

TRASH PALACE

AN INNOVATIVE CASE STUDY ON RESOURCE RECOVERY

Phil Hancock (BSc. Env. Studies and Geography)
Development Manager, Mana Community Enterprises
(04)237 6440, wwise@xtra.co.nz

Helen Schafer (BMus, BApp. Sc. Environmental Health)
Zero Waste Co-ordinator, Porirua City Council
(04)237 1475, hschafer@pcc.govt.nz

INTRODUCTION

The Resource Recovery Centre at Porirua has evolved through an organic creative process. The particular brand of success of what has now become known as ‘Trash Palace’ is the result of a highly creative and co-operative process, where Resource Recovery supports holistic human interactions and building community with flexibility and the expectation of ongoing evolution.

This paper outlines how Trash Palace has evolved within the aims of creating jobs, and building community wellbeing, and with the expectation of continued development and expansion in ways that it is accepted can not necessarily be predicted. The paper is a description of the process of evolution at Trash Palace, and the philosophy behind it. Trash Palace is itself a pilot, a seed, and a unique model of community development specific to the energies and opportunities presented by the Porirua City Council, Mana Community Enterprises, and local, national and international organisations and people who have been drawn to join into the energy of Trash Palace.

Seeing the Opportunity

In early 2000 local Porirua not for profit organisation Mana Community Enterprises (MCE) approached Porirua City Council (PCC) with a proposal to create sheltered work opportunities through recycling and resource recovery.

In receiving this proposal advantages to Council included a strong focus on local community development and job creation and the opportunity to transform the current Porirua ever burgeoning rates funded annual inorganic refuse collection. The diverse socioeconomics of Porirua were recognised as providing a highly viable context for successful exchange of goods within the community.

Porirua City Council recognised that this proposal from a well established local community organisation grounded in international research had potential to transform a waste management problem into a community development solution.

Partnering with People

A partnership was formed with the Development Manager of Mana Community Enterprises and the Zero Waste Co-ordinator of Porirua City Council working together in close alliance. This relationship continues to provide a strong and clear communication pathway with timely

and mutually supportive decisions on the wide range of issues faced in developing Trash Palace.

Both parties contribute to their maximum capacity working towards a common goal. This is only possible in a supportive partnership based on openness and trust. The majority of decisions are not covered by any contractual agreement.

This partnership has provided the context for the uptake of opportunities that would otherwise have been difficult if not impossible to secure through a formal contractual process. This is the organic community development process at work.

OPERATIONAL DEVELOPMENT

Following are examples of the influence of the creative partnership decision making process on the development of Trash Palace.

Building Assumptions

The initial expectation for the type of buildings to house the facility was standard large industrial sheds. However with a clear objective to provide a holistic community resource the building itself would need to integrate principles of sustainability on a human scale. An industrial shed was clearly inappropriate for this purpose.

To achieve this, an environmental architect (Alan Morse of Melling:Morse Architects) was engaged. This provided opportunity to explore how the building could support the sustainable community development objectives. This was reflected in the building through:

- Modular design
- Flexible space
- Use of materials with low environmental footprint.
- Use of recycled and reused materials from the community
- Visible water recycling
- Use of solar and wind energy
- Use of thermal mass for passive solar heating
- Gardens designed on the principles of permaculture
- Providing dedicated space for education

There was never an expectation that the buildings would completely provide for all the future needs of the recovery operations.

Site Assumptions

The engineer prepared drawings for the proposed Resource Recovery site had included a flat site of approximately 1/3 acre on the right side of the road going up the hill to the Spicer Landfill. To merge the gradient of the road with the flat area implied one narrow vehicle entrance point. This design had no consideration of how the facility would operate.

In discussing the brief for resource recovery with the environmental architect (Melling:Morse), the sloping site was utilised to allow multiple entry points. By considering the nature of the activities expected to take place, in particular the high manual component (as distinct from planning for a machinery based operation), the sloping site presented an opportunity rather than a barrier.

Construction Process

The people partnership between PCC and MCE was strengthened through the construction process, and supported by Melling:Morse's philosophy of a client inclusive process. This was evidenced by three way discussions throughout the design process and MCE sourcing reusable and recyclable to be integrated into construction.

Finishing details were left open on the assumption that materials would become available through the facility's operation, allowing time for a creative solution.

Operation

Trash Palace was built to perform a task in terms of the waste stream, knowing the capacity of the facility was always too small. Currently only 1% of the volumes going into the landfill are processed. As a waste diversion facility it fits well inside the margins of error for any form of measurement.

However, the equivalent of 10 people/full time staff are now employed (started with 1.5 FTE) by making more money from the resources. The tonnage processed hasn't increased significantly, however the ability to extract value from the resource has improved.

Functions now include; disassembling fridges, dishwashers and stereos from previously receiving 5c a kilo for whiteware scrap. Aluminium and stainless steel pay approx \$1.50/kg. Approximately \$15 an hour is generated from this process and wages are \$10 an hour. The downtime of workers whose main activity may be unloading the stock as it arrives, is also reduced.

Furniture is disassembled, 90% of biscuit board is landfilled but most timber recovered. Non reusable timber is typically mulched.

