



**BETTER
BUILDINGS
PARTNERSHIP**

STRIPOUT WASTE GUIDELINES

Version 1.1: July 2018



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The NSW Environmental Protection Authority (NSW EPA) Circulate program provided ongoing support to exploring stripout waste and developing recycling alternatives for industry.

The BBP would like to thank them for their expertise and assistance in the development of these guidelines.



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about the better buildings partnership

The BBP is a collaboration of leading property owners, managers and influencers that work to improve the performance and sustainability of existing buildings in the City of Sydney and across Australia.

The Partnership affects broad market transformation on issues difficult to champion by individual companies acting alone. Our work has seen significant progress on issues as diverse as best practice leasing, cooling tower management, operational waste and green infrastructure.

Improving management, measurement and outcomes from refurbishment waste is an area of opportunity for better recovery. The BBP recognises the importance of waste as a resource material with importance and value to tenants and building owners.

The BBP focuses its efforts on intractable and systemic industry issues and seeks to identify a high water mark of best practice capable of delivering a step-change in performance on a particular issue.

Whilst the exact delivery method is designed for each issue, projects are generally moved from identification to delivery using a series of maturation levels. This process is not always direct and linear, as different issues may require an iterative looping of key areas to achieve the long-term objectives.

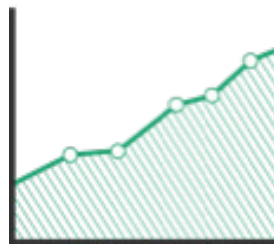
How the BBP works



**engaging
industry
and government**



**scaling
sustainability**



**benchmarking
progress**



**transforming
markets**

BBP Delivery Method

1	PROBLEM IDENTIFICATION	The Partnership defines the problem and the particular barriers to improved performance with a diverse cross-section of relevant stakeholders.
2	GAP ANALYSIS	The Partnership leverages its experience and current practices to collect and promote existing best practice and identify issues and missing links.
3	DEFINING BEST PRACTICE	The Partnership defines ideal industry best practice and where it currently exists, whether in its own practices, its supply chain, or others locally and globally.
4	ITERATIVE CO-CREATION	The Partnership works with its members and external stakeholders to co-create, fill the gaps and sense-check best practice guidelines and standards defined.
5	IMPLEMENTING BEST PRACTICE	The members of the Partnership pilot the best practice guidelines and standards in their own organisations, to embed best practice and identify minor modifications.
6	BENCHMARK PROGRESS	The Partnership creates systems for monitoring and benchmarking uptake of its best practice works in its membership and the industry.
7	TRANSITION TO STANDARD PRACTICE	The Partnership works with industry bodies, government and other appropriate organisations to embed its work into existing tools and systems for broader uptake and servicing.

executive summary

The Better Buildings Partnership (BBP or Partnership) is committed to continuous improvement in the management of waste generated through the refurbishment of commercial buildings. It is the goal of the BBP to promote the highest order reuse or recycling of materials as described by Figure 1. Landfill is the final, and least desirable outcome for any material.

Drawing on its extensive expertise and that of its partners and suppliers, the Partnership has developed these guidelines to assist tenants, building owners and contractors in the procurement and execution of best practice stripout operations. A robust resource recovery system in stripout projects requires clear contracting, established pathways for materials, a shared understanding of responsibilities, the allocation of risk, and health and safety obligations.

These guidelines include a number of tools that can be utilised to create, procure and implement consistent stripout processes while gathering comprehensive data that informs decision making and will drive a stronger market of resource recovery for the long term.

