Construction and Demolition Waste Reduction - SMF 4194

REVIEW OF VERIFICATION PROGRAMMES FOR THE RESOURCE RECOVERY INDUSTRY

- Task 2
- Final
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Sinclair Knight Merz
Level 2, 321 Manchester Street
PO Box 8298
Christchurch New Zealand
Tel: +64 3 379 0135
Fax: +64 3 377 2209
Web: www.skmconsulting.com

Contents

1. Introduction

Construction and demolition (C & D) waste transport, disposal and other 'end uses'[1] is a complex process and involves many 'hidden' transactions between various private and public sector agencies and individuals. Concerns about the transparency of the process, and the possibility for materials to be disposed of inappropriately[2], raises questions about the potential for a system to verify C & D waste transport and end-use. Examples of inappropriate end uses include the sale of treated timber offcuts (a hazardous material) for firewood; the disposal of plasterboard (potentially hazardous) in cleanfills or the potential for waste carriers to advertise recycling services only to dispose materials to ground.

Waste tracking issues have been identified through a number of pilot case studies where separation and recycling of waste from construction sites has been set up[3]. Those involved in the case studies (construction companies, consultants and council staff) found it difficult to ascertain where waste was ending up, and whether the end-use was the most efficient or environmentally sustainable option in the local market. This was primarily due to the number of handling steps between waste removal and the final end-use, but also the number of different service providers and the fact that the recycling / reuse market is immature and frequently changes.

Overall there is currently a lack of information available for waste producers to choose the most 'appropriate' end use from the options in the market place.

These concerns resulted in the C & D Waste Reduction Project including the following task:

> *"Task 2. The development and implementation of a 'verification programme' to assist with the measurement and verification of the chain of custody and processing of C & D materials within the resource recovery industry."*

The purpose of this report is to present the findings of a literature review on types of verification programme frameworks prevalent in New Zealand and abroad that could be used or adapted for the C & D resource recovery industry. The purpose is also to report on current management practices and processes for collection and end uses of C & D waste to better understand the type of verification programme that would suit the current market.

The objectives of the verification programme are defined in Section 2 and the report methodology in Section 3. A review of examples of verification programmes is given in Section 4 and an overview of the current management systems and practices in the recycling industry[4] is given in Section 5. Evaluation of the frameworks against the objectives of this project is summarised in Section 6.

Based on the objectives of this project and the present resource recovery and waste market, a recommendation for a national verification programme are given in Section 7. This report will be distributed to local government and a working group in the resource recovery industry for comment and feedback. Specifically, feedback will be sought on:

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1 'End uses' include disposal, reuse, recycling or recovery of a waste material.

2 Inappropriately in this case refers to land disposal, energy recovery or some other end use with potentially adverse environmental effects or where there is potential for greater resource recovery.

3 North Shore City Council BusinessCare case studies and Christchurch City Council Target Zero case studies.

4 The term 'recycling industry' and 'recycling operators' in this report is intended to include transportation, recovery and reuse, as well as recycling.

1) The perceived market demand for a verification programme.
2) What type of programme is most suitable for the industry?
3) Who is likely to participate?
4) The nature of the role of the verification agency.
5) How the programme should be launched, marketed and otherwise publicised.

In accordance with the C & D Waste Reduction Project, promotion and launch of the programme is to commence on the 1st of October 2004.

2. Verification Programme Objectives

The objective of the C & D Waste Reduction Project is to develop a system to:

Verify that C & D waste is being transported, handled, reused, recycled or recovered in accordance with industry best practice, given the characteristics of the existing market.

To achieve the objective of the project, key features of the programme should be:

1) Verification by a third party organisation.

   Third party validation ensures that the process is more than just a waste tracking system, but that waste handling and processing is done to a particular standard. It is understood that the Recycling Operators of New Zealand (RONZ) would undertake the role for any programme that was adopted, unless there was an opportunity to use an established accreditation process.

