

Treated Timber Waste Minimisation Project

Project Update Report: Potential Solution Provider Progress

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MINISTRY FOR THE ENVIRONMENT
WASTE MINIMISATION FUND PROJECT

TREATED TIMBER WASTE MINIMISATION

PROJECT UPDATE REPORT

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1.0 INTRODUCTION

The Treated Timber Waste Minimisation project was launched on 4 March, 2013 with its overall goal being “to test the feasibility of, and subsequently develop a sustainable business model for the large scale collection and reuse, recycling and/or recovery of hazardous treated timber waste, with a particular focus on earthquake-related building and demolition waste.” The project concluded in December, 2013.

The Environment Canterbury led project received Ministry for the Environment funding of \$144,900 towards the project’s overall cost of \$190,900, with the remainder coming from the project’s governance group, consisting of:

- Environment Canterbury (ECAN) – Project owner
- Christchurch City Council (on behalf of the Canterbury Waste Joint Committee)
- BRANZ Limited
- Scion

The feasibility study had three key objectives:

- Identify and/or create a business case, supply chain and financial model, and end use for the collection, reuse, recycling and recovery of up to 20% (5,000 tonnes) of waste treated timber in Canterbury in such a way that it presents compelling economic and/or brand benefits to all participants in the supply chain (waste owners, processors, logistics providers and end users).
- Identify an appropriate, effective, easy to use and low-cost tool to be used by demolition companies and/or waste processors¹ for identifying treated timber on demolition and/or waste processing sites².
- Increase collaboration between timber waste minimisation stakeholders including demolition, timber and waste industries, Environment Canterbury, Canterbury territorial authorities, construction interest groups and the wider community to improve waste minimisation management of treated timber over its lifecycle.

Overall, the project was aimed at creating a sustainable and economically viable process or processes for the productive use of waste treated timber.

The project was split into five key milestones:

1. **Industry Overview** (completed 10 May, 2013)

A situation analysis and overview of the current waste treated timber industry and potential applications for treated timber waste.

2. **International Industry Trends** (completed 14 June, 2013)

An overview of key international trends and technological developments in the waste treated timber industry internationally and how the application of different elements of these might work in New Zealand.

¹ Target users are demolition workers, transfer station workers, builders and surveyors

² Primarily it would be used on the demolition site, but could also be used at transfer stations, landfills and re-use locations.

3. **Part 1 – Potential Scenarios** (completed 16 August, 2013)

A report detailing potential new waste treated timber collection and reuse, recycling and/or recovery systems for application in New Zealand, and the risks, financial implications and potential benefits of each scenario.

Part 2 - Timber Identification Tool Development (completed 16 August, 2013)

A report providing an overview of international research related to waste treated timber identification on demolition and/or waste processing sites and undertake a feasibility study on the application of this research to create a tool or toolkit suitable for use in New Zealand.

4. **Detailed Business Cases and Stakeholder Collaboration** (completed 4 October, 2013)

Detailed business cases for each preferred scenario, including pilot trial plans.

5. **Scenario Pilot Trials** (completed 20 December, 2013)

A final report detailing pilot processes and outcomes, and scenario details and implementation plan for the preferred option or options.

All reports are available at <http://ecan.govt.nz/advice/your-land/waste/projects/Pages/treated-timber.aspx>.

As the project progressed and evaluated different processing options, four potential solutions emerged which remained the focus for the project in Milestones 3 to 5. These four processing options were:

- Using hydrothermal processing to create lignin and biofuels (Solvent Rescue Limited)
- Using the TERAX process to create methane gas (Scion Research)
- Using pyrolysis to create carbon-based products (Waste Transformationz Limited)
- Using pyrolysis to create biofuels (AES Bioenergy Limited)

At the conclusion of Milestone 5 the assessed feasibility of each of the four solutions, within the context of this project, was as follows:

