

Resource Recovery – CONCRETE – Processing and Storage

This guide provides good-practice advice to maximise recovery rates for concrete from construction and demolition (C&D) projects by improving crushing, screening and stockpiling processes.

The aim is to assist the operators of crushing and screening systems to adopt practices that:

- maximise operational efficiency and the amount of concrete crushed and screened into chip product
- minimise contamination and maximise the quality of the chip product
- avoid or minimise environmental and nuisance effects from processing and storage
- 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 crushed concrete aggregate
- on-site versus centralised processing
- setting up a processing facility or mobile plant
- operating a concrete-processing plant
- testing and storage of crushed concrete product
- environmental, health and safety hurdles
- resources and contacts
- other guidelines in this series.



Demolition concrete ready for processing, Crusaders Landscaping, Christchurch.

The guidelines do not cover the retailing of crushed concrete aggregate.

Read the REBRI Resource Recovery – Concrete – Collection and Transportation guide in conjunction with this guide. Please refer to the particular specifications for operating your machinery for full details on how to maximise efficiency and performance. These guidelines do not replace the specific instructions of the manufacturer.

Finding good markets for crushed concrete aggregate

Concrete waste 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 requirements 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, as unsealed hard stand and for 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.

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](http://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 sorting facilities, transport 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 and the industry-accepted specifications for crushed concrete aggregate

Clients will have their own specifications for crushed concrete aggregate, which will depend on the end use of the product. Here are some tips.

- Always get clear, written instructions from your clients on their specifications, including references to industry guidelines or specifications such as the AQA Recycled Concrete Guidelines and TNZ M/4: 2006 Specification for Basecourse Aggregate (www.nzta.govt.nz/resources/basecourse-aggregate/docs/basecourse-aggregate.pdf).
- Concrete, brick, masonry roof tile (concrete or terracotta), ceramic tile or rock are acceptable materials for crushing and recycling into 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
 - do not accept asbestos for recycling, crushing or reuse.
- The AQA Recycled Concrete Guidelines classify product quality and specifications for each class as follows (from high to low):
 - Class A – Gap 65, Gap 45, Gap 20* (suitable for base course or sub-base)
 - Class B – paver base
 - Class C – general fill (beneath grass, behind retaining walls etc.)
 - Class D – bulk fill (large developments, embankments)
 - Class E – backfilling of drains and stormwater pipes.
- Both the AQA Recycled Concrete Guidelines and TNZ M/4 have specifications for Gap 65 and Gap 40. These differ, so ask your client for the specifications required.

* Gap 65 etc refers to the test sieve size used in laboratory testing of aggregate quality. The higher the number, the larger the average size of the pieces of aggregate. Specifications list the maximum percentage of particle sizes for each of the grades.

- Refer to specifications for contamination tolerances of end uses from foreign materials such as timber or soil.
- Use the REBRI Waste Transfer Form to confirm to clients the source and nature of the concrete products provided.

Calculate the economics of recycling

- Before setting up business, you can use a simple cost model to estimate the economics of your recycling operation compared to disposing of concrete to cleanfill (or other alternatives):

$$I = Q[l_t + rI_s - C_p - (1-r)C_d]$$

where:

- I = gross income from processed chip (\$)
- Q = concrete received (tonnes)
- l_t = income from receiving concrete for processing (\$/tonne)
- r = recovery rate of concrete, from original concrete received (%)
- I_s = income from processed chip sales and reinforcing bar recycling (\$/tonne)
- C_p = cost of processing (\$/tonne)
- C_d = disposal cost for residual waste (\$/tonne).

On-site versus centralised processing

A key decision regarding the operation of a concrete-processing plant is whether to set up a dedicated processing facility or provide a mobile service where the plant is taken to the source of the concrete. There are plenty of reasons why you would choose one set-up over the other, most of which would come down to the ability to make a profit from the operation.

Some things to consider

Processing concrete at the construction or demolition site makes sense when:

- there is enough concrete to justify the mobile plant (use the economic calculation above to determine this)
- the plant is easy to mobilise – the time and labour required to move the plant from site to site may override any other benefit, but again this can be answered using the calculation above
- there is enough room to set up the plant and stockpile the crushed concrete aggregate
- transport costs can be saved by reducing the cartage of concrete to a facility or crushed concrete aggregate to the end market
- crushed concrete aggregate can be used on site
- the surrounding neighbourhood is not sensitive to the environmental effects of the plant.

