

WASTE REDUCTION AND PURCHASING PLAN

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DATA TABLES B AND C

TABLE A: GENERAL AGENCY INFORMATION

Name of Agency/SOC:	ERARING ENERGY
Name of Minister:	Mr Kim Yeadon MP
Name of CEO:	Mr Gerry Grove-White
Agency Postal Address:	PO Box A 2238 Sydney South NSW 1235

WRAPP Contact responsible for preparing the report

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Agency bodies or locations covered by the report: (See Table 1)	Total number of staff in each body or location: (See Table 1)
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1. INTRODUCTION

This is the first Waste Reduction and Purchasing (WRAP) Plan produced by Eraring Energy since its formation as a State Owned Corporation on 2nd August 2000.

This plan provides:

- a summary of the activities undertaken by Eraring Energy and associated staffing numbers for the various sites (Section 1.1)
- data relating to purchasing and waste quantities (Data Tables B & C)
- a review of performance in respect of purchasing, waste minimisation & education
- a list of actions to deliver further improvements (Section 7).

1.1 Scope of business activities and sites covered by this Plan

Eraring Energy is one of three State owned power generation corporations. Table 1 provides details of sites owned by Eraring Energy and employment details for each of the sites.

Eraring Power Station is the major generation asset that supplies the bulk of power produced by the corporation and where 87% of its NSW based staff are located. It is a coal fired power station with a capacity of 2,640 megawatts that consumes about 5 to 6 million tonnes of coal per year and produces large quantities ash and flue gas emissions. A range of waste items are associated with this large scale industrial site.

A number of smaller generation assets involving hydro and wind energy are located at nine locations throughout NSW. These remote sites are either unmanned or have a small workforce and have a relatively small consumption of resources and waste creation. Data has been included for these sites but due to their remote location, limited scope of activities and limited opportunities for waste recycling they have a limited part in actions developed to achieve improvements.

The Collie Power Station, located in Western Australia, is operated by Eraring Energy, on behalf of Western Power. Activities at that site are not addressed by this Plan.

Eraring Energy operates in the National Electricity Market and has been subject to intense pressures to contain costs to maintain its competitive position. While it is recognised that cost savings may result from effective waste management Eraring Energy reviews options for waste management carefully prior to implementation to ensure that they are practical and cost effective.

Table 1: Sites covered by the Plan

Name	Location	No. of employees
Eraring Energy Head Office (227 Elizabeth St)	Sydney	16
Eraring		
Eraring Power Station (2,640 MW)	Eraring	320
Lake Macquarie Centre (Office facility)	Eraring	Nil - Used by PP
Hydro-electric power stations		
Bendeela Power Station (80 MW)	Kangaroo Valley	2
Brown Mountain Power Station (5 MW)	Brown Mountain	2
Burrinjuck Power Station (10 MW)	Burrinjuck Dam	2
Hume Power Station (58 MW)	Hume Weir	5
Kangaroo Valley Power Station (160 MW)	Kangaroo Valley	17
Keepit Power Station (6 MW)	Keepit Dam	1
Warragamba Power Station (50 MW)	Warragamba Dam	1
Wind Farms		
Blayney wind farm (10 MW)	Carcoar	Unmanned
Crookwell wind farm (5 MW)	Crookwell	Unmanned
TOTAL		366

1.2 Objectives of this Plan

Eraring Energy aims to improve its performance with respect to the following materials:

- Paper products
- Office equipment, components and toner cartridges.
- Vegetation waste
- Demolition and excavated materials.

Improvements are aimed to reduce the proportion of the above materials in wastes going to landfill and to assist the development of markets for recyclable items by procurement of materials with recycled content where prices are cost or performance effective.

2. APPROACH TO RESOURCE CONSERVATION AND WASTE MANAGEMENT

2.1 Environment Policy and waste initiatives

As part of its Environment Policy, Eraring Energy aims to take a leadership position in implementing “*cleaner production*” processes, that reduce resource inputs and waste outputs, where these processes are technically and economically feasible.

