



MASTER BUILDERS
GREEN LIVING

2008

COMMERCIAL CONSTRUCTION WASTE MANAGEMENT GUIDE

A **FREE** practical guide for commercial builders and subcontractors to help cut disposal costs, meet contractual obligations, limit risks, and benefit the environment.

The guide includes:

- Practical advice on waste management
- The steps required to develop a site waste management plan
- Helpful tips on how to avoid, reuse, recycle and dispose of waste in Western Australia
- A template site waste management plan
- Tips on waste management for building trades
- Contact details for waste management contractors in Western Australia



2008

Towards
ZERO WASTE
www.zerowastewa.com.au

FOREWORD ON WASTE MANAGEMENT



As builders and contractors, we face increasing pressures to reduce construction waste going to landfill in WA.

We are confronted by increasing costs of disposing to landfill. The WA Government is increasing its landfill levy from \$3 per cubic metre for inert waste in 2006-07 to \$9 per cubic metre for inert waste by 2010. Transport charges for disposal are also increasing as fuel and labour prices increase.

We also have government tendering, contractual or planning requirements to reduce wastes going to landfill. There are some clients asking for waste management plans to demonstrate the environmental credentials of their buildings. Meanwhile, some local governments are requiring the separation of particular wastes.

So I recommend that you read through this guide and see what you can do on your sites in WA to avoid, reuse, recycle and dispose of wastes.

The good news is that there are now more recycling options available to the industry, and more people around to help us do it - in Perth at least.

In my own company, we have started to progress new waste management strategies that are successfully reducing waste going to landfill. I wouldn't say that in our case that we are making a significant profit out of it, but my view is that the initiatives we have progressed are at least cost neutral and limit onsite risks.

If you succeed in reducing your own waste streams on site, you will also assist our whole industry to avoid more onerous waste management regulations in the years ahead. Plus, you will be reducing the industry's environmental footprint and you can feel good about that.

I wish you well in your waste management initiatives.

A handwritten signature in black ink, appearing to read 'George Allingame', with a long horizontal flourish extending to the right.

George Allingame
President,
Master Builders Association

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Disclaimer

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A. SUMMARY BENEFITS FROM MANAGING YOUR WASTE BETTER

You may be able to reduce your waste disposal costs

- lower volumes of waste cut waste transport costs
- enjoy lower disposal costs for separated wastes
- receive payment for some wastes (especially metals)
- cut back purchasing costs by re-using existing wastes onsite

You can meet regulatory requirements

- comply with planning approval requirements in some local government areas
- limit risks of littering fines
- avoid environmental pollution penalties
- create a safer workplace as required under safety legislation

You will reduce onsite risks

- reduce the risk of theft on site
- decrease the chance of worker injuries due to waste left onsite
- improve the visual impact of your project on the surrounding community
- comply with any quality assurance obligations

You will reduce your environmental footprint

- divert waste and protect land resources
- reduce pollution and carbon emissions
- help conserve natural resources

You can meet contractual obligations and ratings requirements

- achieve higher green ratings for the development
- comply with WA Government tendering requirements

You can promote waste reduction successes

- celebrate achievements with your staff and contractors
- inform others in the industry or the community through print or other media, including Master Builder Magazine
- highlight savings to existing and potential clients

B. QUESTIONS AND ANSWERS

Why use this guide?

You can meet regulatory requirements, improve the environment, and reduce waste going to landfill by successfully implementing a site waste management plan.

There may even be savings. These can arise from reduced wastage of materials, reduced transport and disposal costs, and compliance with legal or contractual requirements.

The environment will also benefit through reduced waste going to landfill, fewer greenhouse gas emissions in construction and fewer pollutants.

Longer term, good practice in the industry will also help avoid punitive regulations governing waste management.

Who is this guide for?

This guide is designed as a practical resource for Western Australian commercial builders and sub-contractors.

It is tailored for the commercial sector, although most of the content applies to both commercial and residential construction in WA. Whilst efforts have been made to include regional recycling information, many of the options are available only in the metropolitan area.

What is a waste management plan?

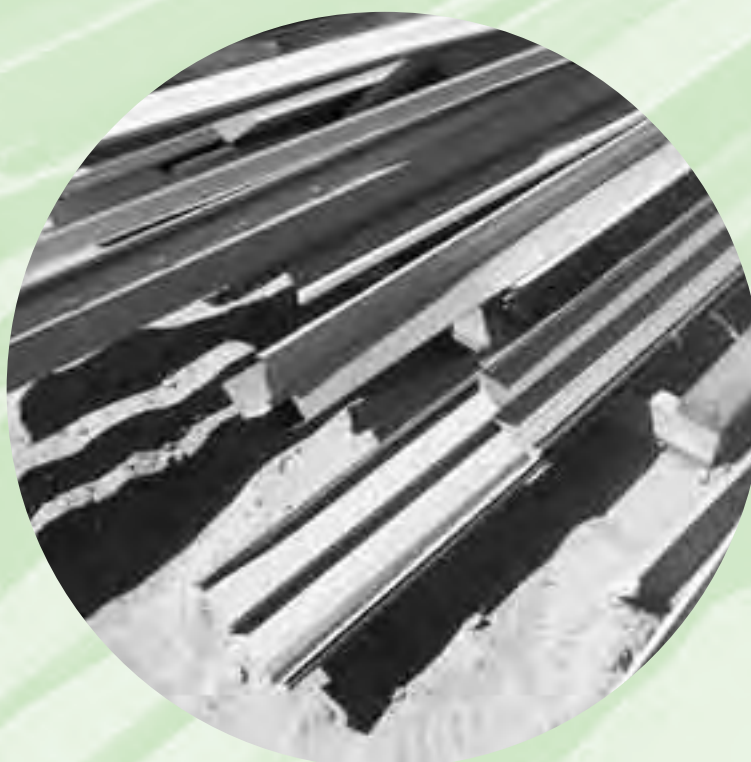
A waste management plan is an important document to assist builders meet contractual, environmental and budgetary goals by reducing waste from their projects. It sets out responsibilities and targets for waste management through the project from the design stage through to completion.