Centralised processing makes sense when:

- economies of scale mean that it is more efficient to process long term at a centralised site, even when transportation costs are considered
- plant is not easy to mobilise (see above)
- there is not enough room on site
- it is easier to get resource consents and other regulatory approvals for a single site rather than for a mobile operation
- not all of the crushed concrete aggregate can be used on site and/or stockpiling is required beyond the timeframe of the building project.

Setting up a processing facility or mobile plant

Good planning in the set-up phase will help you to develop a quality product – without the council on your back.

Factors that affect product quality and reduce the value of the product

- Contaminants such as glass, tiles, metal, timber and soil can affect the grade of the final product.
- Some 'old' concrete products are too hard-wearing on some crushing machines.
- Some concrete products are too soft to meet reuse specifications after crushing.

Environmental considerations

- Crushing equipment is noisy.
- Concrete crushing creates dust, and stockpiling creates dust during windy, dry conditions.
- Concrete fines from washing facilities, crushing operations and stockpiles can contaminate stormwater run-off by raising pH levels, contributing sediment to discolour the water and adversely affecting aquatic life by smothering streams and decreasing light penetration.
- Stockpiling can be a visual nuisance in some neighbourhoods.

Guidelines for reducing the environmental effects of processing are included below – see Environmental, health and safety hurdles.

Design your centralised processing facility to maximise efficiency

- Specific considerations include:
 - provide adequate access and manoeuvring for all vehicles
 - provide access for the public, if appropriate
 - specify designated drop-off locations
 - allow sufficient space and have the appropriate machinery for manoeuvring and stockpiling processed and unprocessed concrete (it is likely that at least several hectares will be required)
 - manage stockpiles to prevent contamination and environmental impacts (see below)
 - provide signage and directions for the sorting area and material storage areas.
- For more tips, consult the *Guide to Best Practice at Resource Recovery and Waste Transfer Facilities* (www.zerowaste.sa.gov.au/upload/transfer-station-design-guidelines/guide_waste_transfer_resource_recovery_station.pdf).
- Check the local and regional council requirements under the Building Act 2004 and the Resource Management Act 1991 (see Environmental, health and safety hurdles).

How to set up mobile plant on construction or demolition sites safely and to enable efficient processing

- Locate the plant to maximise efficiency on site:
 - Locate the plant near the source of concrete and/or where crushed concrete stockpiling is safe and convenient.
 - Avoid other machinery and accessways while allowing adequate access and manoeuvring around the plant for people and vehicles.
 - Remember that building sites are busy and constantly changing. What might be a good position one week could be in the middle of all the action the next. Check with the site manager.
 - Provide signage and directions for processed and unprocessed concrete stockpiling areas.
- Check the city, district and regional council requirements under environmental and building legislation (see Environmental, health and safety hurdles).

Typical equipment includes:

- pulverisers – hydraulic breakers or jackhammers to break up oversized pieces and shear off reinforcing bar
- crushing equipment – generally a three-stage unit with jaw crushers, impactors and cone crushers
- rotating magnetic separators
- vibrating screens for product sizing
- belt conveyors
- a washing facility
- an air separator
- front-end loaders for moving stockpiles and feeding the crushers.

Equipment is similar to that used for the crushing and screening of natural aggregate, and many quarry operations use the same equipment for both processes, the key difference being the height from the bottom of the jaws to the belt.

Operating a concrete-processing plant

Have clear operating systems and procedures

If you want a quality product, every stockpile, every shift, it makes sense to document your procedures and let everyone know what they need to do and how they should do it.

- Specific considerations include:
 - staff training (who trains, who needs to be trained, what information needs to be passed to which staff etc.)
 - manuals for operating and maintaining equipment
 - quality control for product, including testing and documentation procedures
 - emergency procedures, including spill responses
 - health and safety procedures
 - environmental procedures and monitoring.
- Check documentation regularly and keep a record of training.
- For details, consult the *Guide to Best Practice at Resource Recovery and Waste Transfer Facilities* (www.zerowaste.sa.gov.au/upload/transfer-station-design-guidelines/guide_waste_transfer_resource_recovery_station.pdf).

Make sure you get quality concrete for processing from C&D clients, waste transporters or sorting facilities

- Have a written contractual agreement with concrete suppliers to help them to understand your particular requirements or specifications and maximise resource recovery. Include references to relevant industry guidelines.
- Request the delivery of pre-sorted loads to reduce sorting time and increase product quality.
- Consider imposing penalties for contaminated loads.
- Do not accept asbestos for recycling, crushing or reuse.
- Consider preferring suppliers who use 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. You have greater assurance that they are working to good environmental standards and are doing what they say they do.
- Make a document record of delivery arrangements, including site access locations (and any associated traffic issues), site access times, volumes that can be accepted, types of bins, skips etc. and handling procedures.
- Insist on the use of the REBRI Waste Transfer Form so that you can be sure of the source of concrete.
- Consider a 'three strikes you're out' policy for the delivery of heavily contaminated loads, after which penalties are issued or business with the supplier is stopped.