Eraring Energy has already achieved considerable success in the area of resource conservation and waste management.

The major waste for Eraring power station involves some 1.2 million tonnes per year of ash. The amount beneficially utilised has progressively increased to the stage where more than 45% of this product is now sold. The actual amount recycled is market dependant mostly linked to construction industry activity. Ash utilisation not only reduces the quantity directed to landfill but also reduces the quantity of resources that may need to be mined and processed elsewhere.

Another major input for Eraring Power Station is fresh water. With the implementation of a water reclamation plant, Eraring Power Station now converts sewage effluent from the Dora Creek sewage plant to useful water, not only beneficially using the communities waste stream but also reducing the fresh water consumption from Hunter Water Corporation.

The above programs together with recycling for other items such as waste oil, metals, paper, cardboard, toner cartridges, rebuilding of numerous valves, on-site bio-remediation of oily sludges and soils, on-site reuse of vegetation, seaweed, concrete and timber as well as materials recovery for light globes results in significant waste minimisation.

A comprehensive waste audit was undertaken for Eraring Power Station in 1996.

Eraring has at times had a waste management committee, but this initiative lapsed during the recent organisational changes. It is proposed that the committee be reformed with one part of its scope of activities being to oversee implementation of the WRAP Plan.

2.2 Operating Site Environmental Manuals

All generation sites have a reference Environmental Management Manual that incorporates a section on the management of wastes. One Manual applies for Eraring Power Station and a second applies collectively to the hydro-electric power stations and the wind farm sites. Both require updates to address current requirements for waste.

The waste section of the Eraring Power Station Environment Manual is currently being updated to address WRAPP requirements.

2.3 Eraring Power Station Waste Register

Being a large industrial site Eraring Power Station has a diverse range of wastes that need to be managed. To assist station staff to ensure compliance and to maintain best practice in the management of the various wastes a Waste Register for the Eraring site has been prepared. It covers some 107 waste types and provides guidance on waste classifications, handling procedure and the relevant station contact officer responsible for arrangements for the respective wastes.

2.4 Contract specifications

All contract works arranged by Eraring Energy are undertaken according to specifications that include clauses addressing environmental management, including where relevant, waste aspects. Specifications can be improved and a systematic review is required.

2.5 Existing achievements in relation to the WRAPP

Eraring Energy has already implemented a range of initiatives for reduction of waste items addressed by the WRAP Plan, including:

Paper and cardboard:

- Reduction of paper use by greater use of electronic communications, eg pay dockets distributed electronically, positions vacant circulars, newsbriefs, etc.
- Station manuals, procedures and forms are available on intranet
- Reduction in the use of computer paper by storing operating records on discs
- Separation of paper and cardboard from the waste stream and removal by recyclers
- EPA licence reports are now produced in electronic format, but the EPA is unable to utilise them in that form at this stage.
- Purchase of printers and copiers that allow double sided output

Toner cartridges:

- Recycling of toner cartridges

Construction and Demolition wastes:

- Separation of bricks and concrete and crushing for use on site, eg resurfacing trails
- Use of ash in concrete to substitute for natural materials

Vegetation wastes:

- Collection of seaweed from the cooling water canal and its reuse in land rehabilitation
- Mulching of wood wastes and use of the mulch for land rehabilitation
- Where lantana is slashed it is left on site rather than removed to landfill

3. DATA COLLECTION and MONITORING SYSTEMS

3.1 Data Collection for this report

Eraring Energy has utilised a number of systems to obtain data for this report.

In regard to purchasing, records of the MIMS system have been accessed to determine consumption of items over a 12 month period. This has been achieved by obtaining data for the period since the formation of Eraring Energy in August 2000 and up to March 2001 and by extrapolation for a 12 month period. Some items are purchased outside that system, but in most cases these are small amounts or not relevant to items addressed by this report.

