Vinyl-2-Life

The Australian PVC industry's waste management action plan

Prepared by the Vinyl Council of Australia
in conjunction with the PVC industry's
Product Stewardship Program

April 2006

PVC Product Stewardship Commitment

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Introduction

This document sets out the action plan agreed upon by Signatories to the Australian PVC industry Product Stewardship Program to enhance the recovery, reuse and recycling of PVC products at the end of their initial useful life. It is about giving PVC, or vinyl[1], products a second life and we have therefore named this action plan, "vinyl second life", represented by **Vinyl-2-Life**.

In 2004, the Department of Environment and Heritage as a contribution to the industry's Stewardship Program published a report, *The End-of-life Environmental Issues with PVC in Australia*, authored by John Scheirs. The report investigated and identified impediments to recycling PVC in Australia. It found some of the key impediments to PVC recycling were the limited quantities of end-of-life PVC available for recycling at present and as a consequence, the lack of available infrastructure for collection of long-life PVC products; the lack of industry schemes and initiatives aimed at encouraging higher recovery and recycling rates for specific PVC product types, and the lack of assurance of supply continuity in closed-loop recycling of PVC products.

"The presence of sustainable end markets for PVC recyclate and the availability of sorting processes and recycling technologies for PVC wastes are not considered barriers to its greater recycling" (p7).

A full list of the identified impediments is given in the report (p.7)[2]. It is important to note that many of the findings are not isolated to PVC recovery and recycling and would equally apply to many other materials and products.

Following from recommendations of this report, in 2005, the Vinyl Council of Australia on behalf of the Product Stewardship Program Signatories, commissioned Nolan ITU (now Hyder Consulting) to conduct an audit of PVC waste streams.

Because 95% of PVC products are durable applications such as pipe, flooring and cable, it is difficult to know how much product is entering the waste stream in any year as many remain in service for decades. The Nolan ITU project was designed to estimate the quantities of each PVC application reaching end-of-life now and into the future, based on each application's historical consumption and average life-time use in Australia.

PVC is criticised for having a low "recycling rate" (usually estimated at about 4-5%) but this is because the amount recovered and recycled in a year is being compared to that year's resin consumption volume rather than the volume of actual end-of-life PVC.

Nolan ITU's comprehensive analysis on the material is our best estimate of volumes of end-of-life PVC potentially available for recovery. It takes into account how much waste is likely to be available for recovery since in applications such as buried pipelines, the product – regardless of material - is usually left *in situ* and is unlikely to be recoverable.

The authors ranked the waste streams according to the amount of PVC available, the practicality of recovery, technical issues and current product stewardship considerations, to come up with a priority listing of PVC products for recovery (see Appendix I).

The following action plan is based on key findings of the Nolan ITU report and industry's current ability to influence the recovery strategy. We have not set out to tackle all PVC waste streams, but are targeting those with significant volume, or particular sensitivities from the

[1] PVC and vinyl are terms used interchangeably to refer to polyvinyl chloride.

[2] Copies of the report are available at www.deh.gov.au

community's perspective. Three key sectors have been identified: Construction, Packaging and Automotive.

The following **Vinyl-2-Life** plan identifies the key applications, a summary of the findings of the Nolan ITU report in respect of each application and the findings of the report by Scheirs, and the actions of industry Signatories for the next twelve months.

Vinyl-2-Life is about giving a second life to vinyl products that have served a useful first life. PVC products provide significant social benefit in key areas such as

- delivering clean water and providing safe sanitation,
- helping to deliver safe and fresh food,
- safely delivering major information, communication and electrical services;
- making our homes and buildings affordable and comfortable, through durable, low maintenance products.

Key issues

Key issues identified by the research conducted so far, and our current understanding of existing PVC waste, are recovery of co-mingled products and material, existing barriers and impediments (eg as per the Scheirs Report), community sensitivity and the volumes of end-of-life products available for recovery.

In some applications, such as cable and packaging, PVC scrap is being recovered but the material is exported to China. China imports significant quantities of scrap materials – especially plastics – from all over the world, as it has high demand for materials, low labour costs for segregating co-mingled material, and good economics for making reprocessing viable. This creates issues for domestic reprocessors – including PVC – who have to compete for the material based on a Chinese offer price.

