

AUSTRALIAN MUSEUM

REFURBISHMENT WASTE MANAGEMENT PLAN



June 2018

AUSTRALIAN MUSEUM
1 William Street Sydney
NSW 2010 Australia
T 61 2 9320 6000
australianmuseum.net.au





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BACKGROUND

This Refurbishment Waste Management Plan (RWMP) exists as a component of the broader Environmental Management Plan (EMP) and Environmental Management Strategy (EMS) of the Australian Museum (the 'Museum'). It has been developed according to the Green Building Council of Australia's (GBCA) *Green Star Performance v1.2 Submission Guidelines* Green Star Credit 23.1A.

Effective refurbishment waste diversion is dependent on staff procedures, access to recycling services, and to a large extent, materials procurement. This RWMP includes targets for waste diversion and an integrated plan to maximise current resource recovery.

Currently there are limited recycling services available for refurbishment waste and resource recovery is focused on the reuse of items or waste materials. The following recycling services are available onsite for refurbishment works:

- Cardboard and Paper
- Soft Plastic

In periods of extensive construction or demolition at the Museum, separate waste services are provided for contractors or the exhibitions team.

Objectives

This plan aims to provide procedures, accountability and structures to reduce refurbishment waste from the Museum, so as to minimise risk of harm to humans and the environment.

The *Sustainability Action Plan* sets a target to measure current diversion during the performance period and aim for a 15% improvement over the coming 3 years.

A diversion rate of 60% is targeted by 2021.

Scope & Exclusions

Green Star considers any material generated through refurbishment works costing more than \$5/m² to be 'refurbishment waste'. On this basis, the following activities are covered under this RWMP:

- Exhibition waste, including construction and disposal
- Workshop waste (generally or exhibit construction)
- Refurbishment, construction or demolition of building components

The Sustainability Action Plan follows the guidance of the Better Buildings Partnership (BBP) requesting that all tenders request a Waste Management Plan, with the estimated targets for recycling considered in the tender assessment process.

All operational waste streams are excluded from this plan and are included in the *Operational Waste Management Plan*. Museum sites outside of the William Street site are excluded from this plan.



REFURBISHMENT WASTE MANAGEMENT

Site Address: 1 William St, Sydney, Sydney, NSW 2010

Next review Date: June 2019

Responsible Person

Contact: Gerald Winch

Position: Manager, Facilities Operations

Contact Details: (02) 9320 6300, gerald.winch@austrmus.gov.au

Roles and Responsibilities

The table below allocates responsibility for the RWMP at the AM.

Role	Responsibilities
Manager, Facilities Operations	<ul style="list-style-type: none">- Overall responsibility for maintenance and implementation of the RWMP- Coordination of the annual review and potential improvements- Implementation of identified improvements
Project Manager, Facilities	<ul style="list-style-type: none">- Contracting of Refurbishment works (inc. new construction and demolition) according to guidance in this document- Collection of waste reporting from contractors
Exhibition Manager	<ul style="list-style-type: none">- Implementation of the RWMP in exhibition planning, construction and demolition.- Tracking of waste reuse and recycling from exhibitions
Strategic Projects and Public Affairs Coordinator	<ul style="list-style-type: none">- Coordinating projects across the AM to support waste targets



WASTE STREAMS

Refurbishment waste is typically managed through a separate skip bin provided for the workshop and exhibitions team. This service should be managed exclusively for refurbishment waste, to allow for tracking of waste generation through collection data from the waste service provider.

The following list outlines recyclable material streams from refurbishment works:

- Hard fill (concrete, tiles, brick etc.)
- Plasterboard
- Metals (ferrous & non-ferrous & lighting fixtures)
- Glass (laminated & non-laminated)
- Perspex & acrylics
- Raw and untreated timber
- Engineered timber (MDF/Plywood)
- Carpet tiles
- E-waste (including data and power cabling)
- Expanded polystyrene (EPS)
- Mineral fibre ceiling tiles
- Paper or cardboard
- Soft plastic

The Australia Museum promotes the source separation of recyclable materials and their separate disposal but accepts the use of offsite construction waste sorting facilities where the volume of individual recycling streams makes it uneconomical to remove them individually. In projects where contractors are required to provide their own waste disposal services, their Waste Management Plan should be collected and assessed during tender review with a priority given to source separation of materials.