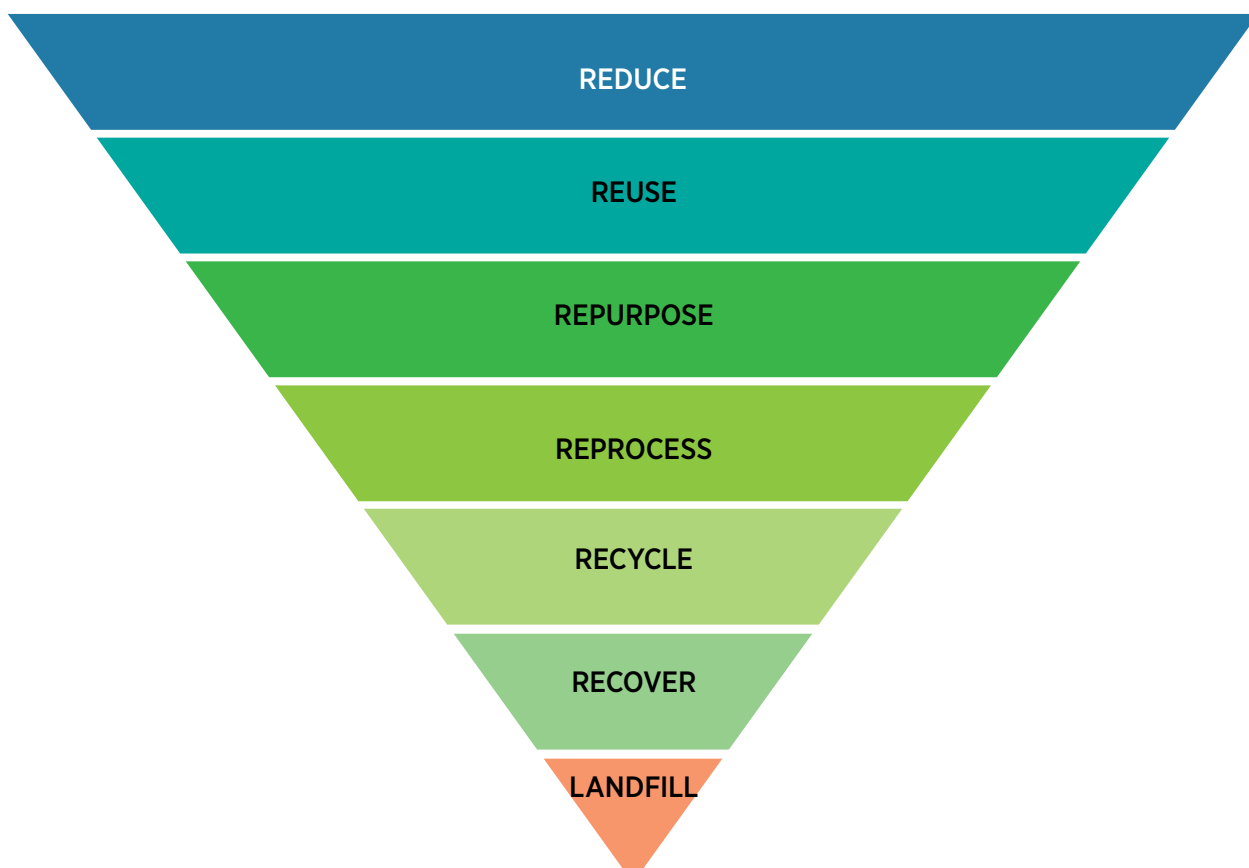
BBP Member Targets

Members of the BBP are publically committed to targeting recycling rates of 60%, and aspirationally 80%, in refurbishment projects.

However, to avoid mis-incentivising contractors, and focus on the delivery of accurate reporting, it is acknowledged that this is not always achievable and as such, the BBP requests contractors to present anticipated recycling rates for projects during the tender response phase. Building owners should consider proposed plans for resource recovery in their tender assessment criteria.

The BBP hopes that by collaborating as an industry we can drive better waste management standards, improve industry data and benchmarking and create positive recovery incentives through the contracting process. These outcomes will lead to waste reduction and improved resource recovery and reuse in the sector. Waste is a resource and the stronger this sector becomes the more valuable this resource will be. The BBP hopes to see the term 'resource' become the norm throughout the industry when referring to 'waste'.

Figure 1



What the Guidelines are

Drawing on its extensive expertise and that of its partners and suppliers, the BBP has developed the BBP Stripout Waste Guidelines (“the Guidelines”) to assist tenants, building owners and contractors in the procurement and execution of best practice stripout operations.

The Guidelines provide practical tools for beginning the journey to best practice in implementing stripout processes that incentivise better resource recovery and suggestions for specific approaches and targets for demonstrating best practice.

The Guidelines include templates for gathering comprehensive data to inform decision-making and enable a market of resource recovery in the long-term.

What the Guidelines are not

Given the complexity of the overall process, the Guidelines are not a comprehensive guide to stripout. However, they are intended to assist the delivery of environmental outcomes within it.

The Guidelines do not set out the only method of achieving best practice environmental outcomes in stripouts. The context, drivers and unique circumstances for each location and business will dictate the method for that organisation. These should be considered when applying the Guidelines to your processes.

The Guidelines do not provide guidance on procurement of office materials. The way that office materials are procured will influence their treatment at end of life, such as being built for disassembly, items destined for take back, fitout as a service, and procuring pre-used items.

The Guidelines do not provide comprehensive guidance on the design or specification of pre-used materials. If parties are committed to maximising resource recovery and instilling the principles of industrial ecology in business, they must also be prepared to design in, specify and purchase pre-used goods. High volumes of pre-used goods can be refurbished and warranted by third parties and parcelled in design-conscious refits for a lower cost per square metre. Furthermore, retaining and enabling the procurement of pre-used items in fitout specifications will ensure longevity and success for material recovery markets and support local circular economies.



quick guide by project role

Role	Concern	Guidance	Ref
Fund/General/ Investment Manager	Embedding stripout waste recovery targets and best practice in tender documents	Follow BBP Model Stripout Clauses	3a
	Setting 60-80% stripout waste recovery targets	GMT Case Study where no additional cost was incurred to meet 60% recovery	1d/2a
	Calculating potential environmental outcomes	Use emissions calculator for avoided landfill	5b
	Reputation/evidencing Corporate Social Responsibility (CSR) outcomes	Use BBP Stripout Waste Case Study Template to share learnings and reuse/recycling outcomes	3d
Project Manager/ Tenant/Tenant Representative	Preparing for an upcoming stripout/ refurbishment	Refer to BBP Stripout Inventory Template and record all existing furniture	2d
	Effectively communicating resource recovery objectives	Ensuring that contract terms are passed on to contractors	3a
	Managing project delivery and hand over of site responsibility	Understand the impacts of site control, and be aware of all parties involved in the project and at what stage they should be taking on certain tasks	1c
Facility/Asset Manager	Organising onsite access for external parties	Furniture removal should only be conducted by suitably insured parties and prior to demolition	2d
Head Contractor or a Demolition Contractor	Complying with or assigning stripout waste recovery targets	Assign requirements per Principal requirements clause	3a
	Preparation of the Resource Recovery Plan	Refer to the BBP Resource Recovery Plan	3c
	Disposal of waste by recovery path	Refer to BBP Reuse and Recycle Directory	3b
	Reporting and evidencing waste recovery outcomes	Use the BBP Resource Recovery Report	3c
Resource Recovery Facility Operator	Providing evidence of material disposal	Provide weighbridge dockets, with date and time for each load	3c