Key parameters

We understand the generally accepted hierarchy for waste management solutions is (in descending preference) Avoid, Re-use, Recycle, Recovery of Energy, Containment, and lastly, Disposal.

This initial **Vinyl-2-Life** action plan focuses on the potential for PVC reuse and recycling. In terms of recycling, we understand the preferred hierarchy to be Closed Loop solutions (recycled into the same or similar product), Up-Cycling (recycled into more durable or valuable products), and lastly Down-cycling (recycled into short-lived or less valuable products).

Closed Loop PVC recycling may take the form of product being recycled by the Converters directly into the same or similar product again (eg end-of-life pipe being reground by pipemakers into new pipe products), or product being reprocessed into a PVC compound by a third party for use by Converters to manufacture the same or similar product.

Some PVC products contain lead or cadmium stabilisers. The Signatories have committed to phasing these out of new products; the use of cadmium stabilisers by Signatories ceased in 2004 and the use of lead-based stabilisers is being phased out by 2008 in pipe and 2010 in other products.

The phase out of these stabiliser systems is based on the recognition that although the products are safe, there are occupational, health and safety hazards in the manufacture of lead and cadmium stabiliser compounds and community concerns about environmental loads of these toxic heavy metals from all sources.

Nevertheless, the industry is committed to recycling old lead and cadmium stabilised product to reduce

the amount of such product going to landfill because the stabilisers can be encapsulated safely in new products with negligible risk of release to the environment. The industry believes that there is a safe recycling solution with priority given to recycling heavy metal stabilised product into a sandwich layer within a new product where feasible. Such recycling has been underway for a number of years with lead-stabilised pipe being recycled into multi-layer pipe.

Vinyl-2-Life is a long term commitment to reducing PVC waste and disposal. This action plan is the first in an on-going process of identifying the key sources of materials for recovery, and developing tools, infrastructure and resources for improved recovery. The plan sets out Signatories' commitments for an initial 12 month period. The industry will report on some of the plan's initiatives after 6 months, and expand the plan at the end of 12 months.

Construction Sector

Over half of the PVC resin consumed in Australia is used in building and construction products, such as pipes, conduit, cabling, flooring and profiles. Within the sector, interior applications appear to generate the highest volume of end-of-life material (flooring, profiles, cables) probably due to the more frequent churn of interiors compared to the building structure.

1. Cable

Background:
Approximately 7% of PVC resin in Australia is consumed in cable and wire applications. PVC is the most commonly used material for insulating electrical cables such as power cabling, data cables and domestic cabling. Such cable is both manufactured locally and imported. The PVC is commonly stabilised with tribasic lead sulphate and calcium zinc stabilisers and plasticised with phthalate plasticisers. PVC does not conduct electricity and is therefore an excellent material for electrical applications such as cable insulation sheathing. PVC insulated cable has an average service life of 35 years in buildings.

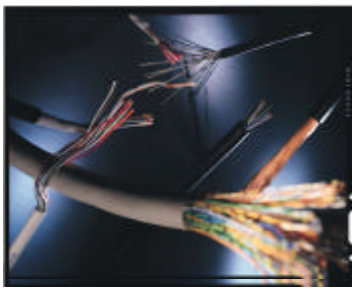
Recovery and recycling of PVC cable insulation has taken place in Australia for many years. A major proportion of the recovered cable, however, is being shipped offshore for reprocessing. The reprocessed PVC produced in Australia has largely been used in unrelated products such as hose and mudflaps, rather than in closed loop recycling.

Closed loop recycling of PVC cable insulation presents a number of challenges because of variations in compound depending on the producer and the insulation grade of the PVC cables collected. In addition, alternative, harder to recycle cable insulation materials may contaminate the recovered PVC scrap.

For recyclate to be re-used in new cable sheathing or insulation, it must meet stringent insulation and tensile property requirements in accordance with Australian or International Standards for cable. A compound produced from various types/grades of recycled cable may not be able to meet this, and separating cable scrap by grade and by polymer is unlikely to be achievable.