2) Voluntary participation of both the waste producer and the resource recovery industry

   There is no legal framework presently to track and verify waste transportation and end-of-use processing that could enforce mandatory participation in the verification programme. Having said this, the verification programme could be made mandatory for companies as part of an industry association (such as RONZ). This would only be successful if market demand for either accreditation or the association membership was strong. RONZ has indicated that mandatory participation is not an objective of the organisation.

3) Transparent process to the market, agencies and client.

   For a process to have validity, the process must include record keeping, auditing and verification criteria that can be reviewed by any party.

4) Cost and resource efficient implementation and auditing.

   We have assumed that RONZ or other third parties will not be subsidising the programme and that it will be user-funded. If the programme is voluntary, and market demand weak, the fee to participate should be kept as low as practicable. Only where the perceived benefit of having verification is high could the programme provide a more extensive (and therefore expensive) auditing and administration process.

5) The system includes transport, sorting and processing and end use.

   The project brief defines all three aspects of the waste chain as requiring verification. This puts the onus on every party handling C & D waste to 'do the right thing', and through records indicate which part of the waste chain is not operating in accordance with the set criteria.

6) Criteria for accrediting or ranking waste services.

   Benchmark criteria are required to define the 'appropriate' level of service, method of process etc given market limitations. Benchmark criteria may be best practice guidelines or industry standards. Where many end uses are possible for a particular material, it may also be desirable

to rank them to allow analysis of 'more appropriate' to 'less appropriate'. A possible ranking system to explore is the 5 R's[5], where the further up the waste hierarchy the end-use is, the higher the ranking.

7) To make the most out of existing infrastructure and systems

   In line with the aim to keep costs and resources to a minimum, there is an economic advantage to adapt or make use of current verification programmes. This will be explored in the literature review.

8) A programme that is able to track individual materials, is appropriate for typical C & D waste materials, and is flexible to adapt to the changing waste markets.

   The recycling industry is organised by materials, such as timber, plastic or metal, and the verification programme should reflect this. Additionally the programme must be flexible to be suitable for different types of materials and handling procedures and be sustainable, as the markets for C & D waste differ over time and between regions. This flexibility will enable the programme to be adapted for other industries / wastes in future.

3. Methodology

To identify the possible frameworks for a C & D waste recycling verification programme the following methodology has been pursued to date:

1) Resource recovery and waste operators in Auckland, Waikato and Canterbury were surveyed to better understand the C & D waste market, the flow of materials from premises of production to end-use, and to document current management processes and procedures.
2) Interviews were conducted with a sample of recycling operators on the phone and during site visits to further understand the management processes and procedures.
3) A desktop review of previous C & D waste reduction programmes was undertaken.
4) A desktop review of informal waste markets such as waste exchanges, classifieds and internet trade sites was undertaken.
5) An internet search, followed by phone calls, were used to review examples of verification programmes presently in use in New Zealand, United Kingdom, Australia and the USA.

4. Verification Programme Frameworks

Three types of verification system frameworks are prevalent in New Zealand and abroad. These are:

1) Chain of Custody record keeping.
2) External Agency Accreditation.
3) Ratings.

Each of these frameworks is discussed below, with examples from New Zealand, Australia, United Kingdom and the USA. The evaluation of each framework against the objectives of this C & D Waste Reduction Project is given in Section 6.

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[5] 5 R's hierarchy – reduce, reuse, recycle, recover, residual disposal.

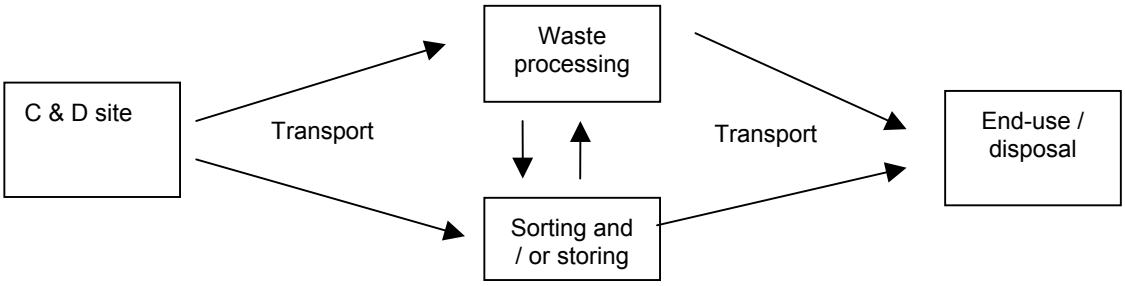
4.1 Chain of Custody Record Keeping

The Chain of Custody audit process tracks waste from production to end use, and has been adopted by many environmental agencies for monitoring hazardous waste transfer. The principles of the record keeping process are applied in many operations outside of the waste management industry, including courier parcel tracking and court evidence handling.

Within the Chain of Custody audit process, a form is prepared by the waste generator for each separate consignment of waste. Documentation includes details on the type and quantity of waste and instructions for handling and delivery of waste. Each person who handles the waste verifies the particulars on the form (which stays with the consignment), keeps a copy for their records and sends a copy to the waste generator. Systems can be paper based or electronic. Electronic systems (i.e. WasteCert, EPA Victoria) allow for real time data capture and avoids duplication of data entry by each party in the chain.

In all examples of hazardous waste transfer, there is a third party auditing agency that receives copies of the records, in order to collect data and audit compliance with regulations. Reporting may be instantaneous (though web-based recording systems), intermittent as documentation is completed at the end use point, through annual data returns, or on request.

Most systems reviewed for this project assume the following transportation model:



- **Figure 1 C & D Waste Stream**

Chain of Custody record keeping allows the waste generator (and the regulatory authority) to verify that waste has been:

- Transported in an appropriate manner.
- Received at an appropriate end point (recycling, reuse, recovery, disposal).
- No waste has been lost or unaccounted for.

Features:

a) Traceable record of waste removal "gate to grave" approach.

b) Audits both the participants and the handling process.

c) Can be effective with or without an external accreditation agency. Without an accreditation agency the process becomes an audit trail for the benefit of the waste producer only.

d) In most of the hazardous waste transfer examples (see below) the transporters and / or the waste receivers are accredited, to ensure the system is not only for record keeping, but to verify that waste is being handled appropriately.

e) All people in the waste chain are required to participate, which means there is accountability from each link to 'do the right thing'. It also allows an external agency to verify all stages in the 'gate to grave' approach, and not just the end-of-use facility.

f) The system can be voluntary or mandatory.

g) Fees can be charged by the external accreditation agency either when waste producers register with the agency to use the system, or obtain a unique waste transfer number from the agency for each consignment.

Examples

The following are all examples of waste handling Chain of Custody systems.

1) MfE[6]: - Hazardous Waste Transfer Form. A voluntary system to standardise recording procedures and assist in achieving the targets of the NZ waste strategy. MfE does not require external verification of the process or the participants, but records can be shown to regulatory authorities and used for data analysis.
2) USEPA[7] - The Hazardous Waste Manifest System – paper based record system, with external accreditation of waste carriers, generators and disposal sites and external auditing of the chain of custody.
3) EPA Victoria[8]: WasteCert - Waste Transport Certificate. An electronic or paper based system. EPA Victoria accredits waste carriers and audits the chain of custody records.
4) EPA New South Wales[9]: Waste Tracking. Paper records of waste transfers. EPA licenses transportation and waste disposal treatment facilities. Waste producers must maintain records that the EPA can request to audit.

4.2 Third Party Agency Accreditation / Licensing

This type of verification programme requires a third party agency to define a set of criteria to which products, services, individuals or companies must adhere. Criteria may be laws, regulations, industry or international standards, guidelines or simple checklists. Third party agencies audit the product, service, individual or company against the criteria and, if compliant, a licence, membership, accreditation or other such approval is given. Two examples given in this section are whole company accreditation and service or product accreditation.

Features:

a) The agency can be a government department, council, industry body or non-profit organisation, that is considered independent.

b) The criteria are often referred to as a 'benchmark', because the same criteria are used throughout an industry.

c) The frequency and level of auditing is relative to the voluntary or mandatory nature of the accreditation process, and the complexity of the criteria / benchmark.

d) Record keeping is required for the audit process.

e) Accreditation is typically granted through a membership or license, with the ability in many cases for companies or individuals to use accreditation branding.

f) Branding is used to advertise to consumers or otherwise communicate the accreditation process.

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6 www.mfe.govt.nz/issues/waste/hazardous/guidelines.html.
7 www.epa.gov/epaoswer/hazwaste/gener/manifest/
8 www.epa.vic.gov.au/waste/wastecert/,
9 www.dec.nsw.gov.au/waste/wastetracking.htm

g) The process can be voluntary or mandatory. Accreditation may be mandatory under law, or mandatory for suppliers to a particular client. Voluntary accreditation occurs when an individual or company sees a benefit in external verification.

h) Fees are charged to cover the costs of the auditing and the setting of accreditation criteria.

i) Penalties can be given for compliance breaches, which range from loss of license or branding rights to fines and court proceedings.

Examples of Product or Service Accreditation Programmes

These programmes accredit a particular aspect of a company or organisation such has a product or service. The criteria for auditing purposes may focus on the way a product is manufactured, including materials used, or on the way in which a particular service is performed. For example the EPA in NSW accredits waste agents in the manner in which hazardous waste is transported from source to end-point, but would not accredit other services performed by the same company ie transportation of non-hazardous waste.

Examples include:

a) Environmental Choice New Zealand [10] - accreditation of environmental products (part of the Global Eco-labelling Network). Environmental Choice create specifications for products against which the company will be audited. Specifications may relate to the types of inputs into the product, manufacturing methods and product performance criteria. A product verified in the programme is branded with the Environmental Choice logo.

b) EPA NSW - Accredited Waste Agents for hazardous waste carriers.

c) EcoRecycle Victoria – Accreditation for collection, acceptance and sorting contractors for kerbside recycling services.

d) Department of Environment, Western Australia – Controlled Waste Licenses to transport and accept hazardous waste.

e) DEFRA, UK – Registered Waste Carriers[11] to transport hazardous waste.

f) IANZ - laboratory testing methods (and other technical equipment and procedures) to international standards in New Zealand.

g) Worldwide Responsible Apparel Production (WRAP)[12] – certifying apparel, footwear and accessory manufacturers around the world by auditing the social impacts of manufacturing.

h) BioGro[13], Demeter and Agriquality Organic Standard[14] - organic produce certification processes in New Zealand.

i) Forest Stewardship Council[15] – sustainably managed forests, wood harvesting and wood products.

Examples of Whole Company Accreditation

These frameworks accredit the entire business as a holistic entity, focusing on people, production, products and services, as well as the way resources are used such as stormwater management and

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10 www.enviro-choice.org.nz
11 www.defra.gov.uk/environment/waste/management
12 www.wrapapparel.org
13 www.bio-gro.co.nz
14 www.agriquality.co.nz
15 www.fscoax.org

water use. Generically, the processes employed to manage compliance with accreditation processes are called environmental management systems (EMS).

Examples include:

a) Enviro-Mark NZ®[16], Landcare Research – New Zealand programme adapted from the United Kingdom, with five different levels of progress, adaptable to any industry. External accreditation by Landcare Research, and branding which indicates the level of progress achieved.

b) ISO14000 – international accreditation process, adaptable to any industry. The scope and auditing criteria are defined by the client (in agreement with the external auditor), and can range from a single site to a whole company management system.

c) Green Globe 21[17] - international accreditation specifically for the hospitality / tourism industry.

4.3 Ratings

This type of verification programme involves auditing products or services against a given set of criteria, and allocating a grade from a possible maximum score. The system allows products or services to be compared against each other easily in the market. The programme can be mandatory, so that all products or services in an industry must be tested and labelled, or voluntary. The programmes will have a minimum benchmark to which a product or service must meet. In mandatory programmes the minimum benchmark has to be met prior to trading, and in voluntary programmes those that do not make the minimum benchmark cannot gain membership to the programme.

Labelling or branding is key to this type of programme, as the rating system is generally used to allow consumers to make informed purchasing decisions.

