

# Product Performance Investigation of Recycled Content Office Paper



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Solutions

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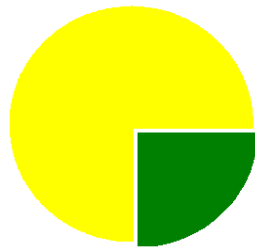
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**Prepared for**



**SOUTHERN SYDNEY WASTE BOARD**

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## Glossary of Terms

<b>BCC –</b>	Brisbane City Council
<b>Brightness –</b>	Degree of reflection of a sheet of paper measured under standardised conditions; used to indicate the degree of whiteness. Measured by optical comparators.  Many factors affect brightness, including the degree of bleaching of pulp, addition of chemicals such as titanium and fluorescent dyes.
<b>CIE Whiteness –</b>	An internationally recognised standard of paper brightness developed in Europe by the Centre Internationale d'Eclairage (CIE).
<b>EPP –</b>	Environmentally preferred product
<b>Finish –</b>	Finish or smoothness of office paper is typically expressed in terms of Sheffield, Gurley, Bekk or Bendsten units. Sheffield (CC by $10^{-2}$ /MIN) is used to describe the finish of papers in this report.
<b>GSM –</b>	Grammage or basis weight - A measurement of paper mass per unit area, normally expressed as grams per square metre. The standard specification for a copy paper in Australia is 80gsm.
<b>Opacity –</b>	Property of a paper which prevents "show-through" of printing from one side of the sheet to the other. The opposite of transparency.
<b>LPB –</b>	Liquidpaperboard
<b>Moisture Content –</b>	The percent of moisture found in paper or pulp.
<b>New Fibre –</b>	Fibre sourced native or plantation forests, softwood or hardwood.
<b>pH –</b>	Measure of the hydrogen ion concentration and the degree of acidity or alkalinity on a scale ranging from 0 to 14. Neutral point is 7.0, with 7.0 to 0 being increasingly acidic and 7.0 to 14 increasingly alkaline.
<b>Recovered Fibres -</b>	Fibres recovered from wastepaper, waste from printing and converting operations, alternative fibre discarded from agriculture (ie. cotton and bagasse) and from forest and lumber mill residues for the manufacture of paper and paperboard.
<b>RCOP –</b>	Recycled Content Office Paper – for the purpose of this report it refers to standard 80gsm office paper that contains a percentage of recycled fibre.
<b>SSROC –</b>	Southern Sydney Regional Organisation of Councils
<b>SSWB –</b>	Southern Sydney Waste Board
<b>Stiffness –</b>	Rigidity, resistance to bending, inflexibility. Strike-through in printing, the ink soaks through the sheet of paper to the reverse side. This is related to the absorbency of the paper and consistency of the ink.
<b>TPA –</b>	Trade Practices Act 1974
<b>WRAPP –</b>	Waste Reduction and Procurement Plan

## Acknowledgments

This report was compiled with information gathered through consultation with key office equipment and paper manufacturers and suppliers. The contribution of the following companies is gratefully acknowledged for assistance gathering the required information:

### *Office Equipment Manufacturers*

Brother International (Aust) P/L, Canon Australia P/L, Copyon, Danka Australia, Epson Australia P/L, Fuji Xerox, Hewlett-Packard Australia Ltd, Konica Australia P/L, Kyocera Mita Australia Pty Ltd, Lanier, Lexmark, Minolta Business Equipment Australia, OCE-Australia Ltd, Panquip Business Centre, Pitney Bowes, Ricoh, Sagem Australasia P/L, Sharp Corporation of Australia, and Toshiba (Australia) P/L.

### *Paper Manufacturers and Suppliers*

Australian Paper, A. Moir & Co., Canon Fax and Copy Supplies, Central National Australia Pty Ltd, CPI Paper, Danka, Ecocern, Fuji Xerox, Genesis Australia, Laser Rib P/L, Longbottom Paper, Q Stores, Raleigh Paper, Tredex Pty Ltd and Tomasetti Paper House.

Thank you also to Environment Victoria, the National Paper Council of Australia Ltd, and the Southern Sydney Regional Organisation of Councils for the contribution of information and perspective.

## Executive Summary

Concerns about the quality and performance of recycled content products often inhibit the success of “buy recycled” efforts. These concerns need to be adequately addressed to strengthen buy recycled efforts and hence improve markets for recovered materials.

Government agencies are being encouraged to increase the use of recycled content products to help make recycling programs sustainable, and office paper is a product that is often targeted because it is so widely used. In recent years the quality of recycled paper has improved considerably, however there is reluctance from some procurement staff to change to recycled alternatives based on experience with early brands of recycled content paper that were poor quality and caused paper jams or other malfunctions in office equipment.

To help overcome the perception that recycled papers should not be used due to inferior quality, the Southern Sydney Waste Board commissioned C4ES Pty Ltd to consult with manufacturers and distributors of both recycled content office paper and office equipment with the aim to:

- Collate information on the available brands of recycled content office paper in terms of performance, recommended usage and quality testing.
- Determine if the use of recycled content office paper would have an impact on service warranties and agreements.
- Highlight associated issues that are influencing Council purchasing decisions.

Preliminary investigations found that most office equipment manufacturers are aware of the improved quality of recycled office papers and most do not object to the use of recycled paper in their equipment, providing it meets the product specifications for the particular piece of office equipment in which it will be used. Furthermore, many companies are more aware of the marketing advantage of supporting environmentally preferred practices and some now encourage the use of recycled paper.

Manufacturers and suppliers of recycled content office papers provided information on the quality and recommended use of the nine brands of recycled content paper currently available in Australia. In order to provide a non-biased overview, C4ES collated the paper characteristics and recommended use of the available brands of recycled content paper in two summary tables. The tables are intended to enable an easy comparison of the different brands of paper.

The Trade Practices Act 1974 was further reviewed to confirm that the use of recycled content office paper cannot legally be discriminated against without due cause.

It became apparent that some Councils seeking environmentally preferred products are now moving away from supporting Australian-made brands of recycled paper and are leaning toward the purchase of imported brands.

The NSW Waste Boards have an objective to reduce waste to landfill, hence encourage waste avoidance and diversion of materials from landfill through various means, such as encouraging the use of recycled content products. Purchase of imported recycled products over recycled products manufactured locally will have an impact on Waste Board objectives because it is technically importing a waste product into Australia and not supporting local markets that will absorb that material when it enters the waste stream in Australia.

There are two obvious areas of concern about the Australian-made products. That is the percentage and source of the recycled fibre used in the paper, ie. whether it is from pre- or post-consumer waste streams and the overall environmental impacts of mill operations, which include:

- Use of bleaching or whitening agents.
- The source of any new fibres used to supplement the recycled content papers or to produce other non-recycled paper products.
- Water management and recycling systems.
- Affiliations with other mills and/or plantations.
- Regard for the immediate environment and implementation of sustainable practices.

C4ES expanded the original scope of the project to address some of the additional factors that are now influencing purchasing decisions. Although many of the issues have been outlined in this document, more thorough research is required to ensure Councils are provided with adequate information and a clear understanding of the environmental implications of purchasing different brands of paper. Further research will rely on cooperation from the relevant paper mills and other key cooperators with due regard for commercially sensitive information.

## 1.0 Introduction

The Southern Sydney Waste Board (SSWB) and its' member Councils are currently preparing Waste Reduction and Procurement Plans (WRAPPs) as follow-up to the adoption of the "*Waste Reduction and Procurement Policy and Guidelines for Local Government*". In addition to reducing Council-generated waste and improving recycling programs, the development of these plans is intended to promote the procurement of environmentally preferred products (EPPs), including products manufactured from recycled material.

Office paper is one of the most widely purchased products for office use, and hence has been recommended as a product to target for both waste avoidance and purchase of recycled content alternatives. Product performance of recycled content office paper (RCOP) has, however, continually emerged as a major barrier to the purchase and use of this product, usually resulting from previous experience with poor quality paper.

Poor perception of RCOP was created by some previous brands of low quality paper that were available in Australia. Some brands created excessive dust in office equipment, which caused jamming and cost many end users considerable money in lost production, paper wastage and additional equipment servicing or replacement.