Some costings include:

- Divan beds- 2m planks of rimu are worth \$15 each, 2m pine \$5. 4-6 shorter lengths averaging \$1 each, casters @\$5 per set, value of drawers varies depending on era.
- Old style bedheads are typically \$5 as timber (often oak or rimu). As a second hand bedhead, they are saleable only as part of the bed. Single bed base + mattress + head and tail boards are \$5.
- Wire wove beds were sold for \$5.00. Now they are disassembled and return over \$20 each. Wire-wove beds provide 2 x 2m lengths of 4x2 rimu (or matai), worth \$5 each, a couple of shorter lengths \$1-2 each and the wire approx 20cents totalling approximately \$15-00. This takes approximately 30-40 minutes. In addition there are 8 coachbolts: 4 worth \$1 each and 4 @50cents. All up, disassembling wire-wove beds returns in excess of \$40 per hour. Resources required 2 x adjustable wrenches and 1 Wonderbar so lets say \$50.00 for tools, covered space, plus one semi-trained person.

Having got to a certain size there is now staff with downtime to learn how to disassemble items. MCE has, in collaboration with PCC worked hard to create the required facilities.

When Trash Palace was built it was designed for items to arrive and then be resold with no consideration of processing. Who knew what facilities were required for processing? By building two workshops (40sqm), another 100sqm of covered space, an extra entrance and another 100sqm of yard space (for a very tight \$22,000). MCE has invested several hundred hours of labour into this process.

This has returned a degree of growth, a degree of inventiveness, and an allowance to try things which might generate a better return. The aim was to create employment – therefore do what works to create jobs. With this approach projects are justified on dollars potentially recovered rather than defined levels of profitability.

Trash Palace aims to empower the community, and return to them the access to their resources. This is in contrast to the typical “take away from this community ” style transfer station found throughout New Zealand.

Funding

In developing a community resource Council provided the capital funding for the infrastructure. In recognising the value of a guaranteed income for MCE to establish this new operation, Council agreed to funding the operation of Trash Palace on a fixed amount for an initial three year period. It was expected that after the initial period both Council and MCE would be in a better position to determine a long term funding strategy. To date, Trash Palace has virtually reached cost recovery with the Council funding covering the cost of providing an on-call pick up service to all Porirua City residents.

Beyond the initial infrastructure, Council has also provided funding for:

- Lining the environment centre where the anticipated solution became non viable.
- Cladding and painting utility sheds adjacent to Trash Palace for community development purposes (business incubation).
- Increasing weather proof space by closing in a section that was roofed only, and adding workshop space.
- Earthworks to increase the yard space.

With MCE contributing labour and project management it was possible to achieve these outcomes at maximum financial efficiency. Council’s internal risk of delegating project management to MCE without formal agreement was accepted as a function of the partnership.

Marketing

The Trash Palace brand is promoted as representing the interests of both PCC and MCE.

In general costs are shared 50/50 with opportunities for promotion discussed regularly and shared decision making for advertising design and strategy. Practical examples include; truck

signwriting, media placements, catering for events, attending events, standing in for one another in case of sickness or availability, introductions to external agencies (e.g. Housing NZ, Victoria University) etc.

Other examples of co-operation include:

- PCC funding of sculpture competition MCE and PCC joint funding with the Victoria University School of Architecture for research into a sustainable building product.
- MCE given free use of Council's call centre as an overload telephone backup for and to take bookings for inorganic collections.
- PCC promotes Trash Palace as part of a city festival and MCE providing materials and operational support to the artists. Winning sculptures are displayed in the permaculture garden at Trash Palace.

Community Development

To date there have been numerous developments around the original Trash Palace facility: some planned, and some spontaneously evolved.

- Having an external agency run the Environment Centre
- Development of an outdoor area based on the principles of permaculture.
- Stormwater solution utilising water cleansing reed ponds – in co-operation with PCC's Leisure and Recreation Group.
- Agreement with landfill operator for use of bund storage space
- Agreement with Council for the use of a Council utility shed when landfill operator vacates.
- Council negotiated donation of a utility shed owned by ex- contractor, on the condition that it would be used for community development.
- Mutual operational agreements between MCE and landfill contractor
- PCC contracting MCE to develop lightweight 'concrete' composite material for use in city landscape art.

A recent high profile initiative is the Polystyrene Project based adjacent to Trash Palace operating under a Heads of Agreement between PCC, MCE and MegaVision. Council provides rent free use of the space, has negotiated storage space at the landfill, and actively promotes the product. MCE is providing labour and transport at cost, and handles enquires from the public. The venture leverages on the Trash Palace brand and how it supports community development. www.polypalace.co.nz

THE SUPPORTING PHILOSOPHY

The way Trash Palace has developed is a reflection of the philosophy of the partners, in particular, the MCE Development Manager and the PCC Zero Waste Co-ordinator. Outlined below are some of these common principles.

Achieving Zero Waste

Zero Waste is a goal that is achievable in the long term. Presently, we do not pretend to have the knowledge or understanding to implement this. Resource recovery is a relatively new and immature industry, with the design element of closing the loop in its infancy.

