



NSW Waste Reduction & Purchasing Policy Biennial Progress Report 2005

For NSW Roads and Traffic Authority

2005

Agency Progress Report

PART A: GENERAL AGENCY INFORMATION

◀ A1 ▶ Agency Details

Name of Agency:	Roads and Traffic Authority (RTA)
Name of Minister:	The Honourable Joseph Guerino Tripodi MP
Name of Agency Head and Title:	Mr Mike Hannon Acting Chief Executive
Signature of Agency Head:	
Agency postal address:	Centennial Plaza 260 Elizabeth Street Surry Hills 2010 PO Box K198 Haymarket 1238

◀ A2 ▶ WRAPP contact responsible for preparing the report

Name:	Nargis A Banu		
Position:	Environmental Officer		
Branch/Division:	Environment Branch		
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◀ A3 ▶ Report Scope

Agency locations or entities covered by the report:	Total number of full time or equivalent staff in each location/entity:
Roads and Traffic Authority	The RTA employs about 6869 staff in more than 180 offices, including 131 motor registries (Source: 2005 RTA Annual Report)

PART B: KEY RESULT AREAS

● B1 ● Including the WRAPP in plans and policies

a ● Have WRAPP principles been included in your:

Plan/Policies	Yes	No
Corporate Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Purchasing Policy	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Environmental Management System	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other, (please describe): [_____]		

If WRAPP principles not included in relevant plans and policies, please outline the reasons why:

b ● List any policies, plans or systems in your agency where WRAPP principles were incorporated since your last WRAPP report. Please give a brief outline of the initiative.

In following areas, RTA has taken many new plans, systems or initiatives since last report where WRAPP principles were incorporated.

1. Purchased office papers and other office consumables
2. Revised some RTA specifications
3. Undertaken research and development
4. Increased staff awareness
5. Improved waste avoidance, reuse and recycling

Details of those initiatives have been illustrated throughout this report.

◀ B2 ▶ Including the WRAPP in relevant contracts

- a ▶ Is the requirement or incentive for recycled content products and materials included in any of the following contracts used by your agency?

Contract	Yes	No	Govt Contract	Not Applicable
Bulk paper	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stationery supplies	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Printers, Facsimiles, Consumables	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Printing (eg publications)	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>
Landscaping materials	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Building materials	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>

If your agency has not included a requirement or incentive for recycled content into any of these contracts please outline the reasons why:

1. **Bulk Paper** – The RTA did not include a requirement or incentive for recycled-content A4/A3 printer copier paper during the 2003/04 and 2004/05 financial years. However, arrangements have been made under the centralised office consumables contract for the mandatory supply of 50% recycled content A4 Australian-made paper for all A4 paper orders. This arrangement commenced in August 2005.
2. **Stationery Supplies** – There is no requirement to use recycled-content stationery supplies such as notebooks etc. Recycled paper pens are now being hard-substituted for all pen orders.
3. **Printers, Facsimiles, Consumables** – printers, facsimiles and copiers are mostly leased under State Procurement Contract 2308. Consumables for printers/faxes/copiers are supplied under the centralised office consumables contract with Corporate Express. RTA imposes no requirements for recycled content under either of these supply contracts.
4. **Printing/Forms/Publications** – All printed envelopes are required to have a high percentage of recycled content. Besides envelopes, there was no incentive/policy relating to the use of recycled content materials. The RTA printing contracts are currently under review, including potential incorporation of environmental considerations/requirements.

- b ▶ What other supply contracts does your agency use that include a requirement or incentive to purchase recycled content products and materials?

Washroom Products

The RTA generally supplies hand towels and toilet paper for the major metropolitan buildings. The paper used is not recycled, however the waste hand towels are recycled. The RTA will arrange for recycled-content hand towels and toilet paper to be trialled.

Construction/Maintenance Contracts

Refer to the discussion within Section B4 regarding the RTA's overarching requirement for contractors to propose recycled content materials, which is accompanied by a range of material specifications that allow for certain amounts of recycled content.

Glass Road Line Marking Beads

Glass beads are used in road marking applications to provide night time visibility. These beads are manufactured from recycled glass.

❶ B3 ❷ Waste Avoidance and Recycling

- a ❶ Please tick the following waste avoidance and recycling practices which are commonly used across the majority of your agency?

Avoidance	Yes	No
Double-sided printing	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Reuse of single-sided paper for drafts, notebooks etc	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Extensive use of email to replace printed material	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Intranet and electronic publishing	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Extending normal office refurbishment cycles	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Accurately estimating material quantities needed (to avoid waste)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ordering materials in standard sizes to minimise off-cuts and waste	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Recycling	Yes	No
Paper recycling system	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cardboard recycling system	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Toner cartridge collection	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Collect reusable products for future use	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Suppliers take back packaging for recycling	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Recycling of containers e.g. glass bottles, aluminium cans, PET	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Reuse of spare resources from one project to another	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Reusing, mulching or composting vegetation waste	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Establishing a worm farm(s) to recycle small amounts of organic matter	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Notes:

- **Office refurbishment** – RTA Facility Management arranges office refurbishments on an “as needed” basis. Funding is provided for building maintenance fit-out works based on priority. Refurbishment is carried out at the end of useful life of the respective office elements. Furniture is reused wherever possible. Where reuse is not possible, the furniture is collected for dismantling and recycling wherever possible. In most cases where carpet requires replacement, it is replaced with carpet tiles unless this is not acceptable to the lessee.
- **Cardboard recycling** – approximately half of RTA sites have some form of cardboard recycling.
- **Collection of reusable products for future reuse** – 36% of registries indicated in survey responses that they collect reusable products for future use.
- **Recycling of containers** – only 25% of registries indicated in survey responses that they have container recycling services.
- **Reuse of spare resources from one project to another** – only 34% of registries indicated in survey responses that they reuse spare resources from one project to another. This figure did not include road construction and maintenance projects resources.

b) List any new initiatives undertaken by your agency in this reporting period to improve waste avoidance, reuse and / or recycling? Please outline initiatives, results, issues and barriers.