10 steps to best practice

1	Set a corporate recycling target for refurbishment	All BBP members are committed to pursuing 60%, and aspirationally 80%, recycling rates in refurbishment projects
2	Agree on responsibility for make-good and handover date	Confirming the handover date well in advance allows the clear allocation of responsibility and greatly increases the potential to recover value from rehoming and recycling efforts
3	Document furniture in the tenancy using the inventory template (2d)	Furniture inventories should be made available to the market as early as possible, as generally the longer the lead time, the greater the furniture able to be recovered
4	Evaluate tender responses with consideration for proposed resource recovery plan and achievable recycling rate	Contractors presenting more extensive Resource Recovery Plans and/or better recycling outcomes for the project should be preferred
5	Tender refurbishment works according to BBP model clauses	Tender documents should include corporate targets for refurbishment recycling (as per 3a), the ' <i>Resource Recovery Plan</i> ' template in the BBP Stripout Waste Guidelines – Resources Workbook and a breakdown of assessment criteria – including the weighting given to the Resource Recovery Plan and expected recycling rate in tender response assessment
6	Divert unwanted furniture using the Reuse and Recycle Directory (3b)	The BBP maintains a list of potential businesses, charities and education facilities able to receive unwanted furniture
7	Contract work according to the resource recovery plan and support the contractor to plan material separation	Contractors should be held to the fulfillment of their Resource Recovery Plan and present evidence of having delivered it
8	Validate the Resource Recovery Report from the contractor and confirm recycling rate	Contractors waste reporting should be made according to the ' <i>Resource Recovery Report</i> ' and will include any furniture rehomed by the outgoing tenant or building owner prior to demolition
9	Develop Project Case studies to highlight good practice and learnings	Case studies are essential in recording and sharing learnings from products and are also encouraged to recognise best practice
10	Specify pre-used furniture and recyclable materials in the new fitout	The BBP encourages its members to consider the end of life cost and impact of the fitouts installed in the built environment

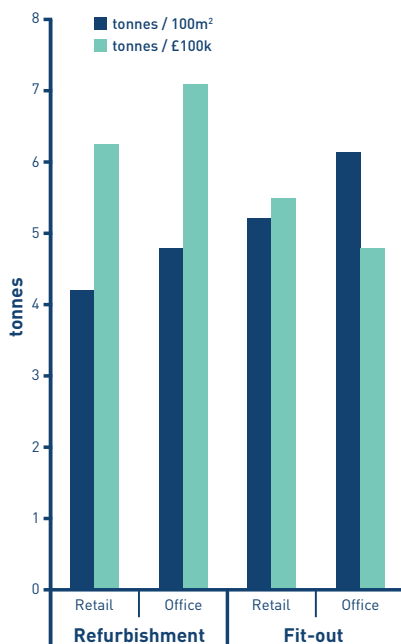
1. introduction

1a. The Scale of the Opportunity

Better Buildings Partnership research shows that stripout works during office refurbishment create 63 tonnes of material per 1000m². This is consistent with research from the UK indicating office refurbishment generates 62 tonnes of material per 1000m². An average of 10% of leases are renewed each year, generating 25,000 tonnes of material every year in Sydney's CBD alone, with 18% being recycled and 2% reused in normal practice despite the materials being predictable in composition and supply, and inherently high in value.

The Better Buildings Partnership foundation report on stripout waste (2014) indicated that the primary material components are plasterboard, carpet, ceiling tiles, glass, metals and furniture. Further, it indicated that many of these materials have existing or emerging diversion pathways which are currently unknown or underutilised by industry because of time, cost or logistics. With careful separation and aggregation, materials can have a viable second life in another tenancy or be reprocessed into something new, creating business opportunities and jobs in the local economy, whilst significantly improving environmental outcomes and avoiding landfill and its expense.