New Zealand is a unique environment having a highly consumerist society with low population density and large distances between industrial centres. In this context, solutions for mass resource recovery are expected to be cost effective at a local level. However, local, regional, national, and international catchments exist and we recognise that some wastes cannot be dealt with locally eg waste oil and batteries.

Pilot Model

Council and MCE agree it is appropriate to use a pilot model to gain experience in the requirements of recovering resources at a community level. After assessing that expert solutions were typically designed around large flat sites it was recognised that the solution for Porirua best be served by examining the local situation and opportunities.

The philosophy at Trash Palace is to involve and empower the local community, so that they identify opportunities and are able to pull out the resources. This is the point of difference – recognising the huge benefits that come from this approach.

“The strength of Community Development is in the people. Best practice is engaging people in the process of developing their own communities” (R.Brooking, 1999)

It was acknowledged that the solution would not be complete and would need to be designed with flexibility. Trash Palace has now become a model with a unique strength, as one of a string of new resource recovery initiatives around New Zealand.

This pilot model is in contrast to the expertise available for development of landfills. Landfill technology in New Zealand has over 50 years of history and learning with well developed design methodology available.

Currently, transfer stations in New Zealand are generally not integrated with resource recovery. At Trash Palace, a potential stage 2 development addresses this integration.

Diversity for Evolution

Cities grow by diversifying in new industries (Jane Jacobs, 1970) and as cities mature a greater range of industries come into existence. This is equally true of individual industries themselves including resource recovery. As the development of community resource recovery is in its infancy, the range of resource recovery activities could grow considerably in the next few years.

While we can plan for growth and can expect increases in diversity, we cannot predict the nature of the diversity or what facilities may be required. A historical example is that although 30 years ago e-waste barely existed, today it is on the Ministry for the Environment’s list of special wastes. Over the last few years, circuit boards have reclaimed a scrap value from previously having no perceived value. This is a function of increased value of resources and,

improved recovery technologies which almost by definition, lag behind the development of new manufacturing techniques.

The Trash Palace pilot model acknowledges this. It does not attempt to predict solutions to deal with the entire future waste stream but it does provide a flexible framework for developing diverse solutions.

THE FUTURE

Having operated for 24 months, Trash Palace has gained an understanding of the required material and human resource flows. Trash Palace is now in a position to intelligently build on this. To this end, after community meetings and brainstorming sessions, Envision NZ Ltd has been engaged to consolidate and formalise a Stage 2 concept plan. Stage 2 would provide capacity to process in excess of 50% of the domestic waste stream and a portion of the commercial/industrial waste stream. It has been through utilising this pilot model that the partners can be confident that the facility will support community development well into the future and seriously contribute to Council's Zero Waste philosophy.

REFERENCES

Brooking, R., Conference Panel Discussion Facilitator. Best Practice Guide for Local Authority Community Development Workers: prepared for Porirua City Council from the proceedings of the Local Authority Community Development Conference 1999 by S Shingleton. 2000. (pg 16)

Jacobs, J., The Economy of Cities, Random House Trade, 1970.

Abstract The Feed Resource Recovery case study presents many issues, however the major ones are; Opportunity, Entrepreneurship and Resources. This paper will discuss the issues and analyze the options and how to address them. Analysis of FEED Resource Recovery The Feed Resource Recovery concept is simple; to provide supermarket and restaurants with an onsite waste processing system that converts previously discarded food waste into a source of renewable energy. Read More. The Environmental Impact of Cattle Farming Essay. A publication for Study Notes and Theory - A CISSP Study Guide. The Memory Palace - A Quick Refresher For Your CISSP Exam! Page 5. Note From The Author. I would like to thank Radha Arora for drafting and reviewing the document with me to make it a better version. I would also like to thank Luke Ahmed for allowing me to release the document on his CISSP platform and for assisting me in compiling it to produce a distributable format. The document is by no means a primary resource for the CISSP exam. Readers are expected to go through their primary materials first and then use this document as a quick reference. A publication for Study Notes and Theory - A CISSP Study Guide. The Memory Palace - A Quick Refresher For Your CISSP Exam! Page 6. The paper compares mineral resource recovery taxes for oil to be paid in Kazakhstan and the RF. It provides a case study on an average Kazakh oil and gas company and presents tax calculations as an example. To compare the taxation systems in Kazakhstan and the RF, the situation is modelled as if the field was located in the RF and the relevant calc Cite. Membrane crystallization is an innovative concept to treat water and recover minerals from concentrates. Thus, it will also be beneficial to the existing mineral extraction industry. This process combines membrane distillation (MD) with crystallization. Austin Resource Recovery (ARR), a City of Austin service, provides a wide range of services designed to transform waste into resources while keeping the community clean. In 2012, Austin's City Council passed the Universal Recycling Ordinance (URO) to increase the life of local landfills, reduce harmful environmental impacts, and encourage economic development. Under the ordinance, property owners must ensure recycling services are available to tenants and employees. By February 1st of each year, property owners must submit an annual diversion plan to the City that describes the trash and recycling services and education offered at the property. Increased efficiency. Enhanced communication.