Get endorsement from your peers and give your clients confidence

- Use the audit sheet at the end of this guide to show clients that you are operating in accordance with the REBRI Guide to Resource Efficiency.
- Use the REBRI Waste Transfer Form to validate the source and destination of waste to your building and recycling clients.
- Join the Enviro-Mark[®] NZ programme for external accreditation of your environmental management.
- Consider an Environmental Choice certification for your product.
- Check with your local council that you meet any licensing requirements under the Local Government Act 2002 for the handling of waste.
- Be site safe – many construction sites require regular visitors to have a Site Safe passport, to help comply with OSH regulations (see www.sitesafe.org.nz for details).
- Join waste industry organisations such as the Waste Management Institute of New Zealand to network with peers (see Links, resources and contacts).
- Join concrete industry organisations such as the Aggregate and Quarry Association of New Zealand (see the Links, resources and contacts).

Check each load of concrete you receive

- Feedstock control is important.
- Weigh and inspect each load you receive – a camera can be positioned to view the contents of the skips and trucks.

- Ensure you receive concrete that you have a market for and have the appropriate skills and facilities to sort and store.
- Ensure your supplier has met your specifications, in particular, for the level of contamination.
- Match the consignment with the description on the waste transfer documentation.
- Reject any loads with asbestos/fibrolite.
- Reject any loads that do not meet your specifications.
- Keep records of incoming materials.
- Direct the load to the sorting and storage area prior to processing.

Sort and store concrete for crushing

You need to have good sorting and storage practices to ensure efficient materials handling and to protect product quality.

- Sort incoming concrete into:
 - broken bricks and tiles and other non-concrete rubble
 - reinforced concrete
 - non-reinforced concrete (this can be further graded into sizes, depending on whether the pieces need to be broken up prior to crushing).
- Store different grades separately in stockpiles. Refer to the tips on stockpile management below to minimise environmental impacts.
- Provide clear signage for all stockpiles.
- Remove contamination during sorting (see below).

Stockpiles of various grades of concrete and rubble and a skip to collect metal during sorting, Ward Resource Recovery, Auckland.



Remove contamination and prepare oversized pieces

- Using excavators with grab attachments such as rakes, grapples, pulverisers and magnets, as well as manual methods, remove as much foreign material as possible prior to crushing including:
 - timber and organic material
 - loose metal
 - glass
 - asphalt, brick and tile
 - soil
 - plastic, rubber, plaster etc.
- Removing contamination before crushing reduces equipment damage and is easier because the particle sizes are larger.
- Recycle or otherwise dispose of all contaminants.
- Prepare oversized concrete pieces for the crushing plant by using pulverisers, hydraulic breakers or jackhammers. This will also loosen steel reinforcing.

Setting up the crushing plant

- If mobile, position the plant (and belt conveyors) where the stockpile of product will be located to avoid moving stockpiles unnecessarily. Plant will need to be moved periodically as the stockpiles reach the height of the conveyor. Some plant is self-propelling whereas other plant has to be moved manually.

- Use front-end loaders and trucks to transport concrete to the crushing system and to move stockpiles of crushed product.
- Set screen sizes for the specification required (for example, Gap 65 = 65 mm screen etc.).
- Rotating magnetic metal separators should be installed above the conveyor after crushing, before the screens. Place a skip or bin underneath the separator to collect metal for recycling.
- Air separators should be placed after crushing, before the screens. Collect plastic, paper etc. in a covered bin for recycling or disposal.
- Aggregate washing can be set up at any stage after crushing.



Locate plant for processing where you want the stockpiles to be located to save moving stockpiles later. As the pile reaches the height of the conveyor, the plant will need to be moved to the next stockpile location.

Operating the plant

- The quality of the feedstock is the key to the quality of the whole production.
- Always operate machinery according to the manufacturer's recommendations.
- Use front-end loaders or excavators with grip attachments to feed concrete pieces into the hopper.
- The loader operator feeding the crusher must watch for contaminants and oversized pieces.
- Plant should be staffed to check for blockages, spills, contamination in feedstock and other problems during processing.
- Staff should do quality checks of the final product during processing, both to make any alterations to the process on the spot and to remove any further contamination from the final product.
- Metal from the magnet should be captured in a skip or bin for recycling.
- Waste water from the washing facility should be recycled or treated prior to discharge to trade waste or the environment (see Environmental, health and safety hurdles).
- Recycle or otherwise dispose of all other contaminants.
- Keep stockpiles of various grades separate (see Stockpiling management).