In recent years the quality of recycled content alternatives have improved considerably and some are comparable to new fibre paper, however concern about product performance continues to pose a barrier to more widespread use of the improved quality brands.

As a result of early experiences, different brands of RCOP are often grouped together and considered poor quality, regardless of the actual characteristics or recommended use. Discussions with Council officers identified two related barriers to greater use of RCOP:

- Concern that recycled office paper is not compatible with commonly used office equipment and will result in excessive paper jams, increased repair bills and associated time lost to clear paper jams, repeat printing or copying and repair equipment.
- Concern that the use of recycled office paper would violate or increase the cost of service agreements or product warranties if the office equipment manufacturers did not approve the use of specific brands or use of recycled content paper in general.

To address these barriers C4ES Pty Ltd (C4ES) was commissioned to carry out detailed investigations into the product performance of available brands of RCOP across a range of standard office equipment. By liaising with office paper and office equipment manufacturers, concise information has been compiled to assist any individual wishing to purchase RCOP.

It should be noted that not all papers that are manufactured from recycled fibre contain 100% recycled fibre. As a result the term 'recycled content' is used to describe brands of paper that contain some percentage of recycled fibre. Actual percentages are stipulated in the Table of Characteristics (Section 2.4).

The 'Buy Recycled Office Product Guide – A guide to Purchasing Recycled Content Office Products' was produced by the Southern Sydney Waste Board in February 2000. The guide lists office products that contain recycled content, including recycled papers, with some information on the fibre content, country of manufacture and suppliers.

This subsequent report is intended to complement the guide by providing more detailed information on quality and recommended use of the available brands of office paper. Furthermore, the Office Product Guide lists all printing, copy paper and letterhead grades. The focus of this report is on the copy paper grades intended for everyday office use.

Although the original objective of the project was to investigate product performance of the available brands of RCOP, consultation with various stakeholders highlighted that other environmental concerns about paper production are having an influence on final purchasing decisions of procurement staff considering RCOP alternatives.

In addition to product quality, other determinants include:

- Whether the recycled fibre is sourced from pre- or post-consumer waste streams
- The actual percentage of recycled fibre used
- The environmental impact of the manufacturing process, especially with regard to the use of chlorine in the whitening process
- The source of the new fibre used in the product, if applicable
- Affiliations with other mills and/or plantations
- Concern about the total environmental impact of paper production, from logging to the actual manufacturing process.

It became evident that the trade-offs in social and environmental impacts are quite complex. For example, some local government staff investigating different brands of environmentally preferred papers are moving away from supporting Australian-made brands of RCOP because of concerns about the manufacturing process.

As a result C4ES expanded the original scope of the project to address some of the additional factors that are now influencing purchasing decisions. However, many of these issues require more thorough research to ensure Councils are provided with adequate information about all the environmental implications of the available brands of RCOP.

## 2.0 Stakeholder Consultation

Consultation with four key stakeholder groups was undertaken to collate obtainable information on the available brands of RCOP and their performance in standard office equipment. Claims that suppliers of office equipment actively discourage the use of recycled paper in their products, by alleging the use may void warranties or service agreements, was further investigated. Key groups consulted include:

1. Local Government
2. Office equipment manufacturers and suppliers, including photocopiers, printers and faxes
3. Recycled content office paper manufacturers and suppliers
4. Representatives from government, industry and other organisations

### 2.1 Local Government

Local government is encouraged to support recycling markets by purchasing recycled content products in an endeavour to minimise the use of natural resources and reduce the disposal of waste to landfill. An apparent barrier to increased demand for RCOP is the perception that the recycled fibres produce a poor quality product that will have a negative impact on the performance of office equipment.

To ensure that all major brands of office equipment used by the SSWB's member Councils were targeted for investigation, the first stage of the project was to inform Councils about the project and ask them to identify principal brands of office equipment used by Council. Consultation results are listed in Table 1.

**Table 1: Major Brands of Office Equipment Used by SSWB Member Councils**

Council	Council Representative	Nominated Brands of Printers, Copiers and Faxes Used by Council
Botany Bay City Council	Environmental Officer	Canon and Pitney Bowes
Canterbury City Council	Manager Supply Unit	Hewlett-Packard Printers, Kyocera Mita Copiers, some Canon faxes
Hurstville City Council	Manager – Purchasing Supply	Have an assortment of brands as equipment purchase is based on the best price
Kogarah Council	Waste Officer	Konica and Sharp photocopiers, Toshiba faxes, Hewlett-Packard printers
Marrickville Council	Supply Co-ordinator	Konica, Xerox, and Canon
Randwick City Council	Manager Purchasing & Contracts	Canon copiers, Hewlett-Packard and Lexmark printers
Rockdale City Council	Supply Manager	Hewlett-Packard and Xerox
South Sydney Council	Purchasing Clerk	Konica
Sutherland Shire Council	Business Manager – Supply and Fleet	Canon printers and copiers, Ricoh copiers, Xerox printers, copiers and faxes, Lexmark printers
Waverley Council	Education Officer	Hewlett-Packard
Woollahra Municipal Council	Manager Procurement	Hewlett-Packard Printers, OCE and Konica, Copiers, Brother and Canon faxes

## 2.2 Office Equipment Manufacturers and Suppliers

The brands of office equipment nominated by Councils comprised twelve different manufacturers. These manufacturers were targeted for investigation and a further twelve companies were identified to ensure investigations were suitably comprehensive and covered a wide range of products.

A database was established to record project information and all companies were initially contacted via telephone to identify appropriate representatives. A questionnaire was developed and sent directly to the nominated representatives as follow-up to the calls. A copy of the equipment manufacturer questionnaire is provided in Appendix A.

The primary aim of consultation with the office equipment manufacturers was to:

- Investigate the legitimacy of the concern that the use of RCOP will have an impact on service agreements, servicing costs and/or product warranties.
- Identify performance specifications required for different office equipment.
- Determine individual company viewpoints on the use of recycled content papers.
- Seek any additional relevant information.

Twenty-four companies, including the twelve nominated by local Councils, were contacted to collate this component of the information. Of the twenty-four companies, one did not respond, two companies had recently merged and one was a distributor of different brands of equipment who recommended making contact with the actual manufacturers.

The level of response varied between companies and many comments were repeated and reinforced a number of times. The overall response was very positive and some representatives claim to encourage the use of recycled content alternatives. A few companies offer testing for different brands of paper or will disseminate previous test results to ensure customers are using paper that is compatible with their office equipment. Relatively few negative comments were received from the office equipment manufacturers and these were based on experiences between two and ten years ago.

A summary of the responses from individual companies is listed in Appendix B for further review, however the principal responses and major issues highlighted, include:

### ***Paper Quality***

- The main priority for a paper is that it be good quality, regardless of the fibre content.
- Quality of the available brands of RCOP varies and not all recycled papers can be grouped as similar. Some brands are actually very good quality and there are no problems associated with using the good quality brands.
- It should not be assumed that because a paper is 100% new fibre it is good quality. Many of the cheap imported 100% new fibre papers are often more problematic in equipment than RCOP. Poor quality papers often curl when going through machines and cause jamming and other problems that reduce the expected life span of equipment consumables, ie. rollers and drums. Some companies use talc filler in paper, which coats rollers and causes problems with creasing and jamming. Another issue relating to paper quality is the amount of glue and wax in the product.
- Use of good quality paper, regardless of recycled fibre, is preferable because poor performance of paper is often viewed as poor performance of the office equipment.

- Maintaining correct handling and storage of any office paper is important to enhance quality and performance because paper absorbs moisture and responds to changes in humidity levels. One company highlighted that service calls usually rise on Monday mornings, resulting from air-conditioners being turned off in offices over the weekend. Paper requires time to adjust to room temperature before use.
- All office equipment has specifications that a paper must meet to be used in the particular piece of equipment. As long as a paper meets the specifications there should be no problem if it has recycled content. The actual paper specifications vary for different types of equipment so end users should review equipment specifications and ensure that any paper used meets the specifications. For example, some high quality colour copiers specify that a particular grade of colour photo paper be used to achieve maximum quality of final prints.
- Guaranteeing paper use in equipment is reliant on equipment being fully serviced and maintained. Poorly maintained office equipment is likely to experience more technical difficulties.
- People should also be aware when trialing a new paper, that quality of RCOP can sometimes vary between different batches of paper for the same brand.
- It is expected that some characteristics of RCOP will experience a drop in quality when compared to new fibre paper, ie. brightness and colour quality, however the paper is still adequate to meet most end-users' everyday needs.
- If companies do want to support the use of RCOP but are concerned about 'quality' of final documents more than one type of paper could be stocked and used accordingly.
- The number of customers seeking recycled alternatives is increasing and some office equipment manufacturers are now encouraging the use of good quality brands of RCOP.
- Some companies have conducted testing of different brands of RCOP in different types of office equipment. Some office equipment manufacturers can perform further testing of additional brands if required.
- A few companies stated that they do not recommend the use of RCOP because of the poor quality and dust issues. When questioned on the timing of their most recent experience with RCOP the response was between two and ten years ago.