The response to this question is divided into office, publications and construction/maintenance categories.

OFFICE WASTE AVOIDANCE, REUSE AND RECYCLING

Initiative	Results	Issues/Barriers
<p>Office waste collection/recycling The RTA has enhanced its system for collection of the following office wastes for reuse/resale/recycling:</p> <ul style="list-style-type: none"> • Printer/copier/fax consumables such as bottles, drums and ribbons. • Broken chairs/furnishings. • Perspex screens from registries. • Office consumables such as floppy disks, ring binders, folders, video cassettes. • Packaging materials from IT and other deliveries to offices (cardboard, plastics, polystyrene). • Used paper hand towels from toilets of main offices in Sydney are collected and sent for recycling. Plastic bags used to transport used paper hand towels to a central warehouse are emptied and then sent to a plastics recycler. 	<ul style="list-style-type: none"> • The RTA collected and sold 699 toner cartridges for remanufacture during 2004/05. • An additional 2,060 kg of printing materials such as toners cartridges, bottles, drums and ribbons were collected from around the state and sent for recycling. • Approximately 2 tonnes of steel were recovered from various items for recycling. 	<ul style="list-style-type: none"> • Collection of bulky recyclable wastes from regional sites is not regular and systematically capturing all wastes. • Free recycling service for polystyrene wastes no longer exists. Cost-effective recycling service difficult to find. • Items that cannot be recycled need to be sent to landfill.

<p>Green Business Program</p> <p>The RTA conducted a "Green Business" trial at the Five Dock Motor Registry to promote staff environmental awareness, reduce operational costs and improve waste/energy/water efficiency. The intent was to establish a pilot trial of various measures for subsequent expansion across additional registries.</p>	<ul style="list-style-type: none"> • Trial outcomes indicated that recycling increased and energy/water usage could be reduced. • The project received the Gold Award in the Green Business Category of the City of Canada Bay Council's 2004 Green Citizens Awards. • Educational material, including a green business tool based on checklists, was developed and piloted prior to evaluating successes/shortcomings and adapting the program to enable an RTA-wide rollout. 	<ul style="list-style-type: none"> • Senior management has requested a delay in the wider RTA rollout of this program across additional registries until mid-2006 because of operational and funding issues.
<p>Office paper waste collection</p> <p>New cleaning contracts were rolled-out across NSW, requiring cleaners to separate recyclables from office waste streams.</p>	<ul style="list-style-type: none"> • These new cleaning contracts have been established wherever feasible. 	<ul style="list-style-type: none"> • The contracts don't capture waste/recycling quantities for WRAPP reporting. A targeted audit of a small number of representative sites is undertaken to derive waste paper recycling quantities/rates for WRAPP reports. This has cost implications. • Some local country councils are now providing recycling bins.
<p>Multifunction Printing Devices</p> <p>Managed print services will see a multifunction print platform deployed across the RTA. This change to printing services was under development in 1 July 2005.</p>	<ul style="list-style-type: none"> • Reduction of print devices, floor space requirements, less noise, less energy requirements. Better staff services. 	<ul style="list-style-type: none"> • Staff uptake of new services. Technical capability of the RTA to deliver benefits of all services a Multi-Function Device can deliver.

<p>Print Waste Reduction Print waste reduction strategies including deployment of default duplex printing settings, electronic-forms and staff awareness campaigns. This initiative was under development by 1 July 2005.</p>	<ul style="list-style-type: none"> This initiative is expected to reduce - by at least one-third - the 65 million prints the RTA generates annually. Better services to staff, streamlined processes. 	<ul style="list-style-type: none"> Staff uptake of new service. Internal technical capability to deliver new services.
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- b) List any new initiatives undertaken by your agency in this reporting period to improve waste avoidance, reuse and / or recycling? Please outline initiatives, results, issues and barriers.**

PRINTING, FORMS AND PUBLICATIONS

Initiative	Results	Issues/Barriers
<p>Printing/Forms/Publications Initiatives: Motor registries were asked to:</p> <ul style="list-style-type: none"> destroy and recycle any old paper stock/publications wherever possible. maintain a smaller amount of stock stock/publications held at the registry. 	<p>Publication Initiatives: As a result of maintaining a smaller amount of stock held by the motor registries, there was less stock to write-off and less waste when a publication is updated.</p>	
<p>RTA Internet Site The RTA was an early adopter of web technology and has established wide-ranging Internet and Intranet sites. The Internet site provides public access to RTA publications in an electronic format, avoiding the need for a paper copy and a trip in to the registry. Online services include renewal of vehicle registration, ordering of customised number plates, booking a licence test and an interactive practice test of road rules. Numerous information sources such as annual reports, educational materials, safety brochures and environmental impact statements are also available on the website</p>	<ul style="list-style-type: none"> Increased use of Internet-based customer service reduces paper-based communications and reduces need for customers to visit RTA Motor Registries. There is the potential to avoid many tonnes of paper usage if customers choose not to print downloaded documents. 	

<p>RTA Intranet Site The RTA's Intranet site is a key tool for internal RTA communications with document search, corporate news, phone directories and other information available online, reducing the need for paper documents. An improved Intranet site has been completed to provide better internal communication.</p>	<p>Increased use of Intranet for internal communications has reduced the need for printed materials. Examples include Human Resources Notices, team briefings, press clippings, staff news items. We have been able to reduce the print numbers of the staff magazine <i>Momentum</i> and Business Reform bulletins are all on-line.</p>	<ul style="list-style-type: none"> • It takes time to change people's behaviour to accept publications in electronic format when they may have a preference for hard copy. • Another barrier is the fact that not all employees of the RTA have access to the Intranet.
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b) List any new initiatives undertaken by your agency in this reporting period to improve waste avoidance, reuse and / or recycling? Please outline initiatives, results, issues and barriers.