Metal skip positioned at the crusher to collect reinforcing bar separated from the concrete, Ward Resource Recovery, Auckland.



Testing and storage of crushed concrete product

Certifying batches for compliance with specifications

- Each batch of crushed concrete should be tested in accordance with the AQA Recycled Concrete Guidelines and/or TNZ M/4 in order to show compliance with specifications.
- Stockpiles may be certified for later use but must have clear signage indicating the certification and results.
- It is the responsibility of the supplier to provide test certificates to clients before delivery. Maintain records of tests, and provide these to clients with other delivery documentation.



Stockpiles of various crushed concrete grades, Ward Resource Recovery, Auckland.

Stockpile management

- Large areas are generally needed to stockpile product.
- Stockpiles should be stored on free-draining hard stand.
- Different products and certified batches should be stored separately to avoid cross-contamination.
- Provide clear signage for all storage areas. Signage should include the grade of chip (for example, Gap 65) and certification.
- No further materials should be added to a stockpile of certified materials.

Environmental, health and safety hurdles

Good practice wouldn't be complete without considering the effects of your operation on the neighbourhood, local environment and the health and safety of you and your workers. This is not a comprehensive guide but should give you enough information to start talking with your city, district or regional council or occupational safety and health adviser.

Before you set up a processing facility, check waste handling and environmental regulations.

- Check with your city or district council:
 - that you meet any waste management licensing requirements under the Local Government Act 2002
 - regarding resource consent requirements under the Resource Management Act 1991 to operate a processing plant, including (but not limited to) any noise and dust issues, operating hours, stockpiling, trade waste discharges, signage and traffic movements
 - regarding requirements to alter, demolish or construct sheds and other buildings under the Resource Management Act 1991 and the Building Act 2004.

Note that, for mobile operations, rules may be different for each project, depending on the type of construction or demolition site and the planning zone in which the site is located. You may need to check these things for each project.

- Check with your regional council regarding:
 - requirements for stormwater discharges and stormwater protection measures
 - requirements for discharges to air of dust and odour
 - requirements for storage of hazardous materials.

Note that, for mobile operations, rules may be different for each project, depending on the location of the site. You may need to check these things for each project.

- Seek professional help to obtain the relevant resource consents.
- Ensure all staff are aware of environmental obligations by documenting all procedures and providing regular training.

Avoid noise and dust disturbances for staff, neighbours and wildlife

- Noise and dust are considered adverse environmental impacts under the Resource Management Act 1991 and must be managed to avoid impacts on people and wildlife. Noise and dust are also a health and safety in employment issue.
- General considerations for noise management include:
 - operate in typical business hours (check with your city or district council to see what the definition of business hours is and restrict noise when working outside of these hours)
 - maintain plant to perform to the manufacturer's specification or use low-noise emissions plant
 - modify plant by enclosing it or adding noise mitigation parts
 - turn equipment off when not in use
 - provide buffers such as earth bunds, buildings or block walls between plant and neighbours
 - locate plant at maximum possible distances from wildlife, dwellings and places of work
 - reduce the time staff are exposed to noisy equipment (for example, by swapping tasks).
- General considerations for dust management include:
 - minimise handling stockpiled material
 - spray stockpiles lightly with water to suppress dust during dry and windy weather
 - moisten materials during loading or moving, where dust may cause a nuisance
 - water should not be applied in a manner that causes run-off
 - have a speed restriction for vehicles to reduce dust disturbance
 - provide wheel and truck washes to prevent dust and dirt migrating off site.
- Provide staff with adequate hearing protection and dust equipment in accordance with the requirements of the Health and Safety in Employment Act.

Spraying accessways with water to dampen dust, Ward Resource Recovery, Auckland.



Manage run-off from the site to prevent contamination of soils and streams

- Stormwater can be contaminated by high pH (basic conditions) from lime in the crushed concrete fines. Fines can also contribute sediment that discolours the water, adversely affecting aquatic life by smothering streams and decreasing light penetration.
- A resource consent may be required for any discharge of stormwater to ground or waterways (check with your regional council).
- Cover stockpiles and plant from rain where possible.