Nolan ITU findings:
Cable and wire insulation was identified as the top priority for improving recovery. The volume of general construction PVC cable and wire insulation entering the Australian waste stream currently was estimated at approximately 3,800 tonnes p.a[3]. Given the fact that there is existing infrastructure for collection and recovery of cable because the copper wire in cables is seen as a high value recoverable material, Nolan ITU was of the opinion there was reasonable potential for significantly improving the recovery and recycling of this PVC application.

Scheirs Report findings:
"Post-consumer PVC cable insulation is mechanically recycled in Australia each year at a level of approximately ~1500-2000 tpa…. substantial quantities of PVC cable strippings are still being landfilled or exported.



"It is recommended that awareness be increased amongst copper recyclers that the PVC insulation represents a valuable product that can be effectively reprocessed in its own right. In addition it is recommended that electrostatic separation

[3] This excludes cable and wire used in electrical appliances, which Nolan ITU estimated to be 6,700 tonnes.

technologies be employed to achieve better separation of PVC insulation from copper cables…

"Closed-loop or controlled loop recycling (e.g. cable to hose) is preferable in order to prevent dissemination of heavy metal stabilizers and other hazardous additives into the environment from products such as PVC cable" (p.59).

Vinyl-2-Life *Actions*:

Objective 1	Actions	Timeline
Investigate current recovery and recycling, including: • how effective is existing infrastructure? • what barriers to recovery exist? • what parties are/would be involved in recovery? • what programmes for recovery exist overseas and what are the better practices?	1. Develop pilot project to test feasibility of closed loop recycling of cable waste: • identify metal recycling partner • identify PVC recycling partner • coordinate recovery and recycling for three month trial period • measure and report progress	September 2006
	2. Identify other sources of PVC cable waste	September 2006
	3. Identify reprocessors/recyclers	September 2006
	4. Investigate overseas markets for scrap, and recycling technologies and practices	September 2006

2. Pipes

Background:
PVC has been used in Australia in a range of piping applications for over 40 years. Today, almost half of the PVC resin consumed in Australia is used in pipe and pipe fittings, practically all of which are manufactured domestically. The average life time use of PVC pipes is 60-70 years, with many pipe products today expected to last for over 100 years in service.

PVC pipe resin may be stabilised with lead-, tin-, organic- or calcium zinc-based stabilisers. The pipe is relatively easy to recycle as it can be reground by the pipemakers directly and the material reused in new pipe and fitting products. Recycling of old pipe has been taking place for some years in Australia on an *ad hoc* basis, as and when pipe is recovered and made available for collection and recycling. There is no consistent supply however, of used pipe material.

The Vinyl Council under the Product Stewardship Program conducted a trial with a major construction firm in 2002-05 to recover and recycle pipe offcuts from a Sydney construction site. The project demonstrated that very little pipe waste is generated in construction, but that it could be recycled easily into new pipe products.

Pipe recyclate may contain heavy metal stabilisers depending on the source material. In order to re-encapsulate these substances safely in new products and ensure the new products meet relevant performance Standards, the recyclate is usually used in a sandwich layer within multi-layer pipe or conduit.

In 2005, the Plastics Industries Pipe Association conducted a three month trial with Collex in Sydney to audit the amount of plastic pipes in construction and demolition waste recovered at a Collex recycling centre. The trial found that out of 96,000 tonnes of waste processed, 2.5 tonnes consisted of PVC pipe waste[4]. This waste material was recovered and recycled.

Nolan ITU findings:
Agricultural and Construction pipes accounted for a little over 5,000 tonnes of PVC waste in 2004. The small volume relative to the amount of PVC pipe manufactured over the past 40 years is a result of the long life of most PVC pipe systems and low availability of many pipe products because buried pipelines are rarely dug up for recovery.

Scheirs Report findings:
This report noted the fact "very little" PVC pipe is recovered from the ground although the volume varied according to geographic location. The report states that "the environmental impact of *in situ* disposal is considered to be minor given that PVC pipe does not biodegrade" (p.18).