Overall the response from office equipment manufacturers was very positive. It is evident that companies are becoming more aware of the importance of adopting sound environmental practices and the need to implement and make a commitment to sustainability. Some company representatives noted that it is an important marketing strategy to be seen to be doing the right thing by the environment and to be providing clients with environmentally preferred alternatives. One photocopy manufacturer alluded to the development of a photocopier that has a designated tray for recycled paper.

## **2.2.2 Impact on Service Agreements and Product Warranties**

The general consensus from office equipment manufacturers was that as long as a paper meets the specifications for the machine in which it will be used, there should be no problems using a good quality RCOP. If a customer would like to trial a new paper but is unsure of the compatibility with their equipment they can contact the manufacturer and seek information on previous testing and/or facilities to conduct further testing.

In terms of having an impact on service warranties and agreements, no company responded that use of RCOP would definitely be detrimental to any warranties or agreements. The general response to this question was that different papers should be treated case by case and any new brand should undergo trials before committing to full-scale usage. If it can be proven that a brand of paper is causing increased problems in office equipment the customer will first be advised to discontinue the use of the paper. If a customer then continues to use the paper, any additional repairs or service calls that can be directly attributed to the use of that paper will be charged to the customer. It should be noted that this is applicable to all types of office paper, not simply those containing recycled fibre.

One objective of the project was to develop a matrix to outline equipment supplier conditions for the use of paper in different types of office equipment. Companies responded that the variability in conditions is too complex as there are different specifications for different types of office equipment and the paper specifications can also be dependent on final print quality in conjunction with actual paper performance.

It was therefore recommended that any person considering the purchase of a new brand of paper should research the recommended paper specifications of the office equipment and then ensure the paper meets those specifications.

## **2.2.3 Warranty Issues and the Trade Practice Act 1974**

Several Council officers in the Sydney area have reported claims by equipment representatives that use of any recycled office paper would violate or increase the cost of service agreements for Council office equipment, particularly copy machines. Similarly, some office equipment representatives or technicians have indicated that only their particular brand of paper could be used in, or is compatible with, their equipment. Both claims can actually be violations under the *Trade Practices Act 1974*, (TPA).

C4ES reviewed the TPA to determine if office equipment manufacturers can legally bias against RCOP. Under the TPA, it is an offence to mislead the public about the characteristics or suitability for purpose of any goods. It is also an offence to make a false or misleading representation about the exclusion or effect of any condition, warranty or guarantee.

If a competitor's recycled paper is identical or equivalent in performance to their own, equipment manufacturers or suppliers cannot legally discriminate against the competing products. This applies to both misleading claims about competing products and also to attempts to establish bias through conditions in service contracts and warranties. Sample sections from the TPA are included in Appendix C to demonstrate this point.

## 2.3 Paper Manufacturers and Suppliers

The second stage of the research was to consult with paper manufacturers and suppliers to collate information on the performance, quality and recommended use of available brands of RCOP.

Existing information was collated from the available buy recycled resources as a starting point to identify available brands of paper and the suppliers. A stakeholder database and potential paper listing was developed to collate all company information and research results.

34 brands of paper were identified and underwent preliminary examination. A brief overview of all papers is provided in Appendix D. Of the 34 brands examined, 15 were identified as being all-purpose copy and office paper – 80gsm. The other papers were specialty grades such as board, letterhead, watermarked and colours. As these paper grades were not the target for investigations, more detailed information was not obtained.

Of the remaining 15 brands of paper that were examined more closely:

- One brand is no longer imported into Australia.
- Two brands are the same paper packaged under different names.
- One brand is manufactured from plantation fibres and does not contain recycled fibre.
- Two brands contain alternative fibres, bagasse or hemp, and do not contain recycled fibre.
- One brand is not made to copy paper specifications – moisture is 7.0% and finish is 250 Sheffield Finish.

Preliminary discussions with office paper stakeholders distinguished a number of key properties that may influence the performance and quality of office paper. Performance criteria include the basis weight, finish or roughness, moisture content, stiffness, curl, cut edge conditions, dust and the use of wax and glues.

The level of dust, wax and glues can influence office equipment performance if a build-up of residue is generated in equipment. Excessive dust build-up was one of the problems associated with some early brands of RCOP. The rigidity, curl and moisture content of paper will affect how it moves through the office equipment. Flimsy paper that has a tendency to curl is more likely to cause paper jams, especially when duplexing. This characteristic has been noted in many of the cheaper brands of imported office papers that do not contain recycled content.

In conjunction with how paper actually performs in office equipment, the actual quality of prints is influenced by other characteristics that include the brightness, opacity and pH of the paper.

Many of the attributes of paper that influence product performance such as stiffness, strength and bulk cannot be reported because the information is considered commercially sensitive. As a result a questionnaire was developed to gather information on the paper characteristics that manufacturers were willing to publish.

The questionnaire was forwarded to relevant paper stakeholders to obtain more detailed information on the nine brands of RCOP and the recommended use. A copy of the questionnaire is provided in Appendix E.

### 2.3.1 Rating Recycled Content Office Paper

When collating information on the different brands of office paper, there are a number of key variables that will influence purchasing decisions. Consultation with office equipment manufacturers and potential end users of RCOP highlighted that different end uses, variability in the types of office equipment, personal preference and quality expectations would influence how individuals would rate the different papers.

Furthermore, because people have different priorities when purchasing paper, one characteristic that may be preferable to one purchasing officer may be of no concern for others. Characteristics such as the fibre content, finish, whiteness and whether the paper is Australian-made will ultimately influence purchasing decisions, however this will depend on individual priorities.

This can be demonstrated by the following:

- Some attributes such as whiteness of a paper may not be an indication of a superior quality paper and also may not be a concern to some consumers. In fact, response from some companies was that they prefer paper to look like it is recycled. Other end users have preference for a whiter paper.
- Many recycled papers do not have archival properties. This would only be of relevance for companies wishing to file documents over a long period of time and not an important consideration for many everyday applications.
- The fact that a paper is Australian-made and utilises waste paper recovered in Australia would expect to see it rate higher than imported brands, however other factors that some groups feel are more of a priority are emerging as barriers against the purchase of Australian products. This is discussed in more detail in Section 3.

Collating information that is directly comparable also relies on the availability of the desired information, accuracy of information received and is subject to different interpretations in responses. A few points to consider when comparing the information on the different brands of paper include:

- Some companies do not list detailed product characteristics and see the provision of the information as commercially sensitive. Therefore, the level of detail provided for each product was subject to the information provided by stakeholders.
- Accuracy of information is entrusted to the company representative providing the data. Conflicting information was received from different companies reporting information for the same brands of paper or the same paper that is packaged under different names.
- Product quality can sometimes vary from batch to batch in some papers.
- There is diversity in the available brands of RCOP in terms of fibre content and composition, quality and recommended use.
- The recommended use of paper is often dependent on the end-user's requirements, quality demand and personal preferences.

To overcome any potential bias that may be shown by rating the available brands of RCOP to a set criteria, all information on the different brands of paper has been compiled in two simple tables (Tables 1 and 2) that provide an easy comparison of paper characteristics and the recommended use. The tables are intended to assist identification of a paper product to suit individual performance and environmental criteria requirements.

The presence of existing rating systems was researched, however none were apparent that cater for different brands of paper. Fuji Xerox has a star rating system that is applicable to the use of Green Wrap in Fuji Xerox equipment, but is not applicable to other non-Fuji Xerox papers.