ROAD CONSTRUCTION AND MAINTENANCE

Initiative	Results	Issues/Barriers
<p>RTA Specifications The following RTA specifications (available at www.rta.nsw.gov.au) have been revised during 2003-2005 to further promote the recycling of onsite materials, or avoidance of waste.</p> <ul style="list-style-type: none"> • RTA R178 Specification requires reuse of disturbed topsoil for revegetation. • RTA QA Specs M317 Landscape Maintenance and M318 Landscape Restoration require reuse of cleared vegetation materials, with any shortfall made up by waste woodchips. • RTA G40 Specification requires that all cleared vegetation, except weeds and exotics, should be recycled and be reused on site whenever possible. • RTA R103 Specification allows for the use of high pressure water blasting to restore the surface of sprayed bitumen seals. This provides an environmentally preferable alternative to other maintenance methods. • RTA environmental protection specifications G34, G35 and G36 requires contractors to report on quantities of certain wastes and material purchases. G35 and G36 require contractors to report on barriers to 	<p>The reporting process for maintenance contracts (under G34) is established and providing useful information for WRAPP</p>	

waste minimisation and use of recycled-content materials.	reporting. However, RTA is currently reviewing the process of the data collection from major projects to ensure that specifications requirements are met.	
<p>Research and Development</p> <p>The aim of the RTA's Research and Development (R&D) program is to acquire, transfer and apply knowledge, leading to new materials, products, devices, processes or services.</p> <p>This report will not discuss specifics of the RTA's general R&D program, however R&D projects with a waste minimisation focus are discussed later on within this report.</p>	<p>RTA's general R&D program may have direct or indirect benefits for waste minimisation.</p> <p>R&D projects may also specifically target waste minimisation.</p>	
<p>Project-level waste minimisation</p> <p>Individual construction and maintenance projects provide numerous examples of waste minimisation at the project-level.</p> <p>Example – Cross City Tunnel</p> <p>The Cross City Tunnel had a target to reuse 93 per cent of spoil generated, which represents 100 per cent of virgin excavated natural material (VENM). VENM spoil is associated with tunnelling, hard ground cut and cover and shaft excavation. The remaining spoil includes fill and other excavated material that is not suitable for reuse. Reuse destinations included rehabilitation and remediation at various sites (including quarries, landfills and service stations), road and other construction projects and onsite reuses.</p> <p>1,143,408 m³ of spoil was generated during the life of the project. 8,019 m³ (0.7 per cent) of this spoil was reused onsite, 1,065,028 m³ (93.1 per cent) was reused offsite and 70,361 m³ (6.2 per cent) was disposed to landfill.</p>		

<p>Light Emitting Diode (LED) Traffic Signals The RTA now uses energy efficient Light Emitting Diode (LED) technology at newly-signalised intersections. The technology is also being used to replace older incandescent traffic signal technology.</p>	<ul style="list-style-type: none"> • Significant energy and cost savings compared to older incandescent technology. • Significantly increased lamp lifespan leads to reduced wastes and reduced planned/emergency maintenance requirements. 	
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◀ B4 ▶ Increasing the range of recycled content products and materials purchased

In your reporting year please identify:

a ▶ Any new products and materials purchased with recycled content

1) Office Purchasing

RTA staff have an increasing range of recycled, re-manufactured and environmentally-friendly products available for purchase under the centralised office consumables supply contract. New environmentally-friendly products purchased between January – June 2005 are highlighted within the table below.

“Environmentally-friendly” office consumables first purchased 2nd half 2004/05

Item Description
ENVIRONMENTALLY FRIENDLY BATHROOM CLEANER
CUP DOUBLE WALL HOT -93% fully biodegradable and fully recycled
RECYCLED POCKET ENVELOPES
COMPATIBLE REMANUFACTURED TONER CARTRIDGE SUIT HP & CANON
ENVIRONMENTALLY FRIENDLY TELEPHONE AND SURFACE CLEANING WIPES
CUP RIPPLE WRAP HOT -93% fully biodegradable and fully recycled
100% RECYCLED COPY PAPER
AUSTRALIAN MADE RECYCLED OFFICE PADS
RECYCLED STORAGE BOX
E-BALL BALLPOINT PEN – BODY MADE FROM 70% RECYCLED MATERIALS
RECYCLABLE FILING BOX MAXIMISER
ANTIBACTERIAL ENVIRONMENTALLY FRIENDLY SPRAY ON CLEANER
NOTEBOOK TWIN WIRE NATURAL COVER – MADE FROM 80% RECYCLED PAPER

Fifteen percent of office consumable expenditure during the first half of 2004-05 was from the “environmentally friendly” range offered through the centralised office consumables supply contract. The percentage of recycled-content A4 paper purchased by the RTA increased to 9.9% during 2004-05 and is expected to increase significantly during the 2005-06 financial year due to mandatory purchasing of 50% recycled A4 paper from August 2005.

2) RTA Publications/Forms Purchasing

Printed envelopes contained higher recycled content rates during the 2004/05 financial year.