Recycling & Reuse Services

The BBP's [Stripout Waste Resources Workbook](#), maintains the most up-to-date list of

- Recycling facilities for typical refurbishment waste streams
- Charities and businesses accepting unwanted furniture or refurbishment materials

These resources should be consulted throughout any refurbishment project. Facilities and reuse options for refurbishment materials should be reviewed annually as a part of the implementation of this plan.

Currently, recycling solutions are not widely available for furniture, laminated and engineered timbers, printed vinyl signage, broadloom carpets, PVC piping, glass wool insulation, and most other composite products. However, reuse is possible for many items composed of recyclable/non-recyclable materials. These may include plinths, panelling, unused paints & display cases. The Museum uses the following established channels to achieve reuse of items:

- Design of exhibitions as travelling exhibitions
- Onsite and offsite storage of exhibition materials for reuse by the Museum
- Gifting of unwanted materials to charitable reuse (Reverse Garbage, Mens Shed etc.)
- Gifting of exhibition props to charitable reuse (e.g. Reverse Garbage)
- Gifting of unwanted furniture to charitable reuse



- Offsite storage of display cases, plinth etc. at Lilyfield site (or elsewhere)
- MDF/plywood/glass offcuts are stored in the William St workshop, until offcuts become an unusable size

EXHIBITION & WORKSHOP WORKS

Waste from the creation of travelling/procured exhibition components is considered to be outside of the scope of this plan (having been created offsite). Onsite, waste from exhibitions occurs from:

- Workshop – the manufacture of display components (plinths, panelling, display cases). Typical materials include:
 - MDF and Plywood
 - Perspex and acrylic
 - Polystyrene
 - Metals
- Installation of display pieces, final surfacing and painting. Typical materials include:
 - Paints
 - Protective packaging (cardboard, timber, soft plastics, polystyrene)
- Removal – the removal of exhibits, lighting, screens, panelling and other components
 - E-waste
 - MDF and plywood
 - Perspex and acrylic
 - Metals
 - Paper and cardboard

Workshop Waste Management

The Museum prioritises the reuse and recycling of materials and implements the following processes for the workshop waste stream:

1. Suitably sized materials and wastage are stored in the workshop for future use. This includes MDF, plywood, acrylics and perspex, polystyrene and other minor consumables. Workshop staff are responsible for determining the reusability of any off-cut.
2. Unwanted timber should be offered for reuse (according to identified reuse channels), or, alternatively collected through a designated raw timber recycling service.
3. Due to mixed material processing (raw and engineered timber) all saw dust and residues should be disposed of too General Waste.

The workshop manages its own 1.5m³ skip bin (General Waste) for workshop and exhibition waste. It is recommended that:

- This bin be reserved exclusively for use of refurbishment waste (some of which is currently being disposed of in other general waste services) to allow more accurate reporting
- Collection frequency (currently managed on an as-needed basis) be managed by the Workshop team



- An additional co-mingled packaging waste service to be requested in the upcoming tendering of waste services (to account for the disposal of cardboard and soft plastic waste) for the exclusive use of the workshop and exhibition teams.

Waste Management from Installation and Removal of Exhibits

To separate refurbishment waste for reporting purposes, it is suggested that Installation waste from packaging will be able to be disposed of through the Workshop skip bin (rather than the regular general waste service).

The following processes should be followed to account for recycling and reuse of exhibition materials:

- Recycling – disposed of through the designated recycling bins for the workshop (cardboard and soft plastics)
- Reuse – material reuse should be measured (by weight) during their removal/bump-out. Scales are provided to the workshop to measure weights of reused items.

Any material wastage or offcuts during installation should be processed in accordance with the Workshop Waste Plan.

CONTRACTED REFURBISHMENT

In construction, demolition or refurbishment tenders and contracts, it should be specified that waste removal and waste services will be managed by the contractor. Further, any tendered works should make reference to the Better Buildings Partnership *Stripout Waste Guidelines and Resource Workbook*.

In accordance with the BBP Stripout Waste Guidelines, the Waste Management Plan (WMP) should be provided by the contractor in a tender response along with an expectation of material recovery for the project. Over the course of the project, the contractor should be bound to the processes and procedures outlined in their WMP and would be expected to achieve the planned diversion rates.

The Museum should collaborate with contractors to ensure sufficient space is made available to allow staff to source separate materials over the course of the project.