### 2.3.2 Introduction to the Nine Brands of Recycled Content Office Paper

#### “Best of” Triotec

“Best Of” Triotec is manufactured in Austria from 50% wastepaper sourced from pre- and post-consumer waste streams and 50% oxygen bleached pulp from sawmill waste or plantation fibre. The de-inked pulp is sourced from the United States and Canada. The paper is manufactured as three layers with the centre layer containing the recycled fibre.



#### Nautilus / Canon 100

Nautilus paper is a 100% recycled content paper manufactured at the Neusiedler Mill in Austria. The paper is also packaged as Canon 100 and distributed through Canon in Australia. The recycled fibre is sourced from pre- and post-consumer waste streams as specified under the restrictions for products classified under the “Blue Angel” label, which is a German environment label for 100% recycled products.

#### Cyclus Offset

Cyclus Offset is a 100% recycled content paper manufactured in Denmark. This paper is primarily designed for offset printing, however is also suitable for some general office applications.



#### Revive, Renew 100 and Ozcopy (Recycled)

The Renew 100, Revive and Ozcopy (Recycled) are all Australian-made papers manufactured from 100% Australian wastepaper sourced from pre- and post-consumer waste streams. Revive is a Fuji Xerox paper.



#### Green Wrap

Green Wrap is a Fuji Xerox paper that is manufactured in Australia from 50% recovered paper sourced from pre- and post-consumer waste streams. 10% of the content is cotton linter waste sourced from the cotton oil seed industry in NSW and the remaining 40% is plantation fibre.



#### Plantation 80

Plantation 80 is an Australian-made paper. It is manufactured from 70% wastepaper sourced from pre- and post-consumer waste streams and 30% cotton linter waste sourced from the cotton oil seed industry in NSW.



#### Renew 80

Renew 80 is an Australian-made paper that contains 80% Australian wastepaper sourced from pre- and post-consumer waste streams. The remaining 20% is plantation fibre.

## 2.4 Table of Characteristics

Table 2 provides an overview of the paper characteristics that were reported by paper manufacturers and suppliers. Although an actual rating system has not been developed for the papers the following descriptions identify the papers that have the highest rating for each characteristic. Please note that the level of detail provided for each brand was dependent on the information that was provided by the paper stakeholders.

### *Fibre Source and Composition*

Office paper can be manufactured from fibres sourced from native or plantation forests, recovered fibre from pre- and post-consumer waste streams, alternative fibres such as hemp, bagasse (sugarcane) and cotton or a blend of the different fibres.

Details on the source of the fibre for the recycled content papers is provided in terms of country of origin, whether the fibre is sourced from pre- or post-consumer waste streams and the use of alternative or new fibres. A breakdown of pre- and post-consumer fibre used in the different papers is not defined. Based on the fact there is variability in the source of fibre between different batches of paper manufactured, it is more accurate to state the paper is manufactured from a certain percentage of recycled fibre. The same was reported for both the Australian and imported papers.

If the priority is to purchase a paper that contains a high percentage of recycled fibre the brands that are manufactured from 100% recovered paper include:

1. Canon 100 / Nautilus, Ozcopy (Recycled), Renew 100 and Revive

If the priority is to purchase a paper that contains wastepaper recovered within Australia, any of the papers manufactured in Australia utilise wastepaper recovered in Australia.

### *CIE Whiteness*

CIE Whiteness is an internationally recognised standard of paper brightness developed in Europe by the Centre Internationale d'Eclairage. The higher the score for the CIE whiteness, the whiter the paper will appear. Recycled content papers are frequently off-white and have a lower CIE whiteness than new paper.

If the priority is to purchase a white paper, the highest rating papers are:

1. “Best Of” and Green Wrap – CIE Whiteness 130
2. Plantation 80 – CIE Whiteness 115
3. Renew 80 – CIE Whiteness 110

If the priority is to purchase a paper that has a recycled paper appearance and is not bright white, the Canon100/Nautilus has the lowest CIE Whiteness, 85.

### *Archival Quality*

Many recycled papers are not recommended for archival purposes because the history of the recycled fibre that has gone into the manufacture of the paper is unknown. Without a guarantee that all fibre in the paper is of archival quality, the manufacturers will not guarantee the paper for this use.

If the priority is to purchase a paper that has archival properties, the highest rating papers are:

1. Canon 100 / Nautilus – 200 years
2. Best Of and Cyclus Offset – 100 years

Paper used for archiving must have a pH of no less than 7.0. All papers listed meet this specification.

### ***Moisture Content***

The moisture content of paper is the amount of moisture contained in paper expressed as a percentage of its total weight. The percentage of moisture found in paper can influence how the paper performs in office equipment because the dimensional stability of the paper may be altered by changes in temperature and humidity levels. For example a paper that has high moisture content is likely to curl when run through a photocopier or printer.

All papers listed in Table 2 have a moisture-content of 4.5 - 5% and meet the standard specification for office paper.

### ***pH***

All papers listed in Table 2 are alkaline and have a pH between 7 and 7.8. Alkaline papers are preferable to acidic papers as they maintain quality over a long timeframe and are suitable for long-term storage.

### ***Whitening Agent***

The type of bleaching agent used in paper manufacturing is often a consideration for procurement staff if giving consideration to the total environmental impacts of the paper production. Collating detailed information on the merits of different bleaching processes goes beyond the scope of this project, however it is recommended that any further investigations focus on how the actual output to the environment is managed in conjunction with the actual agent used.

### ***Finish (Sheffield)***

Paper is produced in a variety of surface finishes and the term "finish" describes the smoothness or roughness apparent when handling or visually appraising the paper. The finish can be expressed in terms of Sheffield, Gurley, Bekk or Bendtsen units.

The lower the number, the smoother the surface of the paper. If the priority is to purchase a paper that has a smoother finish, using the Sheffield rating, the top rating papers are:

1. Green Wrap
2. "Best Of", Ozcopy (Recycled), Plantation 80, Renew 80 and Renew 100

### ***Opacity***

The opacity of a paper is the property that prevents "show-through" of printing from one side of the sheet to the other. This is particularly important for double-sided copying or printing. A paper that has a low opacity rating is more transparent and less suitable for double-sided printing or copying. The opacity of all nine recycled content papers is between 90-94%. This is above the minimum requirement for office paper, which is generally around 85%.

## 2.4.2 Table of Recommended Use

In conjunction with actual paper characteristics an end user should ensure they are only using a product for the purpose in which it is designed. For example, some 100% recycled content papers are not recommended for high speed copying or colour finishes, but are recommended for other uses. Table 3 provides a matrix of supplier recommendations for the use of the different brands of RCOP. The four categories provided for this summary are:

- *Guaranteed* – A guaranteed rating is generally allocated if the paper has been extensively tested across a range of brands of office equipment in the particular category. Some companies have tested papers more extensively than others and therefore guarantee the use for particular applications, while other papers are recommended.
- *Recommended* – If a paper is recommended for a particular use, it is expected to perform well, however the level of testing across different brands of office equipment may not be so extensive that the manufacturer is prepared to guarantee the product for use in all brands of office equipment.
- *Not Recommended* – Paper is generally not suitable for a particular use if it is not designed for the application or if it is felt that the quality of final prints may be compromised. This is especially applicable to the use of RCOP to produce colour prints (note performance versus quality).
- *Not tested* – The not tested category isn't necessarily an indication that the product should not be used, but simply that no test results are available for the particular application. For example, Cyclus Offset is primarily sold to industrial printers for offset printing, however the 80gsm paper is sometimes used for printing and copying purposes. Because the company does not specifically sell the paper for these purposes and has not conducted any testing, the 'not tested' category is highlighted for many applications.

### *Performance Versus Quality*

The issue of performance versus quality is important to address, because it had some influence on the way different companies responded to the questionnaire. Many recycled content papers lack the brightness of new fibre papers, however brightness is not an indication of an inferior quality paper in terms of its performance in office equipment. Despite this, when guaranteeing a product for a particular use, consideration should be given to the expected quality of the final print. The following advice was given by two paper stakeholders and was also mentioned by a number of office equipment manufacturers:

“If the final print quality is not of the highest quality, the paper product should not be guaranteed for that use. Although some brands of RCOP will work in colour printing equipment, the final print quality may not be the superior finish as would be achieved with the use of grades that are specially produced for colour printing uses.”

