

# **Recycling Works: A toolkit for the commercial construction industry in WA**

**Campbell, J<sup>1</sup>, Blakeway, L<sup>1</sup> and Dr Bremner, A.E.<sup>1</sup>**

**Encycle Consulting Pty Ltd<sup>1</sup>**

## **Introduction**

Encycle Consulting (Encycle) was awarded a \$45,450 grant from the Waste Authority in May 2009 to develop a Toolkit for the commercial construction industry to assist in the on-site segregation of waste for recycling. This paper describes the process undertaken in the development of the '*Recycling Works: A toolkit for the commercial construction industry in Western Australia*' (the Toolkit) and its outcomes.

## **Background**

In Western Australia the construction and demolition (C&D) sector is the largest contributor of waste to landfill. The recycling rate for C&D waste in WA is about 20%. This figure falls significantly behind other Australian States and Territories that are recycling between 42% and 90% of their construction waste.

Material lost to landfill represents a loss of valuable energy required to extract raw materials, process that material, and transport the final product. Recycling of construction waste is a way of maximising resource efficiency and minimising the energy required to manufacture construction products.

As is commonly understood, landfills are a major source of methane, which is produced by the degradable fraction of waste such as cardboard, timber, green waste and some plastics.

A major driver to divert construction waste from landfill is Green Star. Many of the commercial buildings currently being constructed in Perth are aiming to achieve a Green Star rating. Green Star is a voluntary tool that rates new commercial buildings' design for sustainability. The green star rating was developed and is administered by the Green Building Council of Australia.

In addition to Green Star, the recent increase in the landfill levy is also likely to result in construction companies reassessing how they dispose of waste and to seek alternatives to landfill on economic grounds.

## **Objectives**

The primary outcomes from the project developing the Toolkit included:

- Establishing improved communication between the construction industry and the recycling industry

- Creating greater awareness within the construction industry about the benefits of recycling and how to implement recycling systems on site
- Providing the construction industry with materials such as signage, data collection templates, waste management plan templates, communication guidance, tips and tricks, posters and a DVD to assist with on-site segregation of materials for recycling

The aim of the Toolkit was to connect the construction industry with credible recyclers and assist construction companies to achieve recycling targets and reduce the quantity of C&D waste sent to landfill in WA. Some of the improvements to the environmental impacts of waste likely to be achieved include the following:

- Reduced waste to landfill and a reduction in methane gas generation from the organic component of the waste stream (timber, cardboard, green waste from land clearing)
- Greater resource efficiency for construction products
- An increased ability for builders to achieve Green Star points for recycling that will result in a higher Green Star ratings for Perth buildings
- Improved data collection about the amount of waste diverted from landfill, will enable construction companies to monitor and therefore continually improve waste reduction and recycling initiatives.

## **Methodology**

The process of developing the Toolkit was split into 4 phases:

1. Focus Group Discussion (FGD) Sessions – consultation with 6 different groups of industry stakeholders to identify barriers to on-site recycling and materials that should be included in the Toolkit
2. Toolkit development – establishing the ‘7 steps to on-site segregation of materials for recycling’, including ways to communicate with site staff, data management and contact details for recyclers in Perth
3. Launch – officially launching the Toolkit at a recycling facility (All Earth Group) and inviting key stakeholders to tour the site and see how construction recycling happens
4. Evaluation – undertaking a survey of Toolkit recipients to assess how useful they found the Toolkit to be and if they were likely to implement it on one of their projects

### **Focus Group Discussion (FGD) Sessions**

Six focus group discussion sessions were held with representatives from 6 different industry stakeholder groups in order to:

- Determine the key perceived barriers to recycling on construction sites
- Identify information needed by the building industry to introduce on-site waste segregation for recycling
- To raise awareness within the construction industry about WA's poor track record of recycling performance compared with other States.

The six focus group sessions were for: the C&D recycling industry, skip operators, construction site supervisors, construction senior management, Ecologically Sustainable Design (ESD) Consultants (who work on Green Star projects) and owners/developers.

