
- Sustainable Business Network www.sustainable.org.nz
- UK Waste and Resources Action Programme (WRAP) www.wrap.org.uk
- Yellow Pages www.yellowpages.co.nz
- The Waste Exchange www.nothrow.co.nz
- Waste Management Institute of New Zealand (WasteMINZ) www.wasteminz.org.nz
- Enviro-Mark® NZ www.enviro-mark.co.nz

Other guidelines in this series

All Waste Types

- Collection and Transportation
- Centralised Sorting and Storage

Timber

- Collection and Transportation
- Processing into Mulch and Chip

Plasterboard

- Collection and Transportation
- On-site Sorting, Storage and Processing
- Centralised Sorting, Storage and Processing

Concrete

- **Collection and Transportation**
- Processing and Storage

Metal

- Collection and Transportation

CONCRETE – Collection and Transportation – Audit Sheet

Use this sheet to check the practice of your service provider against the good practice guidelines in this guide. If you are a waste transporter, you can use this sheet to do your own checks of your performance against the guides. Just consider each point and put a tick for compliance, cross for non-compliance or NA for not applicable. Put any comments at the bottom of the sheet, then sign and date it. Keep these sheets for your records and any discussions between you and your clients or suppliers.

Collection and transportation

1. A list of specifications is provided to C&D clients, which includes such things as:
 - waste materials that can be crushed (for example, concrete, brick, masonry roof tile, ceramic tile and rock)
 - contamination tolerances
 - minimum and maximum quantities
 - size of pieces
 - sorting or grading requirements.
2. A detailed list of unacceptable materials is provided (for example, “No soil or plant matter”).
3. The REBRI Waste Transfer Form is used to trace the source and destination of concrete.
4. Concrete and rubble is collected separately to other wastes from the site to minimise contamination and maximise recovery.
5. The RONZ recycling symbols for concrete or some other type of clear signage have been used on containers. A list of unacceptable materials is included.
6. Containers suitable for the site and quantities of concrete waste are available (for example, half-size skips or tipper trucks).
7. Collection staff visually inspect each load prior to removing it from the site. Where possible, any pieces of contamination are removed.

Internal procedures and compliance

In addition to the procedures above, consider whether the following apply to the operation:

8. Documented emergency procedures, including spill responses.
9. Documented health and safety procedures.
10. Documented quality and environmental monitoring.

- 11. Current resource consents or other approvals for land use and discharges to the environment.
- 12. External accreditation (for example, Enviro-Mark® NZ).
- 13. Prefer clients and supplier that work to good environmental standards by using the REBRI guides and/or have external accreditation.
- 14. Licensed under district bylaw.

Comments

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Signed

Person, company and responsibility

Date

Signed

Person, company and responsibility

Date