3) Construction and Maintenance Purchasing

Refer to discussion of R&D projects and specification changes within point (d) below for an overview of RTA-wide efforts to allow for the use of additional types of materials with recycled-content. Due to the decentralised project management of numerous road construction and maintenance projects, this report will not attempt to collate and report on the innovative use of various new recycled materials at the project level.

b) Where the quantity of recycled content products and materials purchased has increased from the previous report

Products/materials	Total Quantity (previous report)	Total Quantity (during 2004/05)
A4 paper	6% (5,344 reams)	9.9% (7,578 reams)
Toner cartridges	0.2% (18 items)	0.4% (35 items)
Envelopes	59.4%	99.4%
Concrete	Unknown	Estimated at 90% (686,000 tonnes)
Landscaping materials	79% (316 tonnes)	78% (3,900 tonnes)

Notes:

- Assuming that 90% of pavement concrete contains fly ash, averaging 3.4% of the total concrete mass. Figure is only for concrete used within pavements and no other concrete uses are included. Data was not available for all construction and maintenance projects including some major projects.
- Total quantity of landscape materials purchased was 400 tonnes during 2002-2003. However, in 2004-2005, total quantity of landscape materials purchased was 4,500 tonnes. It is noted that calculation of total materials purchased in last report was based on single data source, however this year figure was calculated based on various data sources.
- Total quantity of envelopes within the previous WRAPP report (and reported above) only included un-printed envelopes purchased under the centralised office consumables supply contract.

c) Where the quantity of recycled content products and materials purchased has decreased from the previous report

Products/materials	Total Quantity (previous report)	Total Quantity (during 2004/05)
Printing and publications paper	28% (102 tonnes)	13.9% (39 tonnes)
Post-it Notes	4.87% (117 packs)	2.1% (46 packs)
A4 Pads and notebooks	5% (514 items)	3.7% (525 items)
Asphalt	72% (260,000 tonnes)	39% (281,000 tonnes)

Notes:

- No data is available for the recycled content of VENM/Fill materials.
- Printing and publications paper excludes all printed materials that were not produced under the RTA's centralised printing contracts. Exclusions include Environmental Impact Statements. The current move to bring all RTA printed materials under centralised contracts will increase the accuracy of RTA's future reporting of printing/publications paper reporting under WRAPP.
- Total quantity of "printing and publications paper" within the previous WRAPP report (and reported above) included printed envelopes. The total quantity of "printing and publications paper" for 2004/05 does not include these envelopes.
- In the previous report, total quantity of asphalt with recycled content was estimated based on a representative sample. Data collection processes have improved and current data is more reliable.

d) Any initiatives undertaken by your agency to ensure or increase the purchase of recycled content materials?

Specification Development

The following **RTA specifications** have been introduced or revised during the reporting period to increase the use/purchase of recycled content materials within construction and maintenance works:

- **RTA environmental protection specifications G35 and G36** for construction works - require contractors to propose recycled-content materials where cost and performance competitive and at least the environmental equivalent of the non-recycled alternative. The cost-competitiveness of a product or material must be assessed on a project lifecycle basis, considering issues such as impacts on construction practices and future maintenance and disposal requirements. Contractors are also required to report waste minimisation quantities, initiatives and barriers to the RTA. The RTA is yet to implement procedures to ensure that contractors comply with this reporting requirement.
- **RTA environmental protection specification G34** for maintenance works – requires contractors to propose materials and products with recycled content where cost- and performance-competitive and environmentally preferable to the non-recycled alternative.
- Other key specifications introduced/revised during the reporting period and **allowing** for the use of recycled materials, or greater material recyclability at end-of-life, include:
 - **RTA specification R50 Stabilisation of Earthworks** allows for the use of slag/lime blends for stabilisation of earthworks.

- **RTA specification 2380 Timber for Bridges** has been revised to minimise the use of treated timbers.
- **RTA specifications G38 and G39 Soil and Water Management** specifications allow for the use of recovered water for road projects.
- **RTA specification R116 Asphalt (Dense Graded and Open Graded)** permits contractors to use up to 15% recycled asphalt within new asphalt mixes. A Technical Direction was being developed during the reporting period, allowing up to 20% recycled asphalt within certain asphalts. This Technical Direction was released in August 2005. Further increases in recycled content will be considered when performance implications of the current amendment are demonstrated.

New Procedure for Evaluation of Innovative Technologies

The RTA has developed a procedure "*Management of Innovative Technologies*", which provides a consistent and efficient framework for managing the evaluation of any innovative technologies that are proposed to the RTA on an ad-hoc basis. The application of this procedure should result in:

- Selection of the most appropriate and effective innovative technology for use in building and maintaining infrastructure assets at minimum cost;
- Provision of more effective technology transfer and communication within the RTA regarding the capabilities of innovative technology; and
- Prompt implementation of worthwhile new technology.

A successful application under this procedure may result in the product being eligible for purchase for RTA activities and may lead to changes to current specifications, policies, documents or technical instruments.

Research and Development

Various **Research and Development** programs have been undertaken to increase the purchase of recycled content materials in RTA's construction and maintenance activities:

- **Using Recycled Crushed Glass Within Concrete:** This is a partnership project to be delivered by DEC and RTA to assess the performance of recycled glass fines as partial cement, sand and aggregate replacements within concretes used for pavement construction and related civil works. This project provides an agreed framework for trialling and assessing the technical and economic performance of recycled crushed glass fines in low-strength low-risk concrete pavements.
- **Scrap Rubber Asphalt (SRA):** This joint project with DEC commenced in 2003 to develop a Code of Practice for the manufacture and handling of asphalt containing scrap rubber granulate and to promulgate the commercial application of scrap rubber asphalt (SRA) technology. The Code of Practice is expected to provide an industry-wide standard to assist in reducing the current barrier preventing use of this valuable and technically-proven technology, which would then be adopted for RTA activities where technically/economically preferable to non-SRA alternatives.
- **Steel Slag in Pavements:** Bound pavements incorporating steel slag are becoming a major pavement type in rehabilitation and widening projects for the RTA. A report on the benefits and safeguards for use of these materials was

produced during 2003. An RTA Technical Direction is being drafted on the use of steel furnace slag within asphalt.