Because the quality of colour prints “Best Of” was rated as not tested for all colour applications and many of the other brands of paper are listed as not suitable. These papers will work in colour printing equipment, however will not produce the superior finish as would be achieved with the use of grades that are specially produced for colour printing.

**Table 2: Table of Characteristics for Available Brands of 80gsm Recycled Content Office Paper**

Paper Name	Fibre Source	Fibre Composition	County of Manufacture	CIE Whiteness	Archival Properties	Moisture Content	pH	Whitening Agent	Finish (Sheffield)	Opacity
Revive	Pre/post-consumer collected from various sources around Australia. Includes milk cartons, printers' offcuts and office computer paper.	100% pre/post-consumer wastepaper	Australia	90	Nil	4.5%	>7.8	Sodium hypochlorite (common household bleach)	150 +/- 40	92%
Renew 80	Australian pre and post consumer wastepaper. Includes LPB containers, printers and converters waste. Cotton waste is from the cotton seed oil industry. New fibres are from ecologically sustainable resources.	80% pre/post-consumer wastepaper 20% plantation fibre	Australia	110	Nil	4.5%	>7.8	Sodium hypochlorite (common household bleach)	150 +/- 40	92%
Renew 100	Pre/post-consumer collected from various sources around Australia. Includes milk cartons, printers' offcuts, and office computer paper.	100% pre/post-consumer wastepaper	Australia	90	Nil	4.5%	>7.8	Sodium hypochlorite (common household bleach)	150 +/- 40	92%
Plantation 80	Australian wastepaper and cotton waste from the cotton oil seed industry in NSW.	70% pre/post-consumer waste 30% cotton waste	Australia	115	Nil	4.5%	Alkaline	Sodium hypochlorite (common household bleach)	150 +/- 40	-
Ozcopy (recycled)	Pre/post-consumer wastepaper collected from various sources around Australia. Includes milk cartons, printers' offcuts, and office computer paper.	100% pre/post-consumer wastepaper	Australia	90	Nil	4.5%	>7.8	Sodium hypochlorite (common household bleach)	150 +/- 40	92%
Green Wrap	Australian pre- and post-consumer wastepaper. Includes LPB containers, printers and converters waste. Cotton waste is from the cotton seed oil industry. New fibres are from sustainably managed plantation forests.	50% pre/post-consumer wastepaper 10% cotton waste 40% plantation fibre	Australia	130	Nil	4.5%	>7.8	Sodium hypochlorite (common household bleach)	145 +/- 35	92%
Cyclus Offset	De-inked pulp produced from recycled paper collected from offices, printers and households.	100% pre/post-consumer wastepaper	Denmark	-	100 years	-	Neutral 7.8	Hydrogen peroxide Formandinsulfon acid	-	94%
Canon 100 / Nautilus	Pre and post-consumer wastepaper sourced from a variety of different waste streams as specified under the restrictions for products classified under the "Blue Angel" sign (Appendix G).	100%pre/post-consumer wastepaper	Austria	85 +/- 1-3	200 years	<5%	Neutral 7.0+/-0.5	Oxygen	175 +/-70	93% +/-2
"Best of" Triotec	De-inked pulp produced from recycled paper collected from USA and Canadian pulp mills.	50% pre/post-consumer wastepaper 50% sawmill waste or plantation	Austria	130 +/-2	100 years	<5%	Neutral 7.0+/-0.5	Oxygen	150 +/-50	90% +/-1

Table 3: 80gsm Recycled Content Office Paper - Recommended Use

PAPER NAME	RECOMMENDED USE										
	Copying – Low/Medium Volume	Copying – High Volume	Colour Copying	Low-medium Laser Printing	High Volume Laser	Colour Laser	Digital Printing	Mono Ink Jet Printing	Colour Ink Jet Printing	Faxing	Duplexing
<b>Revive</b>	Guaranteed	Guaranteed	Not Recommended	Guaranteed	Guaranteed	Not Recommended	Guaranteed	Recommended	Not Recommended	Recommended	Guaranteed
<b>Renew 80</b>	Recommended	Recommended	Recommended	Guaranteed	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
<b>Renew 100</b>	Recommended	Not Recommended	Not Recommended	Recommended	Not Recommended	Not Recommended	Recommended	Recommended	Not Recommended	Recommended	Not Recommended
<b>Plantation 80</b>	Recommended	Recommended	Recommended	Guaranteed	Recommended	Recommended	Recommended	Guaranteed	Recommended	Recommended	Recommended
<b>Ozcopy (Recycled)</b>	Recommended	Not Recommended	Not Recommended	Recommended	Not Recommended	Not Recommended	Recommended	Recommended	Not Recommended	Recommended	Not Recommended
<b>Green Wrap</b>	Guaranteed	Guaranteed	Recommended	Guaranteed	Guaranteed	Recommended	Guaranteed	Guaranteed	Recommended	Guaranteed	Guaranteed
<b>Cyclus Offset</b>	Not Tested	Not Tested	Not Tested	Recommended	Recommended	Recommended	Not Recommended	Not Recommended	Not Recommended	Not Tested	Not Tested
<b>Canon 100 / Nautilus</b>	Guaranteed	Guaranteed	Not Tested	Guaranteed	Guaranteed	Not Tested	Guaranteed	Guaranteed	Not Tested	Guaranteed	Guaranteed
<b>“Best Of”</b>	Guaranteed	Guaranteed	Not Tested	Guaranteed	Guaranteed	Not Tested	Guaranteed	Guaranteed	Not Tested	Guaranteed	Guaranteed

*Note: The information detailed in Tables 2 and 3 is based on data obtained from manufacturers and suppliers of the paper.*

It is recommended that the information provided in Tables 2 and 3 be updated regularly because the RCOP market is evolving. Even since the development of the SSWB’s Buy Recycled Office Product Guide there have been a number of changes in the market:

- Neusiedler have just developed a new “high-white” Nautilus product with a CIE whiteness of 113. No product information is currently available for the international product, however it is expected to reach the Australian market by mid 2001.
- Australian Paper is currently developing a whiter Renew 80.
- Botany Offset/Ecolade is a 100% recycled fibre paper that was imported from New Zealand. This product is no longer imported and sold in Australia.
- Green Wrap has recently been improved and upgraded for use in digital printers.

### **2.4.3 Summary of Comments from Paper Manufacturers and Suppliers**

In addition to providing information on quality and performance of RCOP, consultation with RCOP manufacturers and suppliers raised a number of points that relate to the sale of office papers in Australia. A summary of the responses from individual companies is listed in Appendix F for further review, however key considerations include:

- There was previously no sales tax on RCOP to make it price competitive and to encourage its use. The tax exemption was removed a few years ago so now prices are not competitive with other competing brands of paper. Some companies stated that they are discontinuing or scaling down the supply of RCOP because demand has decreased.
- Price disadvantage is an issue for imported and local brands of RCOP.
- Price of new fibre and imported new fibre papers in Australia are so inexpensive, it hampers the ability to produce a high quality recycled content product that is price competitive.
- Tax rates on imported products do not compensate for the handling, processing and management of that product as a waste in Australia.
- Moving to a 70gsm should be fully evaluated because it would reduce consumption of resources by 12.5% and reduce the amount of material entering the waste stream by the same amount. This would achieve the avoidance level of the waste hierarchy.
- There needs to be more education about the type of fibre that is suitable for the production of high quality office paper with consideration of the use of pre- and post-consumer material.
- When encouraging people to 'buy recycled' there needs to be emphasis on the local benefits and greater explanation of how to match recycled products to end user needs.
- Paper can only be recycled 4-5 times before fibres start to break down and need to be augmented with new fibres. 100% post-consumer paper is therefore not sustainable, as a sustainable waste paper recycling industry depends on a viable paper industry.

## 2.5 Additional Stakeholder Consultation

A number of other organisations were contacted to discuss project objectives and:

- Determine if similar research has previously been conducted.
- Investigate the development of paper rating systems.
- Collate existing resources and knowledge to ensure that project research is suitably comprehensive.
- Seek feedback on additional information relevant to the project and buying recycled.

Table 4 provides a brief overview of the additional organisations that were consulted and the key points of discussion.

