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## REBRI and the Easy Guide to Reducing Construction Wastes

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# **REBRI AND THE EASY GUIDE TO REDUCING CONSTRUCTION WASTES**

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## **Introduction**

Two new products for assisting the building and related industries to better manage their material wastes are discussed. The first resource is an internet-based, joint project between the Auckland Regional Council (ARC) and the Building Research Association of New Zealand (BRANZ). The website is designed to be a one-stop-shop for those wanting guidance on good construction waste management practice, and distils information and knowledge gained from many years of New Zealand waste reduction initiatives by ARC, BRANZ and the Auckland City Council. The second resource is a complimentary pocket guide, produced by BRANZ, which includes guidance for good liquid waste management, in addition to practical methods for reducing on-site material waste. The background and development of the two new resources will be discussed, along with their future directions.

## **Background**

Just how much material waste ends up in landfills as a result of the construction and demolition (C & D) industries in New Zealand is uncertain (Ministry for the Environment, 1997). This lack of certainty is largely because of the way the C & D waste stream is categorised in New Zealand. The default method, as set by the Ministry for the Environment's Waste Analysis Protocol (Ministry for the Environment, 1992), classifies materials by their type rather than by the activity that generates those wastes. It has been estimated that the construction and demolition sectors produce 36% of all waste that is being disposed of in landfills under the 'C & D' classification, while about 55% of all the wastes originating from construction sector activities (such as building, renovation and demolition work) could be classified as C & D waste (Patterson, 1997).

What is known is that the construction sector contributes a large portion of wastes going to landfill – best estimates are around 19% (Patterson, 1997). For the Auckland region, the construction sector is estimated to generate around 146,000 tonnes of waste per annum (depending on building activity), with an even split between residential and business-related sectors (Eddington and Patterson, 1995). Also known with some degree of certainty is that there are various methods of reducing this sector's contribution, for example through:

- design and procurement practices which allow for resource-efficient methods of construction, such as the use of prefabrication, modular design and the matching of sheet sizes to room sizes to reduce cutting (Jaques, 1999)

- on-site separation to recover reusable and recyclable material and also separation for cleanfill disposal (Patterson, 1997, Park, 1999, and Glucina, 2001)
- Good 'housekeeping', such as having centralised cutting areas, keeping a tidy site etc. (Forrest, 1997 and Mittermuller, 1998).

By employing these (often basic) waste reduction methods, large quantities of materials can be diverted from landfills. It has been shown by Patterson (1997) for example, that just by sorting construction bin waste, the amount destined for landfills can be reduced by 50-55% (based on existing material outlets in the Auckland region). However, getting practitioners within the construction sector to alter their traditional methods and processes can be difficult (Jaques, 1998). There are several reasons for this, including:

- The lack of freely available resources and education on practical methods to reduce waste, which are specifically tailored for the building industry.
- The extra planning that waste management practice involves, whether considering 'start-of-pipe' or 'end-of-pipe' measures.
- The difficulty in easily finding markets/outlets for some recyclable/reusable materials, and the volatility of those markets.
- The nature of the construction industry itself, being relatively conservative and fragmented, making it slower to respond to change and a barrier to improved practices.

It was felt by the authors and others (Hanne, 2001) that although there is a modest amount of information on how to reduce construction waste entering landfills, it is often difficult to source. Examples of sourcing difficulties include when information/expertise is contained within technical literature or requires the interested party to join an advocacy body to obtain it. Thus, the idea to collate and condense existing sources of New Zealand construction-related waste material into a more accessible document was born.

Two New Zealand-specific resources recently developed are now available to the building industry and have tried to address many of the existing barriers – through both the electronic medium and the more traditional paper-based medium. The first resource is the new internet website, while the second is a pocket guide to be used on the construction site. Their aims, development and future directions will be discussed, as well as what makes them different from currently available resources.

### **The REBRI Internet Site**

REBRI (or Resource in the Building and Related Industries) is a voluntary initiative designed to provide assistance to those interested in the efficient use of their resources. It is a collaborative venture between ARC, the Auckland City Council and BRANZ, and (until recently) provided two main resources for the building industry to use – a comprehensive resource kit – the 'REBRI Resource Guide' (Mittermuller, 1998) and an advocacy group to assist industry bodies to take on board measures to reduce their building material wastes. REBRI was launched in April 1998 as a response to the growing need for companies to improve their operating methods by adopting 'cleaner production' type techniques. It has also participated in many demonstration projects and sorting trials as well as researching new methods for reducing and/or recycling wastes.