A site waste management plan is a plan for the onsite management of waste products that ideally involves the separation of waste products on-site.

Fast facts about construction and demolition waste in WA

- ❖ more than 50% of the waste going to landfill in metropolitan Perth is construction and demolition waste.
- ❖ in 2004-05 this amounted to more than 1.5 million tonnes going to land fill.
- ❖ only 18% of construction and demolition waste is being recycled in WA.

Source: ACIL Tasman & GHD (2006)



What do I need to do to reduce waste?

As a builder or sub-contractor, it is recommended that you follow the AVOID – REDUCE - REUSE – RECYCLE framework to reduce waste and risks on your construction project.

AVOID waste by careful planning at the design and drawing stages. It is at this stage that the greatest reductions in waste can be achieved:

- Select building materials and systems with low waste rates. In particular, consider modular and prefabricated construction materials that minimise onsite waste.
- Identify, source and specify recycled materials to be used during construction.
- Look at available recycled waste from demolition works or nearby locations.
- Choose a method of construction to minimise cut and fill.
- Design with life-cycle flexibility in mind.
- Use dimensions that suit standard material sizes. Plan the use of materials better to reduce the volume of waste (especially offcuts).

Note: mixed loads that contain timber or green waste must go to a putrescible landfill and not an inert landfill. Disposal fees at putrescible landfills are around 4 times higher than inert landfills.



REDUCE by limiting waste when purchasing. This requires you to:

- Purchase materials with minimal packaging, while ensuring goods are not damaged during delivery.
- Control purchasing to limit over-ordering & to encourage buying of recycled or recyclable materials where appropriate.
- Improve site security to reduce theft of materials thus allowing the reduction in the over-ordering margin.

REUSE and **RECYCLE** by implementing a waste management plan, with a site management plan to support it. First, plan to separate as much waste as is feasible:

- Plan for waste separation and sorting on-site during construction, where space allows.
- Plan locations for depositing and stacking of materials prior to onsite delivery.
- Provide recycling bins. Colour code or label waste bins and protect them from contamination, rain and wind where possible.
- Backload trucks from suppliers with waste products.
- Provide all workers with recycling, waste management and minimisation strategies during toolbox meetings or site inductions.
- If possible, secure special bins at night and weekends to prevent rubbish dumping in recycling bins – especially at Christmas time.
- Use waste service providers to advise on disposal options.
- Provide regular waste bins for food scraps and household waste during construction. Usually lidded overhead bins are used.

If off-site separation is required, there are bin hire companies and material recovery facilities that will separate and recycle your materials.

Next, ensure that you enforce reuse and recycling in your contracts:

- Prepare a waste management plan before tender so any waste avoidance or management costs are factored into the price.
- Include waste minimisation and recycling performance clauses in subcontract orders.
- Require workers/trades to separate wastes, if possible.
- Agree which party or parties receive any financial benefits of recycling.
- Consider a back charge for sorting of waste streams not properly sorted by each sub-contractor or worker.

How do I implement a site waste management plan?

There are eight key steps that you can take to introduce a site waste management plan:

Step 1 Read this guide!

Step 2 Allocate staff responsibility for introducing and overseeing a waste management plan.

Step 3 Identify the materials likely to be discarded and at what stage of the project. This should be carried out prior to the commencement of the site works. This involves looking at your construction program and the project design and identifying material in-flows and outflows. Estimate the quantities by using normal ordering margins. This will give you the information you need to schedule bin numbers, sizes and likely changeovers.

Tip: Mixed waste will require separating non-recyclables from recyclables which is labour intensive and expensive, because contaminants may clog up or damage machinery. If you separate waste into bins that contain 100% recyclable wastes, they are cheaper and easier to process.

Step 4 Evaluate the options for recycling in the area of your site. You may need to talk to a number of waste contractors to find out what opportunities exist. Allocate adequate space on the site for the storage of recyclables.

Step 5: Decide how much waste you will sort on-site. There are contractors who will sort waste offsite, but this will increase your disposal costs. If waste is sorted on-site, decide what wastes will be separated. Some options are:

Heavies: *eg sand, bricks, tiles, concrete, rock, plaster*

Lights: *eg packaging, bags, glass, general refuse*

Wood

Paper & cardboard

Steel

Step 6 Implement processes to ensure the separation of chosen wastes by contractors. Ensure that everyone is aware of their obligations and responsibilities. Conduct training during site inductions if possible. Inductions will cover the materials to be separated, explaining the importance of removing contaminants, and getting any ideas from staff as to how sorting can best be done onsite. Consider back-charging a contractor who doesn't separate their waste.

Step 7 Oversee the plan to ensure its success throughout the project and make adjustments if needed. You may want to measure the reductions in waste achieved.