- **Manufactured Sands:** Traditional sources of natural sands are rapidly diminishing, so there is an increasing need to consider alternative materials such as industrial by-products and recycled materials. It is expected that the RTA's current R&D project will result in revised specification acceptance criteria and test procedures for natural and manufactured sands for asphalt and concrete mixes. Key test procedures have been established and trialled. More extensive testing is now in progress.
- **Use of RAP and Recycled Crushed Concrete (RCC) in Flexible Pavement:** A heavily bound recycled pavement material consisting of RAP and RCC as a substitute for roller compacted concrete has been developed and trialled on Reservoir Rd Blacktown. This mix is gaining favour with industry and is being used on several RTA projects, including the M7 Motorway. A new brick/RAP blended material for use as a select sub-grade material has proven to have superior properties to conventional material such as sandstone. The RAP/RCC R&D project ensures that quality of recycled materials is maintained by adherence to specification requirements and sound pavement design principles to ensure long term pavement performance.
- **Use of recycled organic products:** A research partnership has been established with DEC and a university to assess the performance of recycled organics in roadside landscaping.

Case Study - Collaboration with Industry to Develop a Stabilised Recycled Road Base Material

RTA projects in the Sydney area commonly use lean rolled concrete (LRC) as a road pavement sub-base layer for heavy-patching and intersection widening works where overnight construction is essential. LRC is a relatively dry lean concrete mix and is compacted using smooth drum rollers. The LRC sub-base is the bottom layer of the pavement and it is critical to the life of the pavement as a whole.

The working time for LRC (including spreading and compaction) is limited due to the use of cement as a binder. On projects this working time was often exceeded due to unforeseen construction delays. A bound material with similar structural properties to LRC and with an extended working time was needed.

An engineered material manufactured by Boral Resources utilising recycled crushed concrete (RCC) and reclaimed asphalt pavement (RAP) was selected and trialled as a stabilised pavement layer using a slow setting cementitious binder [slag/lime blend] as the stabilising agent. Boral Resources in collaboration with RTA conducted several laboratory trial mixes and a suitable blended mix was selected. Subsequently, a field trial was conducted to assess the performance of the blended stabilised material as a pavement layer under heavy loading condition. The blended material complies with RTA Specification 3052 and stabilisation is carried out in accordance with RTA Specification R73. The traditional use of LRC for heavy patching and intersection widening works is being replaced with use of the new stabilised blended material within the Sydney area.

Project-Level Selection of Pavement Materials

RTA environmental protection specifications G34, G35 and G36 provide overarching requirements for contractors to propose recycled content materials. Various standard RTA materials specifications support this overarching requirement by allowing for the controlled use of recycled content materials in specific applications.

Pavement designs/materials for RTA projects are selected as follows:

- RTA Pavements Section provides a pavement design report, which includes at least one design option that utilises recycled materials.
- RTA Project Managers decide on the pavement design option (including material types) for inclusion within tender documents.
- Tendering contractors may propose pavement materials that differ from the RTA’s tendered design. Such proposals are sent to RTA Pavements Section for advice/approval.
- RTA Project Managers make the final selection on pavement design and may accept the tendering contractor’s alternative design if it has been approved by the RTA Pavements Section.
- Project Managers mostly base their pavement material decisions on up-front costs.

Current barriers to maximising the use of recycled pavement materials up to the limits allowed by RTA’s standard materials specifications include:

- Cost implications.
- Prior project knowledge/experience of decision-makers.
- Incomplete knowledge of recycled materials properties, longer-term performance and availability.

“Environmentally-friendly” Office Consumables

Various “environmentally-friendly” office consumable products are available for purchase under the centralised office consumables contract. These products are highlighted with a special “EarthSaver” logo within the Internet-based ordering system.

◀ B5 ▶ Staff awareness of WRAPP

a ▶ In your reporting year has your agency undertaken any of the following WRAPP staff awareness initiatives:

Initiative	Yes	No
WRAPP Plan and Progress Reports are placed on intranet for staff access	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Distributed WRAPP related messages through email or on notice boards	<input type="checkbox"/>	<input checked="" type="checkbox"/>
WRAPP included at inductions and at other relevant staff training	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Publicise WRAPP achievements within the organisation	<input checked="" type="checkbox"/>	<input type="checkbox"/>

b ▶ Please outline any other innovative WRAPP awareness / learning activities your agency has undertaken.

Office Activities

- The RTA conducted a Green Business Program pilot trial at Five Dock Motor Registry to investigate environmental improvements that could be implemented for all motor registries across the state. The trial was publicised within the internal staff

magazine. Trial outcomes indicated that energy and water usage could be reduced and recycling increased. This project received the Gold Award in the Green Business Category of the City of Canada Bay Council's 2004 Green Citizens Awards. Roll-out of this trial across further registries will likely commence mid-2006.

- During the preparation of this report, all Motor Registries were surveyed regarding their waste minimisation and recycled materials purchasing practices. WRAPP and energy efficiency educational material was issued with the surveys.
- RTA needs to increase its efforts to educate staff and provide formal policy direction on office waste minimisation and use of recycled materials.

Promoting Awareness of Recycled Pavement Materials

RTA's current methods of informing decision makers of factors relevant to use of recycled materials/products within road pavements are as follows:

- Short state-wide training courses are offered.
- Technical Directions - such as the recent Technical Direction to allow controlled use of up to 20% RAP within asphalts.
- RTA Asset Managers' meetings.
- Two-day pavement workshops (regionally) each year.
- Specification workshops - 5 to 10 per year around the regions.
- A monthly Project Service Network meeting involving all regions has been proposed. This network would link in with the Road Asset Managers' meeting quarterly.
- Word passes around within industry if a material has clear benefits over others - such as Boral's EnviroBlend, EnviroPave or Superfill products.