Waste records are less detailed and in some cases quantities have been estimated by analysis of amounts accumulated at specific sites each week. A comprehensive waste audit was undertaken for Eraring Power Station in 1996 and the various waste streams are well defined. Furthermore a waste register was prepared for Eraring Power Station in July 2000 that identifies some 107 wastes produced on-site and provides guidance for their handling.

A brief waste survey has been undertaken to assist preparation of this Plan. This survey involved:

- Inspection of mixed waste bins (18 by 1.5 and 3 m³ bins and 240 litre bins).
- Inspection of paper and cardboard collection areas
- Inspection of recycling facilities within offices and around the Eraring site
- Inspection of office equipment
- Discussions with staff, including, Environmental staff, stores personnel, contract supervisors, waste contract co-ordinator,

While not representing a full waste audit, the survey provided sufficient information to allow meaningful conclusions to be reached as to the quantities of certain wastes and recyclable items and the effectiveness of existing waste reduction systems.

3.2 Data collection proposed for ongoing performance review and future reporting

A number of initiatives will be used to assist data collection for future performance reviews and reporting in relation to the WRAP Plan.

- Review of purchasing records stored in the MIMS inventory system
- Periodic waste surveys will be undertaken to provide more detail on quantities of wastes and recycled materials
- Records of waste contracts will be improved to ensure availability of data in the required format for WRAP Plan reporting.

4. PURCHASING

The bulk of purchasing by Eraring Energy is handled through the Eraring Power Station Procurement Group and records are maintained in the computer based MIMS system. The computer records of purchases have been accessed to assess consumption.

Changes over recent years have led to reduced inventory with associated cost savings and benefits of avoiding unnecessary purchases, thereby reducing the total amount of packaging introduced to the site. In some cases delivery of smaller quantities may mean more packaging per item but the quantum of packaging over the longer term is likely to be reduced.

Re-order points for routinely purchased items are set to minimise stocks carried but ensure sufficient for on-going operations.

Details of purchasing are shown in Data Tables B1 and C1.

4.1 Office materials

4.1.1 Paper

Eraring Energy uses about 6 tonnes/year of A4 & A3 paper. A3 paper represents 2.2% of the total. Systems have been introduced in recent years to reduce the amount of paper used. These include:

- Increased use of electronic mail (reduces paper use if message not printed);
- Provision of key documentation on the intranet rather than reliance on availability of hardcopies;
- Availability of electronic forms saves printing stocks and having excess unused as forms change. Only print out as required.
- Pay dockets circulated electronically
- Position vacant circulars now circulated electronically
- Electronic News briefs replace paper lists
- Some operational records are now recorded on computer disc rather than line printer paper

About 14.7% of the paper purchased has recycled content. The low proportion of recycled paper used is due to the following:

- Operational problems with paper having recycled content, fouling of copiers and printers and curling of pages in humid conditions leading to disruptions to output and confusion as to sequence of pages produced.
- Use of centralised printers for large groups of persons on-site means that operational problems create significant disruption. Often people submitting print jobs to queues may not be aware of the problem when sending the job.
- Double sided photocopying is more likely to be affected by problems with paper that has recycled content than for paper without recycled content.
- Suppliers of copiers and printers contacted by Eraring Energy would not guarantee the performance of their equipment using paper with recycled content.

- The paper with recycled content costs 20% more than paper without recycled content.

Following complaints about the recycled content paper by users of the printers and copiers and the inability of purchasing staff to obtain equipment that could handle the recycled content paper or to obtain recycled paper that is commercially competitive a decision was taken to not purchase paper with recycled content. However follow-up with manufacturers to identify equipment that will be suitable for paper with recycled content is continuing.