**Table 4: Additional Stakeholder Consultation**

Organisation	Comments
Brisbane City Council (BCC)	Currently reviewing BCC's paper usage and future contracts for paper supply. Would be interested to receive a copy of the results of this study.
EcoRecycle Victoria	Had a meeting with EcoRecycle to determine if any similar investigations had been conducted in Victoria. There have been none to date however EcoRecycle is interested to receive a copy of the results from this study.
Environment Victoria	Environment Victoria (EV) has previously researched the composition and manufacture of available brands of RCOP. No research has considered the performance of RCOP so they would like to receive a copy of the results from this study. Furthermore EV does not support the use of local brands of RCOP and recommend the imported paper Canon 100/Nautilus.
Hunter Waste Board	Contacted to inquire if there had been any follow-up to the 'Buy Recycled Guide'. There has been no follow-up to date however the HWB is interested to receive a copy of the results from this study.
Local Government Buy Recycled Alliance (Victoria)	Working with Councils developing case studies on buying recycled products. Two councils have decided not to support the use of Australian-made RCOPs based. Organised a recycled paper seminar in August 2000 to discuss the issue. Perspective was provided from industry and environmental viewpoints.
National Paper Council of Australia Ltd	Collate information for members on all available paper products and imports. Keep a register of paper products, the document is available for \$55.
NSW Environment Protection Authority	Not aware of any similar work that has been conducted. Would like to receive a copy of the final report.
Office Equipment Industry Association	<i>No longer exists.</i>
School Communities Recycling All Paper (SCRAP)	Has been working with RCOPs for a number of years, however had no interest in discussing or participating in this project.
SSROC	Have not conducted any detailed investigations into the available brands of office paper so are very keen to receive a copy of the results from this study.
Wilderness Society	Recommend the purchase of Canon 100 as they believe that it is the purest form of RCOP available worldwide. Have boycotted Australian Papers and encourage people not to purchase them based on the claim that they are not recycled and contain fibres from old-growth forests.

Consultation with additional stakeholders highlighted other important issues that have an enormous bearing on the purchase of RCOP. Other concerns about recycled paper that go beyond the actual product performance are cause for some environmental groups boycotting the use of the RCOP manufactured in Australia. Information from these organisations is having an impact on the purchasing decisions of some Councils in Victoria and New South Wales that are now considering purchasing international brands of recycled paper or paper that contains no recycled fibre.

This could be of particular concern for NSW Waste Board objectives to reduce waste to landfill and support local recycling markets. If the trend to purchase international brands of RCOP is increasing, it may indicate that other important issues need to be addressed regarding educating procurement staff of the 'local' benefits and rationale behind buying recycled and supporting local industry to produce a product that consumer's demand.

As a result further research was conducted and is included in the following section to draw attention to these other factors that are having an impact on Council purchasing decisions.



## 3.0 Evolution of the Paper Debate

The primary focus of information gathering was to address concerns about the product performance of RCOP and encourage its use. Early discussions with major office equipment representatives revealed that many manufacturers are well informed about the improved quality of RCOP and some actually encourage its use if it meets the end users' needs.

Furthermore, any client wishing to trial a new paper is encouraged to correspond with the equipment manufacturer to confirm the paper specifications meets the requirements for the particular office equipment in which the paper will be used. If any Council representatives experience difficulties with misinformed service technicians or companies, the *Trade Practice Act 1974* is further support that particular products cannot be discriminated against without due cause. The Competition and Consumer Commission is also available for anyone wishing to seek further information.

Aside from actual quality of RCOP it has been found that some of the major deciding factors influencing purchasing decisions focus on other characteristics of the paper. In particular:

- The nature of the recycled fibre, ie. pre- or post-consumer material and the percentage
- Use of bleaching or whitening agents
- Use and origin of new fibres

From an environmental perspective, decisions to support one brand of paper over another rely on the interaction of a complex set of issues and there are a variety of concerns that need to be balanced. This section outlines some additional concerns now influencing purchasing decisions, in particular:

- The use of pre- and post-consumer material
- Sources of quality feedstock
- Sustainable paper recycling
- Benefits of buying recycled and buying Australian
- Need for local waste management of imported papers

### 3.1 Pre- Versus Post-Consumer Fibre

The actual source of the recycled fibre in office paper is an area of interest, especially whether it is from pre- or post-consumer waste streams. There is a focus on purchasing products manufactured from post-consumer materials, the rationale being that it creates markets for materials recovered from recycling programs and diverts materials disposed of further down the supply chain. This point of view should be encouraged, however with due regard for actual end-product requirements, expected quality and a clear understanding of why certain materials are used.

The source of the recycled fibre used in the Australian brands of RCOP is one factor that is influencing some Councils to purchase imported brands of RCOP. This is further fuelled by some groups who are claiming that a product is not 'truly' a recycled product if it is not manufactured from 100% post-consumer material. This statement is not entirely true and manufacturing office paper from recycled fibre is not so simplistic. A more detailed overview of pre- and post consumer waste streams in relation to office paper is therefore provided.

### 3.1.1 What is Pre- and Post-consumer Waste?

The Australian/New Zealand Standard AS/NZS ISO 14021:2000, Environmental labels and declarations - Self-declared environmental claims (Type II environmental labelling) defines pre- and post-consumer materials as the following:

#### 1) Pre-consumer material

*Material diverted from the waste stream during a manufacturing process. Excluded is re-utilisation of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.*

#### 2) Post-consumer material

*Material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. This includes returns of material from the distribution chain.*

In the case of fibre used to manufacture office paper, sources of pre-consumer waste are retrieved from companies such as printers and converters. These companies produce paper waste when conducting some of the following activities:

- Manufacturing envelopes or cigarette packaging
- Paper sack converting
- Printed stationary manufacturing
- Office paper converting – offcuts and trim
- Manufacturing tetrapaks, cartons and drinking cups
- Producing printed products – offcuts and trim

The above sources of wastepaper are currently collected and used in the production of Australian RCOP. The paper sourced from these companies is generally high quality, provides a regular supply and would otherwise be disposed of to landfill if it was not collected for use in new paper products.

Post-consumer waste is the material that is collected further down the supply chain from sources such as households, offices and schools, as these are the end consumers. Much of this material is collected as mixed grades of paper which include newspapers, office paper, magazines and cardboard packaging.

There is a third type of waste produced that is sometimes confused with pre-consumer waste. This is material that can be reused by the company that actually creates the waste. In the case of office paper this resource is known as mill broke and it is the paper waste generated by the mill itself in the production of paper. Mill broke is not classed as recycled fibre as it is simply good business practice to reuse this material. The reuse of mill broke in the manufacture of paper products is common practice to maximise efficient use of resources and has been occurring at Australian Paper's Shoalhaven Mill since production commenced in 1956.

Figure 1 provides a visual representation of the three paper waste streams and the movement of wastepaper through distribution back to the mill. The overview demonstrates that waste generated by a company manufacturing envelopes is pre-consumer waste but when the envelope is disposed of when it reaches the end of its life it is then post-consumer waste.