PART C: WASTE DATA

■ C1 ■ PAPER AND OFFICE PRODUCTS

- Complete **all** categories - if none generated or recycled, please mark as "0" or "Nil"
- See Attachment 1 for definitions

Material	Total Quantity Generated	Total Quantity Recycled	Comments (if applicable) <small>Additional space for comments pg20</small>
A4 & A3 white paper	124 Tonnes	105 Tonnes	See comment 1 below
All other office paper	319 Tonnes	220 Tonnes	See comment 2 below
Cardboard	50 Tonnes	43 Tonnes	See comment 3 below
Used toner cartridges	8,775 Cartridges	2,134 Cartridges	See comment 4 below
Computer Processing Units (CPUs)	664 No. of Units	664 No. of Units	See comment 5 below
Computer monitors	424 No. of Units	424 No. of Units	See comment 6 below
Other, Please specify: Number Plates collected at Motor Registries	231 (steel) 130 (alum.) Tonnes	231 (steel) 130 (alum.) Tonnes	

■ C2 ■ VEGETATION, CONSTRUCTION AND DEMOLITION MATERIALS

- Complete **all** categories - if none generated or recycled, please mark as "0" or "Nil"
- See **Attachment 1** for definitions

Material	Total Quantity Generated		Total Quantity Recycled		Comments (if applicable) Additional space for comments pg20
Vegetation waste	23,400	Tonnes	19,900	Tonnes	See comment 7 below
Concrete	11,700	Tonnes	7,600	Tonnes	See comment 8 below
Fill	unavailable	Tonnes	unavailable	Tonnes	See comment 9 below
Asphalt	195,000	Tonnes	187,000	Tonnes	See comment 10 below
Timber	unavailable	Tonnes	unavailable	Tonnes	See comment 11 below
Virgin Excavated Natural Material	3,925,000	Tonnes	3,335,000	Tonnes	See comment 9 below
Bricks and roof tiles	unavailable	Tonnes	unavailable	Tonnes	See comment 11 below
Glass	unavailable	Tonnes	unavailable	Tonnes	See comment 11 below
Plasterboard	unavailable	Tonnes	unavailable	Tonnes	See comment 11 below
Steel	unavailable	Tonnes	unavailable	Tonnes	See comment 11 below
Non-ferrous metal	unavailable	Tonnes	unavailable	Tonnes	See comment 11 below
Mixed waste	unavailable	Tonnes	unavailable	Tonnes	See comment 11 below
Other, Please specify:	-	Tonnes or, specify: []	-	Tonnes or, specify: []	

Comments:

1. The total amount of A3/A4 paper waste calculated based on a waste paper and cardboard audits. This audit was intended to take a representative sample of waste at seven RTA facilities (offices and motor registries), revisiting sites that were audited prior to last WRAPP biennial report. The audit results indicate that the degree to which these policies are implemented varies between the sites audited. The audit team recorded the weight and volume of waste generated over a one day period and the results were combined into the WRAPP categories. The amount of A3/A4 paper generated per staff member per day was calculated for each site and then total annual A3/A4 paper recycling quantities was estimated. About 85% of A3/A4 paper was recycled across RTA. Three largest office buildings, Centennial Plaza, Blacktown and Parramatta generated lowest amount of waste paper and cardboard per person, compared to small offices and motor registries.
2. The total amounts of other waste office paper were calculated as above. The amount of other office waste paper generated per staff member per day was calculated for each site and then total annual other office waste paper recycling quantities was estimated. According to the calculation, about 69% of all other paper was recycled across RTA.
3. Total cardboard waste was calculated as above. Total annual cardboard waste recycling quantities were estimated. About 86% of cardboard waste was recycled across RTA. The audit also indicated that motor registries within RTA often generate higher quantities of cardboard than offices due to the regular delivery of cardboard for public distribution.
4. It has been assumed for this report that the total number of used “toners” generated during the 2004-2005 financial year was equal to the total number of toners, ribbons and inkjet cartridges purchased through the RTA’s centralised office consumables supply contract. RTA directly sent 801 toner cartridges, 525 ribbons and 109 inkjet cartridges to “Close the Loop” for reuse/recycling. RTA also directly sold 966 toner cartridges to three remanufacturing companies in an attempt to maximise resale value of used cartridges. Note however that it hasn’t been possible to quantify the total number of toners/ribbons/cartridges that the RTA has sent for recycling/remanufacturing. A survey of RTA sites indicated that 73% of registries send their cartridges for remanufacture/recycling by various means, including dropping cartridges directly to Post Offices.
5. A total of 664 computers were discarded by the RTA during the 2004-2005 financial year, including 21 owned PCs/laptops. A total of 643 personal computers were returned to the lessor company at the end of the lease cycle. Twenty-one owned PCs/laptops were sent to auction and offered to charitable organisation or schools. No other disposal methods were used.
6. A total of 424 monitors were discarded by the RTA during the 2004-2005 financial year. Of these 424 monitors, 408 were returned to the lessor company at the end of the lease cycle for resale overseas and 16 monitors were sent to auction. No other disposal methods were used.
7. Estimated 10,000 tonnes of vegetation were cleared for general construction projects (this total was derived from “hectares cleared” pay items) and 12,000 tonnes cleared during maintenance projects (84% reused). Data is not available for all construction and maintenance projects.
8. Data was not available for all maintenance projects. The Westlink M7 project was the only construction project that provided waste concrete quantities. Attempts to implement the contractual requirement for construction waste reporting were unsuccessful during 2004/05. Further efforts are required during 2005/06 to implement these reporting requirements.