4.2 Packaging

No specific arrangements have been made in regard to requirements on suppliers for minimising packaging or returning packaging. Cardboard represents a large proportion of the packaging received on-site. Most of this is separated for collection by a recycling contractor. Some cardboard was noted in mixed waste bins, some of which was soiled and was unsuitable for recycling. There is an opportunity to increase recycling of cardboard by improved education to ensure that cardboard is not contaminated and that all clean cardboard is separated and recycled.

4.3 Office equipment – Copiers and printers

Eraring Energy generally has modern comparatively new printers and photo-copiers that mostly allow double sided copying and printing.

The double-sided features do not appear to be extensively used and there appears to be potential to reduce paper use by education to increase use of such features.

The re-use of paper that has already been printed on one side for draft documents does not appear to be utilised and offers a further area for improvement.

Eraring Power Station Purchasing Staff advised that they had been unable to obtain performance guarantees from equipment suppliers if using paper with recycled content. This appears to conflict with findings of other government agencies that have identified photocopiers that are able to utilise paper with recycled content. Future changes in office equipment represent the greatest potential for improvements to the proportion of paper purchased with recycled content.

Eraring Energy purchasing staff shall put in place purchasing practices that result in the purchase of low waste products or products with a recycled content where they are cost and performance competitive with non recycled product.

When Eraring Energy contracts the delivery of services to an external provider, the provider of those particular services will be expected to demonstrate their commitment to the waste reduction and purchasing policy.

4.4 Construction Materials

Eraring Energy purchases concrete from local suppliers and includes the requirement for inclusion of ash in the contract specification wherever technically feasible.

5. WASTES

Systems for reducing wastes generated by Eraring Energy at Eraring Power Station include sales of ash, on-site reuse of suitable wastes, and off-site recycling where markets exist and separation and collection are practically and economically feasible. Reuse or Recycling programs have been implemented for:

- Ash – (Currently about 45% of ash is sold, actual amount is market dependent)
- Water - Effluent from the Dora Creek sewage plant is treated on-site and used in place of fresh water
- Paper and cardboard
- Toner cartridges
- Concrete and building rubble is stockpiled, crushed and reused as required
- Vegetation wastes, including aquatic vegetation, are reused for land rehabilitation
- Some timber is reused if of suitable dimensions
- Metals (ferrous and non ferrous) are recycled
- Waste oil
- Mobiltac gear oil
- Steel 205 litre drums
- Aluminium cans
- Fluorescent Lamps (recovery of materials)
- Lead Acid batteries
- Conveyor belting

Items which are not suitable for reuse or recycling are removed off-site by waste contractors. Waste contractors collect mixed wastes at more than 18 sites, twice a week. Waste bins are 2 off 3 m³, 16 off 1.5 m³, and generally 6 to 8 of 240 litre bins. Quantities of waste in individual bins may vary significantly depending on the activities occurring in the vicinity of the collection point. Details of wastes disposed off-site by waste contracts are not detailed and are indicative only. There is room for improvement in waste recording, however obtaining precision would require weighing of loads which would add significant cost and this is not likely to be implemented on a regular basis. It is more likely that occasional measurements be made and that these results be used to extrapolate annual quantities. It is considered more important to have monitoring and corrective measures to ensure items that can be reused or recycled do not become included with wastes going to landfill.

The quantity of paper wastes recycled is estimated to be 2.3 tonnes/year (estimate). The low proportion of paper waste in the general waste bins indicates that recycling of paper is effective, but cardboard recycling can be improved. It can be deduced from the data available that an accumulation of several tonnes of paper records occurs per year. Once stored the records are unlikely to be removed from the system in less than 10 years. Systems are being progressively introduced to reduce reliance on hardcopy.