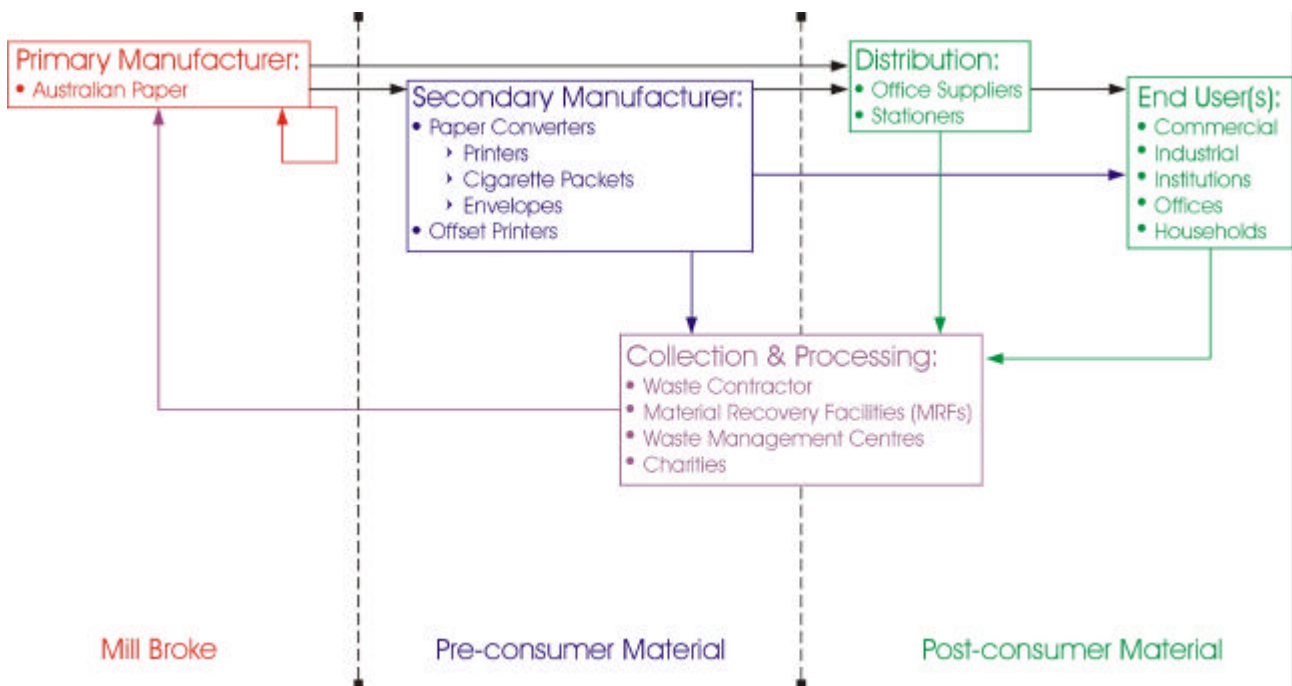


Figure 1: Paper Waste Stream Overview

### 3.1.2 Sources of Quality Feedstock

Consumers expect all-purpose copy paper to meet a certain standard of performance. To achieve the expected quality in the paper, only certain grades of recycled fibre can be used in the paper making process and these need to be carefully monitored and sourced from suitable operations.

Paper and cardboard products are produced in an extensive range of grades that encompass many different end uses. Recycled fibre can be utilised in a number of paper-based products including newspapers, cardboard boxes, tissue products and office papers. Each material has specifications for the grade of recycled fibre that can be utilised in order to achieve a particular quality in the end product. For example, when manufacturing newspapers out of recycled fibre, old newspapers are the preferred fibre source and the process has a low tolerance for poorer quality fibre found in grades such as cardboard packaging.

Much of the post-consumer wastepaper that is collected is not suitable for making office paper. Materials like old newspapers and other publications, used packaging and mixed waste paper from kerbside collections are not suitable to make office paper, but do provide substantial quantities of valuable fibre that can be used to make lower grade paper products.



**Figure 2: Baled Liquidpaperboard for Recycling**

The pre-consumer paper that is collected from industry is easily sorted and is consistently high quality with less chance of contamination. Fibre from liquidpaperboard (LPB) packaging is also utilised because the quality of the fibre meets quality specifications for office paper. Within Australia LPB is sourced from companies that generate scrap in the manufacture of LPB packaging, which is pre-consumer waste, and also the containers themselves collected from kerbside collections, which is post-consumer waste.

Another waste product utilised in the production of Australian papers is a by-product of the annual cotton seed oil industry in NSW, Australia (shown in Figure 3). This material is classed as industrial waste AS4082 – 1992, but is not a pre-consumer waste product. Utilising cotton linters assists the cotton industry to dispose of their industrial waste and also helps to ease the demand for new wood fibres. This has merit but would be overlooked by people seeking only 100% post-consumer paper.



**Figure 3: Baled Cotton Linter Waste**

To put the pre- and post-consumer debate into perspective for office paper there are a few fundamental points that should be remembered:

- Whether the wastepaper is sourced from printers' offcuts, an office or kerbside collections, they are all waste products that should be diverted from landfill.
- If pre-consumer waste is not recycled it will still end up as landfill.
- Using pre-consumer waste helps to ease the demand for new wood fibres also.
- Much of the post-consumer material collected does not meet the specification for high quality office paper. This material is utilised to produce other recycled content products such as cardboard packaging and tissue products.
- If much of the post-consumer waste that is collected was to be utilised for office paper it would need to undergo more costly sorting and cleaning before it could be used. Pre-consumer waste, on the other hand, is economical to collect and contains high quality fibre suitable for making high quality products such as printing and writing paper.

- Economically, it makes sense that good quality grades of wastepaper go into the highest value application. Utilising good quality wastepaper for low quality paper grades, ie. cardboard packaging grades, is not a proficient use of paper resources. Recycling high quality wastepaper into high-grade products maintains the quality of paper stock.
- There needs to be a balance between environmentally preferred products and a paper that will meet end user needs in terms of performance and quality of final print.

Used office paper is a good source of fibre to be reused in RCOP. However, Australian Paper is unable to utilise this fibre source because the Shoalhaven Mill currently lacks the de-inking facility to process this type of waste product and purchasing new equipment would require considerable capital investment. With increased demand for Australian-made products there may be opportunities to improve the mill and develop wider opportunities for the use of different grades of paper.

### **3.1.3 Comparable Definitions**

Confusion about the origin of the recycled content in paper is a matter of importance because of the apparent influence it is having on purchasing decisions. Furthermore, when comparing international and Australian products it is important to ensure that the same meaning is given to definitions.

The paper that is most highly recommended by groups that are encouraging Councils not to purchase Australian papers is Nautilus, also known as Canon 100, which is manufactured in Austria. All correspondence received from Australian representatives, state the paper is manufactured from 100% post-consumer waste, however information received from the mill itself states that the product is made from 100% recycled paper.

Confirming the actual content of the paper was further investigated through the Australian agent for Nautilus. More detailed discussions confirmed that the Austrian mill considers any paper products that have left the mill to be post-mill and therefore post-consumer waste. As a result many of the grades of paper that are used to make the paper, which the Austrian mill class as post-consumer, would be considered to pre-consumer under Australian and New Zealand standards. Furthermore the actual percentages of pre- and post-consumer waste cannot be defined for the Austrian papers because the content varies considerably between the different batches of paper. This is the same for RCOP manufactured in Australia.

Appendix G outlines the types of waste papers that are used to manufacture Nautilus. Nautilus has been approved to use the “Blue Angel” label, which is a German environment label for 100% recycled products. Details on Blue Angel restrictions for waste used state that 51% of the recycled fibre must derive from Groups I, II, IV and V, which include assorted and mixed waste from printing and publishing houses.

If this is an indication of the fibre that is used to manufacture the Nautilus paper, it should be noted that the use of waste from printing and publishing houses in Australia is classed as pre-consumer waste. This point highlights that the actual sources of waste paper should be confirmed before verifying any product is 100% post-consumer content in Australian terms to ensure information is accurate and comparable.

## **3.2 Sustainable Paper Recycling**

The argument that office paper should be 100% recycled fibre, or is not truly a recycled product, is another area of contention. Paper fibres differ from other recyclable materials such as glass and steel in that they can only be recycled five or six times. Paper fibres become damaged during the recycling process, shrink and break, so they are no longer strong enough to form paper.

The fact that paper fibres break down is rationale for using some new fibres to manufacture RCOP. When wastepaper is used to make recycled products, it is not possible to determine how many times the paper has previously been recycled, which impedes the ability to guarantee paper quality from batch to batch. Tables 2 and 3 demonstrate that many of the 100% recycled content papers are not recommended for use in high-speed applications because of this potential variability.

To overcome this problem Australian Paper has determined that the inclusion of 20% new fibre in the production of RCOP is sufficient to ensure paper quality can be managed and maintained more readily. Using a paper that is 80% recycled content could be viewed as 'not truly' supporting recycled products because the product is not manufactured from 100% recycled fibre. However, on the other hand higher quality paper that contains a percentage of new fibre may be viewed as utilising wastepaper without compromising on reliability of the paper.

The breakdown of paper fibre in the recycling process indicates that, the exclusive use of 100% recycled content paper products would not be sustainable over a long timeframe.