The report noted that PVC pipe and conduit "is the next visible and recoverable component following the more voluminous bricks, timber, tiles and concrete" (p.58) and it is generally identified as to polymer type on the product. The Scheirs report suggested that pipemakers could offer to take-back end-of-life pipe products when installing replacement product. The report recommended further extending the trial project for collecting pipe-offcuts.

[4] More information available at http://www.pipa.com.au/docs/recycling.html

Vinyl-2-Life *Actions*:

Objective 2	Actions	Timeline
Develop a more consistent supply of pipe material for reuse/recycling	1. Extend the Collex trial to all Collex Sydney recycling centres	June 2006
	2. Extend the Collex trial to metropolitan Melbourne	September 2006

3. Profiles

Background:
A little over 10% of PVC resin is consumed in the manufacture of a wide range of profiles for the building industry. This includes conduit, window frames, architraves, cladding, fencing, light switches, channels, strips and guttering etc. These applications may be flexible or rigid PVC and the formulations will vary accordingly. Average life time use of profiles varies significantly according to application, with interior profiles averaging 5 years and exterior applications over 40 years.

Nolan ITU findings:
According to Nolan ITU's results, interior fit-out profiles, including conduit, account for the vast majority of building profiles waste. Nolan ITU estimated that nearly 30,000 tonnes of interior fit-out profiles were available for recovery in 2004 and that this will grow to over 50,000 tonnes a year by 2015. Other building profiles (windows, doors, fencing, cladding etc) accounted for 357 tonnes in 2004. In all Nolan ITU estimated that profiles represented 19.1% of the available PVC waste by application.

The results of the Nolan ITU analysis were surprising as the Scheirs report had found that profiles (*excluding* conduit) were not a major market in Australia and certainly the PVC windows and doors market here is small compared to overseas. The industry suspects that the large volume of interior profiles waste Nolan ITU estimated is based on the relatively high consumption of resin for conduit and that this application, in fact, has a much longer average life span than 5 years. If this is the case, we would not expect to find the volumes of waste Nolan ITU suggest are available.

Vinyl-2-Life *Actions*:

Objective 3	Actions	Timeline
Identify potential for recovering profiles by application type	1. Disaggregate the data in the Nolan ITU Report to better understand what products are included	June 2006
	2. Extend the NSW Collex pipe trial to include all uPVC[5] construction and demolition waste including profiles	September 2006
	3. Audit the waste stream to understand profile composition	December 2006
	4. Obtain data from the building and construction sector on average quantities of PVC in key building types	December 2006

[5] uPVC refers to unplasticised PVC i.e. rigid applications

4. Flooring

Background:
Vinyl floor sheet and tile account for almost 12% of PVC consumption in Australia. These products are both manufactured domestically and imported. PVC is the main plastic used for sheet and tile flooring and five million square metres of vinyl floor coverings are laid in Australia each year. Vinyl resilient flooring is widely used in Australian hospitals, sporting clubs and commercial kitchens where slip resistance and high levels of safety and hygiene are required. It has an average life time use of 15 years although is often still in service for much longer than this.

Floor coverings are usually stabilised with calcium zinc or tin-based stabilisers and plasticised with phthalate plasticisers.

There have been some small pilot projects in Australia conducted to take-back vinyl flooring installation offcuts for recycling by manufacturer Armstrong. Taking back end-of-life floor coverings is more problematic under existing demolition processes because of contamination from concrete and cement. In addition, unlike in Europe, there is only one manufacturer of vinyl floor coverings in Australia although a number of imported branded products is available.

Nolan ITU findings:
Nolan ITU estimated that over 29,000 tonnes of vinyl floor sheet and tile were available for recovery in 2004, representing 18.5% of all available waste. It forecast that the volume of this waste would rise 40% over the next ten years.

Scheirs Report findings:
This report noted the lack of well-administered voluntary and non-voluntary schemes/ initiatives aimed at encouraging higher recovery and recycling rates for products such as flooring (p.32). It noted that "The installers of new long-life PVC products (such as …flooring etc.) are well placed to take back and collect the end-of-life PVC for resale to recyclers…. The advantage of such initiatives is that it enables the collection of a readily identifiable single stream of PVC before it becomes too commingled with other building and demolition waste" (p.58). The report recommends that studies on collection and recycling feasibility of floor coverings be conducted.