9. Includes all excavated materials. There is no current way to differentiate between Fill and Virgin Excavated Natural Materials (VENM) for RTA construction and maintenance projects. These figures estimate the total amount of materials excavated within projects. Road designers endeavour to balance earthworks so that there is no spoil (excess of excavated material) or import (material that needs to be bought to the site). The quantity of material that is excavated on a road project is designed to be as close as possible to the quantity that is required to be placed on the project, including landscaping quantities, and utilising any unsuitable material where possible. Although identified here as 'reused', materials extracted from cuts located and sized to meet specific fill requirements within a project are considered by the RTA to be virgin materials excavated for use (not 'reuse') within projects.
10. Includes maintenance contracts. No information was available for construction projects other than Westlink M7.
11. RTA met with DEC in 2003 to discuss the RTA's WRAPP waste data collection and reporting processes. The discussion highlighted that steel, glass, plasterboard, non-ferrous metals and roof tiles etc are all minor waste streams for RTA projects in comparison to major waste streams such as asphalt, VENM, vegetation and concrete wastes. DEC recognised that there is a considerable lead-time between the incorporation of waste reporting requirements within the RTA's generic environmental specifications and the actual activation of these reporting requirements across active projects. It was agreed that the RTA would only report on its major waste streams within the 2003 biennial WRAPP report. DEC requested that the RTA review this list of reportable wastes over time to ensure that the list is still relevant and to consider adding additional categories – such as those reportable under WRAPP. The RTA will assess the feasibility of reporting additional WRAPP items in future reports but will - as a first priority – focus on improving the completeness and accuracy of the major materials of relevance to RTA projects.

PART D: PURCHASING DATA

« D1 » PAPER AND OFFICE PRODUCTS

- Complete **all** categories - if none purchased or none purchased *with* recycled content, please mark as "0" or "Nil"
- See [Attachment 1](#) for definitions

Material	Total Quantity Purchased		Quantity Purchased WITH Recycled Content		Comments (if applicable) Additional space for comments pg20
A4 white paper (including letterhead)	77,931	Reams	7,578	Reams	See comment 1 below
A3 white paper	2,483	Reams	0	Reams	
Printing and publications paper	111,240	Reams	15,600	Reams	
Toner cartridges	8,775	Cartridges	35	Cartridges	This includes fax, inkjet cartridges and printer ribbons.
Post-it Notes^	2,145	Packets of 12	45	Packets of 12	
Envelopes^	14,272	Boxes of 500	14,188	Boxes of 500	See comment 2 below
A4 Pads and notebooks	14,300	Individual Pads	525	Individual Pads	
Diaries^	3,493	Individual Diaries	0	Individual Diaries	No diaries available with recycled content.

Note ^ Various Sizes

◀ D2 ▶ LANDSCAPING AND CONSTRUCTION MATERIALS

- Complete **all** categories - if none purchased or none purchased *with* recycled content, please mark as "0" or "Nil"
- See **Attachment 1** for definitions

Material	Total Quantity Purchased	Quantity Purchased WITH Recycled Content	Comments (if applicable) Additional space for comments pg20
Landscaping materials	4,500 Tonnes	3,900 Tonnes	See comment 3 below
Concrete	762,000 Tonnes	686,000 Tonnes	See comment 4 below
Fill / Virgin Excavated Natural Material	4,844,000 Tonnes	unavailable Tonnes	See comment 5 below
Asphalt	711,000 Tonnes	281,000 Tonnes	See comment 6 below
Aggregates	unavailable Tonnes	unavailable Tonnes	See comment 7 below
Timber	unavailable Tonnes	unavailable Tonnes	See comment 8 below
Sand	unavailable Tonnes	unavailable Tonnes	See comment 8 below
Bricks and roof tiles	unavailable Tonnes	unavailable Tonnes	See comment 8 below
Other, Please specify: [_____]	- Tonnes or, specify: [_____]	- Tonnes or, specify: [_____]	
Other, Please specify: [_____]	- Tonnes or, specify: [_____]	- Tonnes or, specify: [_____]	

Comments:

1. 452 reams of 50% recycled content, 95 reams of 100% recycled content and 31 reams of 35% recycled content.
2. 14,000 boxes of 500 envelopes had 70% recycled content paper. This includes envelopes with RTA letterhead, which were reported under 'Printing and Publications Paper' in previous years.
3. Includes maintenance contracts and estimates for construction projects based on area mulched. It has been assumed that straw mulch does not contain recycled content and that hydromulch is 100% recycled content.
4. Assuming that more than 90% of the concrete used within pavements contains fly ash, averaging 3.4% of the total concrete mass. Figures are only for concrete used within pavements. No other concrete uses are included.
5. At the time of reporting, information was not available on the recycled content of imported fill and VENM materials. All four million tonnes of Fill/VENM imported to Westlink M7 came from other projects such as Parramatta Rail Link.
6. Assumed density of asphalt is 1.65 tonnes per m³.
7. No data available. Reporting of aggregates under G35/G36 contracts was not implemented successfully this year. Refer to other sections of this report, which outline specification development and discussion of the increasing use of recycled construction demolition wastes as substitutes for natural aggregates.
8. RTA met with DEC in 2003 to discuss the RTA's WRAPP waste data collection and reporting processes. The discussion highlighted that steel, glass, plasterboard, non-ferrous metals and roof tiles etc are all minor waste streams for RTA projects in comparison to major waste streams such as asphalt, VENM, vegetation and concrete wastes. DEC recognised that there is a considerable lead-time between the incorporation of waste reporting requirements within the RTA's generic environmental specifications and the actual activation of these reporting requirements across active projects. It was agreed that the RTA would only report on its major waste streams within the 2003 biennial WRAPP report. DEC requested that the RTA review this list of reportable wastes over time to ensure that the list is still relevant and to consider adding additional categories – such as those reportable under WRAPP. The RTA will assess the feasibility of reporting additional WRAPP items in future reports but will - as a first priority – focus on improving the completeness and accuracy of the major materials of relevance to RTA projects.

AGENCY CHECKLIST

◀ NB ▶ Prior to submitting your agency’s WRAPP report please ensure you have completed each of the following:

Data Verification

- Every reasonable effort has been made to ensure that the information and data supplied is accurate or well estimated.
(Please **do not** “guess” your figures as this may result in misleading or incorrect government reporting).
- All data from contractors has been included in relevant WRAPP categories (eg printing, landscaping, construction etc).
- For reporting categories where data is unavailable, data collection systems will be implemented during the next reporting period.