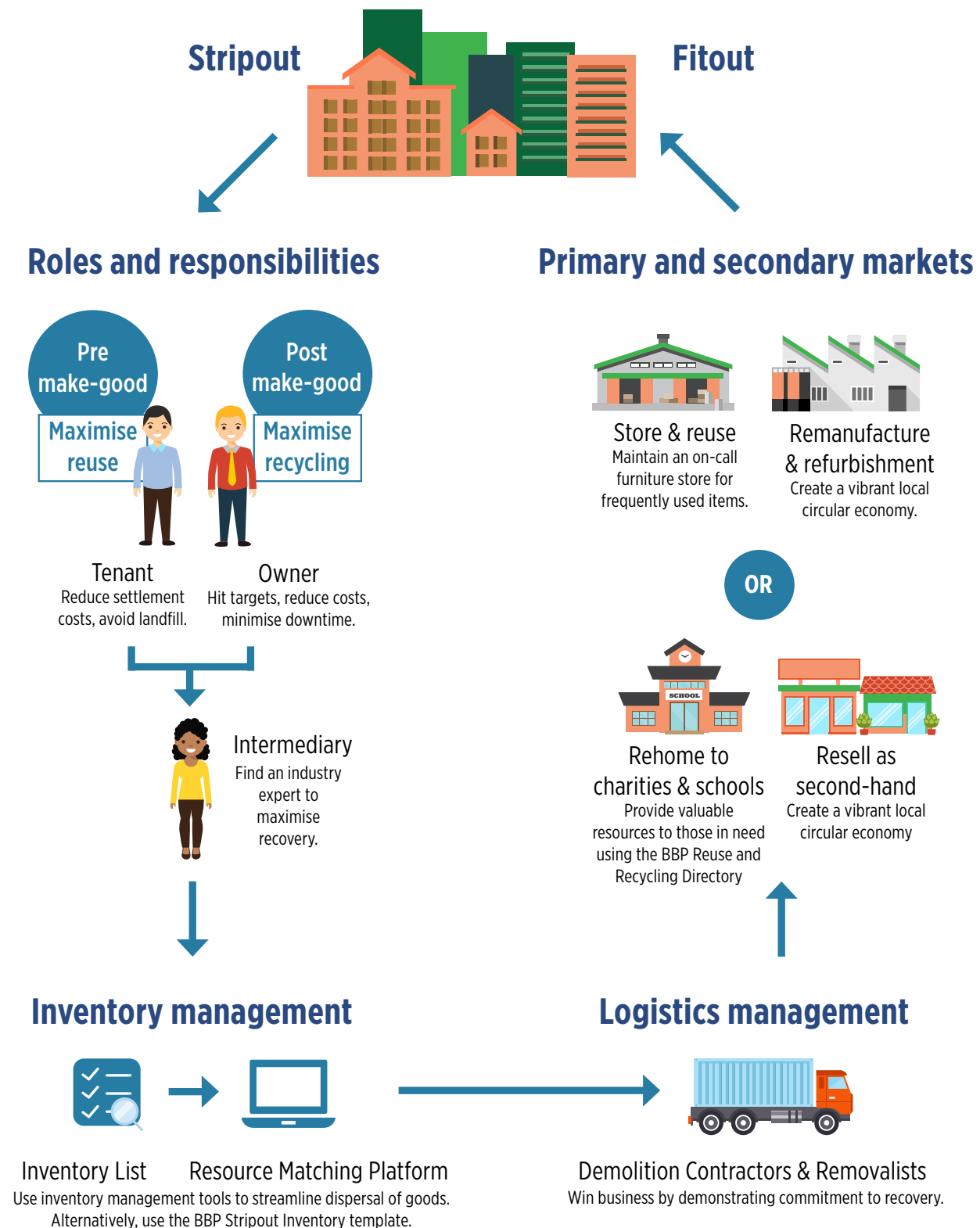
Retail and office:
Fit-out and refurbishment waste.



Source: WRAP's average benchmark figures.



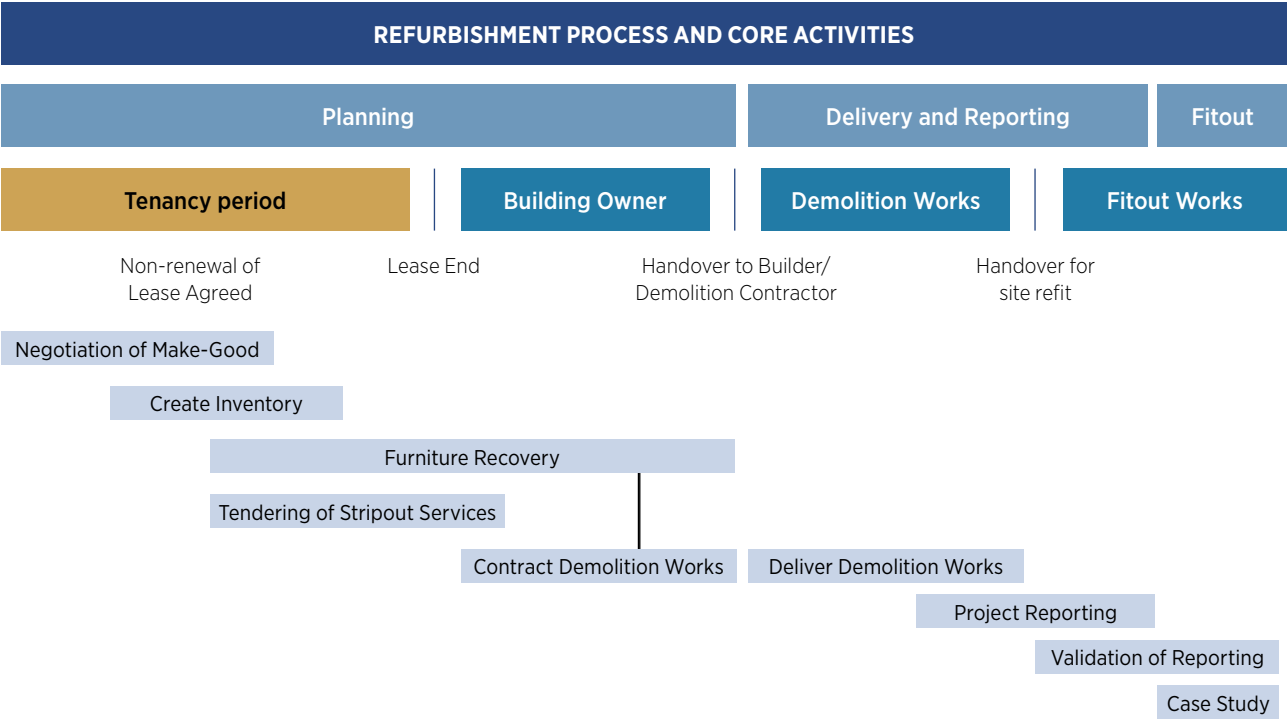
1b. The Office Stripout Furniture Recovery Ecosystem



1c. The Refurbishment Process

Refurbishment projects follow a general chronology through occupation, vacation, lease end, demolition and reporting. However, there are intricacies in the transition of ownership, responsibility and site control over this process that require careful management to deliver effective environmental outcomes.