Vinyl-2-Life *Actions*:

Objective 4	Actions	Timeline
Understand work currently being undertaken in Australia and overseas to assess feasibility for expanding recovery of floor coverings.	1. Identify potential recyclers/reprocessors of vinyl floor coverings both in Australia and overseas.	March 2007
	2. Develop a commitment with relevant Signatories to trial recovery of end-of-life flooring and installation offcuts when fitting new vinyl floor coverings.	March 2007

Packaging Sector

Packaging consumes around 5.5% of PVC resin in Australia. This includes rigid bottles, rigid sheet for thermoforming or blister packaging, and flexible films. Packaging applications have short life spans (< 1 year). Overall, Nolan ITU found that packaging applications accounted for 11.4% of all end-of-life PVC in 2004.

One issue that has been raised with respect to PVC packaging is the use of printed PVC sleeves on non-PVC containers. Although the sleeves may carry perforations for easy removal, if the sleeve is not removed by the consumer before disposal, it complicates the recovery of the container.

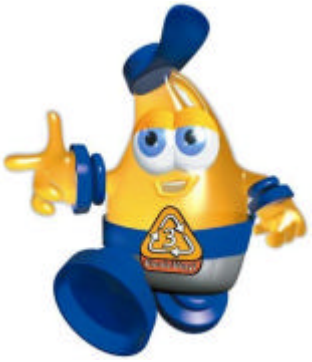
1. Bottles

Background:
Nearly 10 years ago, relevant members of the PVC industry formed the Vinyl Bottle Group in order to improve the recovery and recycling rate for PVC bottles under a program called Vinyl Cycle. This Group is a signatory to the National Packaging Covenant and has lodged Action Plans under the Covenant outlining its commitments and progress. Today, PVC bottles are included by many councils around Australia for kerbside collection and recovery.

Under the industry's Product Stewardship Program, relevant Signatories are committed to being signed up to, and maintaining compliance with, the National Packaging Covenant.

According to a survey by Hyder Consulting for the Vinyl Bottle Group (2004-05), the kerbside collection rate of PVC bottles is 55.5% of bottle consumption. Much of this collection is exported offshore for separation and recycling but 17% of the collected bottles are recycled locally. Demand for bottle recycle by local manufacturers of flooring and pipe products is strong and supply is insufficient.

The volume of PVC bottles used in the market is low - at about 3600 tonnes - compared to materials such as PET; however, PVC continues to be specified because of particular technical requirements which PVC alone meets. The key barrier for improved recovery and local recycling is the reluctance by Material Recovery Facilities (MRFs) to sort out the PVC rather than exporting it as mixed plastics waste, in part because of the small tonnage involved and the relatively strong price paid for export bales.



Nolan ITU findings:
Bottles were the second highest priority for recovery on Nolan ITU's list. Although the volume of PVC available from this source is comparatively low, this ranking reflects the fact there is established infrastructure for collection and recycling and high demand for the recycle.

Scheirs Report findings:
This report recommended that PVC bottles be positively sorted by MRFs using sophisticated sorting technology that is now available.

Vinyl-2-Life *Actions*:

Objective 5	Actions	Timeline
Support the Vinyl Bottle Group in continually enhancing recovery and local recycling of PVC bottles.	1. Actively engage with the Vinyl Bottle Group to support their activities	Ongoing
	2. Promote the view that sleeves/labels used on plastic containers be compatible with the container polymer for recycling purposes.	December 2006

2. Blister Packaging

Background:
PVC blister packaging scrap (post-industrial) is highly sought after for recycling as it can be more widely used than other product waste in long-life PVC products such as pipe. However, only a small proportion of product packaging using this material takes place in Australia; most of the material is imported with packaged consumer products.

Although other polymer blister packaging is used, it is expected that a reasonable proportion of blister packaging will be PVC.