Reuse Opportunities

To maximise the reuse of materials prior to refurbishment, the Museum will deliver an inventory of loose items (particularly furniture) during the tender phase. This should be made according to BBP Guidance and circulated to the list of charities and businesses able to accept these materials.

All material rehomed should be accounted for in recycling targets for refurbishment waste.



WASTE REPORTING

Numerical reporting on waste and recycling will be made in two ways.

- For exhibition and workshop waste:
 - Collated monthly reporting from waste service providers on the workshop general waste and recycling services
 - Inclusion of any measured reuse of items (reuse and tracking of weights should be measured at the removal of an item, when its alternative would be landfill)
- For external contractor waste (if providing their own waste disposal)
 - Aggregation of all data supplied in the BBP's *Stripout Waste Resources Workbook*.
 - Manually add diversion data to the total recovery data for the relevant performance period for each project delivered.

MONITOR AND REVIEW

Monitoring and Reporting Indicators

Key monitoring and reporting indicators should reflect the objectives and ambitions of the Museum's *Draft Sustainability Action Plan*. These should be updated for each performance period and may include both numerical and program focused outcomes.

Numerical data should be used to measure diversion rates and material generation; whilst stakeholder engagement and interviews should be used to anecdotally assess any other waste reduction initiatives.

Annual Review

The RWMP will be reviewed annually. The review will be coordinated by the Manager of Facilities and should involve the Exhibition Project Manager(s), Building Services Manager(s), Workshop staff, Exhibition designer, Waste Service Providers. The review should include:

- Monthly data collection and diversion rates
 - General Waste (from waste service invoicing)
 - Reuse (weight and tracked per exhibit)
 - Recycling (from waste service invoicing)
- Progress to objectives and targets
- Review of any available data on waste and recycling composition
- Review of available recycling facilities
 - Refer to updates in the BBP's recycling facility directory



- Present primary non-recyclable materials to waste service provider and consider any new options from recovery
- Review of reuse channels and recording of any updated options
 - Charitable donation
 - Workshop processes
 - Opportunities to reduce waste through exhibit design
- Review of external contractor performance against waste managed plans and identification of opportunities for further improvement (construction and demolition works)

To facilitate the review process, a framework such as the one below may be used to guide the process and collect feedback from all parties to the waste contract, cleaners and representatives of site staff/teams.

Initiative Category	Type	Details or Actions
Performance	Stated goals of the performance period	<i>e.g. Diversion rate, improvement on baseline</i>
	Workshop Waste	<i>e.g. Waste composition measured, and procedures in place to separate all recoverable materials, no new recovery streams implemented and no further training required</i>
Commitment to waste management	Exhibition Team waste	<i>e.g. Waste effectively separated from regular operational waste and disposed of through designated services</i>
	External Construction/Demolition contractors	<i>e.g. Poor signage and communication to external contractors resulted in waste being lost to the operational waste streams. Improved education and site inductions required.</i>
Enhancing the RWMP	Education plans	<i>e.g. All new and existing staff trained, contractor training to be reviewed and improved</i>
	Signage	<i>e.g. Signage updated across loading dock areas, to meet industry best practice.</i>
	Infrastructure	<i>e.g. Further separation equipment required by staff to manage separation of waste from exhibits.</i>
	Monitoring regime	<i>e.g. Museum controlled refurbishment waste now effectively separated from operational waste and reported on. Scales provided to workshop and reuse being captured effectively.</i>

The outcomes of the review should be incorporated as changes in the RWMP for the subsequent year.

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BACKGROUND

This Operational Waste Management Plan (meeting Greenstar Credit 22.1A) exists as a component of the broader Environmental Management Plan (EMP) and Environmental Management Strategy (EMS) of the Australian Museum (the 'Museum'). It has been developed according to the Green Building Council of Australia's (GBCA) *Green Star Performance v1.2 Submission Guidelines*.

Effective operational waste diversion relies on programs and procedures that improve transparency and accountability. This Operational Waste Management Plan (OWMP) includes targets for waste diversion and an integrated plan to fit existing service provisions.

The Australia Museum currently recycles the following streams:

- Co-mingled (container) recycling
- Cardboard and paper
- Soft Plastic
- Organics
- Printer Cartridges, e-waste, mobile phones, batteries and luminaire.

The Australia Museum manages the contacts and collection of all operational waste from site.