Overview of site control, transition of title, and key activities



Tenancy period

Over the course of the lease, the tenant has ownership of the furnishings, partitions and equipment located within the tenancy.

Most leases included a 'make-good clause' that requires the tenant to return the space to its original condition by either delivering the works themselves, or through a financial settlement with the building owner. In these instances, the responsibility for site and delivery of works transfers to the building owner.

Due to the legalities of site access once works commence, it is preferable that all furniture reuse efforts take place before the lease end date and are coordinated by either the tenant, or building owner.

Building Owner and Demolition Works

Once the responsibility for making good has been negotiated between tenant and building owner, a builder will be engaged to manage and deliver the refurbishment works. An immediate start date (i.e. as close as possible to lease end) is generally preferred for demolition, and the builder will often engage a specialist stripout or demolition sub-contractor to manage the removal of materials from the site in a safe and timely manner.

Fitout period

When all refurbishment works are complete, the site is handed back to the building owner, and subsequently the incoming tenant. The incoming tenant will then set about fitting out the space to suit their needs.

The design of a fit-out has a significant impact on the achievable recycling rate at end-of-life. The materials and products procured should be done so with consideration of their removal, and doing so is recognised under several credits in the industry rating tools (such as Greenstar Interiors).

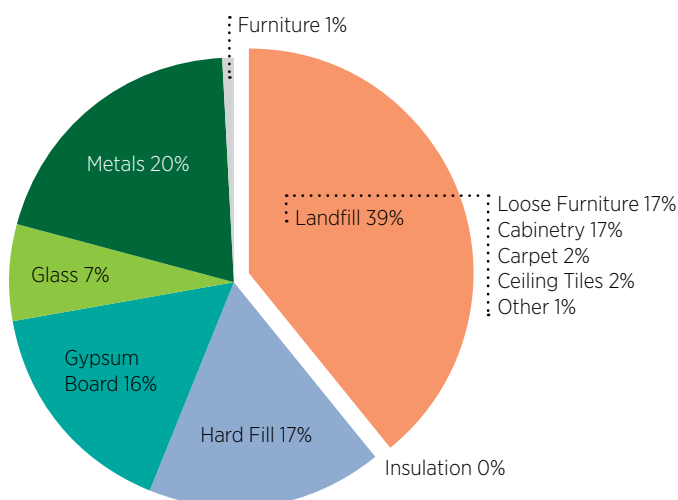
1d. Proving it's Possible – GMT Case Study

In 2015 Edge Environment, in conjunction with BBP, compiled a case study for the stripout of Governor Macquarie Tower (GMT) in Sydney. This case study used this report's toolsets and reporting matrix to measure and record the material destinations.

GMT Trial – Fast Facts

- 9503m² net lettable area across the 8 floors
- 891.56 tonnes of waste was removed from the site, see Figure 2 below for this breakdown of waste composition:
 - 60% of the total waste (536.22 tonnes) was recycled
 - 1% of the total waste (9.5 tonnes) was reused
 - 39% of the total waste (345.84 tonnes) was disposed at landfill.

Figure 2



This project focused on working with down and upstream suppliers and reprocessors to demonstrate the achievability of recovery rates over 60%. This outcome was possible through:

- A timely and comprehensive inventory of remaining furniture items for charitable reuse or sale
- Commitments to increasing recycling from Building Management to create the framework for improved environmental outcomes during stripout
- Planning the program of works strategically to maximise removing materials (eg. plasterboard before glass) by type to overcome on-site storage issues
- Good on-site systems and processes for effective reporting and contamination management
- Co-operation from Building Managers to allow charities and other not-for-profits to receive items and rehome them from the tenancy
- Accountability and transparency in disposal for effective reporting.



2. planning phase

2a. Setting a Corporate Refurbishment Recycling Target

All BBP members are committed to pursuing 60%, and aspirationally 80%, recycling rates in refurbishment projects. As a benchmark for industry, the BBP encourages other organisations to adopt similar targets.

Once a target is set, this should be carried through to all requests for tender, tender assessment criteria, contracts and annual reporting on waste or sustainability.

2b. Negotiation of Make-good

Should an outgoing tenant elect not to deliver the scope of the make-good themselves, there will generally be a cash settlement made with the building owner to cover the cost of refurbishing the space. This cash settlement is typically based on quotations collected by the building owner to deliver the scope of works to make good (as defined in the lease), once non-renewal of lease is confirmed.