Given the existence of the National Packaging Covenant, the potentially ready market for this end-of-life material and the volume estimated to be available, post-consumer blister packaging warrants further investigation to explore whether it can be included in future packaging recovery schemes.

Nolan ITU findings
Post-consumer blister packaging was found to account for 3.3% of the available end-of-life PVC in 2004 amounting to nearly 5,300 tonnes. This was significantly higher than industry had expected[6].

Vinyl-2-Life *Actions*:

Objective 6	Actions	Timeline
Investigate the feasibility of recovering PVC blister packaging.	1. Investigate existing commitments regarding blister packaging under the National Packaging Covenant	September 2006
	2. Gather data and information on the use of blister packaging in Australia, working with other stakeholders (Councils, retailers, packaging companies etc).	March 2007
	3. Investigate the technical feasibility and constraints in recovering and recycling PVC blister packaging.	March 2007
	5. Prepare a progress report December 2006	December 2006

[6] Nolan ITU acknowledges in the report that due to the highly dispersed nature of blister packaging the figures used in their analysis are an approximate estimate only.

Automotive Sector

Background:
PVC is used in a variety of applications within the automotive sector including in relation to car underbodies, interior trims and panels, seat covers and cable insulation and harnesses. Around 4% of PVC resin in Australia is consumed in this sector, consisting of both locally manufactured components and parts imported in imported vehicles. It is estimated that PVC accounts for 1-2% of a sedan car by weight and between 5% of the automotive shredder residues ('ASR', generally the plastics fraction of auto waste)[7].

The automotive sector has significance particularly in terms of market perceptions and community sensitivity. PACIA[8] has a project currently underway investigating plastics recycling from the sector.

Nolan ITU findings:
Nolan ITU estimates that approximately 6.5% of all available end-of-life PVC in 2004 was related to automotive applications, including interior trims, panels and profiles.

Scheirs Report findings
This report estimated a similar volume of PVC automotive waste to Nolan ITU and found that all ASR is currently landfilled. It recommended that government and industry conduct further work to quantify and characterise potential leaching from ASR in landfill and that research be undertaken to establish more appropriate alternatives to landfilling.

Vinyl-2-Life *Actions*:

Objective 7	Actions	Timeline
Investigate opportunities for PVC recycling in the automotive sector	Engage with PACIA in its project to investigate plastics recycling in the sector.	Ongoing for next 12 months

[7] John Scheirs, 2003, End-of-Life Environmental Issues with PVC in Australia
[8] Plastics and Chemicals Industries Association

Summary of Vinyl-2-Life *Action Plan*

Objective 1 Cables	Actions	Timeline
Investigate current recovery and recycling, including: • how effective is existing infrastructure? • what barriers to recovery exist? • what parties are/would be involved in recovery? • what programmes for recovery exist overseas and what are the better practices?	1. Develop pilot project to test feasibility of closed loop recycling of cable waste: • identify metal recycling partner • identify PVC recycling partner • coordinate recovery and recycling for three month trial period • measure and report progress	September 2006
	2. Identify other sources of PVC cable waste	September 2006
	3. Identify reprocessors/recyclers	September 2006
	4. Investigate overseas markets for scrap, and recycling technologies and practices	September 2006
Objective 2 Pipes		
Develop a more consistent supply of pipe material for reuse/recycling	1. Extend the Collex trial to all Collex Sydney recycling centres	June 2006
	2. Extend the Collex trial to metropolitan Melbourne	September 2006
Objective 3 Profiles		
Identify potential for recovering profiles by application type	1. Disaggregate the data in the Nolan ITU Report to better understand what products are included	June 2006
	2. Extend the NSW Collex pipe trial to include all uPVC[9] construction and demolition waste including profiles	September 2006
	3. Audit the waste stream to understand profile composition	December 2006
	4. Obtain data from the building and construction sector on average quantities of PVC in key building types	December 2006