Report completion

- The agency head has signed the WRAPP Progress Report (see **Part A**)
- Information has been provided in each of the Key Result Areas (see **Part B**)
- Data has been provided on waste and recycling (see **Part C**)
- Data has been provided on purchasing (see **Part D**)
- All category boxes contain a figure or a notation
 - ▶ If no materials were purchased or waste generated write a “0” or “Nil”
 - ▶ Where data cannot be provided please write the reason (eg “*unavailable*” or “*unknown*”)
 - ▶ If any of the vegetation/ landscaping and construction tables are not applicable then those tables can be deleted from the report.

◀ OK ▶ Acknowledgement

Signed
WRAPP Contact Officer

Date

Notes:

- All available data from contractors has been included within the relevant WRAPP categories of this report.
- Contractor printing and office consumable purchases and wastes are outside of the scope of this report.
- The RTA will assess the feasibility of reporting additional WRAPP items in future reports but will - as a first priority – focus on improving the completeness and accuracy of the major materials of relevance to RTA projects.

Definitions of waste and purchasing materials

Attachment 1

The following definitions will assist agencies to fill out **Part C** and **Part D**.

Please note that descriptions of vegetation, construction and demolition materials are broad to encompass the range of activities undertaken by government agencies.

If a material used by your agency is not described below **exactly** EITHER list it under the category that it fits into **best** and briefly describe it in the comments section, OR list it as an 'Other' category with a description.

Waste and Recycling

Material	Description
A4 and A3 sized white paper	Used plain white printer and photocopier paper in A4 and A3 sizes.
Other office paper	Used stationery such as folders, files, coloured or tinted paper publications, forms, newspapers, magazines, advertising material, envelopes, phone books, wrapping paper, letterhead, post-it notes.
Cardboard	Packaging eg boxes, cartons and containers.
Used toner cartridges	Cartridges for printers, faxes, photocopiers, and multifunction machines (combined fax/copier/printer).
Computer and computer monitors	Central processing units (CPUs) and monitors should be recorded separately.
Vegetation waste	Vegetation such as leaves, grass clippings, branches and logs. Includes materials that have been processed eg sawn, chipped, mulched or composted. Does not include putrescible waste such as food scraps.
Concrete	Mixture of cement, sand and aggregates. May include additives or substitutes such as fly ash.
Fill	Excavated material such as clay, gravel, sand, soil and rock that has been mixed with another waste or excavated from areas that are contaminated with manufactured chemicals, as the result of industrial, commercial, mining or agricultural activities.
Asphalt	Any materials containing bitumous hydrocarbons. May contain additives such as concrete. Includes recycled asphalt pavement.
Timber	Wood materials used for formwork or other construction purposes.
Virgin excavated	Virgin excavated natural material such as clay, gravel, sand, soil and

natural material	rock that is not mixed with any other waste and has been excavated from areas that are not contaminated with manufactured chemicals, as the result of industrial, commercial, mining or agricultural activities.
Bricks and roof tiles	Clay bricks and roof tiles which may be mixed together. This can include small amounts of concrete or plaster render.
Glass	Sheet glass used for doors, windows, partitioning etc.
Plasterboard	Composite material of gypsum and cardboard used for interior panels for buildings.
Steel	Metal building products and materials e.g. reinforcing steel, sheet roofing, structural columns and beams etc.
Non-ferrous metal	Metal building materials other than steel e.g. aluminium, brass, copper etc.
Mixed waste	Mixed demolition waste of which no one material comprises 50% or more of the load.
Other categories	Agencies can report on other categories of waste they are generating or recycling, please specify.
Total quantity generated	The combination of the amount of waste disposed to landfill and the amount recycled. For example 800 tonnes recycled and 200 tonnes to landfill equals 1,000 tonnes generated.

Purchasing

Material	Description
A4 and A3 paper	White A4 and A3 paper used within offices including letterhead but not coloured or tinted paper.
Printing and publications	Paper used in printing publications including reports, forms, educational or advertising material, brochures, pamphlets, posters etc. This includes printing within the agency or by an external printing company.
Toner cartridges	For printers, faxes, photocopiers and multifunction machines (combined fax/copier/printer).
Post-it Notes	Self adhesive relocatable notelets of various sizes.
Envelopes	Plain or window faced envelopes of various sizes including those printed with agency letterhead.

A4 Pad and/or Notebooks	A4 size bound or spiral note pads and exercise books.
Diaries	Paper diaries of various sizes.
Landscaping materials	Organic products such as mulch, compost, bark, wood chips and soil blends.
Concrete	Mixture of cement, sand and aggregates. May include additives or substitutes such as fly ash.
Fill	Excavated material such as clay, gravel, sand, soil and rock that has been mixed with another waste or excavated from areas that are contaminated with manufactured chemicals, as the result of industrial, commercial, mining or agricultural activities.
Asphalt	Any materials containing bitumous hydrocarbons. May contain additives such as concrete. Includes recycled asphalt pavement.
Aggregates	Rock or other hard materials such as concrete, crushed stone or bricks, between 4.25mm and 100mm particle size. See Australian Standards for detailed specifications.
Virgin excavated natural material	Virgin excavated natural material such as clay, gravel, sand, soil and rock that is not mixed with any other waste and has been excavated from areas that are not contaminated with manufactured chemicals, as the result of industrial, commercial, mining or agricultural activities.
Timber	Reclaimed, reused or recycled timber.
Sand	Very fine hard aggregate between 0.75mm and 4.25 mm in size. See Australian Standard for detailed specification.
Bricks and roof tiles	Reclaimed, reused or recycled bricks and roof tiles.
Other categories	Agencies can report on other major categories of materials they are purchasing, please specify.
Total quantity purchased	The entire amount purchased, including the amount with recycled content.

■ Additional Comments: