

Waste Management for the Olympics

Policies and Infrastructure for the 2000 Olympics and Homebush Bay Development

A consultancy for Green Games Watch 2000

Final Report

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Executive Summary

Waste management planning for the Sydney 2000 Olympics has already commenced, though few firm decisions have been made. There is considerable scope for the Sydney 2000 Olympics to meet, if not exceed, the objectives of the Sydney Olympic 2000 Bid's Environmental Guidelines for the Summer Olympic Games.

The following is a summary of the waste management issues associated with the two key government agencies for the development of Homebush Bay and staging of the 2000 Olympics — OCA and SOCOG — together with recommendations for further planning and development. (Note: numbers in brackets relate to recommendations contained in the body of this report).

OCA

OCA has developed an Environment Strategy which commits the organisation to the Sydney Bid Environmental Guidelines. It will convene a Waste Management Expert Advisory Panel to develop a waste strategy. This panel should have, as part of its terms of reference, the requirement to develop strategies that satisfy, or exceed the Environmental Guidelines (R1, 2).

Also to be convened is a Construction Material Expert Advisory Panel. OCA, together with this group and the Waste Expert Panel, has the opportunity to minimise the life-cycle environmental impacts of the facilities it is to develop. To do this will require up-to-date knowledge of worldwide waste minimisation best practice in the design and construction of facilities (R9, 10). It is most important that waste minimisation is built into the design phase of facilities (R11) and material specifications developed to maximise the use of low-waste and recycled materials (R12, 13).

Waste minimisation should also be incorporated into the design of the Olympic Village. The Sydney Regions of Councils' Model DCP/LEP should be used as a reference for the provision of adequate recycling and home composting facilities (R16). Re-use and repair centres, community composting areas and community gardens can provide a community focus for waste minimisation (R17).

Catering is an area that provides potential for waste minimisation — both for the Olympics and ongoing use of Homebush Bay. At the Lillehammer Winter Olympics, biodegradable plastic dinnerware was used. However a number of European catering companies have developed low-waste re-usable dinnerware systems for public events. OCA should investigate claims that these are the environmental and economic best choice (R22, 23). For packaged beverages, the use of refillable plastic containers, as used in Europe should be explored, together with any Health Department concerns (R25, 26).

To implement waste minimisation at public events, a wide range of players will need to be involved — facility managers, caterers, cleaners and waste collectors. It is likely that each facility will have a unique management/contractor arrangement. Hence, OCA will need to develop standard guidelines and conditions for all facilities so as to co-ordinate waste management (R31, 32). OCA should require specific waste management plans for major (non-Olympic) events *staged at Homebush Bay, including the Easter Show and major sporting events* (R34).

Large quantities of organic wastes will be generated at the Homebush Bay site — from landscaping and catering. OCA should investigate on-site composting options for these (R35, 36). For organics that can not be processed on-site, the use of the Waste Service NSW's proposed enclosed composting facility should be considered (R37).

SOCOG

SOCOG has given a commitment to the Sydney Bid Environmental Guidelines. This commitment needs to be translated into an implementation strategy (R6).

SOCOG faces the challenge of providing, during the Olympics, a residential Village for people from all over the world. The waste management systems will need to cater for a wide range of knowledge and skills of waste reduction. This means a simple system. To prevent waste, SOCOG should investigate the possibility of standardising the types of packaging sold at the Olympic Village (R14). A four stream waste and recycling collection system — *organics, paper, recyclable packaging, and residual waste* — is preferred. Drop-off points can be provided for household hazardous wastes (such as batteries) and a peer-education program can be used to empower all residents at the Olympic Village to participate (R15).

Sponsorship, promotion and merchandising are areas where SOCOG can play an important role in reducing waste. To do this, it will need to have a good knowledge of best practice waste minimisation in the fields of potential sponsors and merchandisers, so that it can truly press for best practice (R18, 19). Potential merchandisers seeking licenses should be required to justify the usefulness of their product/service and demonstrate best practice waste minimisation (R20, 21).

Sponsorship can be used to fund environmentally preferred systems that may not yet be economically viable. For example, the provision, through sponsorship, of low-impact washing systems for re-usable dinnerware could allow the equipment to remain in use after the Olympics. SOCOG should explore such possibilities (R24).

The staging of each Olympic event will generate different types and amounts of waste. SOCOG should develop specific waste management plans for each Olympic event.

SOCOG should be commended for establishing an in-house “green-office” project. SOCOG and OCA should work together to extend this concept to *all offices at Homebush Bay and other Olympic facilities*.

1. Review of Current Situation

1.1 Current Planning for the Olympics

The Sydney Olympic Bid

Associated with its bid for the year 2000 Olympics, Sydney Olympic Bid Ltd produced environmental guidelines for the Summer Olympics (Sydney Olympic Bid Ltd, 1993). These guidelines outline the bid organisation's position on environmental responsibility for an Olympic Games.

Now that Sydney will host the 2000 Games, these guidelines represent Sydney's international environmental commitment for the Games. A summary of the commitments for the Sydney Games relating to waste management is given in appendix 1.

SEPP 38

The Environmental Guidelines for the Summer Olympic Games has been enshrined in law through State Environmental Planning Policy (SEPP) No 38 (Department of Planning, 1993 and NSW Government Gazette, 1995).

The SEPP nominates the Minister for Urban Affairs and Planning as the consent authority for all Olympic Games and OCA projects. The Minister is required to consider the principles of ecologically sustainable development in deciding whether to grant development consent for such projects. The Minister must also consider the Environmental Guidelines for Olympic Games projects.

Greenpeace "LoWaste Olympics" report

Soon after the announcement that Sydney would host the 2000 Olympic Games, Greenpeace Australia commissioned a report by ITU Sydney on a strategy to manage wastes generated during the Olympics (Partl, 1995).

The report reviewed relevant government policies and legislative frameworks; estimated waste quantities and compositions for the 16 day events; and proposed a series of recommendations for waste avoidance, recycling and composting. A summary of the report is included as Appendix 2.

Homebush Bay Corporation Waste Management Workshop

The (then) Homebush Bay Corporation ran a one day waste management workshop in March 1995 (Denlay, 1995). Representatives from state and local government, industry, environment groups, SOCOG and representatives from various Homebush Bay facilities attended.

The workshop consisted of whole group brainstorming, small group discussions, group reporting and brief concluding discussions on the following waste management strategies for Homebush Bay:

- prevention of waste;
- re-use;
- recycling;
- composting;
- separation of materials;
- litter;
- waste handling;
- education.

The workshop group recommended that each of these strategies be considered for the following sectors:

- the residential area to be constructed at Homebush Bay;
- the industrial parks on the site;
- the events that will take place at Homebush Bay — most importantly, the annual Royal Easter Show and the Olympics.

The group also identified the following means of implementing waste management strategies and options in each of the sectors:

- regulatory measures;
- contractual arrangements;
- educational measures;
- fiscal strategies.

A wide range of views were put forward during the workshop, and in many cases little consensus was reached. A summary of issues raised is included in Appendix 3.

The Homebush Bay Development Guidelines

The Olympic Coordination Authority (OCA) has produced seven volumes of guidelines for the development of Homebush Bay. The first volume is the Environment Strategy (OCA, 1995).

The Environment Strategy states OCA's commitment to develop Homebush Bay "in a manner consistent with the *Environmental Guidelines for the Summer Olympic Games*" and notes that these Guidelines have been incorporated into SEPP 38. It also states OCA's support for "the NSW Government's goal of high quality and ecologically sustainable development in the Homebush Bay area".

In particular, the Environment Strategy is a document in which OCA "interprets the concept of Ecologically Sustainable Development (ESD) for Homebush Bay, describes the actions which can contribute to the achievement of ESD, and states the desired outcomes which influence all aspects of planning, development and management at Homebush Bay".

The other six volumes that form the Homebush Bay Development Guidelines are Area Structure Plan, Masterplan, Transport Strategy, Landscape Strategy, Design Codes, and Management Plans.

OCA's uses the National Strategy for Ecologically Sustainable Development as the basis for its understanding of ESD. It states the following principles of ESD in the Environment Strategy:

- the precautionary principle;
- the 'cradle to grave' principle (as it applies to the life of structures);
- the principle of 'real costs' (particularly applicable to infrastructure);
- the 'polluter pays' principle;
- inter-generational equity.

The Environment Strategy identifies key performance areas for OCA's implementation of ESD — conservation of species, conservation of resources and pollution control. Waste Management is one of the specific outcomes for pollution control key performance area. Two specific outcomes for conservation of resources — construction materials and topsoils — also have relevance to waste management. Appendix 4 is a summary of the Environmental Strategy's outcomes and actions that relate to waste management.

The Environment Strategy outlines the methods OCA will use for environmental monitoring and evaluation of its work. This will consist of:

- establishment of an environmental advisory panel to provide advice to OCA

- establishment of expert advisory panels to provide advice to OCA through environmental advisory panel — one panel will be for waste management;
- monitoring and evaluation is to be reported through OCA's annual report.

The Strategy also states that OCA will work Green Games Watch 2000 (through its representation on the Environmental Advisory Panel), the CSIRO (on mutually agreed issues of technological innovation) and SOCOG (to assist in meeting overall Olympic environmental responsibilities).

OCA

The following is the author's assessment of the state of OCA's waste planning work. It is based on discussions with OCA's waste management officer (pers. comms, 18 March 1996).

OCA has the difficult task of planning for both the 16 day Olympics and the long term use of Homebush Bay. The factors that need to be considered in this context include:

- the cumulative environmental impacts of the long-term operations of the site can far exceed those of the 16 day Olympics;
- the high profile nature of the Olympics and the potential for sponsorships makes it an ideal opportunity to show-case innovative systems;
- such innovative systems may not be viable for the long-term uses of Homebush Bay;
- the residential areas (eg Olympic Village) can become important models for further urban developments in Sydney (even world wide) — for this reason they deserve special attention.

OCA have the responsibility for co-ordinating the development of the Homebush Bay facilities and other Olympic facilities. It is possible that each facility may have different owner, project manager and operator arrangements. In some cases OCA will have a strong involvement in design (eg the RAS site) and much less in others.

Further, each facility may have quite different and complex chains of responsibilities. For example, the current arrangements for the Aquatic Centre are:

- OCA is the land owner;
- Department of Sport and Recreation is the lessee;
- another party is the operator;
- the operator contracts the catering to another party;
- the operator contracts the cleaning to another party;
- the operator contracts the waste collection and disposal to another party.

Hence, OCA will need to consider a wide possible range of management and responsibility structures for facilities in implementing its Environmental Strategy. It may need to develop general guidelines that apply to the lessees/operators that then filter down to the contractors. The important time to commence implementing the strategy is during the design of facilities.

OCA is planning to developing a position paper, providing an overarching framework for the issues of waste management. This will be reviewed by OCA's Waste Management Expert Advisory Panel. The panel will also be involved in reviewing the design for each facility.

OCA has commissioned a review of waste management at the Homebush Bay stage one developments — the Aquatic Centre and two Athletic facilities. Waste management systems for these facilities were established before OCA was formed. The review provides an opportunity to improve waste services, in keeping with OCA's guidelines. The review has been supported by the facility operator.

The review, which included waste audits, found that while recycling facilities were well used by the public, the system could be improved. It also found that current contract arrangements provide no incentives for cleaners to follow through with recycling.

The review has found scope for improvement, including :

- the need for a waste minimisation strategy to be followed right through the facility;
- purchasing strategies that facilitate better recycling (eg, limiting the range of packaging materials sold);
- the need for strong contractual arrangements;
- the possibility of on-site composting for food and garden waste.

At present, there is a lack of data on expected waste quantities and compositions for Homebush Bay and the Olympics. OCA is soon to commission a study to identify expected waste quantities (based on site usage forecasts and other information).

The proposed Olympic Stadium

Following a tendering process, the NSW Government has chosen a preferred consortium, Australia Stadium 2000, for the design, construction, financing and operation of the Olympic Stadium.

Features of their proposal for the Stadium include (Richmond, 1996):

- savings in minimising waste, compared with conventional stadiums;
- life-cycle-assessment during design to maximise opportunities of meeting ESD;
- minimum use of PVC — none to be used for plumbing, drainage, or flooring;
- use of reduced toxicity paints and consideration of alternatives to synthetic carpets;
- a comprehensive waste management plan, both during construction and operation, to minimise waste and maximise recycling, and stadium's suppliers will be required to reduce unnecessary packaging.

OCA is still negotiating with Australia Stadium 2000. However, it has acknowledged that this proposal matches the Government's commitment to ESD and OCA's Environment Strategy.

SOCOG

The following is the author's assessment of the state of SOCOG's waste planning work. It is based on discussions with SOCOG's Executive Manager of Facilities and Manager of Environment (pers. comms, 25 March 1996).

SOCOG is committed to meeting the Environmental Guidelines of the Sydney Bid and aims to implement these via a philosophy of best practice. It will seek outside advice on waste management issues, using methods such as peer review. It also wishes to lead by example. For example it will establish a "Green Office" program to reduce waste in its own office. This will also provide a means of further informing and empowering staff on environmental issues.

For the staging of the Olympics, SOCOG requires "clean" facilities. This means that the facilities are clear of advertising and there are no contractual commitments that prevent SOCOG's staging its events. SOCOG would prefer to take over facilities with existing services/contractors — but under a different chain of command. In some situations, SOCOG may need to establish new arrangements for services/contractors during the Olympics, for example, to cater for the greater scale of the events.

The focus for SOCOG's environmental work in sponsorship is to seek good environmental practice in the normal practices of sponsors. It has succeeded in incorporating an environmental responsibility clause into the IOC's international sponsorship guidelines. It is also working with major national sponsors and sponsors associated with facility construction. SOCOG is also looking at opportunities for a waste management sponsorship category.

SOCOG is aiming for environmental responsibility from suppliers in exchange for promotional opportunities. For example, it has given the building industry the task of developing alternatives to PVC in temporary buildings.

SOCOG expect there to be around 15,000 types of Sydney Olympics merchandise. Some of this will be products and services developed at the request of SOCOG. Others will be private initiatives. SOCOG will survey the environmental credentials of the products and services that companies seek licensing rights for.

During the Olympics, the Olympic Village is better thought of as a large resort than a residential area. The “guests” will have responsibility for some matters, such as laundry and there will be shopping centres and services such as hair salons. Meals will be provided in communal dining rooms. It is possible that the kitchens of the apartments will not be fitted out.

Education to support the many logistical issues associated with the Olympics, such as waste management, will include:

- education, through TAFE of the 30-40,000 Olympic volunteers;
- use of each countries Games “Envoy”. Each Envoy commences their work with their country’s Olympic team a number of years before the event.

1.2 Best Practice Waste Management

Benchmarking at recent Summer and Winter Olympics.

This section will review innovative waste minimisation and management practices for past Olympics, future Olympics and those proposed by cities bidding for future Olympics.

Lillehammer, 1994 Winter Olympics

- manual for sponsorship, including in-kind sponsorship, included environmental objectives (eg, the refusal to allow Kodak to export effluent from their donated film laboratory led to the company installing equipment that produced only one-tenth of the maximum emission standards);
- a “green office” project to promote the use of environmentally friendly office equipment and procedures, including standards for suppliers of office materials;
- requirement for the main sponsors to support Lillehammer’s environmental profile, and for local sponsors to specify two or three areas in their own operations where environmental efforts will have an impact and improve their own profile;
- environment standards were specified in all contracts between the organising committee and official suppliers — this led to:
 - use of a new compostable (96 per cent potato starch plates and 80% spoons) dinnerware,
 - all disposable cups used to be made of recyclable cardboard,
 - watches without batteries;
- school projects to involve youth in environmental issues;
- all written information to be on environmentally preferred papers (eg chlorine free, recycled), and some staff were given responsibility for environmental information;
- source separation of wastes in accommodation and catering areas;
- emphasis on materials and construction practices in temporary structures to facilitate re-use;
- 70% of the 20,000 temporary signs to be made of cardboard were recycled;
- lead bullet retrieval system at the biathlon stadium — up to 500 kg recycled;
- the range of products sold at official catering outlets was controlled to: paper cups, PET bottles (with deposits), compostable plates/cutlery, etc (no cans or glass);
- use of refillable drink containers combined with washing systems that incorporated water recycling and low impact detergents;
- environmental audits at all stages of development.

Atlanta, 1996 Summer Olympics

- target to divert 50 percent of waste away from landfill 8700 tonnes of mixed waste predicted for the 17 days);
- hope to use compostable cutlery and to have a composting facility (though time may not permit);
- a sponsor, International Paper, has agreed to take all waste paper and cardboard for recycling;
- packaging for all equipment (thousands of pieces) is being stored for re-use.

Stockholm, Bid city for the 2004 Summer Olympics

- considering how to certify their Olympic Games under EMAS or ISO14000.

References: Myer, 1996; Haugsjaa, 199?; Kaspar, et. al., 1993; Partl, 1995.

An overview of best practice

This section will provide a brief overview of best practice in a range of fields that relate to waste minimisation and management at Homebush Bay and the 2000 Olympics.

Facility construction

A case study of best practice is the construction of the Dandenong Police and Court Complex by Fletchers Construction (McDonald, 1994). Waste minimisation initiatives included:

- planning, awareness and commitment for waste minimisation;
- separation and collection of bulk waste items for recycling, including: concrete, wood, plastics, paper, metals, glass, plasterboard and insulation;
- use of recycled products;
- energy savings in temporary electric design;
- co-ordination and liaison with trade contractors prior to and during contract works.

In addition, waste minimisation initiatives were implemented in offices and amenities.

The Dandenong project was benchmarked with a similar project at Frankston (which did not implement waste minimisation). The Dandenong project reduced waste volumes by 15 percent (before recycling), reduced waste removal costs by 55 percent and reduced landfill needs by 43 percent.

Fletchers is now seeking government funding to investigate the potential for further savings through waste avoidance at the building design and material specification stages; and to increase recycling rates during demolition.

A German project, in which a 1910 hotel was dismantled, rather than demolished resulted in 94 percent recovery of materials for recycling. The project demonstrated dismantling to be technically feasible, and analysis of the results showed it to be the best in economic terms (Warmer, 1995, b).

In Nuremberg, the city requires demolishers to remove for re-use or recycling all re-usable parts, such as heating systems, furniture, doors, and windows prior to demolition (Schimmack, 1994).

Event catering

- The city of Nuremberg, Germany, has banned single-use dinnerware at public events. At major events, such as the Nuremberg Christmas Fair, re-usable ceramic cups are used, with a A\$2 deposit. For smaller festivals, the local authority has purchased two mobile dishwashing trailer units — each containing a dishwasher and 3000 sets of crockery (Warmer, 1995a).
- Haberl Gastronomie GmbH, a large catering company in Munich, Germany which caters for the Munich Olympic Park (4.5 million visitors yearly), and other centres (such as beer gardens) has switched completely to low-waste systems. It uses a 0.4 l polypropylene beaker. With a deposit of

A\$1 it achieves a 100 per cent return rate. Where possible, returnable plates (made from Arkopal) are employed. Take-away snacks are packaged in edible dishes, or no packaging at all. The shift to a low-waste systems was done at no additional cost (Richert & Venner, 1994).

- A German company, Concept Cups has established a centralised supply and washing system for re-usable public event dinnerware. Re-usable mugs, cups, champagne glasses, deep and flat plates, dishes and cutlery are made available, with average re-use rates of 80 to 100 trips. Highly efficient dishwashers can wash 5000 mugs per hour, and use 8ml of water per mug. Even with transport distances of up to 60 km, the company claims re-usables are still preferred. The company also provides returnable mugs for use in vending machines. (Warmer, 1995b).
- The 1995 Scout World Jamboree, held in the Netherlands, used re-usable dinnerware for the 7000 co-workers and returnable plastic glasses (with a deposit) for the 30,000 scouts (including Australians) — the scouts cooked their own meals (Personal communications with Friends of the Earth, Netherlands, 15 March 1996).
- A Sydney company, Ecoplas (Contact: Dennis Jaffe) supplied 100,000 sets of potato and corn starch large plates, small plates, bowls, knives, forks and spoons for the 1994 Taste of Tasmania food fair in Hobart. The biodegradable dinnerware was separately collected with food scraps and taken to the local landfill, where it was fed to a worm farm. Patrons were charged an extra 50 cents per meal to fund the scheme — which received much support (Wood, 1995).

Merchandising

The Australian Conservation Foundation has developed a set of criteria for assessing products suitable for its Product Endorsement Program (ACF, 199?). These include:

- sustainable resource use — use of recycled and renewable materials; ease of repair, re-use or recycling; resource and energy conservation programs used during production;
- marketing — honesty and restraint in marketing; provision of customer information on use of the product and environmental impacts; minimum use of packaging; producer contribution to post-consumer re-use or recycling;
- transport — reduction in movement of raw materials; minimum social and environmental impacts of transport;
- pollution — minimum discharge of waste, minimum hazardous materials and waste; responsibility for post-consumer disposal;
- use — products that minimise energy use and waste;
- the company — demonstrated commitment to environmental management; contribution to state or national economy; environmental responsibility throughout all areas of the company.

The Centre for Design at RMIT has established an EcoReDesign project (1994). The centre assists companies in the design of their products. Life-cycle-assessment is used to identify opportunities to minimise energy use, resource use and waste; and to design for ease or disassembly, re-use and recycling. The Centre has also developed guidelines for designing for remanufacturing and designing for recyclability.

No discussion on best practice merchandising can occur without noting the inherent contradiction behind this concept. Green consumerism “fails to escape the logic and limitations of consumerism as a whole. Human fulfilment is still defined largely in terms of the purchase of commodities” (Irvine, 1989). Corporate sponsorship, of such activities as environmental awards, “allows companies responsible for massive waste, poor nutrition and other environmental problems to buy a ‘respectable’ public image”.

An alternative to green consumerism, according to Irvine, is “the sustainable and balanced satisfaction of different kinds of present and future human needs — material, psychological and spiritual — and those of other species”.

Domestic waste management

The city of Nuremberg Germany (population 500,000), is a good example of best practice in domestic waste management (Schimmack, 1994).

Households in Nuremberg are required to separate four different types of recyclables: cardboard, glass, biowaste, and packaging. Household hazardous wastes and bulky wastes are also collected separately. Using a four bin system, households have weekly biowaste and residual waste collections, fortnightly packaging collections (funded through a levy on all packaging sold) and paper is collected monthly. This multi-stream system was introduced with extensive community consultation and information.

A number of “bring” systems also exist. Household hazardous wastes are collected once each year at 60 sites across the city. Twenty garden waste collection points are provided. Non-returnable glass is collected via bottle banks scattered across the city. There are five recycling centres that accept a whole range of recyclable and bulky wastes, including old furniture, tyres, bicycles, and electrical appliances. Bulky wastes may also be collected from households on demand.

A private company accepts electrical items from the recycling centres and dismantles them for re-use of components, recycling of materials, and separation of hazardous substances. This company conducts research into the dismantling of common German electrical appliances.

Households pay for residual waste collection based on the size of bin they use. For example, a 120l bin costs A\$300 per year. If two neighbouring households share a bin, they both only pay half the fee and receive a 10 percent discount.

If a household composts all their food and garden waste, the city will pay them A\$100 for a compost bin as well as A\$40 for tools.

To assist with information and education, the city employs 12 waste advisers — four for households and eight for businesses.

Commercial waste management

Nuremberg also provides a good model for commercial waste management.

Commercial businesses are required to separate all recyclables: building rubble and excavation material from building sites, wood, metals, plastics, paper, garden waste and other recyclables. Remaining waste has to be sorted into:

- sortable wastes — taken to a commercial sorting plant (charges based on difficulty to sort);
- combustible waste which can't be sorted;
- landfillable waste — suitable for immediate landfilling;
- hazardous waste — which is taken to a special facility.

Businesses which produce more than 50 tonnes of waste per year are required to produce a waste report, and city inspectors have the power to control waste bins on any property.

Bans on the use of throw-away dinnerware at public events has reduced waste at public events by 70-80 per cent. The retail traders association placed a bulk order for 2-3 million linen bags — at a low cost — as a substitute to throw-away plastic bags.

The city has worked with a wide range of trade associations to implement industry waste reduction programs. Information leaflets and pilot programs have been developed.

1.3 Relevant Government Policies

National Waste Minimisation Strategy and ANZECC Waste Taskforce.

The Commonwealth Government's 1992 National Waste Minimisation and Recycling Strategy sets the national target of halving waste to landfill (based on 1990 levels) by 2000. The strategy outlines numerous commitments to minimising waste. However, there has been little action in following through with these. As an indication of how slow progress has been, the Commonwealth is only now conducting a study to determine what the 1990 base-line waste levels were.

Much more active has been the work of ANZECC. In 1992 it established a National Kerbside Recycling Strategy (National Kerbside Recycling Taskforce, 1992) in which ANZECC negotiated the following material specific domestic recycling targets with industry:

<u>Material</u>	<u>Target</u>
rigid and semi-rigid plastic containers	25% recycling by 1995
glass containers.....	45% recycling by 1995
aluminium cans.....	65% recycling by 1995
steel cans.....	25% recycling by 1996 and 45% by 2000
liquidpaperboard.....	20% recycling by 1995
newsprint.....	40% recycling by 1995
paper packaging	71% of input fibre to be secondary by 1995

These targets were voluntary. It is of concern to note that a number of industry sectors (ie, sections of the plastics industry and liquidpaperboard) failed to meet quite low targets.

These narrow voluntary material specific recycling targets have received much criticism. In response, ANZECC, at its November 1995, agreed to a much broader scope for its next wave of waste reduction initiatives.

ANZECC's priority waste streams are:

- green/organic waste;
- construction and demolition waste;
- commercial, industrial and institutional waste (post-industrial packaging and office waste);
- post-consumer packaging and paper.

The priority industries which ANZECC wish to achieve waste reduction agreements are:

- the construction and demolition industry;
- the packaging industry;
- the paper industry;
- those industries which generate post-industrial packaging and office waste.

Such plans shall extend beyond recycling to consider factors including source reduction, product redesign, production waste reduction, and litter reduction. A national framework for reducing organic waste will also be developed.

Implementation of the ANZECC program has commenced and is expected to be completed by mid 1997.

One Commonwealth initiative of particular note is the Waste Wise program. This involves the five large construction companies entering into project specific memorandums of understanding with the Commonwealth EPA on a broad range of waste minimisation initiatives.

NSW Waste Minimisation and Management Act, 1995, and other Government initiatives.

Waste Minimisation and Management Act, 1995

In late 1995, the NSW Parliament passed the Waste Minimisation and Management Act, 1995. Key elements of the act included:

- an objective of reducing waste to landfill by 60 percent by 2000;
- the requirement for waste minimisation and management to be conducted in accordance with the principles of ecologically sustainable development;
- the formation of a Solid Waste Advisory Council (SWAC) — an independent body to advise the Environment Minister on a wide range of waste issues, including funding;
- the establishment of Waste Regions — councils can combine in regions which have the power to enforce waste reduction in the domestic and commercial sectors;
- Industry Waste Reduction Plans (IWRPs) — industries are given the option of developing voluntary plans, or having them imposed by the Government;
- strong penalties for non compliance — waste offences are now brought under the Environmental Offences and Penalties Act, including illegal dumping and failure to comply with IWRPs.

The Government has allocated \$60 million over five years to support the formation of Regional Waste Boards, enforcement and other initiatives. Sydney Council's have been given until mid 1996 to identify how they wish to form into regions. The EPA has indicated that only four regions in Sydney may be formed. There is a wide range of views in local government on this matter, however it is likely that it will press for four to six regions (possibly following existing ROCs) together with an overarching Sydney wide co-ordinating body. The NCC's Waste Crisis Network advocates one region for Sydney with existing ROCs operating as sub-regions.

During the passage of the waste legislation through parliament, environmentalists lobbied for events such as the Olympics to be the subject of an Industry Waste Reduction Plan. Such a plan could span the many industry sectors that relate to waste management at the Olympics. The Minister for the Environment, in a letter (dated 29 February 1996) to Friends of the Earth (Sydney) claimed that the EPA working with OCA (on ways that waste reduction can be incorporated into design specifications and ways in which catering contracts can require alternatives to single use packaging) are "more effective than an Industry Waste Reduction Plan".

Green Waste Action Plan

A draft "green waste action plan" was recently announced by the Government. Key features include:

- a ban on the disposal of garden waste to landfill by January 1998 if viable systems can be established for its collection, processing and marketing;
- the Waste Service investing \$10.5 million in an enclosed composting facility to process 55,000 tonnes per year of food and garden waste;
- a \$150,000 Green Waste Initiatives Grant scheme for local government; and
- the development of environmental guidelines for the operation of composting and mulching operations.

Much work has already been done regarding green waste. Waste Service NSW has made provision at all its transfer stations and landfills for the separate delivery of garden waste. A modest price discount is offered for commercial and council loads. A number of private companies compost these materials and approval has been obtained for the Waste Service to conduct composting at its Eastern Creek landfill.

Government waste reduction and purchasing policy

In July 1995, the NSW Government announced a waste reduction and purchasing policy for all state government agencies (both budget- and non-budget-sector agencies) and works carried out for agencies. The policy consists of three key elements:

- requiring agencies to examine what wastes they generate and adopt responsible management practices aimed at reducing waste. This consists of conducting waste audits, and identifying

opportunities to avoid, re-use and recycle, with an emphasis on office paper, office equipment components, vegetation, and construction products.

- requiring agencies to purchase low-waste products when such products are cost competitive and of equal quality than alternatives. Initially this requirement applies only to recycled paper products, office equipment capable of using recycled paper, recycled components of office equipment, recycled landscape materials, and recycled construction products.

- requiring agencies to produce waste reduction and purchasing plans, for review by the EPA, that report on the agency's performance in implementing the policy.

Local Government roles and responsibilities in waste minimisation and management.

Recycling and green waste

All Sydney council provide some form of domestic recycling services. In recent years, a number of these programs have shifted from kerbside sorting of recyclables to co-mingled collected and sorting at a materials recovery facility (MRF). In most councils, ratepayers fund part of the recycling service — as resale prices are not sufficient to cover collection costs. Most Sydney councils have come together to form the Local Government Recycling Cooperative; which serves as a delivery point for recyclables and marketer for the collected materials. At present, the Cooperative is located at Rhodes, but will move to Chullora in the next few years.

Many Sydney councils provide some form of separate garden waste collection. Willoughby is the only council to provide residents with a separate bin for a full-scale regular garden waste collection. The current price differential offered by the Waste Service (\$3/tonne) has had limited effect in encourage councils to collect green waste separately.

Waste Not...

The combined Sydney ROCs have developed a model development control plan and local approvals policy (Combined Sydney ROCs, 1995). These models are in a form suitable for adoption by individual councils as draft DCPs and LAPs. They specify requirements for waste management planning, provision of waste management facilities in developments, and practices to minimise waste during construction and demolition. The aim is to ensure that waste management is adequately incorporated into the design of a development at the approvals stage.

Education

Many Sydney councils are employing waste education officers to provide education services to residents, schools and workplaces. A number of councils have established Earth Works groups — groups of local residents who, after receiving initial training in waste reduction, recycling and composting, volunteer their time to educate members of their community on these topics.

ROCs and Regional Waste Board

Local government waste management roles and responsibilities are set to significantly change under the Waste Minimisation and Management Act, 1995. Sydney councils will be bound to regional waste plans developed by their Regional Waste Board. The plans and the council's responsibilities will extend beyond the traditional domestic waste focus to include commercial, industrial and construction wastes. Councils will be expected to take on an enforcement role for waste management across all these sectors. Local government has expressed concerns that there may not be adequate state government funding to allow it to carry out these roles.

1.4 Relevant Environment Movement Policies

NCC and Waste Crisis Network

A number of environment and community groups are active on waste issues. The NCC's Waste Crisis Network provides a forum for the co-ordination of policy and campaign work between these groups.

The following NCC policies have been developed through the Waste Crisis Network, with particular input from groups including Friends of the Earth, Total Environment Centre, Greenpeace and Sutherland Shire Environment Centre.

Legislative Package for Waste Reduction

The following package has been jointly developed by the NCC and the Local Government Association of NSW:

- a legislative packaging is required:
 - to ensure industry takes life-cycle responsibility for their products and packaging.
 - to provide for point of sale return of products and packaging.
 - for the placement of refundable deposits on appropriate products and packaging items.
 - to ensure manufacturers of products and packaging assess, and disclose full details of, the life-cycle impact of such items.
 - so that all sectors of the community (including manufacturers, retailers, consumers as well as federal, state and local government) meet compliance targets for product re-use and material recycling; and
 - to prohibit the most wasteful and hazardous products and materials from sale.

- non-legislative measures
 - preferential government purchasing of low environmental impact products;
 - increasing percentage of government budget be spent on low environmental impact products;
 - establishment of collection services and municipal-scale composting facilities for food and garden waste;
 - providing markets for composts;
 - bans on disposal of building, demolition and excavation waste;
 - re-use and recycling of building, demolition and excavation waste be part of the development consent process;
 - a revenue-neutral rebate scheme where levies on wasteful activities fund rebates on low waste activities;
 - advanced disposal fees applied to appropriate items to finance waste avoidance education programs;
 - mandatory source separation, disposal bans and user pays waste charging.

A waste management strategy

The following three stage approach to waste minimisation and management strategy was adopted by the NCC at its 1995 annual general meeting. It provides an alternative to raw waste landfilling or mass incineration:

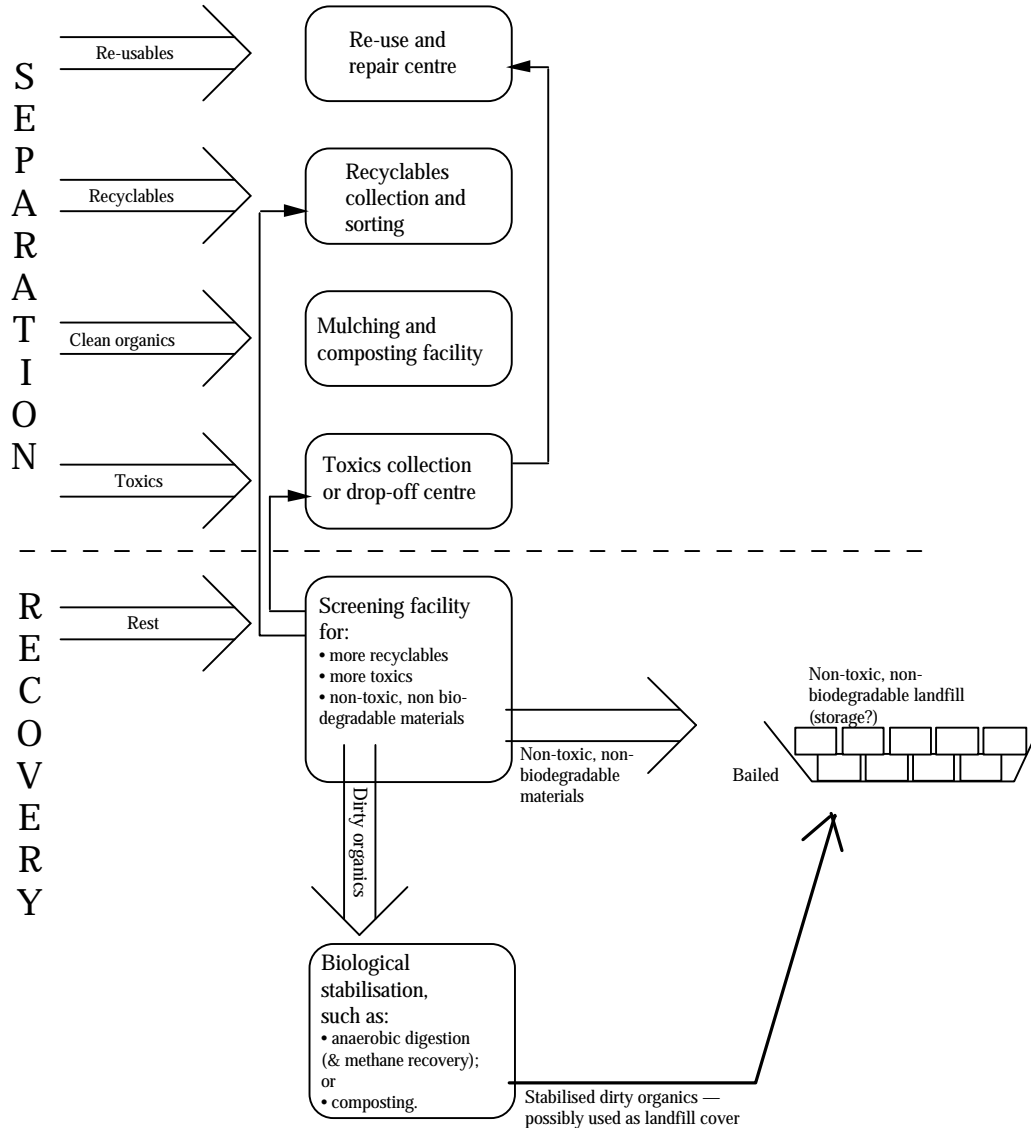
PRIMARY STAGE (source separation): Consumption reduction, product re-use, materials recycling, composting of source separated organics, source separated recovery of toxics.

SECONDARY STAGE (depot separation): After fully exploiting source separation, the ever decreasing remaining waste is sorted at a depot into the following streams:

- re-usables — recovered for repair/re-use;
- recyclables — recovered for recycling;
- toxics — recovered for using up, recycling or treatment/disposal;
- non-biodegradable/non-toxic materials — bailed and send to non-putrescible landfill;
- the residual is “dirty organics” which undergo the tertiary stage — stabilisation.

TERTIARY STAGE (depot stabilisation): The small fraction of biodegradable residual is subject to biological stabilisation by composting or anaerobic digestion (in which energy can be harvested). The stabilised product can be landfilled and poses much less threat to the environment compared with raw waste.

The process can be summaries through the following diagram:



Greenpeace Chlorine Campaign

Greenpeace has a worldwide campaign to phase out the use of chlorine in products and industrial processes. Greenpeace Austria has published a report on alternatives to PVC products (Greenpeace, 199?) — a particular focus of Greenpeace’s campaign.

GGW2000’s Major Outcomes

Green Games Watch 2000’s major outcomes include:

- implementation of ESD in the planning, design, construction, and operation of Olympic facilities to ensure a high standard of environmental protection for Sydney and other affected areas;
- use of international best practice in the environmental management of the Olympic Games to improve and promote the competitiveness of Australia’s environmental management industries in the Region and beyond;

- integration of environmental planning and management for the Olympic Games and Greater Metropolitan Region to ensure that infrastructure investments for the Games will provide environmental and other benefits for both existing and future residents of Sydney.

2. Assessment of Current Situation

2.1 Introduction

This section will assess the policies, planning and infrastructure development conducted to date for the Olympics and Homebush Bay. This assessment will be made in the context of ecologically sustainable development.

Recommendations to the NSW Government (in particular OCA and SOCOG) are formed out of this assessment.

2.2 Assessment of Where We Are Now

The Sydney Bid

The Sydney Olympic Bid Ltd's Environmental Guidelines is a most important document for both the Olympics and long-term development of Homebush Bay. The Guidelines, together with the principles of ESD form an important part of the legislative framework for all developments and activities associated with the 2000 Games. Indeed, the Guidelines should be regarded as the 'non-negotiable' starting point from which environmental strategies for the Olympics should be developed. Also, OCA's commitment to developing Homebush Bay "in a manner consistent" with the Environmental Guidelines (OCA, 1995, p. 4), adds further importance to them.

Homebush Bay Corporation and OCA

Given the legislative requirement (under SEPP 38) and commitment by OCA to develop Homebush Bay in accordance with the Sydney Olympic Bid Ltd's Environmental Guidelines, OCA's Environment Strategy should be an implementation strategy for these Environmental Guidelines.

However, the Environment Strategy falls short of serving this purpose. To OCA the aim of the Environment Strategy is to "interpret the concept of ecologically sustainable development (ESD) for Homebush Bay" (p. 6). A far more appropriate aim for such a strategy, given OCA's legislative requirements, is: to implement the Sydney Olympic Bid Ltd's Environmental Guidelines according to the principles of ESD.

In the area of waste management, the Environment Strategy provides for the establishment of an expert advisory panel which will investigate into waste management methods and develop a strategy for OCA's consideration. This process is welcomed. There is a need for the scope of the expert panel's work to directly relate to the Sydney Olympic Bid Ltd's Environmental Guidelines.

For OCA to put in place a waste management strategy for Homebush Bay, it will need to establish clearer performance objectives. For example the waste management objectives (as specified in the Environment Strategy) of optimising re-use, recycling and resource recovery and minimising possible waste to landfill are noble but need to be translated into more defined outcomes.

Recommendation 1: That OCA incorporate the following into the terms of reference for the Homebush Bay Waste Management Expert Advisory Panel:

- *the development of waste management strategies that satisfy, or exceed, the requirements of the Sydney Olympic Bid Ltd's Environmental Guidelines; and*
- *the development of waste management strategies that are in keeping with the principles of ecologically sustainable development.*

Recommendation 2: That OCA ensures that the waste management strategy to be developed by the Waste Management Expert Advisory Panel clearly specifies how each of the requirements of the

Sydney Olympic Bid Ltd's Environmental Guidelines (that relate to waste management) will be satisfied. This should include clearly defined benchmarks, indicators and targets.

The one day workshop on waste management organised by the Homebush Bay Corporation was a useful process at exploring the issues associated with developing and implementing waste management for the Olympics and other uses of Homebush Bay. There was notable support from representatives of the various Homebush Bay facilities and operations for innovative waste minimisation, such as on-site composting and re-usable dinnerware.

No follow-up eventuated from this workshop — possibly due to the change of the Corporation to OCA. Only an internal report on the workshop has been produced. It would be expected that OCA's Waste Management Expert Advisory Panel will replace this consultative work. It should be noted that there is the potential for overlap in the scope of the various expert panels identified by OCA — most notably between the Waste and Construction panels in the issues of facility construction.

The design stage for facilities will be an important time for OCA with regards to waste management. OCA intends to deal with this firstly by requesting the Waste Management Expert Advisory Panel to develop a waste management strategy based on an OCA position paper. OCA then intends to work with each of the facility project managers to incorporate waste minimisation into their design work. The expert panel will serve a reviewing role for this.

For OCA to be effective at achieving best practice waste minimisation at each facility, it will need to overcome the difficulties presented by the potentially complex chain of management and responsibilities. A test case for OCA will be how it responds to the review of current waste management practices at the existing Aquatic and Athletics facilities.

The commissioning of a study on anticipated waste quantities at Homebush Bay is welcomed.

Recommendation 3: That OCA's internal report of the waste management workshop organised by the Homebush Bay Corporation be made available to SOCOG and OCA's Environmental Advisory Panel and Waste Management Expert Advisory Panel

Recommendation 4: That the Waste Management Expert Advisory Panel coordinate its work on construction waste management with the Construction Materials Expert Advisory Panel.

Recommendation 5: That OCA consult broadly (beyond its experts panels) in developing its position paper on waste management.

SOCOG

SOCOG's commitment to the Environmental Guidelines of the Sydney Bid through a philosophy of best practice is welcomed. A demonstration of this commitment would be for SOCOG to develop an implementation strategy for its environmental responsibilities.

Recommendation 6: That SOCOG develop, with broad consultation, an implementation strategy for the those parts of the Sydney Olympic Bid Ltd's Environmental Guidelines that relate to its activities. This should include clearly defined benchmarks, indicators and targets.

Sponsorship, promotion, and merchandising are important area where SOCOG can influence potential sponsors or merchandisers to adopt best environmental practices. However, to be effective in this, SOCOG needs to be well informed on what is best practice.

The Olympic Games can be an important forum to show-case emerging best practice. SOCOG should strive for such emerging best practice in its sponsors and merchandisers, while being wary of tokenism and window dressing.

The four years before the Olympics is sufficient time for industries serious about environmental best practice to research and develop new products and practices. SOCOG has the opportunity to use the “carrot” of potential sponsorship, promotion or merchandising licences as a means of encouraging such industry innovation. SOCOG’s work in encouraging the building industry to phase out PVC in temporary structures is a good examples of the role it can play.

Specific recommendations regarding sponsorship, promotion and merchandising are included below, in the section on Public Events.

With regards to SOCOG’s consideration of a waste management sponsorship category, it is important that companies considered for such sponsorship should demonstrate a strong track record in efforts to both minimise and manage waste in ways that exceed local requirements and expectations.

Recommendation 7: That SOCOG, if it chooses to establish a waste management sponsorship, ensure that candidate companies are active in waste prevention, minimisation and education programs — beyond just recycling collection schemes, and have high standards for their management of residual wastes.

Waste Management in Sydney

Following a six year hiatus, waste management in Sydney is set to undergo considerable change. Regional waste planning will see much more coordinated approach to waste planning and management, and an entry into the area of commercial and industrial waste reduction. Waste minimisation and recycling services and facilities should expand, in particular garden and food waste recycling. Industry waste reduction agreements offer the potential for less wasteful products and greater support by industry for recovery, re-use and recycling programs. Stricter requirements on waste disposal practices should see waste disposal costs rise — helping to make waste minimisation alternatives more viable.

Homebush Bay is well located in regards to waste infrastructure. A Waste Service NSW transfer station is adjacent to the site. The Waste Service NSW is establishing an additional transfer station nearby at Chullora. The Local Government Recycling Cooperative will relocate from Rhodes to Chullora, making this site an important waste management facility.

Recommendation 8: That OCA ensures that the waste management requirements of Homebush Bay are adequately reflected in in any regional waste planning conducted by a Regional Waste Board in the area.

2.3 Opportunities and Threats Presented by Olympics

The following is a summary of the waste management opportunities and threats presented by the Sydney 2000 Olympics.

Opportunities

- The Homebush Bay site is sufficiently self-contained to allow for an integrated strategy for the site. This offers the opportunity to show-case innovations in waste management.
- The development of Olympics facilities and the Olympic Village from scratch allows for incorporation of waste management into the design stage and considerable consistency in the way

waste is managed. Of particular importance is the Village, as this can serve as a model for future urban development.

- Government commitment to a “Green Games” should be interpreted to mean that worlds best practice should be incorporated.
- The potential for significant corporate sponsorship (either financial or in-kind) makes it possible to implement innovative waste minimisation practices that may not (yet) be viable in the long term — though simplistic window dressing should be avoided.

Threats

- A minimalist interpretation of Sydney Bid Environment Guidelines may reduce environmental benefits.
- The complex structures of facility management and responsibilities may preclude implementation of many waste management initiatives.
- Conservative long-term waste management systems may preclude innovations for the Olympics.
- Industry lobbying against innovations in low-waste products, packaging and merchandise.
- Inadequate education and information programs may lead to waste management initiatives to not achieve their full potential.

2.4 Directions for Further Planning and Development

While waste management has not been ignored in the planning to date for the Olympics and Homebush Bay, most of the work to date has been quite high level. The need for more detailed planning and implementation will emerge once the Homebush Bay facilities move into the design stage.

Hence, there is still considerable opportunity for progress to be made in waste management. The following sections assess the opportunities for implementing best practice waste minimisation and management for the Olympics and on-going use of Homebush Bay. Many of the recommendations contained below will have direct relevance to the construction and operation of the other Olympic facilities, such as Penrith Lakes.

Planning and development will be considered in five broad areas:

- construction of facilities;
- the Olympic Village and other residential development;
- public events;
- landscaping;
- commercial activities.

2.5 Construction of Facilities

Olympics, on-going use and Sydney context

The scale of the Homebush Bay development offers the potential for implementing innovation by incorporating waste minimisation into the design stage, minimise material use, use of recycled, low-waste and low-toxicity materials in construction, and implementing a high degree of waste separation, re-use and recycling during construction.

The Homebush Bay development offers the potential to be a significant market for recycled building materials. The key factors for this to happen are that the material specifications are compatible with the quality of available recycled materials. There may be need for research and development in this area. Also, as a number of facilities will be constructed up to year 2000, there is the potential for waste exchanges between developments.

It is anticipated that a number of temporary facilities will be constructed for the Olympics, and other facilities will undergo temporary alterations and amendments for the Games. For example, the Aquatic Centre is to be extended to allow for more seating during the Games. Particular attention should be given to ensure that waste is minimised in the construction, use and dismantling of these temporary facilities.

Best practice

Best practice for construction of the facilities includes, as a minimum:

- life-cycle assessment of projects to minimise whole of life environmental impacts;
- incorporating waste minimisation into the design stage of the project;
- minimise materials use, through methods such as standardising;
- substitution of toxic with non-toxic materials;
- maximise use of recycled materials;
- design for ease of renovating, dismantling and re-use or recycling of materials;
- maximum sorting of waste materials during construction.

Many of these best practices techniques offer potential for reduction in costs, as the case study of Fletchers Construction demonstrates. Many of these best practices also apply to temporary facilities needed for the Olympics.

Recommendation 9: That OCA, in consultation with Green Games Watch 2000, the Waste Management Expert Advisory Panel and the Construction Material Expert Advisory Panel, assemble case studies of worlds best practice in waste (including toxicity) minimisation in the design and construction of facilities. These case studies should be used to develop a benchmark for assessing the designs of Homebush Bay facilities.

Recommended directions and strategies for implementation

Recommendation 10: That OCA monitor the development of and contribute to the development of State and National Industry Waste Reduction Plans (including the Waste Wise Program) for the Construction and Demolition industries.

Recommendation 11: That OCA seek to incorporate best practice construction waste minimisation (as described above) into the design of all constructions.

Recommendation 12: That OCA and its Construction Material Expert Advisory Panel, work with facility designers and materials suppliers to match product specifications for recycled construction materials; and if necessary, seek opportunities for research and development in this area.

Recommendation 13: That OCA and its Construction Material Expert Advisory Panel, explore the possibility for waste exchanges between various facilities.

2.6 Olympic Village and other Residential

Olympics, on-going use and Sydney context

The Olympic Village offers a rare opportunity for a medium scale urban development to occur in a single stage. This opens the possibility for considerable co-ordination of waste management services and facilities.

The use of the Village for the Olympics will be considerably different to its ongoing use. For the 16 days of the Games, the Village will be home to people from throughout the world. With regards to waste management, these people will have quite varied knowledge, skills, behaviours and attitudes to waste. Further, they may not be familiar with the waste management services offered in Sydney, nor ongoing education campaigns.

For these reasons, the waste management systems they are asked to participate in will need to be quite easy to use. Waste reduction could also be made easier if the opportunities to create waste were decreased — ie, if the stores in the Village sold low-waste and easy to recycle products.

After the Olympics, the Village will become residential. It is likely that waste management services will be provided by a nearby Council of Waste Region. The recycling, green waste and residual waste services offered by them will dictate the waste services provided to these residents.

Potential for innovation lies in waste avoidance and product re-use.

Best practice

For the Olympics a simple waste management system is required. An example of such a system is as follows:

- all products sold in the stores of the Olympic Village should be unpackaged, sold in re-usable package (possible with a refundable deposit) sold in recyclable packaging, or sold in compostable packaging;
- the range of recyclable packaging should be minimised and labelling used to easily indicate its recyclability. Compostable packaging should also be clearly labelled;
- each household is to be provided with a four-bin collection system:
 - organics (food scraps, soiled paper, compostable packaging);
 - paper and cardboard;
 - co-mingled recyclable packaging
 - remaining waste;
- bins to be labelled graphically and with wording in the language of the residents of each apartment;
- hazardous waste collection points are to be located within the Village. Priority products (such as batteries) should be targetted).
- a peer education program to explain the waste management system be established through each Team's "Envoys" and Team Leaders — ie: members of each Olympic team receive basic training on the waste management services provided so that they can in-turn educate member of their team.

Recommendation 14: That SOCOG, OCA and the Waste Management Expert Advisory Panel investigate the feasibility of requiring a standardised range of products and packaging to be sold at stores in the Olympic Village.

Recommendation 15: That SOCOG, OCA and the Waste Management Expert Advisory Panel develop a simple waste management system for the Olympic Village incorporating a four stream material (organics, paper, recyclable packaging, and residual waste) collection; household hazardous waste collection; and peer education programs.

For the ongoing residential use of the Olympic Village, an emphasis can be placed on on-site management of organic wastes. Best practice would involve adequate provision for home composting and/or communal composting. Such communal composting could be incorporated into local community gardens.

Recommendation 16: That OCA ensure that the design of the Olympic Village and other residential sites is in accordance with the Sydney Regions of Councils' Model DCP/LEP, especially in the provision of adequate space for recycling bins and home composting units. Consideration be given to communal composting systems and community gardens.

Best practice for bulky domestic waste is to re-use or recycle such items via re-use and repair centres. There are numerous examples of such services that are profitable. Current household hazardous waste collections are quite limited in scope. Overseas systems provide re-use

opportunities for items such as paints, and better management for other substances, than just disposing the wastes to landfill.

Recommendation 17: That OCA investigate the feasibility of establishing a re-use and repair centre in the area and improved household hazardous waste drop-off points — possibly incorporated into the nearby Waste Service NSW facilities.

2.7 Public Events

Olympics Sponsorship, Promotion and Merchandise

Discussions on SOCOG's role in sponsorship, promotion and merchandising, best practice in merchandise and the contradiction that is "green consumerism" have been presented above.

*Recommendation 18: That SOCOG communicate to potential sponsors and merchandisers the **expectation of environmental innovation that has a strong likelihood of becoming widely used** (ie, not just window dressing).*

*Recommendation 19: That SOCOG **review** current and emerging best practices in the fields of potential national and local **Olympic sponsors**, so that it **can best assess** the environmental credentials of proposals for sponsorship or promotion.*

Recommendation 20: That SOCOG, together with OCA and the Waste Management Expert Advisory Panel, develop detailed environmental criteria and best practice for Olympics merchandise. This criteria should include:

- *a justification for the need of the merchandise;*
- *requirement for life-cycle assessment of the product; and*
- *evidence of steps taken to minimise environmental impact at each stage of the life-cycle.*

Recommendation 21: That SOCOG explore the use of means such as levies on licence applications to fund environmental assessments of potential Olympic merchandise..

Catering

Olympics and Post-Olympics Context

The Olympics may serve as a means of demonstrating the viability of low-waste catering systems — funded by sponsorship or promotion opportunities. Such a demonstration may be sufficient to allow for the ongoing use of the system. For example, Olympic sponsorship may help fund a washing system for re-usable dinnerware, which could be used beyond the Olympics.

Given the self-contained nature of the Homebush Bay site and the intended uses of the facilities — both Olympic and future uses, it would be expected that most food and drink purchased would be consumed near the point of sale. Hence re-use systems could be viable.

It would be expected that a no-glass policy will apply during the Olympics for packaged beverages. The policy may also apply for future uses as well. Hence, if re-usable beverage containers are to be considered, then non-glass alternatives will be needed.

Best Practice

Most reports of the Lillehammer Winter Olympics indicate that recyclable paper cups and biodegradable dinnerware were used for catering purposes. One report (Partl, 1995) states that refillable containers, together with low environmental impact washing systems, were also used.

In simplest terms, best practice waste minimisation in catering is either re-usable dinnerware and biodegradable. The circumstances at Homebush Bay allow for both systems to be feasible — during

the Olympics and beyond. It would be expected that re-usable systems would offer both environmental and economic advantages over biodegradables. A life-cycle assessment would further clarify this.

Recommendation 22: That OCA and the Waste Management Expert Advisory Panel conduct a preliminary life-cycle assessment of various dinnerware options — re-usable plastics, crockery, biodegradable and throw-away plastic — to determine which provides superior environmental and economic advantages.

Recommendation 23: That OCA and the Waste Management Expert Advisory Panel assess the suitability of the preferred low-waste catering system for the Olympics and post-Olympic events, including the Easter Show. Consideration should be given to the use of deposits with re-use systems.

Recommendation 24: That SOCOG investigate the potential for sponsorship of the preferred low-waste catering system — for example, through in-kind provision of dinner-ware and washing facilities — in a way that would help make this system viable beyond the Olympics.

Best practice for packaged beverages is refillable containers. In Europe and the US, refillable containers are made from glass or plastics (PET or Polycarbonate). Given the possibility of no-glass policy for Homebush Bay, refillable plastics containers should be investigated.

It is not clear whether there is any local Health Department objections to the use of the refillable plastic containers that are already widely used in many European countries.

Recommendation 25: That SOCOG, together with OCA and the Waste Management Expert Advisory Panel, investigate the use of refillable plastic beverage containers (eg PET and Polycarbonate) — with deposits — in terms of costs, and life-cycle environmental impacts; and investigate sponsorship opportunities to assist with the provision of these containers. Department of Health's position regarding re-use of plastic containers should be clarified.

In terms of best practice, it would be desirable for refillable containers to also be used at other Homebush Bay events. This would depend on whether sufficient usage would exist to justify on-going washing facilities. The next best option would be for a rationalising and standardising of beverage container types to facilitate recycling. An on-site deposit system could be used to ensure high return rates.

Recommendation 26: That OCA and the Waste Management Expert Advisory Panel investigate the feasibility of on-going refillable beverage systems at Homebush Bay. If not feasible, then a rationalising and standardising of beverage container types sold should be developed to facilitate recycling, possibly complemented with a deposit system.

Other Waste generated by patrons

In addition to the foods and drinks sold on site, much will be brought on-site by visitors — together with other wastes. A recycling system will be needed that best matches the types of recyclable packaging brought. Separate organics and hazardous waste collections should also be provided.

Recommendation 27: That OCA ensure that its upcoming waste forecasting study incorporates estimates of quantities and composition of the wastes items brought by patrons, including recyclables, organics and hazardous items.

Recommendation 28: That OCA and the Waste Management Expert Advisory Panel use the results of the waste forecasting study to be conducted by OCA, to develop the most appropriate collection

systems for organics, recyclables, residual waste and hazardous waste items (such as batteries) that will be generated at Homebush Bay.

Waste and recyclables handling

Participants at the Homebush Bay Corporation's waste management workshop could not reach agreement on the best system for collecting and transporting recyclables and waste from Homebush Bay. Unresolved issues included:

- whether wastes and recyclables should be collected from many locations or one central location;
- whether on-site processing of wastes and/or recyclables (eg sorting of recyclables or on-site composting) should take place;
- what level of co-ordination/standardisation should be provided in the waste and recyclables handling at each facility;
- whether one or more waste transporting companies be involved.

The unique nature of the Olympics — a consistently large number of people over 16 days — implies that its waste handling system may be different from the on-going system.

Recommendation 29: That SOCOG consult with OCA and the Waste Management Expert Advisory Panel on the most appropriate waste and recyclables handling systems for the Olympics that best complement on-going systems. Waste handling systems for organics, recyclables, hazardous products and residual waste should be considered.

Beyond the Olympics, different waste handling systems may be required for one-day events and multi-day events, such as the Eastern Show.

Recommendation 30: That OCA and the Waste Management Expert Advisory Panel identify the most appropriate waste handling systems for post-Olympics one-day and multi-day events.

Incorporating Waste Management into Facilities Contracts

A critical challenge facing OCA is the implementation of a coordinated waste management system across a potentially broad range of facility management and responsibility structures.

It is unlikely that OCA will be able to, or interested in, directly negotiating all aspects of waste management with all managers and service providers in each facility. Hence, OCA will need to develop detailed guidelines/conditions that can be incorporated into facility contracts.

Recommendation 31: That OCA and the the Waste Management Expert Advisory Panel develop, in consultation with facility managers, waste management guidelines and conditions for incorporation into the contracts for each facility. Such guidelines and conditions should be based on the outcomes of waste management investigation and planning — including that identified in other recommendations made in this report — and where appropriate, aim for consistency across facilities.

For the Olympics, SOCOG has the power to influence the waste management practices for all facilities. Given the potential for the waste management of the Olympics to be somewhat different to ongoing systems, SOCOG need to develop its own set of waste management guidelines.

Recommendation 32: That SOCOG develop its own set of waste management guidelines and conditions for each facility during the Olympics — based on the unique needs of the Olympics and the many Olympic specific recommendations made in this report.

Waste From Staging Events

Each Olympic event will have its own unique set of wastes generated. A case-by-case assessment of options to minimise waste is needed. Examples from other Olympics include the recycling of lead from biathlon events, and the storage and re-use of transport packaging.

Recommendation 33: That SOCOG, together with OCA and the Waste Management Expert Advisory Panel, develop a specific waste management plan for each Olympic event and other major Olympic activities (such as the media centres). Such plans should include strategies to minimise the creation of waste, re-use packaging, re-use and recycle temporary equipment, and educate those involved on the best ways to minimise waste.

Recommendation 34: That OCA and the Waste Management Expert Advisory Panel, explore the possibility of developing, with facility managers and event promoters, waste management plans for major public events staged at Homebush Bay, including the Easter Show and major sporting events.

2.8 Landscaping and Organics

Olympics, on-going use and Sydney context

The waste management issues associated with landscaping at Homebush Bay are unlikely to be different for the Olympics and the on-going uses of the site.

Quantities of food wastes from the Olympic Village and other residential sites during the Olympics are likely to be comparable with on-going quantities — though home composting has the potential to reduce quantities requiring collection. It would not be expected that significant quantities of garden waste will be generated at the Olympic Village during the Olympics.

Food wastes from public events includes cooking wastes from caterers and food scraps from patrons. The quantities will vary according to the scale of the events. The Olympics and Easter Show will generate considerable organic wastes.

Best practice

Best practices for managing garden waste from landscaping include:

- leaving grass clipping behind after mowing lawns;
- on-site mulching of garden waste that is known to be weed free and disease free (in accordance with the Australian Standard for Composts, Mulches and Other Soil Conditions — currently in a draft form);
- on-site composting of garden waste;

Best practice for managing garden waste from residential areas include:

- leaving grass clippings on the lawn and home composting;
- on-site or communal mulching, and communal composting;
- regular green waste collections or drop-off systems.

Best practice for managing food waste from residential and public events include:

- on-site co-composting with garden waste;
- collection and off-site composting or anaerobic digestion.

Recommended directions and strategies for implementation

An objective for landscape and waste management planning at Homebush Bay should be for full on-site recycling of garden waste. Options do exist to transport garden waste to the adjacent Waste Service NSW facility — for transport to a composting or mulching operation — however this is much less desirable than on-site management.

Recommendation 35: That OCA and the Waste Management Expert Advisory Panel, in consultation with the Landscape/Open Space Expert Advisory Panel, develop a garden waste management strategy for on-site management of all garden waste generated at Homebush Bay. Consideration should be given to the number of on-site mulching and composting operations provided, and their location.

There is scope to include food waste into on-site composting systems. Priority should be placed on utilising clean food wastes from caterers. Waste Service NSW has recently announced its interest in establishing large scale composting facilities for food waste. Such a facility, if suitably located, could provide a means to recycle food waste that can not be composted on-site. An appropriate symbol for the “Green Games”, an anaerobic digester located near Homebush Bay could provide gas to light the Olympic flame.

Recommendation 36: That OCA and the Waste Management Expert Advisory Panel explore opportunities for incorporating catering food waste into on-site composting.

Recommendation 37: That OCA and Waste Service NSW explore opportunities for organic wastes from Homebush Bay to be taken to an enclosed aerobic or anaerobic composting systems.

Food and garden wastes from the Olympic Village and other residential sites can be integrated into the management strategies for landscaping wastes and public event food waste.

2.9 Commercial activities

Olympics, on-going use and Sydney context

Commercial activity at Homebush Bay includes the commercial complexes, such as the Australia centre, the offices associated with each of the facilities, and general services provided (such as the train station). Much of the commercial activity will be typical office work — generating typical office type wastes.

The additional commercial activities associated with the Olympic events have been discussed in the above section on public events. This section will consider the more constant sources of commercial waste.

Best practice

Best practice commercial waste minimisation includes in-house waste prevention schemes (such as use of electronic communications), purchasing of low-waste products and equipment, and recycling of materials kept separate from the waste stream.

Recommended directions and strategies for implementation

The Lillehammer Winter Games includes a Green Office project for reducing waste in office activities associated with the games.

Recommendation 38: That SOCOG and OCA establish a Green Office project (based on the Lillehammer project of the same name) for waste minimisation at all offices at Homebush Bay and other Olympic facilities.

In addition to this Green Office project, OCA can use facility contracts to influence commercial waste minimisation.

Recommendation 39: That OCA and the Waste Management Expert Advisory Panel incorporate, in consultation with facility managers, conditions for commercial activity waste minimisation into facility contracts.

OCA has limited control over the activities of the Australia Centre. Still, the member companies of the Centre should be invited to participate in waste minimisation.

Recommendation 40: That OCA invite the companies at the Australia Centre and other commercial sites to develop waste management plans which utilise the waste management planning and infrastructure being developed for the entire Homebush Bay site.

3. Costs and Benefits

The case studies and discussions on best practice in the above sections outline a broad scope for innovation in the way waste is management for the Olympics and the ongoing use of Homebush Bay. At the time of writing this report there has been little work carried out by SOCOG or OCA on assessing waste management alternatives. The recommendations of this report reflect this situation — many of the recommendations specify the process to identify the best alternatives, rather than detailing a single preferred outcome.

Given this early stage in planning for waste management, it would be inappropriate to conduct exhaustive cost-benefit analysis of preferred options.

While detailed cost-benefit analysis may not be appropriate at this stage, the above case studies demonstrate a number of initiatives that are likely to offer clear environmental, social and economics benefits. These include:

- Incorporating waste minimisation into the design, planning and implementation of facilities construction. The experience of Fletchers Construction in Victoria and overseas examples demonstrate the significant project cost reductions and waste reduction can be achieved.
- The proposal to stream-line the range of packaging materials sold at the Olympic Village during the Olympics will improve the cost effectiveness of re-use and recycling schemes.
- Multi-stream waste collection systems, such as the four-stream system proposed for the Olympic Village are likely to be established throughout Sydney. Hence the cost implications for the Village area should be no different to other parts of Sydney.
- Re-use and repair centres for domestic bulk items have proven to be profitable ventures both in Australia (eg Revolve in Canberra and Resource in Tasmania) and overseas.
- The environmental significance of household hazardous waste management warrants that it be funded by industry levies or through government community service obligations.
- Use of re-usable dinnerware for public events. Caterers in Munich experienced no cost increase in shifting from throw-away to re-usable dinnerware, but significant reductions in waste. The Tasmanian experience of using biodegradable dinnerware was that it was more expensive than throw-aways.
- On-site composting may currently be of marginal economic benefit. However, with increasing landfill prices and the possibility of a ban on the disposal of garden waste, it is likely that it will become the most cost-effective alternative in the medium to long-term.
- There are numerous examples where commercial sites have saved considerable money through in-house waste minimisation.

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Appendix 1 — Sydney Olympic Bid

The following is a summary of the commitments for the Sydney Games that relate to waste minimisation and management (Sydney Olympic Bid Ltd, 1993):

Facility construction

- use of recycled and recyclable building materials
- all new Olympic projects being constructed, wherever possible, on previously used industrial and commercial sites so that undeveloped land remains untouched.
- minimal construction of new facilities consistent with satisfying all needs to conduct the games.
- companies tendering for construction contracts will be required to submit details of provisions to protect the environment and how they will satisfy the requirements of the Environmental Guidelines
- selection of components that go into new projects will be subject to life-cycle costing and consideration of environmental implications during manufacture, use and disposal
- timber will be selected from sustainable managed sources.
- the selection wherever practicable of materials and processes that are non-toxic in use such as natural fibre insulation, and non-toxic paints, glues, varnishes, polishes, solvents and cleaning products
- use of building techniques and interior design that minimise the need for chemical pest control and maximise opportunities for integrated pest management.

Waste minimisation and recycling

- management programs based on the principles of waste minimisation
- maximum effort to achieve recycling of paper, glass, metals, plastics and organic matter, and integrated management of all waste material
- minimising waste and maximising recycling
- education of athletes, officials, media and spectators on correct waste disposal.
- best practice waste reduction and performance criteria to apply to services, materials and appliances
- the co-operation of sponsors and service providers in developing responsible corporate purchasing and waste management policies
- best practice recycling of waste including use of colour-coded waste recycling stations, use of compost from organic waste in landscaping, use of recycled paper, and public education on waste minimisation.
- recyclable packaging will be suitably identified to facilitate separation from other recyclables and assist ease of collection
- recycling bins for waste will be supplied at all Games venues, supported by education programs on proper disposal methods
- information will be carried electronically where possible to reduce unnecessary use of paper, supplemented by effective paper recycling procedures
- special procedures will be adopted for the disposal or recycling of chemicals, film and other photographic materials.

Chlorinated Substances

- minimising the use of chlorine based products such as PCBs and PVCs.

Merchandising:

- all official merchandise satisfying appropriate environmental standards in manufacture, use and disposal
- avoiding unnecessary waste from products with a short useful life or unnecessary packaging
- not using materials from threatened environmental or species

- maximise use of recyclable and recycled materials
- promotional clothing being made from natural fibres wherever possible.
- every company tendering for a merchandise contract will be required to provide environmental information in its submission in relation to manufacture, use and disposal
- the design and packaging of products will embody an educational message about the environment wherever possible.

Ticketing:

- ticketing systems integrating event admission with public transport
- tickets should be printed on recycled and recyclable paper using non-toxic ink

Catering

- packaging of foodstuffs should be minimal subject to appropriate health standards being maintained
- packaging should be recyclable or reusable.
- non-disposable cutlery and crockery will be used at food outlets wherever possible.

Appendix 2 — Greenpeace Report

The following is a summary of the Greenpeace “LoWaste Olympics” report produced by ITU Sydney for Greenpeace (Part I, 1995).

The ITU report estimated that for the Sydney Olympics, on average, one kilogram of waste would be created by each tourist per day. Based on preliminary estimates of crowds by SOCOG, the report went on to estimate waste levels associated with the 16 day Olympics:

Source of waste	Quantity (tonnes)
Individuals Accommodated at the Olympic Village	312
Individuals Accommodated at Sydney Harbour	56
The “Olympic Family” Accommodated in the City	264
Visitors Accommodated in the City and Suburbs/Visitors	4288

Around 5000 tonnes is estimated — 650 tonnes from the Olympic Family and 4300 from visitors. Using existing tourism industry data, the report estimated the composition of this waste to be as follows:

Material	Percentage
Organics	33
Glass	24
Paper/cardboard	13
Metal	5
Plastic	3
Residue	22
Total	100

The report provides a rough estimate of 34,040 tonnes of construction waste associated with various Olympic facilities (Homebush Bay facilities, Penrith Lakes and Eastern Creek).

The report makes the following recommendations regarding waste minimisation and management for the Olympics:

Food and drink outlets

- use of cardboard, paper and waxed paper (recycled) for fresh foods sold at food outlets;
- bins for recyclables and residuals to be provided at all outlets;
- refillable plastic (PET and polycarbonate) containers with deposit systems for cold drinks, and washable mugs and cups, also with deposits (with low impact detergents — as practiced in Lillehammer);

Media and support services

- mandatory use of re-usable transport packaging (disposable packaging can account for up to half of overall waste at large events);
- investigate use of digital photography to avoid need for chemical developing;
- maximising use of electronic communication to reduce paper use;
- on-site composting of landscape waste;
- merchandisers to provide life-cycle information for their products;
- requirement for sponsors to implement waste reduction worldwide.

Relocatable Food Processors and Food Halls

- Use of washable dinnerware (labour costs double but materials supplies halve);
- supply of bulk quantities of food rather than packaged single serve items;

Education

- need for a mottoes and logos which are used widely;
- promotion of pre-cycling activities, such as “bring your own bag”;
- guides to environmentally friendly shopping;
- educational opportunities through the worldwide TV audience;
- involvement of major suppliers/sponsors.

Construction

- fully life-cycle energy audits for new buildings;
- use of recyclable materials;
- adaptable “long-life, loose-fit” buildings — to facilitate easy dismantling;

Waste management

- five stream system — organics, paper/cardboard, other dry recyclables, residues, hazardous;
- 3 bin (plus Household Hazardous Waste attachment) system for domestic waste;
- communal on-site composting for garden materials designed into the Olympic village;
- 4 stream collection for events — paper, other dry recyclables, residue, and HHW) — possibly staffed (eg by students) to assist visitors;
- recycling facilities at commercial sites, and large projects required to produce waste management plans;
- requirements for source separation at construction sites;

Waste Management Facilities

- recyclables can be sorted at a nearby large MRF;
- garden waste to be composted on-site;
- food wastes composted off-site in an enclosed composting facility.

Appendix 3 — Homebush Bay Corporation Workshop

The following is a summary of the issues raised that Homebush Bay Corporation's Waste Management Workshop held in March 1995 (Denlay, 1995).

Prevention

- waste prevention needs to be incorporated into the design stage of facilities and residential areas;
- contracts can be used to apply waste prevention in catering and merchandising;
- education of contractors will also be necessary;
- restrictions could be applied on the types of materials brought on site — an example of such restrictions is the RAS's alcohol management program;

Re-use

- re-use of transport (supply) packaging and purchasing in bulk — standardising of items will help with this;
- re-use of dinnerware vs pre-packaged foods and drinks;
- deposits to complement re-use of dinnerware and drink containers;

Recycling

Very little was discussed on this topic.

Composting

- home composting is important for residential waste prevention;
- animal wastes will also be available on the site, especially during the Easter Show;
- on-site composting is an option, with the need to consider cost and odour issues;
- leaving grass clippings on the lawn after mowing was advocated for lawns.

Separation

- collection of recyclables focussed on the debate over co-mingled collection (using materials recovery facilities to sort the recyclables) vs kerbside sorting;
- there is a need to maintain flexibility in designing collection systems;
- separate collection of organics was not considered — despite its importance.

Litter

- a major focus for litter control needs to be catering;
- Disneyland was seen as a model, where staff such as guides constantly clean-up litter.

Waste handling

- residential waste collection be based on that provided by neighbouring councils;
- for one-day events waste collection can occur after the event, for many day events, waste may need to be collected during the day;
- waste storage and handling needs to be properly designed into facilities;
- ease of cleaning needs to be designed into facilities;
- should waste be collected from all over the site, or from one central location (which requires double handling) ?
- waste handling should be standardised throughout the site.

Education

- education is also needed for the general public, site operators, caterers, operators, waste haulers, employees;
- caterers and operators need to make a commitment to education.

An internal draft report on the workshop has been prepared by OCA. Given the wide range of views expressed in the workshop, OCA see it as providing an assessment of the issues to be considered in planning for waste management, rather than providing clear directions.

Appendix 4 — OCA's Environment Strategy

The Olympic Coordination Authority has produced seven volumes of guidelines for the development of Homebush Bay. The first volume, Environment Strategy (OCA, 1995) outlines a range of outcomes and actions relevant to waste minimisation and management. The following is a summary of these:

Conservation of Resources: Construction Materials

Outcome: That Homebush Bay development minimise the use of materials which deplete natural resources or create toxic pollution in their manufacture, use or disposal.

Actions:

- establishment of the Construction Materials Expert Advisory Panel — to review Life Cycle Assessment (LCA) of selected construction materials;
- use of recycled materials in all facets of construction — roads, building, fittings. Also applying principles of re-use and recycling to temporary structures.

Conservation of Resources: Topsoil

Outcome: That importation of topsoil to Homebush Bay is minimised.

Actions:

- amelioration of the soil where required — including use of commercial organic materials and any compost produced as part of the Homebush Bay waste management strategy.

Pollution control: Waste Management

Outcome: That all development and ongoing management activities at Homebush Bay maximise the use of recycled materials and reduce waste generation.

Actions:

- establishment of the Homebush Bay Waste Management Expert Advisory Panel — to determine the best waste management strategy for Homebush Bay, based on existing facilities, co-ordination with adjacent councils, and on-site requirements for organic matter and mulches;
- investigation of the latest waste management techniques and technologies — the Expert advisory panel will develop a strategy for OCA's consideration. This will be based on — minimising waste during construction and operation; maximising re-use and recycling; optimum collection systems; maximising organics recycling;
- implementation of the recommendations of the Waste Management Expert Advisory Panel — until final recommendations are known, colour coded bins are required for glass, aluminium, paper and compostables.

Specific Functions of the Waste Management Expert Advisory Panel

- to advise on a strategy for waste management at Homebush Bay and other OCA sites which is achievable immediately but allows for progressive improvement towards the year 2000;
- to provide advise on a strategy which incorporates all operators at the Homebush Bay, Penrith Lakes and Holsworthy sites;
- to encourage compatible strategies within adjacent Council areas;
- to review innovation within the packaging and catering industries which can minimise event waste;
- to evaluate new waste management technologies and recommend additions to the ISO/OCA database;
- to review and provide advise on waste management research/technologies;
- to provide advice on waste management performance criteria for the environmental monitoring programme;
- to provide advice to OCA on waste management issues;

- to provide advice as requested by OCA on specific projects or issues.