The negotiation of the make good represents a significant transfer in responsibility for resource recovery:

- During tenant occupation:
 - the responsibility for rehoming or disposing of goods within a commercial office tenancy is with the tenant and their representatives. Often the tenant will make a first decision about what to keep and may undertake some disposal of unwanted items. The tenant will receive the benefit and value (potentially through a reduced make good settlement) of this material diversion. Re-homing and reuse is most achievable at this stage in the process.
- After lease end (assuming a cash settlement is made for the make-good):
 - the title and all the remaining goods on-site is exchanged for an agreed amount. Responsibility for resource recovery now falls with the building owner (or their appointed manager)
 - At this stage the building owner/manager should undertake rehoming of any remaining furniture.
- After handover to a builder:
 - responsibility for all remaining materials becomes the responsibility of the appointed contractor
 - Site access will generally be restricted by the contractor's demolition teams from this point limiting the ability to extract and reuse furniture.

Confirming the handover date well in advance allows the clear allocation of responsibility for resource recovery at different stages, and also the potential to recover value from rehoming efforts.

2c. Tendering of Stripout Services

Tender documents and assessment criteria are a critical aspect of formalising expectations and deliverables around resource recovery.

Tendering of stripout works

Tender documents for refurbishment projects should always include:

- Corporate targets for refurbishment recycling (as per 3a)
- The 'Resource Recovery Plan' template in the [BBP Stripout Waste Guidelines – Resources Workbook](#)
- A breakdown of assessment criteria – including the weighting given to the Resource Recovery Plan and expected recycling rate in tender response assessment.

Due to commercial sensitivities, some contractors may not wish to provide a full breakdown of their material quantity estimations in the Resource Recovery Plan, although as a minimum they should submit an expected recycling rate. The executed contract will specify a date (generally within 10 business days of the signed contract) for the provision of a completed Resource Recovery Plan to support any quoted recycling rate in their tender response.

The BBP Model Stripout Clauses make contractors accountable to:

- Following the proposed Resource Recovery Plan (in terms of recycling by material type and also, use of destination facilities), but not,
- The recycling rate estimated for the project.

Assessment of tender responses

Tender assessment criteria should incorporate the contractor's estimated recycling rate. Contractors presenting more extensive Resource Recovery Plans and/or better recycling outcomes for the project should be preferred.

2d. Reuse of Furniture

The reuse of materials should be prioritised over any other end of life scenario, and the creation of an inventory should be undertaken early in all stripout projects. The avoided labour and disposal costs of furniture make it possible to deliver a furniture inventory and rehoming in return for a commensurate (or greater) reduction in demolition costs.

In the refurbishment of Darling Park Tower, over 83t of furniture was recovered by the building management and Edge Environment prior to demolition. Active co-ordination between the tenant and building owner allowed the early inventory of available materials and sufficient time to have these removed by a range of recipient charities.

Beneficiaries of the furniture included, The Smith Family, Girvan Waugh, Moorebank High School, Lucas Heights Primary School, The Exodus Foundation, the Tongan Government, Padstow Public School, The Baptist Church (the Entrance), Built, The Bosnian Community Centre, and the Bonnett Bay Football Club among others.

The project demonstrated that even with cost of appointing an external consultant to manage furniture recovery, this cost can be more than offset by a reduced demolition scope.

Inventory of existing furniture

As soon as a non-renewal of lease is confirmed, a list of available furniture should be created according to the [BBP Stripout Inventory Template in the BBP Stripout Waste Guidelines – Resources Workbook](#), or an industry expert intermediary. The BBP encourages all furniture reused or gifted by the tenant to be counted as resource recovery – so documenting all available items as soon as possible is essential in fully reporting the projects reuse component.

A well prepared and maintained inventory (including images, dimensions and condition) will help potential recipients assess and confirm interest in available furniture. Using the [BBP Stripout Waste Guidelines – Resources Workbook](#), furniture recorded as reused in the inventory tab will be automatically recorded in the projects Resource Recovery Report.

Ideally, furniture inventories should be made available to the market as early as possible, as generally the longer the lead time, the greater the furniture able to be recovered. Wherever possible inventories should be circulated at least 4–8 weeks prior to the commencement of demolition works.

Reuse of unwanted items

In addition to the personal or professional connections of tenants and building owners, the BBP maintains a list of potential businesses, charities and education facilities able to receive unwanted furniture. Refer to 'Reuse Directory' in the [BBP Stripout Waste Guidelines – Resources Workbook](#) for this list.

When emailing available inventory to these parties, please also make note of any site access requirements, minimum orders and removal timelines.



3. delivery and reporting phase

3a. BBP Model Stripout Clauses

Context

When contracting stripout services it is important to articulate a resource recovery target (nominated by the contractor) based on the potential recovery of the materials. The BBP's case studies on stripout works have found that a 60% minimum target is achievable without compromising time or cost.

To avoid mis-incentivising contractors, the BBP's model clauses request tender respondents to develop a Resource Recovery Plan and calculate their expected recycling target. Contractors should be held to the fulfillment of their Resource Recovery Plan and present evidence of having delivered it, but not be penalised for failure to meet a certain recycling target.

Contractors waste reporting should be made according to 'Resource Recovery Report' in the [BBP Stripout Waste Resources Workbook](#) and will include any furniture rehomed by the outgoing tenant or building owner prior to demolition.

Introduction

The terms "Principal", "Contractor" and "Practical Completion" have been used throughout these clauses to reflect terminology used in the standard templates considered. However, these terms can be customised and substituted with other terminology if the parties to a particular agreement would prefer. For example:

- "Principal" can be replaced with "Owner";
- "Contractor" can be replaced with "Builder";
- "Practical Completion" can be replaced with "Completion";
- "Work under the Contract" can be replaced with "WUC".