Encycle compiled a list of all of the resources or tools the focus group participants wanted to see in the Toolkit. The topics on this list fell into four main categories:

- Information: Details on the waste legislation, recycling process and recyclable items in WA, preferably provided via single online resource.
- Planning Guidelines for setting up a recycling system
- Bigger Picture: Why is recycling important. Statistics on recycling and waste generation from different areas of the construction industry. What benchmarks is the industry achieving or not achieving?
- Communication to Staff: Training materials, toolbox topics, suggestions on how to provide incentives/feedback to staff

## **Toolkit Development**

During November 2009 to January 2010, Encycle researched, drafted and designed the content of the Toolkit.

Encycle conducted a desktop research to identify existing resources available in Australia and internationally for the commercial construction industry to reduce waste and implement recycling on construction sites. These resources were reviewed and analysed as to their relevance and usefulness for the WA construction industry.

Visits to two construction sites were conducted to gain a better understanding of logistical issues and the waste streams coming from these sites, and to sense-check some of Encycle's ideas for the Toolkit with the site workers for feedback. The sites were:

- Optima Centre, 133 Hasler Road, Osborne Park – PACT Construction
- Leighton Beach Development, North Fremantle - Mirvac

In January 2010, Encycle engaged Media on Mars to design the Toolkit. The first draft of the Toolkit was sent out to eight participants from the focus group session for

feedback. Feedback was combined with the information obtained from the site visits for incorporation into the Toolkit.

## Launch

The Toolkit was successfully launched on Wednesday 24<sup>th</sup> February at the All Earth Group recycling facility. The event was attended by 63 representatives from construction companies, government, a member of the Waste Authority, developers, site owners, recycling companies and the community, including the Hon. Helen Morton MLC, who officially launched the Toolkit

The Toolkit consists of “7 steps to effective recycling on construction sites” and was composed to ensure relevance to all stakeholders within the construction industry, from managers to site staff. Each step contains tools for commercial construction sites to use as set out in the table below:

Step	Relevance	Resources in the Toolkit
<b>1. Commit</b>	Construction senior management must commit to recycling on construction sites through providing adequate resources and reporting recycling performance.	<p><b>Why recycle on a construction site?</b> Fact sheet</p> <p><b>Tell him he’s dreaming</b> – common barriers and their solutions</p> <p><b>Does recycling cost more?</b> Fact sheet</p> <p><b>What is recycling?</b> Fact sheet</p> <p><b>What happens to my recycling?</b> Fact sheet</p> <p>Top 10 recycling tips</p>
<b>2. Plan</b>	Recycling collection systems, equipment, storage areas and logistics must be well planned and communicated to all site workers. Recycling facilities and skip operators must be consulted during the planning stage to ensure that materials are segregated and delivered correctly to be recycled.	<p>Waste Management Plan (WMP) Checklist</p> <p>Recycling and general rubbish template</p> <p>Perth recycling facilities</p> <p>Questions to ask recyclers</p> <p>Questions to ask skip operators</p>
<b>3. Set up</b>	The initial setting up of the recycling bins and skips will require involvement from skip operators and key site staff. The bins and skips must be well organised and clearly signed.	<p>Signage examples and CD</p> <p>Signage guidelines</p> <p>Recycling works poster</p>
<b>4. Train</b>	All site workers must be fully aware of the recycling systems and how to use them. Continual training, feedback and reminders are necessary to ensure recycling procedures are adhered to throughout the construction project.	<p>Training and communication methods</p>
<b>5. Execute</b>	During the implementation of the WMP, site	<p>Top 10 recycling tips</p>