Step 8 Review how the plan worked after completion and share findings with staff and contractors. Celebrate any successes. Consider displaying outcomes on a notice board on site for all to see. You can publicise findings through the Master Builder Magazine and other media.

Note: A comprehensive Waste Management Plan Checklist is included below to explain the process of introducing a waste management plan.

How do I estimate quantities of waste?

You can consider appointing a quantity surveyor to undertake this work for larger projects.

If you are doing it yourself, the following process can be followed:

1. Quantify materials used in the project;
2. Use normal ordering margins allowed in ordering; and
3. Copy these amounts of waste onto the Site Waste Management Plan.

You may also like to consider wastes produced in previous jobs of a similar size and nature.

How much will I save?

Any savings will depend on the size of your project, your current work practices, location, staff and contractor commitment, and material selections. The areas where you may be able to save by implementing a waste management plan are:

1 Reduced transport and disposal costs for separated wastes

Disposal costs for separated wastes are substantially lower than for mixed wastes. Savings will depend on the demand for the separated waste, the volume of the waste and the proximity of the waste to recycling facilities.

2 Reduced material costs

Savings are generated by the reuse of recovered materials, the avoidance of waste, and the reduced need for packaging.

Basically, you have the opportunity to separate your leftover materials to turn your wastes into a resource to save you money, although there may be some separation or cleaning costs.

3 Compliance with regulatory requirements

Meet planning approval requirements, avoid littering fines (which some local governments WILL impose on untidy sites), and prevent environmental pollution penalties. Note that some local councils in WA require you to separate particular wastes in planning approvals, such as for green waste.

4 Avoiding onerous new compulsory regulations

By minimising waste and encouraging recycling NOW, the construction industry can help avoid more punitive regulations. The WA Government has recently considered a plan to ban the disposal of recyclable materials to landfill, a move that would have increased disposal costs to the industry by an estimated 46% (ACIL Tasman & GHD, 2006 at page 44).

5 Lower risks of losses

You will reduce your exposure to risks relating to materials and waste on your site, such as fewer workplace injuries, less material at risk of theft, reduced risk of claims resulting from wastes damaging surrounding properties.



What other benefits are there in having a site waste management plan?

There are benefits to you, other than cost savings, from introducing a site waste management plan.

- You can better demonstrate your environmental credentials to existing and future clients.
- A plan can help you meet your quality management systems.
- You can assist your client to get a higher rating through the Green Building Council's Green Star system by having a comprehensive waste management plan.
- You can promote your waste reduction successes in local media, staff newsletters, and through Master Builder Magazine

What should I think about when appointing a waste or bin contractor?

Most of the contractors who specialise in recycling C&D materials in Western Australia will negotiate removal logistics and prices for materials with you so that solutions are tailored to your project.

- Enquire about different costs for any separated waste.
- Ensure that at all times collectors implement litter management controls like covering their loads during collection, handling and transportation of materials.
- Ask recycling companies for details of their recycling statistics. In this way you can see how much effort that they actually put into recycling and diverting waste from landfill. Recycling companies use percentage of residual to landfill as a KPI. Ask about offsite recycling procedures and facilities – you may be able to access reports.
- Consider visiting the recycling facility.
- Return packaging to supplier, especially pallets (refunds sometimes apply).

What are the environmental benefits in WA from reducing waste?

There are considerable environmental benefits from successfully implementing a waste management plan to cut waste.

- protecting land resources by diverting materials from landfills.
- reduced pollution and carbon emissions associated with the extraction and production of new materials.
- helping conserve natural resources by reducing demand for new materials in a wide range of markets.

What other resources are there in this guide?

This guide presents three documents to assist in the development of a waste management plan:

- 1 Western Australian regulatory guide for construction wastes
- 2 Waste recycling opportunities and contractors in WA
- 3 Waste management plan checklist
- 4 Site waste management plan template
- 5 Waste management subcontractor guides

C. TOOLS FOR WASTE MANAGEMENT IN WESTERN AUSTRALIA

WA REGULATIONS FOR CONSTRUCTION WASTE

Below is a brief guide to regulatory considerations for risks associated with construction waste handling and recycling.

Activity	Potential Result	Impact	Relevant Acts/Regulation
Site clearing	Dust & Noise	Health Air pollution Amenity	<i>Environmental Protection (EP) Act 1986</i> - section 49 Causing pollution and unreasonable emissions. Conditions imposed under relevant planning approvals. Environment Protection (Noise) Regulations 1997.
	Loss of Biodiversity	Flora & fauna habitats	Environment Protection (Clearing of Native Vegetation) Regulation 2004. Environmental Protection Act 1986 – section 50A (causing serious environmental harm).
Transporting materials to or from site or stockpiling of wastes or recycled products on site Crushing, grinding or screening operations	Dust due to wind movement across unsealed areas	Health Air pollution Amenity	Environmental Protection Act 1986 section 49 Causing pollution and unreasonable emissions. Environmental Protection Regulations 1987 (Licence may be required under Schedule 1 – Part 1 - Categories 13, 61A, 62 or 63).
	Noise	Amenity	Environmental Protection (Noise) Regulations 1997.
Site operations or contouring that allows water to pond on-site Poor site maintenance practices	Odour	Health Amenity	Environmental Protection Act 1986 Section 49 - cause pollution and unreasonable emission.
	Mosquitoes, weeds, pests or vermin	Flora & fauna impacts	Environmental Protection Act 1986 – Section 50A if licensed, otherwise section 182 of the Health Act 1911. Local Government Bylaws.
Uncontrolled or poorly managed site run-off. Poorly maintained or inadequate site access roads or drainage systems.	Surface water run-off resulting in transport of sediment, erosion	Water pollution	Environmental Protection (Unauthorised Discharge) Regulations 2004. Environmental Protection Act 1986 Section 49 - cause pollution and unreasonable emission.
Diesel, oil or other leaks or spills Poor design or management of fuel or hazardous goods storage areas.	Site or groundwater contamination	Land contamination	Contaminated Sites Act 2003. Environmental Protection (Unauthorised Discharge) Regulations 2004. Explosives and Dangerous Goods (Explosives) Regulations 1963.
	Diesel, oil enters drainage systems	Water pollution	Environmental Protection Act Section 49 - cause pollution and unreasonable emission. Section 50 - discharge of waste likely to cause pollution.
Asbestos contamination	Asbestos pieces pass through crushing operations	Air pollution	Environmental Protection (Unauthorised Discharge) Regulations 2004. Health (Asbestos) Regulations 1992 – Regulation 11 – Asbestos for disposal to be separated.
	Asbestos from stockpiled material remains in soil	Land contamination	Contaminated Sites Act 2003. Contaminated Sites Regulations 2006.
Building	Litter	Amenity Safety issue	Litter Act 1979.

WASTE RECYCLING OPPORTUNITIES AND CONTRACTORS IN WA

Many building products can be recycled in Western Australia. Below are some contacts and summary information on recycling.

Remember that this list does not reflect the ease of recycling material on every job. It is important for you to investigate the opportunities available for recycling in your local area and consider opportunities for recycling specifically for your project.

RECYCLING IN WESTERN AUSTRALIA		
Waste that can be recycled	Contacts	Waste accepted & charges
<p>Aluminium & metals:</p> <p>Aluminium is 100 percent recyclable. Recycling aluminium reduces embodied energy by around 95 percent (Reardon C).</p> <p>Tin and other metals can be recycled too.</p> <p>Payments are sometimes made for metals by recyclers.</p> <p>Steel: Recycling furnaces produce reinforcing bar, mesh and sections from steel scrap. Recycling steel reduces embodied energy by an estimated 72 percent (Reardon C). Currently in WA 93% of our recycled scrap metal is exported (Cardno BSD, 2007).</p>	<p>Laurance Scrap Metals PO Box 2587 Malaga WA 6944 300 Victoria Road, Malaga Wa 6090 (P) +61 8 9209 9444 (F) +61 8 9209 9499 (E) lsmaccounts@westnet.com.au www.laurancescrapmetals.com.au</p>	<p>Accepts steel, copper, aluminium, PVC, batteries & brass. It can offer a pick up and bin service.</p>
	<p>Simsmetal WA Perth, 200 Barrington St Spearwood Phone 9434 2222 Fax 9418 5030 Perth, 150 Welshpool Rd Welshpool Phone 08 94519877 Fax 08 9458 5919 Kalgoorlie, 100 Forest St Kalgoorlie Phone 08 9021 1041 Fax 08 9091 3326 Port Hedland, 15 Peawah St Wedgefield Phone 08 9172 2460 Fax 08 9172 3213 Karratha, 2526Coolawanya Rd, Karratha Phone 08 9185 2277 Fax 08 9144 1193 In all cases e-mail is simswa@au.sims-group.com</p>	<p>Accepts all metallic and steel waste including steel, aluminium, copper, lead, brass, cable, car bodies, car batteries, white goods and many more items. This is accepted free of any charge. In addition, a bin pick-up service is available should quantities be sufficient.</p>
	<p>Other:</p> <p>ABC Scrap Metal Recyclers Pty Ltd, Naval Base Ph. 08 9410 2372 Absolute Scrap, South Fremantle Ph. 08 9335 9699 Allied Metal Recyclers, Welshpool Ph. 08 9451 6818 Al's Scrap Metal, Landsdale Ph. 08 9342 4680 Auscon Metals & Machinery, Armadale Ph. 08 9497 1340 Balcatta Recycling, Balcatta Ph. 08 9240 1187 Bulk Metal Traders, Kenwick Ph. 08 9493 7300 C.D. Dodd Scrap Metal Recyclers, Maylands Ph. 08 9370 3066 Collins Recycling Depot, Willetton Ph. 08 9457 3973 DSR Scrap Metal Recyclers, Naval Base Ph. 08 9410 2372 J & P Metals Pty Ltd, Picton Ph. 08 9725 5019 K&F Scrap Metal, Bayswater Ph. 08 9272 5286 Laurance Scrap Metals, Malaga Ph. 08 9209 9444 Metal Movers Logistics, Naval Base Ph. 08 9410 2372 Metro Salvage, Bayswater Ph. 08 9279 8886 Millennium Metals, Naval Base Ph. 08 9410 2372 Rondas Pty Ltd, Perth Ph. 08 9328 5402 Runabout Metals, South Lake Ph. 08 9417 9513 S.B. Steel, Welshpool Ph. 08 9451 1960 Stirling Recycling & Wanneroo Recycling, Wangara Ph. 08 9309 9556</p>	