6. EDUCATION AND COMMUNICATION OF WRAP PLAN TO STAFF

Eraring Energy recognises that all its staff and contractors can have a role in the achievement of the WRAP Plan objectives. Accordingly a number of actions have been developed to assist knowledge of the requirements and to enhance its implementation and outcomes. These actions include:

- Environmental Awareness Training currently includes discussion of waste issues and will include details of the WRAP Plan
- Contractor induction addresses environmental issues and where applicable waste issues
- A Waste Management Committee will be reformed to provide direction and review for waste matters.
- Feedback on performance in waste reduction will occur annually
- The WRAP Plan will be installed on the Intranet.
- Waste Register (for Eraring Power Station) that provides guidance for site staff as to waste handling including reuse and recycling options is also installed on the Intranet.
- Other information may also be provided on the Intranet (eg. sources of supply, reviews, updates, etc.)
- A Waste management co-ordinator has been appointed and will co-ordinate the implementation of the WRAP Plan.

7. ACTIONS

The following actions will be implemented to assist Eraring Energy to achieve the objectives of its WRAP Plan.

7.1 Waste Reduction and Purchasing Plan

- (a) Seek EPA approval of the WRAP Plan and maintain liaison with the EPA.
- (b) Implement improved monitoring systems to enable annual reviews of performance of the Plan and biennial reporting to EPA
- (c) Eraring Energy staff to be notified of WRAP Plan during Environmental Awareness Training.
- (d) The WRAP Plan is to be available electronically to all work groups.

7.2 Waste Management Committee

- (a) A waste management committee to be formed with representation of each of the relevant groups involved in the operation and maintenance at Eraring Power Station. A co-ordinator will be appointed to arrange the meetings, provide minutes and follow-up actions.
- (b) Each group will nominate a member as a coordinator.
- (c) The Waste Management Committee shall set the WRAP Plan's objectives and targets and review of performance.
- (d) After each annual review the Waste Management Committee will consider whether the Plan requires updating.

7.3 Office equipment and electronic messaging

- (a) Purchasing Officers arranging office equipment replacements shall consider the WRAP Plan objectives and obtain quotes for office machines that can use paper with recycled content and where relevant enable double sided copying.
- (b) Train personnel to maximise use of electronic forms and messaging.

7.4 Purchasing

- (a) Purchasing procedures be reviewed and updated to address WRAP Plan objectives.
- (b) The amount of paper purchased with recycled content be progressively increased as compatible equipment is obtained.

- (c) A systematic review of specifications involving purchasing of equipment and materials covered by the WRAP Plan be undertaken and requirements to assist achievement of WRAP Plan objectives be included.
- (d) A systematic review of contract works and services specifications be undertaken to identify aspects that can be updated to address WRAP Plan objectives.

7.5 Wastes

- (a) Signage be updated on all bins for recyclable materials clearly stating acceptable items and non-acceptable items.
- (b) Record keeping for wastes addressed by the Plan be improved to assist monitoring and reporting of the wastes.

7.6 Employee awareness

- (a) Employee environmental awareness training shall include details of the WRAP Plan requirements.
- (b) A co-ordinator will be appointed for the coordination and communication of waste management initiatives.
- (c) The WRAP Plan to be installed on the intranet.
- (d) Feedback on performance in waste reduction will be provided to staff at least annually.
- (e) The Waste Register that provides guidance to employees will be updated at least annually.

8. IMPLEMENTATION PROGRAM

The Actions listed in Section 7 will form the basis of an Action Plan that will be reviewed and updated annually by the Eraring Energy Waste Management Committee.

The Waste Management Committee will identify appropriate objectives and targets within 6 months of submission of this Plan. Performance will be reviewed annually and reported to EPA every second year or as required.