## **3.3 Benefits of Buying Recycled**

There are sound economic and ecological reasons for recycling paper and purchasing products manufactured from recovered fibre. The two primary goals and rationale for recycling are to divert waste that would normally be disposed of to landfill and to reduce the consumption of natural resources.

Increasing the amount of wastepaper that is utilised in paper production relieves the need for new fibre which eases the impact on forests, reduces the amount of material that needs to be disposed of to landfill, reduces greenhouse gases and also supports waste management systems.

Preliminary studies show that paper recycling has substantial greenhouse gas benefits compared to landfilling the same material. Some of the most significant impacts result from decreased energy use and process emissions compared to that consumed during primary production. Furthermore, paper disposed to landfill is a significant contributor to methane gas, which has a global warming potential that is 21 times more damaging than carbon dioxide (Metz, 2000).

### 3.3.1 Benefits of Buying Australian-Made Recycled Products

It may be argued that the use of any recycled content product, regardless of the place of manufacture, should be encouraged to reduce waste to landfill and alleviate pressure on natural resources on a global scale, however Waste Boards and Local Government are primarily concerned with local waste management.

Purchasing Australian products that utilise local waste materials support local recycling markets and assist local waste management. Although supporting any recycled product should be encouraged to close the loop on recycling and conserve natural resources, utilising imported recycled products ultimately increases the amount of waste material that needs to be handled and/or disposed of locally.

Buying imported recycled papers not only incurs the environmental costs of international transport and the economic costs of imports. If local markets for recycled paper are not subsequently supported, imported paper products will inevitably end up in the local waste stream and will be sent to Australian landfill or, if feasible, will be exported for reuse in international markets. Importing waste products from overseas and then exporting Australian waste products creates a very large recycling loop.

Recycling rates in Australia will only improve as consumers support local products which in turn encourages companies to invest in new technology dedicated to developing new recycled content products.

When noting the broader environmental implication of purchasing decisions, consideration should be given to the impact of long-distance transportation of imported products. Assessing the full environmental and economic impacts of long distance transportation is outside the scope of this project but is currently under investigation in both Australia and overseas.

A recent report from the United States, published in July 2000 (Bluewater Network, 2000), investigated the impact of pollution from large ocean-going vessels, which are overwhelmingly used for importing paper. The report claims that:

- Large ocean-going vessels are one of the largest pollution sources in the United States.
- Lack of emissions control regulations by US EPA and international regulatory agencies have allowed ships to become one of the top dischargers of nitrogen and sulfur oxides and diesel particulate matter in the world.
- Ship emissions are far more significant than previously estimated and represent a major contributor to global nitrogen and sulfur emissions from all petroleum sources (14 and 16 percent, respectively). Both of these pollutants have been implicated in global warming.
- The pollutants emitted from burning the dirty fuel leads to acid rain, global climate change, and damaging health effects for communities living near major ports.
- As commercial operations increase so does the threat to marine ecosystems.

As mentioned previously the issues that influence purchasing decisions are complex and subject to individual priorities. Some green groups in Australia have boycotted the use of Australian-made RCOP and encourage the purchase of imported brands, based on their views about the paper. To ensure people are making well informed purchasing decisions, accurate and concise information about all the factors pertaining to production and transport of the different brands of paper is required.



## 4.0 Education

With any new initiative or project, education is essential to ensure dissemination of project outcomes and understanding of the project objectives and subsequent findings. It is understood that many of the the SSWB member Councils purchase office paper through the Southern Sydney Regional Organisation of Councils (SSROC) so it is recommended that a C4ES representative attend a meeting with Council representatives and the SSROC to provide an overview of project findings.

An additional booklet containing information about the available brands of RCOP has been developed for wider distribution to Council staff and interested individuals. The summary report provides an overview of key project outcomes to:

- Reassure purchasing staff that office equipment suppliers can not legally boycott the use of a RCOP, without due cause.
- Assist Councils to make purchasing decisions by providing more comprehensive information on available brands of RCOP.
- Ensure understanding that not all RCOPs are recommended for use in all types of office equipment. As an example, some 100% RCOP is not recommended for high-speed use but are suitable for low speed copying, printing and faxing.
- Provide more detailed information about the misconceptions that are currently having an impact on purchasing decisions.

As follow-up to the report, it is recommended that Council representatives be given the opportunity to visit the Australian Paper Mill at Shoalhaven. Any doubts concerning manufacturing practices, use of recycled fibres and regard for the environment are best overcome by viewing the production of the paper and the associated waste treatment and speaking to Australian Paper representatives

### 4.1 Support for Improved Quality of Recycled Content Office Papers

#### 4.1.1 Northern Sydney Waste Board Paper Trial

The Northern Sydney Waste Board conducted a blind trial of recycled office paper versus new fibre paper in Willoughby Council to determine if there were any “real” performance problems with the recycled content brands that were selected for the trial.

Three types of paper were used in copiers, printers and fax machines – 80gsm new fibre paper, 80gsm paper with 50% recycled content and 90gsm letterhead with 70% recycled content. Staff were not told it was a trial for ‘recycled content’ paper, just that it was a trial for a new paper.

During the trial staff were asked to report on various aspects of the performance of each paper. Results showed that the recycled office paper got the top rating with recycled letterhead a close second and the new fibre paper third.

The irony of the trial is that the new fibre paper used, and least preferred by Council employees, was the brand that was currently being used by Council.

#### **4.1.2 U.S. Government Paper Trials**

The US Government has conducted extensive trials to evaluate the performance of office paper containing 30% post-consumer fibre in support of an Executive Order requiring federal agencies to use 30% post-consumer paper by December 1998.

In conjunction with three office equipment manufacturers (Canon U.S.A., Inc., Hewlett-Packard Company, and Lexmark International, Inc.), the U.S. Government Printing Office tested:

- Three brands of 30% post-consumer fibre multipurpose paper.
- Over a dozen brands of 30% post-consumer fibre copy paper.
- Paper with 20%-25% post-consumer fibre and new fibre content were used as controls.

Physical properties and performance of over 2 million sheets were tested on various models of copiers, laser printers, and ink jet printers. The 30% post-consumer papers were shown to have equivalent performance across a range of criteria including paper feeding, reliability, image quality, toner fixability, smoothness, and curl.

## 5.0 Future Focus

Supply of accurate product information is important to assist Council staff to make well-informed purchasing decisions. Quality of a product is one of the first priorities, however criteria relating to environmental considerations go beyond the actual quality and fibre content of different papers. Procurement staff are increasingly becoming concerned with the actual manufacturing processes associated with producing paper products, in particular the overall environmental impact of mill conduct. For example:

- The source of any new fibres used to supplement the recycled content papers or produce other non-recycled paper products.
- Affiliations with other mills and/or plantations.
- Use of bleaching or whitening agents.
- Water management and recycling systems.
- Regard for the immediate environment and implementation of sustainable practices.

Although mentioned briefly in this report, it is recommended that more detailed research be conducted to collate information that will provide Councils with a higher level of understanding of all the issues. Many Councils are being encouraged to boycott the use of Australian papers because of claims they source fibre from old growth forests, use harsh chlorine in the paper bleaching process that pollute waterways and do not utilise post-consumer waste in recycled papers. Australian Paper, state that these claims are ill founded and yet they are still having an impact on local government purchasing decisions.

Australian Paper, believe that often the wrong questions are being asked about the paper manufacturing process and decisions are often being made with incomplete or misguided information. For example, when considering the type of whitening agents used by a mill, attention should be given to the impact, if there is any at all, of the pulp mill wastewater discharge to the receiving environment, rather than just the agent used.

Furthermore, Australian Paper believe that environmentalist claims, that ‘only totally chlorine free whiteners are acceptable’ does not stand up to scrutiny and has a poor foundation in science. Individuals should be considering the toxicity of the effluent from the alternative bleaching strategies that are chlorine free also. Each bleaching strategy or chemistry has the potential to pollute so focus should be on the existence and functionality of appropriate abatement technologies that ensure the receiving environment is not affected.

In order to provide more quantifiable information about these issues, it is recommended that results of scientific testing of the water discharged to the environment should be reviewed before concluding that a company is having either an ill effect or negligible impact on the environment. Without further information is not possible to support or discredit Australian Paper’s views.

Overseas mills that produce the other recycled content papers should also undergo the same level of scrutiny.

## 6.0 References

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