Waste that can be recycled	Contacts	Waste accepted & charges
<p>Bricks and tiles: can be re-used where appropriate or crushed on site or offsite for backfill, aggregate and gravel. Portable crushing plants can be used for large projects.</p>	<p>Midland Brick Cannington 68 Bickley Rd, Cannington WA 6107 Jandakot 4 Armadale Rd, Jandakot WA 6164 Joondalup 16 Franklin Lane, Joondalup WA 6027 Middle Swan 102 Great Northern Hwy, Middle Swan WA 6056 Osborne Park 8 Parkland Rd off Harborne St, Osborne Park WA 6017 Ph 13 15 40</p>	<p>Takes any clean clay or clay tiles, pavers and brickbats AT NO COST. It also recycles some plastic strapping from brick and paver packs, however this must be kept apart and deposited separately.</p> <p>There are no charges, but the waste must be free from contamination, i.e. without timber, paper, plastic, metal or excessive mortar.</p> <p>It used to take back masonry bricks however it is not able to add them effectively to clay mix so it is limiting returns only to clay bricks, pavers and clay tiles.</p>
See contacts under mixed waste below for other brick recycling options.		
<p>Concrete: Set concrete can be crushed and recycled as aggregate for new concrete or road base and fill. Un-set concrete can be "washed" out at the plant to remove cement (Reardon C). Sand and stone can be re-used.</p>	<p>Anmic Resources 41 Briggs Street, Welshpool Contact: Vince - 0418 922 621 or Anthony - 0437 427 566 Phone: (08) 9361 1616 Fax: (08) 9361 6110 anmic.1@bigpond.net.au</p>	<p>Accepts:</p> <p>Grade 1 Concrete up to 300mm, Limestone, Clean Brick, Bitumen and Sand with Mixed Rubble, \$10.00m³ + GST</p> <p>Grade 2 Concrete over 300mm thick with reinforcing \$15.00m³ + GST</p> <p>Grade 3 Concrete Mixed Loads [e.g. Brick, Glass, Timber] \$20.00m³ + GST</p>
Other: see mixed wastes below.		
<p>Glass: Most glass can be recycled, although construction glass must be separated from other glass such as drink bottles. Glass can be cut and re-used or recycled as aggregate for concrete. Recycling glass reduces embodied energy by 20 percent. Cardno BSD reported that since 2003, all recycled glass in Western Australia has been sent to South Australia for reprocessing. The recycler said glass can be up to 70% recycled material without any reduction in quality.</p>	<p>Perth Glass Recyclers 15B Barker St Belmont Mitch - 0400 848 658</p>	<p>Takes container glass and sends it to South Australia.</p> <p>Investigations are underway into recycling options for window glass.</p> <p><i>Note that container glass needs to be kept separate from window glass. If ceramic material is included with container glass, it is contamination and the whole load of glass may be rejected from recycling.</i></p>
<p>Mixed: May be sorted and recycled or disposed of offsite. There are several waste service providers who will sort this waste.</p>	<p>C & D Recycling Cnr Abernethy Rd & Great Eastern Hwy Bypass Hazelmere WA 6055 Ph 08 9423 5100 Fax 08 9423 5151</p>	<p>Takes all 'heavies' eg bricks, metal, tiles, sand etc. Costs vary according to separation.</p>
<p>Soil: Can be stockpiled for reuse as fill.</p>	<p>All Earth Group 42 Kelvin Rd Maddington WA 6109 Ph 9459 9588 Fx 9459 9144 www.allearth.com.au</p>	<p>All waste is subject to inspection and tip fees (except clean sand) and full price lists can be made available upon request.</p> <p>This waste is meticulously sorted and stockpiled into different materials.</p> <p>Cardboard, steel, alloy, plastics are taken off site for recycling.</p> <p>Greenwaste, concrete, rubble, sand is processed at our site to produce quality landscaping and construction materials.</p> <p>All Earth Group also has a large range of mobile plant and equipment and can do on site crushing and screening or can pick up an deliver materials to site.</p>

Waste that can be recycled	Contacts	Waste accepted & charges
Soil: Continued	Capital Demolition 34 Jaxon Road, Bayswater, 6053 Ph 08 9279 4599	Accepts construction and demolition waste.
	Jandakot Transfer Station Mariott Road, Jandakot WA 6164 Ph 08 9414 1722	Waste accepted: <ul style="list-style-type: none"> • Construction and demolition waste • General skip waste • Concrete Opening Hours: Monday to Thursday 6am – 4.30pm. Friday 6am – 3.30pm. Saturday 6am – 12noon.
	Resource Recyclers 42 Kelvin Road, Maddington 08 9459 9122	Accepts construction and demolition waste.
	Veolia Environmental Services Marriot Road, Jandakot Ph. 08 9354 0444	Accepts construction and demolition waste.
	Other: Beetle Environmental Pty Ltd, Wattle Grove Mineral Crushing Services, Midvale Nine Mile Landfill Site, Henderson RCG Technologies, South Perth Red Sand Supplies & Earthmoving, Naval Base	0438 802 244 Ph. 08 8976 1150 Ph. 08 9407 5069 Ph. 08 9407 5069 Ph. 08 9417 9068
Paper: Uncontaminated paper and cardboard materials can be recycled in Perth.	Amcor Recycling Australasia 3 Madison Street Canning Vale WA 6155 Deliveries : 3 Bell Street, Canning Vale P: (08) 9256 6103 M: 0418 306 002 F: (08) 9256 6166 E: annette.debenham@amcor.com.au Web: www.amcor.com	Collection of most products can be arranged. Rebates paid at market prices. Accepts: Cardboard - all types of clean cardboard and cardboard boxes Newsprint - clean, not sunburnt Magazines - magazines, books, brochures Office Paper - photocopy paper, envelopes, computer printouts, etc Aluminium and Steel Plastics - all grades of clean plastic Enquires welcome for other grades of recyclable product.
Plasterboard: May be crushed for re-sale as a soil conditioner. At the time of writing, we are unaware of other recycling opportunities.		
Plastics: Many plastics can be granulated and re-used to make new plastic products and include: <ul style="list-style-type: none"> • High Density Poly Ethylene (HDP): rubbish bins, buckets and traffic cones. • Low Density Poly Ethylene (LDP): shrink wrap and bubble wrap • Polystyrene: containers, insulation, UPVC pipes, fittings and flooring. 	Claw Environmental 35 McDowell St, Welshpool, WA, 6106 Ph 08 9333 4888 Fax 08 9333 4899 email recycle@clawenvironmental.com	All plastics, All plastics (codes 1 to 7) can be recycled. Charges and rebates vary depending on cleanliness of the material and whether there are multiple plastics mixed together. Claw Environmental is available to visit your site and advise on the plastics available for recycling. Shredding and granulation services available.
	Other: Elite Plastic Recyclers, Maddington Jo Jo Plastics, Wangara PP Recyclers, Welshpool Recycla-Plas, Midvale Visy Recycling, Kewdale	Ph. 08 9459 1617 Ph. 08 9302 3933 Ph. 08 9250 3014 Ph. 08 9250 3654 Ph. 08 9477 4894