SECTION

CLAUSES

1. Interpretation and construction of Contract

[Insert the following into the interpretation/definition section of the relevant Contract]

In the Contract, except where the context otherwise requires:

- *Demolition Waste* means [the materials to be removed from the site by the Contractor as detailed in the Contract including the scope of work and specifications/materials identified in the Waste Management Report].
- *Documentary Evidence* includes the facility and weighbridge receipts which provide evidence of Demolition Waste receipt at a diversion or disposal facility.
- *Recovery Target* means the percentage in Item [X] of Contract Information. [Note: BBP Guidelines encourage a resource Recovery Target of at least 60%]
- *Resource Recovery Plan* means a written plan prepared in the form of and containing the information required by the template attached at Annexure [X]. [Insert BBP Waste Management Plan Template or other plan format agreed between Contractor and Principal]
- *Site* means the lands, buildings, structures and any other lands and places made or to be made available to the Contractor by the Principal. [Insert only if Site is not already defined in the Contract]
- *Waste Management Report* means a written report prepared in the form of and containing the information required by the template attached at Annexure [Y]. [Insert BBP Stripout Waste Resource [Workbook](#)/Waste Management Report Template as a new Annexure to Contract or other form of report agreed between Contractor and Principal]

SECTION**CLAUSES****2. Resource Recovery Plan****2.1 Access to Site**

Before the expiry of the time stated in Item [insert], the Principal must procure access for the Contractor to the Site to enable the Contractor to [prepare/refine/update] the Resource Recovery Plan.

This clause [2] confers on the Contractor a right to such access as is necessary to enable the Contractor to [prepare/refine/ update] the Resource Recovery Plan. The Contractor must comply with such reasonable conditions imposed by the Principal and any current occupier of the Site regarding the timing and extent of access and non-interference with, and confidentiality of, business operations.

2.2 Recovery Target

The Contractor acknowledges that the Principal aims to achieve the Recovery Target in relation to the diversion of Demolition Waste from disposal in landfill.

2.3 Contractor's obligations to [prepare/refine/ update] Resource Recovery Plan

The Contractor must:

- a. [prepare/refine/update] the Resource Recovery Plan for the work under the Contract;
- b. provide the Resource Recovery Plan to the Principal no later than the date stated in Item [insert] of the Contract Information, following which the Principal may comment on the Resource Recovery Plan but is not required to do so; and
- c. comply with the Resource Recovery Plan.

2.4 Documentary Evidence of Recovery Target

The Contractor must:

- a. [use its best endeavours to/follow industry best practice to] achieve the Recovery Target as agreed in the Resource Recovery Plan;
- b. retain appropriate, complete and accurate records including, but not limited to:
 - i. Waste Management Reports; and
 - ii. Documentary Evidence regarding disposal of Demolition Waste which demonstrates compliance with this clause [2.4];
- c. provide the Principal with those records upon written request.

2.5 Contractor's Provision of Documentary Evidence

The Contractor must [as a pre-condition to the achievement of Practical Completion/within [insert time period] after Practical Completion] provide to the Principal evidence of the diversion rate achieved by the Contractor, including by production of a final Waste Management Report and Documentary Evidence

SECTION	CLAUSES
3. Additional Items for inclusion in Contract Information	Item [insert] – Recovery Target [insert] percent
	Item [insert specific date or time within which Principal must procure access for Contractor to Site for preparation of Resource Recovery Plan]
	<i>[Drafting Note: Note that the longer the period allowed to the Contractor for access prior to commencement of work, the greater the opportunity for waste diversion and the higher the Recovery Target and ultimate diversion rate will likely be]</i>
	Item [insert] – Date by which Contractor must provide Resource Recovery Plan to Principal
4. Additional Annexures for inclusion in Contract	Annexure [insert] – Resource Recovery Plan
	Annexure [insert] – Waste Management Report

3b. Reuse and Recycle Directory

The BBP has developed a ‘Reuse and Recycle Directory’ in the [BBP Stripout Waste Resources Workbook](#) to assist contractors and building owners to deliver improved recycling in stripout projects.

The aim of the *Reuse and Recycle Directory* is to provide a centralised source for researched destinations of recoverable materials. It includes:

- common recoverable materials from stripout
- re-processors for that material with contact details, acceptance criteria and recovery rate
- indicative gate fees – noting that these are subject to change and individual negotiation

The *Reuse and Recycle Directory* also provides guidance on acceptable/non-acceptable contamination at recycling facilities. Managing contamination is essential to avoid the rejection of loads, compromise the quality of the recycled material output or at worst, cause damage to expensive facility plant and equipment.

3c. Validate Project Reporting

BBP Model Stripout Clauses (2.4 & 2.5) require the contractor to provide a completed ‘Resource Recovery Report’ from the [BBP Stripout Waste Resources Workbook](#) to achieve practical completion and payment for the project. In support of this document and the achieved recycling rate, the contractors should retain disposal dockets for each line item of the report and make these available to the Principal at request.

It is recommended that either the Building Manager (or Project Manager) validate the reported recycling rate through a comprehensive (or sample based) review of the evidence provided before confirming the practical completion of the project.

All project reporting should be submitted to the BBP Secretariat as projects are completed.