So what are the objectives of the REBRI internet site and how does it differ from what is already available in the hard copy of the REBRI Resource Guide? The main objective of the REBRI website is to provide the New Zealand building (and related industries) with a comprehensive guide to minimise material waste, which is freely available to all. The aim is that the website will be relevant for all stages of building construction, from concept design through to demolition. REBRI's goal is to have a 'working' website – one that is used and perhaps (if necessary) fine-tuned by the building industry to be their first (and main) source for New Zealand building waste reduction information. The secondary goal of the website is to promote the use and services of the recycling operators and waste exchanges, positioning them closer to the construction industry so that a stronger symbiotic relationship can be established. Part of the impetus for the website's creation was to free up the resources available which were previously inaccessible due to the REBRI advocacy group membership system. The internet site naturally also has the great benefit of being easy to keep up to date with changes in recycling markets/outlets, industry contacts and other pertinent information as it becomes available.

Considerable thought has gone into the development of the REBRI site to make it as user-friendly as possible. To achieve this, the site aims to be clear, informative and concise, with a minimum of graphics to cut downloading time. Critical to this, is site navigation, which is set up so that industry is able to use it quickly and with a minimum of fuss.

Using the Internet as a means for accessing construction-related tools needed careful consideration, as the construction sector is perhaps less reliant on computers than many other industries. There are no current figures available, but a 1997 survey found that more than 30% of the construction industry population do not use computers and at least another 12% only use them casually (Doherty, 1997). These results are only suggestive, however, because of:

- the low sample size.
- the rapid uptake of information technology over the past five years.

These figures should also be interpreted in light of the fact that those in the industry who do use computers are likely to be more responsive to change and therefore probably more likely to adopt new practices anyway (such as better waste-minimisation practices, for example). The same study found that computers were used at most stages of the project – i.e. project inception, concept design, design resolution, project documentation, tendering, and construction planning and project management. These results suggest that websites provide a good opportunity for introducing waste management tools to the construction industry.

### **Website Development**

To find out how the REBRI site should be best developed, construction waste experts were canvassed to find out what the key (i.e. most likely) questions construction industry users would ask. In other words, what information, links and contacts would users expect to be on a construction-related waste website? After discussion with the experts, the following six key questions were distilled:

- What can I (the architect / specifier / engineer / site manager) do at the (design/construction/demolition) stage of construction to minimise material waste?
- What organisations are available in my region, to help me with a waste minimisation plan and alternatives to landfill disposal?

- What needs to be addressed (i.e. what are the key elements) in a waste management plan?
- What have other New Zealand construction companies achieved, and are there examples of their successes/failures?
- Is there a primer that my site foreman (and sub-contractors) could apply on-site to help them start to look at material waste in terms of a resource?
- Who can supply recycled content materials in my region?

During the development of the website, checks have been made to ensure that each of these six key questions is accessible with a minimum number of ‘clicks’.

An international search of what the current construction-waste-related sites were offering was also made to gain insight into what ‘worked’ well. It quickly became evident that there is a fine balance between overloading the user with information (no matter how informative and pertinent) on one hand, and providing too few resources to be of any benefit, on the other. Hopefully, this balance has been addressed with the REBRI website – but only time (and feedback from users) will tell.

The overall ‘look’ of the website has been as straightforward as possible, with the minimum amount of ‘extras’ in terms of dynamic images, large graphic files etc. After introductory explanations on what REBRI is and what its objectives are, the visitor is quickly directed into their specific interest area. The website information is staged, so that primary (top level) information is available directly off the site, while more detailed information (in the form of construction-site auditing guides, samples of contract document specification etc) is accessible from downloadable pdf documents within the site. In addition, a directory of recycling operators (by region) is provided, giving easy access for contractors wanting to source ready markets for their recyclables.