Waste that can be recycled	Contacts	Waste accepted & charges
<p>Timber: Can be reclaimed, reused, or re-processed into flooring or horticultural mulch (where permitted under local regulations). It may be easier to reuse jarrah than reprocess it at present.</p>	<p>Laminex 1/27 Somersby Rd, Welshpool, WA, 6106 Ph (08) 9311 0400</p> <p><i>Note: The Eastern Metropolitan Regional Council has recently launched a timber collection site at Hazelmere, with material being shredded and transported to the Laminex Group for reprocessing.</i></p>	<p>Laminex has started a process in Western Australia to produce particle board from post consumer timber products. Accepted materials are pine off cuts, particle board off cuts (but no MDF or high pressure laminates), pallets and light woods. Darker timbers are not accepted.</p>
	<p>Other: Fremantle Timber Traders, South Fremantle Recycled Timber Co., Bayswater Sita Environmental Solutions, Welshpool Tamala Park, Mindarie The Fremantle Wood Company, Hamilton Hill Timberville Pty Ltd, Naval Base Transpacific Industries, Welshpool United Paper, Welshpool Western Recycling, Balcatta</p>	

BIN CONTRACTORS

BIN CONTRACTORS WESTERN AUSTRALIA - CONTACTS
Instant Waste Management, Bayswater, Ph. 08 9379 2111 *** Master Builder Member
Budget Bins, Malaga, Ph. 08 9247 8822
Cleanaway, Malaga, Ph. 08 9449 3333, Cleanaway, Malaga, Ph. 08 9449 3333, Cleanaway Mandurah, Mandurah, Ph. 08 9550 4777
Dial A Bin/Total Waste Disposal, Cannington, Ph. 08 9356 2771
Miniskip, Malaga, Ph. 08 9247 8811
Stateside Bins, Malaga, Ph. 08 9247 8800

ENVIRONMENTAL CONSULTANT

Encycle Consulting Pty Ltd, Perth, m: 0439 557 859, * Master Builder Member**

Services:

- Waste assessments
- Preparing Waste Management Plans for commercial constructions for the following phases:
 - design phase (including in accordance with the Green Building Council of Australia's Green Star - Office Design v3 Rating Tool)
 - construction phase
 - operational phase
 - demolition phase
- Waste Management Plan implementation assistance
- Performance monitoring and reporting
- Staff are accredited Green Star Professionals

SALVAGE YARDS & DEMOLITION COMPANIES

SALVAGE YARDS/DEMOLITION WESTERN AUSTRALIA - CONTACTS	
Belmont Salvage Yard, Kenwick	Ph. 08 9459 4448
Brajkovich Demolition, Upper Swan	Ph. 08 9296 4821
Byford Salvage, Byford	Ph. 08 9526 2017
Cape Salvage, Landsdale	Ph. 08 9409 6093
Cottage Demolition, South Fremantle	Ph. 08 9336 2569
Dale Salvage & Demolition, Armadale	Ph. 08 9497 3947
Demolition Works, Woodvale	Ph. 08 9409 5501
Diacon Demolition, Bayswater	Ph. 08 9379 2700
Diggers & Truckers, Daglish	Ph. 08 9382 2240
Eldridge's Salvage Yard, Bellevue	Ph. 08 9259 2685
Frank's Salvage, Guildford	Ph. 08 9279 8062
G & D Housestrippers, Wanneroo	Ph. 0412 959 954
Gastarov Laze Demolitions, South Coogee	Ph. 08 9410 1801
Greenway Eco Demolition, Sawyers Valley	Ph. 08 9295 2824
Groundworks Demolition, Welshpool	Ph. 08 9258 8055
Handiland Salvage And Hardware, Rockingham	Ph. 08 9592 4013
Infinity Renovations, Armadale	Ph. 08 9497 3640
Jag Salvage/ Jag Demolition/ Jag Timber And Flooring, Landsdale	Ph. 08 9302 2244
Jbi Recycling, St James	Ph. 08 9450 6152
Metro Salvage, Bayswater	Ph. 08 9279 8886
Midland Demolition & Recycling, Midvale	Ph. 08 9274 7575
Mosman Recyclers, Munster	Ph. 08 9418 5443
Multiskip, Malaga	Ph. 08 9247 8888
Need A Bin, Welshpool	Ph. 08 9356 8400
Perth Demolition, Victoria Park	Ph. 08 9362 2807
Projek Demolition, Wattleup	Ph. 0413 941 236
Raptor Commercial Demolition, Jandakot	Ph. 08 9417 7966
Ron Smith Salvage Yard, Landsdale	Ph. 08 9302 1226
Ross's Auctions, Maylands	Ph. 08 9272 4644
S & L Salvage, O'Connor	Ph. 08 9314 1433
Salvage & General, Kelmscott	Ph. 08 9390 0033
Salvage & Save, Bibra Lake	Ph. 08 9434 3243
Statewide Demolition And Salvage, Bassendean	Ph. 08 9378 3111
Stirling Recycling & Wanneroo Recycling, Wangara	Ph. 08 9309 9556
The Salvage Warehouse, Port Kennedy	Ph. 08 9524 6292
The Strip Joint, East Victoria Park	Ph. 08 9470 5649
Vic Park Salvage, Welshpool	Ph. 08 9272 3316
Vinsan Salvage, Bayswater	Ph. 08 9279 5422
Wes's Demolition, / Wheatbelt Salvage, Northam	Ph. 0407 608 253
Wilmok's Doors & Building Supplies (WA) Pty Ltd, Bayswater	Ph. 08 9379 3980
Zissis P & Son, Belmont	Ph. 08 9277 9053

WASTE MANAGEMENT PLAN CHECKLIST

Project name:				
Project location:				
Responsible manager:				
Project stage	Checklist questions	Tick if yes	Action proposed	Tips
Internal Planning	1 Have you internally agreed on the need for a site waste management plan and allocated staff responsibility?			Responsible staff need sufficient enforcement powers to make sure others comply with the plan.
	2 Have you checked any tendering, contractual or rating tool requirements for a site waste management plan?			Check with the tendering documents, Green Building Council, or other rating body what is required to meet any targets.
	3 Has a Site Waste Management Plan been completed prior to commencement of job?			See sample site waste management plan template below.
	4 Have relevant sub-contractors agreed to follow the Site Waste Management Plan?			Share responsibility with subcontractors for waste management.
Design	5 Have material quantities been selected to minimise over-ordering?			Minimise wastage allowances.
	6 Has consideration been given to the use of secondary and recycled materials?			Consider ordering from recycling facilities. Investigate whether you can recycle materials from your other construction jobs.
	7 Can unwanted packaging be returned to the supplier for recycling or re-use? Can unused materials be returned to the supplier or used on another job?			Choose suppliers who will take back packaging and off cuts. Ask suppliers to backload wastes
	8 Have designers used standard material sizes wherever possible?			
Project Planning	9 Has responsibility for waste management planning and compliance with environmental legislation been communicated to all staff and identified sub-contractors?			Documentation in subcontract orders is desirable. Provide for back charges if waste is not separated.
	10 Have you identified likely waste arising (how much, when, and what types)?			Use bills of quantities and previous experience.
	11 Has an area of the site been designated for waste management, including separated waste bins?			This may prove a challenge on small sites.
	12 Have waste targets been set for the different types of waste likely to arise from the project?			
	13 Have measures been put in place to deal with any hazardous waste?			Note obligations under the Contaminated Sites Act to report sites containing material harmful to humans or the environment.
	14 Have you considered the implications of the disposal of liquid wastes such as wash-down water and lubricants?			Set aside an area for wash downs.
	15 Have you checked any requirements for water wastes with the Water Corporation or Swan River Trust (if applicable)?			It is best to prevent any silty or other discharge at source rather than causing a problem. The best way to prevent discharge is to ensure that stormwater and drainage is properly managed.

Project stage	Checklist questions	Tick if yes	Action proposed	Tips
	16 Have opportunities been considered for re-use or reprocessing of materials on-site?			Consider having onsite crushing equipment.
	17 Have opportunities been considered for re-use or reprocessing of materials off-site?			Consider using unwanted fill on other sites.
	18 Have you researched disposal costs for separated waste that may have a commercial value?			Remember that there are lower disposal costs for separated wastes. Some wastes will be accepted at no charge by recyclers.
Site operations	19 Has responsibility for waste management on-site and compliance with environmental legislation been assigned to a named individual regularly onsite?			
	20 Have toolbox talks or inductions been planned for all site personnel about waste management on-site?			Include a waste training component in site inductions.
	21 Are selected waste materials separated to allow best value to be obtained from recycling waste management practices?			
	22 Are containers/bins clearly labelled to avoid confusion?			Locate bins for different waste streams close to the work places generating material for recovery.
	23 During operations, have you monitored that waste is being placed in the correct bins?			Make sure the bins do not overflow and insure that all workers know their obligations.
	24 During site operations, are barriers to good waste management noted for incorporation into the post-completion review?			
	25 Have you made sure that the bins are, where possible, removed from street viewing to help avoid illegal dumping of rubbish?			Take special care to secure bins around Christmas time when illegal dumping becomes especially popular.
Post	26 Has a final report of use of recycled materials, waste reduction, and separation, with costs and savings identified, been completed?			
	27 Have key waste management successes been considered for action at future projects?			
	28 Have you considered promotional opportunities for any successes eg local media, industry media (eg Master Builder Magazine) or in staff newsletters?			Submit successes to mba@mbawa.com . Distribute media releases to local newspapers or organize an interview with a local radio station to discuss your achievements.