Examples include:

a) Qualmark – Government and tourism sector partnership, licensing and accrediting accommodation and tourism facilities in New Zealand for hospitality. Accreditation is voluntary, and facilities must achieve the minimum rank to be members.

b) Energy Ratings for whiteware appliances – EECA[18]. Energy performance testing and labelling of all whiteware appliances is a legal requirement in New Zealand. Manufacturers test products according to Australia and New Zealand standards, and the appropriate rating applied. Ratings are audited by EECA on a selective basis.

c) Water Efficiency Labelling and Standards – Department of Environment, Australia. Mandatory rating and labelling of domestic water using devices in terms of water use efficiency. Presently in pilot phase.

d) Green Star Office Design Rating Tool – Green Building Council of Australia. Voluntary environmental rating tool for various aspects of office building design. Only the top three star ratings are eligible for official certification.

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16 www.enviromark.co.nz
17 www.greenglobe21.org
18 www.eeca.govt.nz

5. Overview of the Current C & D Recycling Industry

A verification programme has to take into account the characteristics of the C & D waste management and resource recovery industry. This section provides an overview of the existing waste chain and comments on the various processes and participants in the industry to identify the key factors which will assist the formation of a suitable verification programme.

5.1 Overview

C & D waste pathways in Auckland, Waikato and Canterbury are complex and can involve many transactions between various private and public sector agencies. General pathways are represented in Figure 1.

A typical scenario involves the collection and transport of mixed C & D waste consignments to a sorting or storage facility and then further transport for processing or disposal. For example, private sector waste carriers collect mixed waste skips from construction sites, manually sort then store waste on their premises, and when loads are large enough, transport single waste consignments to landfill, cleanfill, recycling operators or other end uses.

5.2 Types of Waste

Typical wastes from a construction or demolition site are:

- Concrete (and 'manmade' rubble).
- Natural rubble and soil.
- Treated timber.
- Non-treated timber.
- Wood based products.
- Plastics (hard and soft, including polystyrene).
- Garden waste.
- Metal.
- Cardboard.
- Insulation.
- Electrical – cabling, appliances, lamps, heating and ventilation.
- Fittings, claddings, joinery.
- Plasterboard.

5.3 Sorting and Storage

C & D sorting and storage facilities have become more common in Auckland and Christchurch in the past three to five years. Sorting and storage facilities may be transfer stations, warehouses or cleanfill sites, and are run by non-profit organisations, councils or the private sector. Waste transport is dominated by the private sector due to the expense of infrastructure requirements. Discussions with waste carriers indicate that the economics to collect mixed consignments of waste in Auckland and Christchurch and manually sort and recover materials for reuse and recycling change over time depending on market signals. Non-profit and council operated sorting facilities cite a number of drivers for sorting mixed C & D waste, but the primary reason is to reduce waste to landfill as directed by council waste policies.

Sorting and storage creates a hiatus in the waste chain. Following sorting and storage it is often impossible to track the original consignment to the end use.

5.4 Direct Exchange of Waste

Direct transport from the construction site to the end use also common, particularly soil and hardfill material taken directly to cleanfill, but also wood taken by staff or the public for heating, and good quality leftovers are taken to the next job by tradespeople. Occasionally there will be a direct transfer from the construction site to a recycling operator, but will only occur from a site that has pre-sorted wastes by material. An example is steel, one of the few materials that has traditionally been sorted on site because of its well-developed market.

Other examples of direct exchange of C & D waste materials is through trading arrangements such as internet trading sites[19], weekly trade and exchange publications and newspaper classifieds. It is assumed that the majority of participants are small businesses, community groups and the public, and the transactions are 'mostly one-offs', although they may develop into ongoing business.

Waste exchanges run by councils[20] or non-profit organisations[21] also create an opportunity for direct waste trading. Exchanges of materials through any of these channels are generally for reuse, but can also be for waste processing or disposal.