- Do not stockpile crushed concrete aggregate within at least 10 metres of a natural waterway or stormwater drainage system nor in a manner where stormwater run-off may reach a natural waterway without settlement and treatment. Greater than 10 metres may be required in areas with high rainfall or sloping ground.
- Create earth or concrete bunds around the site (or stockpile area) to prevent untreated stormwater from flowing to streams.
- Where stormwater cannot be absorbed on site, provide ponding areas for stormwater run-off for settlement of fine particles, prior to discharge to stormwater systems or natural waterways.
- Check the quality of stormwater before discharging water from the ponds. The pH can be checked using a pH meter, and clarity can be checked using a clarity tube. Resource consents will have additional stormwater monitoring and management requirements. Ask an environmental professional or regional council officer about appropriate monitoring for your site.
- Consider a recycled water system, and use the stormwater for dust and stockpile damping down. Ensure the stormwater does not contain contaminants that might affect the end product.

Health and safety procedures

- Write a plan that has procedures for safe handling of concrete and plant operation for you and staff to follow. Consider addressing:
 - a list of hazards on the property and methods to manage these
 - safety training
 - procedures for handling waste
 - procedures for operating machinery
 - personal protective equipment.
- Have the plan checked by WorkSafe New Zealand, your lawyer or a consultant to ensure you comply with the Health and Safety in Employment Act 1992.
- All staff and subcontractors should be regularly trained in the procedures.

Resources and contacts

Relevant legislation and regulations

- Health and Safety in Employment Act 1992
- Local Government Act 2002
- Building Act 2002
- Hazardous Substances and New Organisms Act 1996
- Resource Management Act 1991
- Regional and district plans
- District bylaws.

Relevant industry guidelines

- *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)
- TNZ M/4: 2006 Specification for Basecourse Aggregate (www.nzta.govt.nz/resources/basecourse-aggregate/docs/basecourse-aggregate.pdf)
- *Guide to Best Practice at Resource Recovery and Waste Transfer Facilities* (www.zerowaste.sa.gov.au/upload/transfer-station-design-guidelines/guide_waste_transfer_resource_recovery_station.pdf)

Links, resources and contacts

- Resource Efficiency in the Building and Related Industries (REBRI) www.rebri.org.nz
- The Waste Exchange www.nothrow.co.nz
- Zero Waste www.zerowaste.org.nz
- Sustainable Business Network www.sustainable.org.nz
- Waste Management Institute of New Zealand (WasteMINZ) www.wasteminz.org.nz
- Enviro-Mark® NZ www.enviro-mark.co.nz
- Environmental Choice New Zealand www.enviro-choice.org.nz
- Aggregate and Quarry Association of New Zealand www.aqa.org.nz
- New Zealand Transport Agency www.nzta.govt.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 – Processing and Storage – 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 concrete recycler, 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.

Sorting and storage

1. A list of specifications is obtained from clients and provided to waste suppliers. This includes such things as:
 - material type
 - contamination tolerances
 - minimum and maximum quantities
 - size of pieces
 - sorting or grading requirements.

2. The REBRI Waste Transfer Form is used to validate the source and destination of concrete to and from the sorting or processing facility.

3. A designated central tipping and sorting area is provided.

4. Each consignment is inspected prior to tipping and accepted or rejected based on:
 - meeting specifications
 - meeting skills and operating capacity of the sorting or processing facility
 - matching the description on the REBRI Waste Transfer Form.

5. Records are kept of waste accepted, sorted and sold.

6. Concrete is sorted into grades according to recycling operator specifications.

7. Contamination (such as metal, soil and vegetation) is removed during the sorting process.

8. Clear signage is provided for all processed and unprocessed concrete storage areas, including information on grade of chip and certification.

9. Contaminants are recycled or otherwise disposed of to disposal facilities that are consented by the regional council or have met the permitted activity status in regional plans.

Processing

- 10. Processing equipment is set up at the location where processed concrete chip can be stored to prevent double handling of materials.
- 11. Metal is collected with magnets and recycled.
- 12. Equipment is staffed while in operation, and contamination and quality checks are frequent.
- 13. Procedures for operating and maintaining equipment are documented and staff are trained.
- 14. Crushed concrete product is tested (in accordance with AQA Recycled Concrete Guidelines and/or TNZ M/4).

Internal procedures and compliance

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

- 15. Documented emergency procedures, including spill responses.
- 16. Documented health and safety procedures.
- 17. Documented quality and environmental monitoring.
- 18. Current resource consents or other approvals for land use and discharges to the environment.
- 19. External accreditation (for example, Enviro-Mark® NZ).
- 20. Prefer clients and supplier that work to good environmental standards by using the REBRI Guides and/or have external accreditation.
- 21. Licensed under district bylaw.

Comments

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Signed

Person, company and responsibility

Date

Signed

Person, company and responsibility

Date