APPENDIX 4

OPTIONS PAPER – STEEL CANS

1. STEEL CAN PROPERTIES

Steel cans are a strong container commonly used to package preserved foods such as fruit, vegetables meat and fish. Each can is coated with a thin layer of tin which is applied to the steel sheet using an electrolytic process. The tin layer protects the steel from corrosion, thus protecting the food contents from contamination.

The life cycle of a steel can is potentially continuous. However this is dependent on the availability of markets, accessible recycling schemes and consumer behaviour.

Tin is a contaminant of high grade steel. For this reason, recycling of steel cans always involved a de-tinning process. In the past, the tin, despite its low volume, provided a quarter of the recycling revenue due to its higher value as a commodity. However a decline in tin prices in the eighties, combined with changing processes that enabled less tin to be used in each steel can, saw the de-tinning step decline from favour. Now steel mills can use the cans directly in their processes, provided clear process controls are used to minimise tin contamination. This change has made the recycling of steel cans more viable, as in the past freight distance to de-tinning plants was the critical factor.

Steel cans are recycled through a smelting process, with furnace temperatures of approximately 1550 degrees Centigrade. This process totally incinerates any food remnants or paper labels, so there is no need to present the cans cleaned and without labels. Aerosol cans are also able to be recycled provided they are empty. Even steel paint cans are recyclable, provided they are empty and dry.

The magnetic properties of steel cans make it one of the easier commodities to separate from the waste stream. Producing steel from recycled cans uses approximately 75% less than the energy required to produce steel from iron ore and coal. In addition to significant energy savings, recycling steel cans reduces raw material use and environmental degradation from mining, excavation, processing and transport. For every tonne of steel recycled, 1,131 kg of iron ore, 633 kg of coal and 54 kg of limestone are saved.

2. QUANTITIES

Corned beef and preserved fish – common products consumed in Tonga

There is no data that gives a clear indication on the amount of steel cans in the waste stream of Tongatapu. In Australia, each person disposes of

approximately 6 kg of steel cans per annum. It is difficult to draw direct comparisons, as the level of consumption of packaged goods is lower in less affluent societies. However, in Tonga, there is a high market demand for a number of products that are packaged in steel cans. Particularly canned meat products are very popular. Anecdotal evidence suggests the consumption of steel cans would be higher than that of Australians.

3. STEEL CAN RECYCLING DEVELOPMENTS IN TONGA TO DATE

To date, there has been no export of steel cans for recycling. However, this has changed recently with one of the companies, GIO Scrap Steel Recycling, investing in a baling machine. This baler creates blocks of steel cans, which can then be exported to New Zealand along with other ferrous steel for recycling.

To date the steel can bales have been stockpiled, although it is expected that the first shipping container including steel cans will be exported to Metal Smelters in New Zealand in the near future.

In the trial of a public recycling depot at Fo'ui, one of the bins was for steel cans. This was filled quickly, demonstrating that a number of households may have stockpiles of steel cans. Often they are burnt, but the remnants remain on site, creating an eyesore. When the recycling depot network is established, it would be important to include steel cans as an easily recycled commodity from the household waste stream.

4. REDUCE

Reducing steel can consumption can be achieved through buying in bulk rather than a number of small cans. However, buying in bulk requires greater economic resources, even though it delivers savings to the consumer. Whilst it is an important part of the community education message, waste reduction of steel cans is clearly linked to consumption patterns and therefore economic circumstances.

5. REUSE

Steel cans can be reused in a limited way as storage containers. As school projects, it is an easily accessible material to paint and decorate, making attractive containers for paper clips, pencils etc.

6. RECYCLING OPTIONS

6.1. OPTION 1: EXPORT

Clearly local processing is not an option for steel cans. Exporting to New Zealand, Australia or to Asia provides the most logical pathway for recycling. The difficulty is reliance on global markets for steel price, and vulnerability to price crashes undermining the viability of export. However, steel can recycling infrastructure has grown significantly, along with the ability to utilise recycled steel in furnace technologies.

6.2. OPTION 2: OTHER USES

Research to date has found no other uses appropriate for steel cans. Whilst they are relatively inert as a fill material, stockpiles of rusted steel cans are an eyesore.

7. PROPOSED APPROACH

The recycling of steel cans is a priority given their prevalence in the waste stream. All households would have steel cans in their waste stream, regardless of income. This is clearly a commodity that will make the option of recycling a reality for all households.

The export of the first bales of steel cans will be followed closely to ensure that there are no problems with the acceptance of the material, or the economic viability of including them in shipments of steel.

Providing the export is successful, other recycling businesses may also explore opportunities for baling steel cans and exporting them. Alternatively, GIO could act as an agent accepting steel cans. However, as no payment would be made for the commodity, there would not be enough incentives for recyclers to handle this material which potentially is large in volume. For this reason, any recyclers, particularly those looking to service the public recycling depots, need to be encouraged to invest in low cost baling equipment.

8. BIBLIOGRAPHY

Blue Scope Steel: *Recycling in the Steel Industry* [Online]. Available at http://www.bluescopesteel.com/corp/navajo/display.cfm

Connecticut Metal Industries Inc (2001): *Tinplate and Steel Can Recycling.* [Online]. Available at http//:www.recyclemetal.com/steel.htm

Spokane Regional Solid Waste System (1996): *Tin Can Recycling.* [Online]. Available at http://www.solidwaste.org/recdetin.htm

Steel Can Recycling Ltd: *Steel Can Recycling.* [Online]. Available at www.steelcans.co.nz

WSN Environmental Solutions: *Steel.* [Online]. Available at http://www.wasteservice.nsw.gov.au/dir138/publish.nsf/content/education-kids-facts-steel

Zero Waste SA (2003): *Steel Can Recycling Factsheet.* [Online]. Available at http://www.zerowaste.sa.gov.au/pdf/fact-sheets/steelcans.pdf