5.5 End Uses for C & D Materials

Potential end uses for C & D waste depend on the market for materials. Examples for non-treated timber in Christchurch include boiler fuel, domestic home heating, furniture and reuse in construction (home renovation or commercial sites). For metal and plastic materials they are reused in their original form (as fittings, buckets, wrap etc) or recycled. The salvage of building components and fittings for reuse in their original form depend on the market for reuse. For any material, the environmental impact of reuse, recycling, recovery or disposal may vary.

End users are diverse, and include the public, salvage retailers, exporting processors, landfills and cleanfills (both council and private sector), community groups, manufacturers (either using waste as fuel or a product input), or construction-related trades. Several end users are major national companies who operate in established markets, such as metal recyclers or landfill operators. At the other end of the scale are the community groups using timber offcuts for furniture and companies establishing new enterprises such as timber chipping and concrete crushing, unsure of future market directions.

End uses for materials are influenced by market forces, and can vary greatly between regions. In Christchurch the market for non-treated timber is more developed than Auckland because of demand for home heating fuel. End uses are also dictated by the quality of the waste material. For example waste concrete from a demolition project is likely to be used for base course rather than reprocessed for structural use, because the quality is perceived to be inferior to virgin material. Similarly, demolition timber 'contaminated' with nails may prevent it from being reused and it is likely to burnt for heating.

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19 e.g. www.trademe.co.nz

20 e.g. No Throw – funded by 18 regional and local councils in Waikato and Bay of Plenty. RENEW – Auckland waste exchange.

21 e.g. RMF Waste Exchange – Recovered Materials Foundation

5.6 Record Keeping

Details of waste transactions in the market currently vary from no records, to weigh bridge dockets, chain of custody documentation and electronic data management. Records may include volumes or tonnage of material transferred, source and destination of material, and price for the exchange. Volumes or tonnage of material transferred, in many cases, is estimated visually, particularly at cleanfills or sorting facilities. Many firms surveyed that kept records could not easily analyse the data into percentages of various waste types, sources or destinations, and most data of this type given in survey responses was estimated.

5.7 Third Party Environmental Accreditation

Several companies have internal management systems for environmental performance, but no companies surveyed had a third party accredited system such as ISO 14000[22].

5.8 Implications for the Verification Programme

The characteristics of the existing waste management industry will influence the type of verification programme that is most suitable to achieve the objectives of the C & D Waste Reduction Project. Given the overview of the industry above, a verification programme must take into account the following:

- The waste management industry is reasonably obscure to the waste producer because of the number of steps between them and the end use. Waste tracking would create transparency in this process, along with labelling or other marketing information.
- There are a large number of material types, some with recycling and reuse opportunities, some without. The programme should be able to be readily adapted to any type of material.
- There is a wide variety of organisations are involved in waste transporting, storing, and end use, including individuals, small and large companies, community groups and councils. Therefore a programme needs to be adaptable to different record keeping procedures, scales of business, cost structures etc.
- Changing markets and opportunities for end uses, and differences in end uses between regions means the programme must be flexible and adaptable.
- Many organisations may not be able to afford expensive third party accreditation because they are establishing new businesses, are small, or are non-profit.
- The many informal transactions of waste in the industry will be difficult to track or verify by a third party.

[22] One company has had environmental reports reviewed by third parties in the past.

6. Evaluation of Frameworks

Three verification programmes have been assessed:

- Chain of Custody.
- Third Party Accreditation.
- Ratings.

In Table 1 the three frameworks are evaluated against the objectives of the C & D Waste Reduction Project verification programme. Discussion on each of the frameworks follows Table 1.

Table 1 Evaluation of Frameworks Against the Project Objectives

Project Objectives	Chain of Custody	Third Party Accreditation	Ratings
1) Verification by third party organisation.	Third party verification of participants is required to assess appropriateness of transport and end use methods. Without third party verification, this process is a waste tracking record only.	Requires third party verification. RONZ, a local or regional council, or other industry organisation could undertake this.	Requires third party verification. RONZ, a local or regional council, or other industry organisation could undertake this.
2) Voluntary participation.	Waste producers can implement this system on a voluntary basis. Once a chain of custody form is started it is considered a mandatory process, and all those in the chain need to participate in order for it to be successful.	This system can be voluntary.	This system can be voluntary. Third party agencies can give ratings to service providers with or without the service provider's involvement.
3) Transparency.	Transparency through record keeping. No labelling or communications to customers or the public.	This system can be transparent through branding or labelling, and through record keeping. Lists of accredited services and products can be made public.	Transparency through labelling of ratings (for customers) and record keeping (for third party audits). Lists of accredited services and products can be made public.