SITE WASTE MANAGEMENT PLAN TEMPLATE

Note that you will need to tailor this plan to allow for the type of waste that your job is likely to produce, and to suit the number of wastes that you decide to separate.

Project:								
Site address:								
Subcontractors involved:								
Responsible site manager:								
Material Quantity (in m³)								
	Total waste	Re-used on-site	Re-used off-site	Recycled for use on-site	Recycled for use off-site	Sent to recycling facility	Sent to landfill	Contractor used
Soil								
Rock/rubble								
Concrete								
Plaster/Plasterboard								
Tiles								
Bricks & pavers								
Wood								
Plastics/PVC								
Metal								
Green waste								
Paper + Cardboard								
Glass								
Other								
Hazardous								
Totals (in m3)								
% of total	100%							
SWMP Target %*								

WASTE MANAGEMENT SUBCONTRACTOR HANDY HINTS

Whilst there can be resistance to recycling, there is majority support for waste management amongst sub-contractors. A survey by Barclay Mowlem gained an interesting insight to the attitudes of subcontractors. It was part of a survey conducted on the Vantage Project in Brisbane. The survey found:

- 85 percent believe building waste affects the environment;
- 71 percent believed waste management was a good idea;
- 59 percent believed the waste products which they generated could be recycled;
- 84 percent agreed or strongly agreed the bins and coloured logos were easy to identify.

[See Construction and Demolition Waste, Waste management and resource use opportunities, Queensland EPA at page 46]



Below are some hints from different trades (source: Reardon C, 2005):

Bricklaying

Have bricks dropped around perimeter to save damage in transporting to place of use and to minimise costs.

Use appropriate mortar strength - softer mortar saves cement and helps in recycling.

Set aside straps for recycling.

Choose bricks with less packaging.

Carpentry

Use engineered timber products that make efficient use of materials where possible.

Use sustainably sourced timber.

Encourage your supplier to find sustainable sources.

Prepare accurate cutting lists before ordering.

Give joiners a copy of the cutting list. Ensure that carpenters have a complete cutting list to allow efficient timber use.

Use joinery profiles that can be easily and invisibly joined to reduce off-cuts.

Use off-cuts wherever possible.

Concreting

Use concrete with recycled aggregate where possible.

Utilise reinforcement made from recycled steel.

Form up accurately and minimise wastage. Up to 10 percent is regularly wasted.

Return surplus to the supplier for recycling.

Buy from plants that wash out cement to allow recycling of sand and aggregate.

Crush/smash remnants into small pieces before final set to allow later use as backfill or recycling.

Always form up an area of path or low grade slab ready to accept remnants.

Electrical services

Use sub-boards and plan wiring to reduce wiring distances, quantities, waste and cost.

Recycle off-cuts. Strip insulation from copper which can be sold.

Use PVC free insulated cable - it lowers leachate toxicity.

Consider pulse switching and intelligent controls to reduce cabling and energy use.

Glazing*

Separate construction glass from other glass such as drink bottles.

Most glass can be melted down and recycled but requires sorting.

Glass can also be recycled as aggregate.

* There are limited glass recycling options in WA.

Plastering/Plasterboard

Buy plasterboard from suppliers who recycle.

Sort off-cuts and store on site for return to recycler.

Keep off-cuts clean and dry.

Carry useful sized off-cuts to other work areas.

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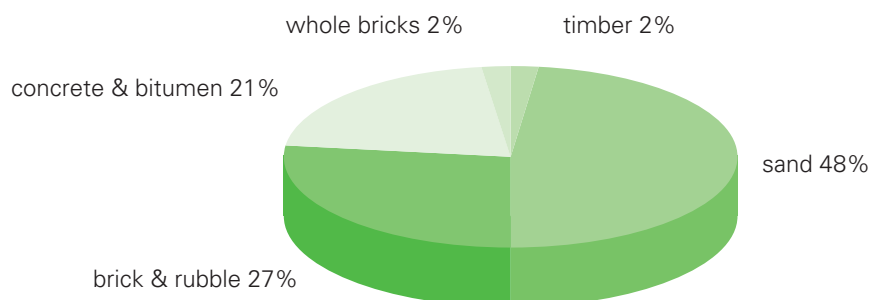
Geoff has authored numerous articles, publications and research reports, including the WA Commercial Property Management Checklist, workplace privacy laws, property rights, industry association communications, contempt of Parliament, a WA property tax guide, and office space use survey reports.

He has strong private and public sector experience, having worked in political, corporate affairs and industrial relations roles. His resume includes appointments as WA Corporate Affairs Manager for SGIO, Deputy Executive Director with the WA Division of the Property Council of Australia, as a Labour Relations Advisor for the Department of Productivity and Labour Relations, and as a Ministerial Officer for two State Government Ministers.

Outside of work, he is a proud father of twins Eamon and Oliver, and is President of the Blue Gum Early Learning and Child Care Centre.



Recycled Construction & Demolition Waste in Western Australia 2005/2006



Source: Cardno BSD, Review of Total Recycling Activity in Western Australia, 2005-06, June 2007

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