So what is actually included in the REBRI website? The information available can be grouped into six areas:

- **Generic guidelines** for the design, construction and demolition stages, from practical housekeeping tips through to a downloadable pocket-sized booklet which can be used on-site.
- **‘Seven Steps to Resource Efficiency’**, a concise step-by-step guide for novices, on how to plan, develop and carry out waste-minimisation practices.
- **Specific guidelines** on essential topics, including: practical steps for separating on-site waste, tips for homebuilders etc.
- **Six demonstration cases**, of a variety of sites (from new residential through to large commercial properties) showing the effectiveness of applying good resource management and what is achievable in New Zealand using REBRI examples
- **Downloadable pdf documents**, which extend areas explored by the ‘Seven Steps’ section, and include:
  - site audit guides, formalising the site waste-auditing procedure (Patterson, 2001)
  - guidelines for inserting waste-minimisation requirements into contract documents (Mittermuller, 1998).

- **Links to further information, advice and contacts** to assist in minimisation programmes – such as the New Zealand material waste exchange directory, essential advocacy bodies and advisor service links.

There were two main sources of information which provided the basis for the REBRI website – the REBRI Resource Guide, (a guidance manual provided to those who joined the REBRI membership programme) and the supporting research and demonstration studies carried out since the inception of its predecessor program (Project C & D), conducted by ARC, BRANZ and Auckland City Council.

### **The Easy Guide to Reducing Construction Wastes**

The *Easy Guide to Reducing Construction Waste* (the *Easy Guide*) is a hard copy resource for the building industry. The objective of the *Easy Guide* booklet is to provide a practical, user-friendly handbook for the building-industry to use on-site, all contained within 20 A6 sized pages. One of the main reasons for the guide is to provide an easily accessible and low-cost document for the industry to complement the REBRI site, by:

- introducing good waste management practices to those (smaller?) businesses which may not have access to the internet yet.
- providing on-the-fly information, in a transportable and easy to read document, which can be used by all on-site.
- providing education and links to not only good construction material management but also good effluent management.

Although the *Easy Guide* examines a variety a ways to reduce material wastes, it focuses more on on-site issues. It is based on successful overseas pocket guides, including the UK publication *Environmental Good Practice Guide* (Coventry S et al., 1998) and the Australian publication *Demolition Handbook* (EcoRECYCLE Victoria, circa 2000), which have been extensively trialled on-site to good effect.

The illustrated guide is packed with useful information that can be applied to most sizes of building sites. Although the pocket guide is intended for everyone working in building construction, it was especially targeted at foremen, site workers and contractors.

As with the REBRI website, the *Easy Guide* can be read on two levels – satisfying both those who just want an introduction into the management processes involved, as well as those searching for detailed or specific advice. For users who are in a real rush, a ‘Short Cuts’ section is provided, which addresses waste management essentials. For those seeking detailed information, the *Easy Guide* has a listing of further contact points and advocacy bodies who have a specific interest in dealing with construction-related wastes, and can be contacted for further direction.

The *Easy Guide* will be available by the end of the 2001-year in hard copy form, and will also be electronically downloadable though the REBRI site, the BRANZ website ([www.branz.org.nz](http://www.branz.org.nz) under ‘resources’), and ARC’s EnviroLine. Before publication, however, it will be extensively trialled on building sites in the Greater Wellington region, in case any fine tuning is necessary.

## Summary

Providing the construction industry with good waste management tools is especially relevant for New Zealand now, with many initiatives spurring interest in the broader waste management area, including:

- the 're-branding' of the WASTEMINZ waste industry, with the focus re-directed towards more accurate descriptions of the industry's operation, which is 'better resource use' and 'sustainable management' (Waste Awareness, 2001)
- the drive for landfills costs to be more reflective of real (that is longer-term) environmental costs (Waste Awareness, 2001a), and
- the goals and aspirations of the National Waste Minimisation Strategy, which is about to be launched later this year (Ministry for the Environment, 2000) and the intentions of the Zero Waste New Zealand Trust (Zero Waste, 2001).

So where to from here? Both the REBRI website and the *Easy Guide to Reducing Construction Wastes* will be heavily promoted, through BRANZ media (including the BRANZ Guidelines, and the bi-monthly BUILD magazine), ARC's EnviroLine and SPECTEL (a product suppliers and service providers directory). Also, there will be some promotion of the demonstration trials applying the *Easy Guide* in Wellington. The REBRI website will be periodically updated, to remain current with the recycling/reusing operators. At the next WASTEMINZ Conference, the results of the Wellington demonstration trials will be presented.

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