Step	Relevance	Resources in the Toolkit
<b>WMP (Waste Management Plan)</b>	workers will raise questions about what can and can't be recycled, so be ready with the answers so as to avoid any confusion and bad habits from forming. The systems must be well managed and regularly inspected. A procedure for addressing WMP non-compliance is necessary.	
<b>6. Monitor / feedback</b>	It is vital that site workers are kept informed about their recycling efforts, including providing regular feedback on recycling rates and whether targets were achieved. Reward good performance.	Data collection, monitoring, reporting and feedback guidelines
<b>7. Review</b>	It is always useful to report why recycling succeeded or failed, lessons learned, tips for your next site, future innovations. Make sure these are reported to senior management. Celebrate your successes and congratulate site workers.	Review and evaluation process guidelines

## Evaluation

To date over 140 Toolkits have been disseminated. The effectiveness and use of the Toolkit was evaluated from the results of a questionnaire, and from voluntary feedback from recyclers.

A 16-question survey was sent out to over 100 recipients of the Toolkit to gauge the extent to which the Toolkit is being used and to understand its value in terms of usefulness and practical application. The survey demonstrated that there was a positive response to the Toolkit and that it formed an important part of the behaviour change process to encourage on-site segregation of construction waste for recycling.

According to the survey three companies have implemented a recycling program as a result of the Toolkit on more than 11 sites. One survey respondent indicated that their company would be implementing the Toolkit on their next project, while 10 respondents said that they do not know yet if their organisation will use the Toolkit.

Those who participated in the Toolkit evaluation survey gave an average rating of 4 out of 5 for how useful they found the Toolkit

In addition to the survey, Encycle received feedback from three recyclers who indicated that the release of the Toolkit has resulted in an increased interest in their facilities and/or has generated a means by which they are able to engage with potential clients.

Since the landfill levy has increased at a similar time to the implementation of the Toolkit it is difficult to strongly align the cause and effect of any one given activity relating to C&D recycling. However, behaviour change relating to recycling often requires several points of action to generate the required outcomes and it is likely that

the Toolkit has played at least some part in changes observed in the recycling industry, in particular by dispersing information about where to recycle and how to collect separated material on site to a range of large construction companies.

As a result of this project, several media releases were generated promoting the Toolkit and the financial support provided by the Waste Authority.

The Toolkit has been instrumental in creating dialogue within the commercial construction industry about on-site recycling and increasing recycling rates. Since the development and launch of the Toolkit, Encycle has noticed a significant improvement in attitudes of the construction industry towards recycling and from the recycling industry towards the opportunities on construction sites. Many connections between recyclers and the construction industry have been formed.

Since the development of the Toolkit, Encycle has engaged in discussion with commercial composters and commercial building fit-out companies to explore the potential of using plasterboard as an additive to the composting process. There are at least two composters in WA now considering incorporating plasterboard into their compost products. Local manufacturers of plasterboard are considering establishing programs for construction and fit-out companies to return un-used sheets or off-cuts for incorporating back into the manufacturing process. Encycle will continue to liaise with the composters, construction companies and plasterboard manufacturers in the establishment of a service that prevents plasterboard from ending up in landfill. Encycle will promote any newly established plasterboard recycling service through their website and e-newsletter as soon as an option becomes available.

## **Conclusion**

The Toolkit has been received very positively by the construction and recycling industries. Once companies begin to implement the Toolkit on their sites, case studies can be developed outlining the benefits and hopefully showcasing cost savings of segregating waste on site for recycling. Encycle intends to continue to seek case studies on use of the Toolkit for publication.

Other areas for potential future projects, continuing on from the Recycling Works Toolkit may include:

- A media campaign to advertise case studies and good practice C&D recycling
- The development of education and training tools for site staff to recycle more effectively and be more engaged with the reasons for recycling
- The delivery of 'Recycling Works' seminars through organisations such as Master Builders WA to provide basic information to site supervisors and staff for implementing on-site recycling systems

- The establishment of a construction waste transfer station to act as a ‘one stop shop’ for the construction industry to simplify transport planning and minimise transport costs of recyclable material

The *Recycling Works* Toolkit is available for download from the Encycle website [www.encycle.com.au](http://www.encycle.com.au).