[9] uPVC refers to unplasticised PVC i.e. rigid applications

Objective 4 Floor Coverings		
Understand work currently being undertaken in Australia and overseas to assess feasibility for expanding recovery of floor coverings.	1. Identify potential recyclers/reprocessors of vinyl floor coverings both in Australia and overseas.	March 2007
	2. Develop a commitment with relevant Signatories to trial recovery of end-of-life flooring and installation offcuts when fitting new vinyl floor coverings.	March 2007
Objective 5 Bottles		
Support the Vinyl Bottle Group in continually enhancing recovery and local recycling of PVC bottles.	1. Actively engage with the Vinyl Bottle Group to support their activities	Ongoing
	2. Promote the view that sleeves/labels used on plastic containers be compatible with the container polymer for recycling purposes.	December 2006
Objective 6 Blister Packaging		
Investigate the feasibility of recovering PVC blister packaging.	1. Investigate existing commitments regarding blister packaging under the National Packaging Covenant	September 2006
	2. Gather data and information on the use of blister packaging in Australia, working with other stakeholders (Councils, retailers, packaging companies etc).	March 2007
	3. Investigate the technical feasibility and constraints in recovering and recycling PVC blister packaging.	March 2007
	5. Prepare a progress report December 2006	December 2006
Objective 7 Automotive Products		
Investigate opportunities for PVC recycling in the automotive sector	Engage with PACIA in its project to investigate plastics recycling in the sector.	Ongoing for next 12 months

Glossary

Closed Loop recycling	Recycling a product back into the same, or a similar product
End-of-Life	The phase of a product's life cycle when it's original use ceases
Plasticisers	Additives used in PVC formulations to impart flexibility or softness
Product Stewardship Program	The Australian PVC industry's voluntary initiative setting commitments related to addressing environmental impacts of the PVC life cycle in Australia
PVC	Polyvinyl chloride, or vinyl
Resin	PVC powder before it is compounded with additives
Signatories	Companies in the PVC industry signed up to the Product Stewardship Program
Stabilisers	Additives used in PVC formulations to impart stability such as against UV damage or weathering
Vinyl	Polyvinyl chloride, or PVC

Appendix I

Table 7-1: Top-20 Prioritised PVC Products for Recovery

Rank	PVC Product	Market Sector	Application Group	Available (tonnes)	Priority Score
1	Cable & wire (general construction)	Construction - General	Cable & wire	3 830	3.60
2	Bottles	Packaging	Film & sheet - rigid	3 210	3.50
3	Agricultural pipe	Agriculture	Pipes & fittings	4 180	3.25
4	Profiles for interior fitout (inc. conduit)	Interior Fit Out	Profiles (building)	29 960	3.20
5	Cable & wire (electrical appliances)	Electrical & Electronic	Cable & wire	6 730	3.20
6	Floor - sheet	Interior Fit Out	Flooring	17 490	3.05
7	Cling film & stretch wrap	Packaging	Film & sheet - flex.	10 070	3.00
8	Pipes & fittings - drainage	Construction - General	Pipes & fittings	160	2.95
9	Pipes & fittings - drinking water	Construction - General	Pipes & fittings	320	2.95
10	Pipes & fittings - miscellaneous	Construction - General	Pipes & fittings	610	2.95
11	Pipes & fittings - industrial	Industrial	Pipes & fittings	250	2.95
12	Interior trim, panels, other films & sheet	Automotive	Film & sheet - flex.	5 180	2.90
13	Blister & blow-moulded packaging	Packaging	Film & sheet - rigid	5 290	2.90
14	Floor - tile	Interior Fit Out	Flooring	11 670	2.85
15	Cable & wire (automotive)	Automotive	Cable & wire	130	2.80
16	Information & power systems cables	Industrial	Cable & wire	560	2.80
17	Agricultural hose	Agriculture	Flex. Hoses/profiles	540	2.70
18	Pipes & fittings - sewage	Construction - General	Pipes & fittings	320	2.65
19	Automotive profiles	Automotive	Flex. Hoses/profiles	4 600	2.60
20	Garden and other domestic hoses	Household /consumer	Flex. Hoses/profiles	970	2.50
TOTAL				106 070	-

Source: National PVC Waste Audit, Final Report, December 2005, NOLAN-ITU Pty Ltd (now Hyder Consulting).