Table 1.1 – Feasibility Assessments for Solutions

Risk	Solvent Rescue	Scion/TERAX	Waste Trans.	AES Bioenergy
Overall Assessment of Feasibility	MODERATE	LOW TO MODERATE	MODERATE TO HIGH	MODERATE
Financial Feasibility	MODERATE	LOW TO MODERATE	MODERATE TO HIGH	MODERATE
Supply Chain Feasibility	MODERATE	LOW TO MODERATE	HIGH	HIGH
Deployment Timeframe Feasibility	LOW TO MODERATE	LOW	HIGH	LOW
Processing Volume Feasibility	HIGH	HIGH	HIGH	HIGH
Technical feasibility	MODERATE TO HIGH	MODERATE	MODERATE	MODERATE

Based on the information provided and available at the time of publication of the final report, the solutions offered by Waste Transformationz Limited, AES and Solvent Rescue were determined to have the best potential for feasibility as a solution for objectives of this project.

Waste Transformationz Limited was considered to offer the best potential for feasibility, particularly based on deployment timeframes. The solution offered by Scion is considered unlikely to be feasible in terms of the objectives of this project.

It was noted, however, that each of the providers was planning to undertake testing of treated timber waste through their processes in early 2014. This report is provided to give a brief update on these testing processes and the progress of providers towards offering solution for treated timber waste in Christchurch.

2.0 PROVIDER UPDATES

In mid-February, 2014 each of the four potential solution providers was contacted to determine:

- Whether any formal testing of CCA treated timber waste through the proposed solution had been undertaken and, if so, what the results of this testing had indicated.
- Whether any further advances had been made in terms of business model deployment.

The results of these enquiries are shown in the following sections.

2.1 Solvent Rescue

Solvent Rescue is currently undertaking testing of CCA treated timber through its process as part of a Ministry for the Environment Waste Minimisation Fund project. The most recent milestone completed showed what Solvent Rescue consider to be 'promising results' but a mass balance (showing the deportment of all copper, chromium and arsenic in the process) has not yet been achieved. Testing is being repeated as part of the current milestone to avoid the internal and external errors in the previous testing processes. It is believed that the next round of testing should produce a satisfactory mass balance.

In any event, Solvent Rescue has advised that operating at a commercial scale is now likely to be several years away.

2.2 Scion/TERAX

Scion has advised that a significant rebuild of the laboratory space required for the testing has recently been undertaken and that, as a result, treated timber has not yet been tested. Scion are currently "upgrading [their] hydrothermal processing facilities providing a significant step up in [their] capability to run potentially hazardous materials at a wider range of useful scales in the lab (from micro to multi-litre)".

Scion expect this process to be completed in March 2014 and they will then focus on their testing backlog, which includes treated timber.

2.3 Waste Transformationz Limited

WTL have advised that their process has progressed well, with very positive testing results. WTL have advised that, due to commercial sensitivity, formal testing results and other details relating to deployment are not able to be released. Chairman Colin Knox has noted, however that:

“a recently completed independent research and development project commissioned by WTL clearly demonstrates that emissions from the commercial technology developed by WTL for processing CCA-treated timber waste contain no traces of arsenic. Obviously this is a major step toward the commercialisation of a robust technology which will allow CCA-treated timber wastes to be safely processed utilising a mobile plant located at suitable collection points”.

Should WTL be operating in accordance with the deployment plan indicated in Milestone 5 of this project, commencement of operations in Christchurch may be imminent.

2.4 AES Bioenergy

Despite repeated efforts to contact AES Bioenergy, no information as to testing progress has been provided. It is believed that testing of CCA treated timber has not yet been undertaken.

3.0 COMMENT

The testing processes are not yet complete for all of the providers, so it is not yet possible to say unequivocally which are or are not feasible. In fact, these processes may take some time or, for some, may not happen at all.

At this stage the previous assessment of feasibility appears to be still fundamentally accurate, although AES may no longer be pursuing the processing of treated timber and WTL may be very close to actual processing of treated timber waste.