Project Objectives	Chain of Custody	Third Party Accreditation	Ratings
4) Cost and resource efficient.	Set up costs are minimal, and include developing a standard 'chain of custody' form. Very easy and cheap to implement on a voluntary basis, and without third party auditing. Third party auditing of the process is simple and can be cost and resource efficient, and costs can be recovered by charging for a unique transport number for each consignment.	This system is potentially the most costly. Accreditation set up and operational costs will depend on the detail of the system. It is recommended that the system be kept simple in order to attract participants. Costs for auditing and rating can be recovered through fees.	Rating set up costs will depend on the detail of the rating system. Once the rating system is set up, this system should be easy and cheap to implement. Costs for auditing and rating can be recovered through fees.
5) Covers all aspects of waste transport and end use.	Chain of custody ensures all parties participate in the record keeping. This process does not work well if sorting or storage facilities are used because the chain is 'broken'.	Each aspect of waste handling and processing would require its own audit and accreditation system.	Each aspect of waste handling and processing would require its own rating system.
6) Benchmarking criteria.	If third party verification is required, benchmarking criteria is needed. Criteria can be best practice guidelines and industry standards.	Benchmarking criteria is essential, and can be best practice guidelines and industry standards.	Benchmarking criteria is required in the form of a ranking system, where more points are scored for a better product or service. Criteria can be best practice guidelines or industry standards, or can be simply based on the 5R hierarchy. May include 'minimum' criteria which members must meet to be rated.

Project Objectives	Chain of Custody	Third Party Accreditation	Ratings
7) Potential to be incorporated into existing verification system.	Some companies already have their own waste tracking systems, otherwise there are no national, standardised processes with third party auditing available. The voluntary MfE hazardous waste transfer form is a possible system to replicate. This form is already relevant for hazardous C & D waste such as treated timber.	Environmental Choice is a possibility, in particular for recycling operators producing products using waste material. Services have not been accredited through the programme to date. More discussions are needed. Any firm can seek ISO 14000 or Enviro-Mark accreditation at any time. No other existing system is directly applicable to this project.	No ranking system exists presently for waste tracking. The 5R rank is a possible place to start.
8) Materials-based programme that is flexible for changing waste markets.	This system can be used for any type of waste, and for mixed or single waste consignments. Key materials can be targeted initially. The form can be adapted to any type of use, and the process can include or exclude auditing and verification.	This programme can be materials based, but it is more suited to being company based. It may be confusing to customers to get accredited for one part of the business only. This process can be flexible to adapt to different markets, but this will depend on the ability for the criteria to be adapted. Key services or materials can be targeted initially.	This programme can be materials based, but could be more cost and resource efficient to focus on the 5R hierarchy as a standard across all materials. The system has flexibility to adapt to different materials or services, but will depend on the adaptability of the criteria. Key services materials can be targeted initially.

6.1 Discussion

Chain of Custody

The Chain of Custody process is simple, cost effective, voluntary, and offers gate to grave tracking of waste. Third party auditing of waste tracking may or may not form part of the process. This means the whole system is flexible and can be developed slowly as the market responds. The record keeping system has synergy with the (currently voluntary) MfE system for tracking of hazardous waste, which creates consistency in the waste industry.

However, the Chain of Custody process is only a record keeping procedure, on its own it does not achieve the overall objective of the project i.e. the verification of waste collection, handling and processing, including end uses.