Objectives

This plan aims to provide procedures, accountability and structures to reduce operational waste at the Museum, so as to minimise risk of harm to humans and the environment. The Museum's *Sustainability Action Plan* sets the following targets for operational waste recycling and avoidance:

- Ensure that 80% recycling of containers and packaging are recycled
- Continue green office policies and practices to ensure that consumption of single-use consumables is minimised and recycling is maximised
- Increase overall waste diversion at the William St site.

Scope & Exclusions

The Museum's Sustainability Action Plan specifies that at least 80% of regularly occupied primary spaces will be covered by at least one commitment to set, measure, and report on at least one environmental building performance metric according to this operational waste management plan.

The Australia Museum produces both operational and refurbishment waste. Greenstar considers any material generated through refurbishment works costing more than \$5/m² to be 'Refurbishment Waste'. Which in the case of the Australia Museum accounts for:

- Exhibit creation, dismantling and removal,
- Office refurbishment or construction works

This plan covers operational waste from offices, labs, public areas and general cleaning and maintenance. Waste from events (managed by the café onsite) are excluded from this plan.



SITE AND CONTRACTOR DETAILS

Next review Date: June 2019

Site Address: 1 William St, Sydney, Sydney, NSW 2010

Site Contact Details

Contact: Gerald Winch

Position: Manager, Facilities Operations

Contact Details: (02) 9320 6300

Waste Contractor Details

Waste Contractor: Veolia

Contact: Tony Morrissey

Contract Type: 3 years

Contract Expiry: currently up for renewal

Cleaning Contractor Details

Cleaning Contractor: Broadlex

Contact: Paul Ramos

Roles and Responsibilities

The table below allocates responsibility for the OWMP at the Museum.

Role	Responsibilities
Manager, Facilities	<ul style="list-style-type: none">- Overall responsibility for maintenance and implementation of the OWMP- Coordination of the annual review and potential improvements- Implementation of identified improvements
Waste Contractor	<ul style="list-style-type: none">- Collection of waste and recycling- Reporting of waste and recycling collected
Cleaning Contractor	<ul style="list-style-type: none">- Collection and transport of recycling and waste to the dock- Contamination identification and management
Strategic Projects and Public Affairs Coordinator	<ul style="list-style-type: none">- Coordination of targets and projects with Green Champions Team



CURRENT WASTE STREAMS

The following table details the recycling and waste facilities to which material streams from the Museum are taken. The facilities and contractual details listed should be reviewed annually as a part of the implementation of this plan. Further, any additional waste streams contracted by the Museum should be added to the table.

Stream Category	In place	Managed by	Covered by current contract	Destination facility / address / license
Mixed Recycling	Yes	Australian Museum	Yes	e.g. Bailey Tip, 123 George St, Sydney NSW 2000, Licence No. 12345
Paper & Cardboard	Yes	Australian Museum	Yes	
Organics	Yes	Australian Museum	Yes	
Soft Plastics	Yes	Australian Museum	Yes	
General Waste	Yes	Australian Museum	Yes	

WASTE MANAGEMENT SYSTEM

The following table provides an overview of waste management procedures and responsibilities in place at the Museum, along with an inventory of equipment. In the case of a change to the aggregation procedures or collection services, it is the responsibility of the Manager of Facilities to update them here.

The procedural elements below should be reviewed as a part of the annual assessment of the OWMP.

Stream	System in Place	No.	Collection Frequency	Management Procedures
Mixed Recycling	240L MGB	4	Monday Friday	<ul style="list-style-type: none"> - Cleaners collect mixed recycling from office and public areas - Clear bags are used in all recycling streams to ensure that cleaners can make a contamination assessment - Recycling should be removed from the bin liner when disposed of



				<ul style="list-style-type: none"> - Signage and cleaners educated on contaminants according to <i>Facility Acceptance Criteria</i> - Cafés use smaller in-kitchen collection bins and transport to external 240L bins. Café staff are required to make a contamination assessment
Paper & Cardboard	4.5m ³	1	Monday Thursday	<ul style="list-style-type: none"> - Cleaners collect paper & cardboard waste from office and public areas - Clear bags are used in all recycling streams to ensure that cleaners can make a contamination assessment - Contamination assessments are made according to the <i>Facility Acceptance Criteria</i> - Cafés separate and flatten cardboard which is disposed of by staff
Organics	240L MGB	2	Monday Thursday	<ul style="list-style-type: none"> - Organics services are available to the café only - Only biodegradable bin liners are to be used in café organics bins - Café staff are responsible for disposing of organics to dock
Soft Plastics	Various bale Frames	4	As needed	<ul style="list-style-type: none"> - Bale frames are provided in four locations at the AM. (AMRI/Loading Dock/Parkes Farmer/Archives) - Cleaners empty full bale frames as needed and transport to dock for collection Bale frame bags are to be clear to allow visual contamination inspections
General Waste	3.0m ³	1	Monday Wednesday Friday Saturday	<ul style="list-style-type: none"> - Cleaners collect all general waste from office, laboratories and public areas and transport to dock - General waste from operations is disposed of in the designated 3.0m² skip available. - Black bags are used throughout the museum for general waste streams