DATA TABLE B: ERARING (All Sites) - OFFICE EQUIPMENT AND MATERIALS

Table B1 - Purchases – (Based on extrapolation from records for 7 month period)

MATERIAL	TOTAL QUANTITY PURCHASED		QUANTITY PURCHASED WITH RECYCLED CONTENT		COMMENTS (IF APPLICABLE)
	Quantity	Unit	Quantity	Unit	
A4 paper	3878	reams	1687	reams	Corporate Express EXP 800 \$4.47/ream Xerox Greenwrap 60% recycled \$5.72/ream (20.6% more) and associated with problems in printers/copiers at Eraring – Only in some areas – Mainly areas with high humidity.
A3 paper	141	reams	0	Reams	
Printing and publications paper	100	kilograms	0	kilograms	
Toner cartridges	97	cartridges	97	cartridges	99% of cartridges supplied are recycled.
Inkjet cartridges	85	cartridges	67	cartridges	85% of cartridges are recycled type
5 major paper stationery items					
1 - A4 Pads	260	items	260	items	All A4 pads purchased from Office Logics are now made from recycled paper.
2 - A5 Pads	70	items	70	items	All A5 pads purchased from Office Logics are now made from recycled paper
3 - Spiral note book	58	items	0	items	
4 - Exercise books	286	items	0	items	
5 - Envelopes 110/220	3000	items	0	items	
6 - Document folders	1600	items	0	items	

Table B2 - Waste - Note: fill out all categories (Data based on preliminary waste audit and waste contract records)

MATERIAL	TOTAL QUANTITY GENERATED		TOTAL QUANTITY RECYCLED		COMMENTS (IF APPLICABLE)
	Quantity	Unit	Quantity	Unit	
A4 and A3 <u>white</u> paper	1.5	tonnes	1.2	tonnes	Collected in local bins and transferred to large bags at 8 locations for off-site recycling.
All other office paper	0.9	tonnes	0.4	tonnes	Magazines, Newspapers, brochures, etc. Recycled with A4/A3 paper.
Packaging Cardboard	1.4	tonnes	1.0	tonnes	Cardboard recycled with paper
Used toner cartridges	97	cartridges	97	cartridges	Returned to store on new for old replacement system.
Computers and Computer monitors	200	number of units	100	number of units	Computers donated to non-profit organisations. Remaining equipment stripped of useful material and sent to salvage.

DATA TABLE C: ERARING (All Sites) – VEGETATION, CONSTRUCTION & DEMOLITION MATERIALS
C1 - Purchasing

MATERIAL	TOTAL QUANTITY GENERATED		TOTAL QUANTITY RECYCLED		COMMENTS (IF APPLICABLE)
Fill (Ash)	1,200,000	tonnes	588,000	tonnes	Eraring Power Station Ash sales represent 49% of ash produced up from 45%. Aim to achieve 60% by 2005.
Seaweed	600 wet (50 dry)	tonnes	50 (dry)	tonnes	Lake Macquarie City Council now using all seaweed from screens for land rehabilitation.
Vegetation	15	tonnes	15	tonnes	Used on-site for revegetation programs
Concrete	20	tonnes	0	tonnes	Stockpiled for future use within Eraring Power Station.
Asphalt	20	tonnes	20	tonnes	Stored for re-use at Eraring Power Station.
Timber	10	tonnes	9	tonnes	Reused until unsuitable for further use. Site shed is used to store wood pending its reuse.
Virgin Excavated Natural Material	1000	tonnes	1000	tonnes	Topsoil is reused for rehabilitation
Bricks and roof tiles	0	tonnes	0	tonnes	
Glass	0	tonnes	0	tonnes	
Plasterboard	0	tonnes	0	tonnes	
Metals ferrous and non-ferrous	66.72 Mixed 1.51 Stainless Steel	tonnes	68.23	tonnes	Minor amounts in mixed waste bins.
Mixed waste	107	tonnes	0	tonnes	Disposed via Rethmanns waste contractors (and Emu collection 21 tpa) to Awaba landfill
Waste oil	34	tonnes	29	tonnes	Range of oil types recycled from various plant. 3% not recoverable, mixed with water, ash and debris in contaminated water system.
Valves		items	80-90% refurbished	items	Most are re-built or directed to metal salvage
Light globes	8800	tubes /year	8800	tubes / year	Collected by contractor that extracts component materials