Third Party Accreditation

Third party accreditation programmes are ideally suited to the objective of verifying waste services through the waste chain. Auditing criteria can be developed from the best practice guidelines being developed as part of the C & D Waste Reduction Project, and other industry standards already in existence. The level of detail in the auditing process, the number and types of materials or services included in the programme and the voluntary or mandatory nature of such a system needs to be debated in the waste industry. Costs of implementing such a programme depend on the detail of the auditing process, but any system should aim to be cost recoverable, with fees set at a level that meets demand.

Issues such as how to brand the programme, how to differentiate the processing of different wastes by one company and how to verify a collection service compared to a processing service, will need to be addressed. The system does allow the process to be developed over time, so that processing and exporting services, or timber and concrete, could be developed first with other materials or sectors to follow.

The use of Environmental Choice for third party accreditation of waste services is an option worth exploring, to make use of an existing system and brand. Since there is no provision for service accreditation presently, the Environmental Choice board would have to approve the concept prior to specifications being produced, which could take time. The specification process may be too rigorous for the purposes (and budget) of this project.

Ratings

A rating system can work with or without ‘membership’ to an accreditation programme. Service providers can rank themselves against set criteria, or the third party agency can rank all service providers and publish the results. This system may have a minimum benchmark, which must be met, prior to ranking, or could include a nil ranking to show poor performance compared to the set criteria. Labelling and / or branding is required for marketing purposes, along with a clear understanding of what the scores mean. The ranking gives more information to clients and the public than an accreditation system because there is a qualitative component, rather than the pass / fail of accreditation.

The system could be complex, with different criteria for each material and each handling process, but is more likely to be useful if it is simple. One suggestion is to rank a process (rather than a material) based on the 5R waste hierarchy, where an end-use process has a higher rank for a higher step on the hierarchy. As an example, reuse of a material in its original form would rank higher than recovery for fuel.

The question that should be raised is what benefit does a separate C & D waste handling verification programme have over established environmental accreditation such as Enviro-Mark or ISO 14000? An accreditation programme that only verifies particular services of a company may be limited in appeal in the market place compared to a whole company environmental accreditation. It may also create confusion in terms of branding, if a new brand was added to the plethora of New Zealand and overseas examples in the market.

7. Recommendations

Comparing verification programme frameworks with the objectives of the C & D Waste Reduction Project, it is recommended that:

1) The verification programme should include both a waste tracking and service auditing function.
2) RONZ should administer the programme, including auditing, benchmarking, branding etc.
3) The application of the programme should be voluntary for participants.
4) The programme should allow for clients such as local government and construction firms to specify verification as part of service agreements.
5) Minimum standard criteria for auditing be developed from the best practice guidelines, developed through the C & D Waste Reduction Project, for a matrix of waste materials and services (transport, storing, processing).
6) Cost recovery for audits and the use of labels, branding, or other publication material should be on a user pays basis.
7) The system could be developed in stages. High volume wastes initially, followed by hazardous or 'problem' wastes.
8) The development of any programme should consider the long term sustainability of criteria review and update, the changing waste markets, ongoing auditing, maintenance of publication lists and other administrative and marketing tasks following the programme launch.
9) Verified operators may have branding or labelling on RONZ, waste exchange or local government databases.

The recommended steps following the outcomes of this report are:

1) Distribute the report findings to representatives in the waste management industry who have requested involvement in the C & D Waste Reduction Project. A 'working group' will be formed to discuss the recommendations.
2) Specifically, feedback is sought to answer:
   a) What is the perceived market demand for a verification programme?
   b) Does the industry agree with the recommendations, or is there a more preferable option?
   c) Who is likely to participate?
   d) The nature of the role of the verification agency – should it be RONZ?
   e) How the programme should be launched, marketed and otherwise publicised?
3) RONZ is to determine the likely costs of administering a verification programme.
4) An article will be written for the relevant publications detailing recommendations.
5) Seek feedback from local government regarding the support and use of a verification programme for service providers.

6) Feedback from the working group will be incorporated into a final verification programme report in September 2004. Key education and implementation resources and a communication strategy will be detailed in the report, along with details on how the verification programme will be branded, rolled out, administered and otherwise managed.

7) In accordance with the C & D Waste Reduction Project, promotion and launch of the programme is to commence on the 1st of October 2004.