Density Calculator

In the instance that a facility is unable to provide weighbridge dockets giving weights of disposed materials, ‘Density Calculator’ in the [BBP Stripout Waste Resources Workbook](#) provides conversion factors for the different material categories reported on.

The BBP preferences weight based data be used for reporting in stripout projects.

3d. Develop Case Study

Case studies are essential in recording and sharing learnings from projects and are also encouraged to recognise best practice. The “BBP Stripout Waste Case Study Template” in the BBP Stripout Waste Guideline – Resources should be utilised following the completion of a project.

4. fitout works

The BBP encourages its members to consider the end of life cost and impact of the fitouts installed in the built environment, as some careful design at the fitout stage can significantly improve resource recovery outcomes at its end-of-life. Working with providers offering take-back programs can ensure that these two traditionally non-recyclable materials have reuse/recycling options at end of life.

Further, the specification of furniture suitable for repair or with availability to replacement parts, can reduce wastage over the lifetime of the fitout.

4a. Linkage to Industry Ratings

Green Star is the Green Building Council of Australia's [GBCA] sustainability rating system for the design and construction of buildings, fitouts and communities. As a well-established mark of sustainability nationwide, Green Star rating tools collectively consider the waste from fitout and stripout operations and the importance of reuse and recovery.

Green Star – Interiors

Green Star – Interiors encourages reductions in the amount of waste generated during the design and construction of any fitout works by awarding up to three [3] points (on a sliding scale) in 'Construction and Demolition Waste' credit, 'based on the amount of waste sent to landfill from all demolition, construction and packaging of materials in the project'. In order to receive recognition, the GBCA requires that less than 0.35 tonnes of waste is generated per 100m² of the fitout area. Points are generated in the following basis:

- 3 points = 1.6–2.5 kg/m² fitout area
- 1.5 points = 2.6–3.5 kg/m² fitout area
- 0 point = <3.5 kg/m² fitout area.

The Green Star – Interiors tool does not specifically address waste from stripout (prior to fitout).



Green Star – Performance

Green Star – Performance awards one point for having an implemented management plan addressing the treatment of construction and demolition waste. Additionally, up to two points based on the percentage of waste diverted from landfill, from refurbishments in the 'Waste from Refurbishments' credit. The diversion rate percentage is calculated based on the amount of recyclable and reusable materials divided by the total amount of material generated. Points are allocated on the following basis:

- 2 points = >80% diversion rate
- 1 point = >60% diversion rate

The Green Star – Performance credit only applies to:

- Base building elements owned by the building owner, during a determined performance period; and
- Refurbishment works cost at least \$5 per square metre.
- Where the requirements for both 'tenant' and 'base building' items are met, this may be claimed as an Innovation item under the 'Expanding the scope of the credit.'

Project teams which meet the clauses outlined with the BBP Stripout Guidelines and associated toolsets can be used to demonstrate compliance with the Waste Management Plan Requirements of the credit.

These Guidelines and the associated toolsets are aligned with Green Star Interiors and Performance rating tools, and could be utilised as part of the evidence used to document the credits.

As shown in the table below, there are a number of credits that address efforts to minimise waste from stripout and the efficient use of materials. Please refer to the relevant Green Star Submission Guidelines for further detail.

Green Star Rating Tool	Credit
Green Star – Design & As Built	Commitment to Performance
	Sustainable Products
	Construction and Demolition Waste
Green Star – Interiors	Fitout Information
	Commitment to Performance
	Sustainable Products
Green Star – Performance	Construction and Demolition Waste
	Commitment to Performance
	Waste from Refurbishments.

5. other resources

5a. NGRS Reporting

Section 5.11 of the NGRS Determination in emissions recording of landfills states that each type of waste in a mix needs to be estimated on receiving. One method is “Criterion BBB” which determines that landfills operators can estimate the amount of “solid waste received in accordance with industry estimation practices”. This Guide encourages industry estimation practices such as the use of “accepted industry weighbridges, receipts, invoices.

Landfills often act as storage areas for material which is subsequently moved onwards for recycling or biological treatment. When this is the case, NGRS guidance suggests the removal of this waste from the tonnage of original material received.

This Guide aims to produce a resource economy where all recoverable and recyclable elements have already been removed before materials are at landfill. For the landfill sites and reporting under the NGER Act, this Guide seeks to reduce emissions and landfill use, whilst also reducing the amount of reporting legislation the landfill operators are required to comply with.

Intermediaries between the stripout and landfill or recycling plants may also have to report under the NGER act. Their liabilities will also be improved by this Guide and the accuracy of the reporting highlighted.

Thus, landfill operators and intermediaries alike can use this Guide to support NGER reporting.

Useful NGER act resource:

- The [NGRS Measurement Determination 2008](#) – landfill information found in chapter 5; 5.5–5.11.

5b. Greenhouse gas emissions from waste landfill calculator

Greenhouse gas emissions associated with the disposal of waste, more specifically C&D and C&I waste, can be calculated according to the equation provided by the Australian Government Department of the environment – [National Greenhouse Accounts Factors](#) (page 72)

5c. Additional Resources

- [Melbourne Markets Fitout Guide](#)
- [WRAP \[Waste and Resources Action Program\] Refurbishment Case Studies and Factsheets](#) and the [WRAP Procurement Training](#) for clients during construction and fitout works.
- [The British Government Highways Department](#) providing details on a smooth transition of title and handover of site





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