Education

All parties to the waste contract should receive training at commencement of employment or contract with the Museum. The training process should be overseen by the Facilities Manager; however, it may be managed through HR inductions or the relevant contractor managers.

Training for Museum staff should include as a minimum:

- Recycling and general waste disposal points
- Signage, acceptable items and contaminants
- Use of unique recycling services (e-waste, printer cartridges, batteries etc.)

Training for contractors should be relevant to their role and might include:



- Regular operational waste training for Museum staff
- Project/role specific use of waste services

A simple test of competence should be delivered at each training session to ensure comprehension of individual responsibilities.

Training should be tracked in a register by responsible persons to ensure that all staff and contractors are competent and fully aware of their responsibilities. A sample template has been included in a separate sheet in the attached Excel.

CONTAMINATION MANAGEMENT

The table below outlines common contaminants for each recycling stream and suggests processes for their treatment. Contamination identification should be made in conjunction with the waste contractors and the acceptance criteria of the destination facility processing the material.

The Manger of Facilities should ensure that the Cleaning Contractor is aware of all contaminant issues and seek regular feedback on the composition of recycling streams.

Stream	Acceptable Items	Non-acceptable Items	Mitigation
Mixed Recycling	Glass, Plastics 1-6, Aluminium, Tetrapak,	Liquid Paperboard, Coffee Cups, Paper & Cardboard, food waste, liquids	Clear consistent signage and education of contamination restrictions for cleaners
Paper & Cardboard	Paper and Cardboard	Any mixed recycling, food waste, wax coated cardboard, used food packaging, paper towel	Cardboard bins co-located with general waste services, clear and consistent signage
Organics	Food waste (except bones & shells)	Any mixed recycling or plastics, cutlery, plastic bags, latex gloves, chop sticks	Organics waste services available only in café for preparation waste. Education of staff and clear consistent signage
Soft Plastics	LDPE	Non-LDPE plastics, food contaminated plastics, foil lined plastics	Bale frames widely available and clearly marked with clear signage.

Measuring Contamination

Cleaners should collect all recycling streams in clear bags to allow immediate contamination assessment. Contamination should be monitored monthly to inform staff engagement programs and knowledge sharing around acceptability of various materials.

Contamination measurement can be made by:

- Visual assessment (% or total volume)



- Weight based assessment (weighed samples of recycling streams)

It is recommended that a weight-based audit of recycling streams be undertaken annually to track progress toward reducing contamination and inform staff engagement procedures for the upcoming year. Composition analysis during auditing is very useful in determining target waste streams, persistent contaminants and opportunities for improvement.

WASTE REPORTING

Waste reporting should be consolidated monthly by the Museum (or the appointed contractor) according to the *Monthly Waste Management Report* (Excel).

This report should be used:

- Monthly to:
 - Track waste collection,
 - Calculate total waste generation, and,
 - Calculate diversion rates.
- Annually to:
 - Calculate overall diversion,
 - Analyse annual improvements, and,
 - Assess the success of education or waste reduction initiatives.

This sheet has been developed based on guidance from the Better Buildings Partnership and the Green Building Council of Australia to meet minimum Green Star reporting requirements.

MONITOR AND REVIEW

Monitoring and Reporting Indicators

Key monitoring and reporting indicators should reflect the objectives and ambitions of the Museum. These may be:

- Numerical targets (tracked through generation/diversion data)
- Initiatives (education, contamination reduction etc.)

Monthly waste reporting should be used to track numerical waste diversion, waste reductions and contamination management. Tracking the progress of initiatives and their effectiveness may require more anecdotal evidence from those involved.

Reporting

Annual review of the OWMP will be coordinated by the Manager of Facilities. Outcomes of the review should be incorporated in updates to the OWMP for the subsequent year.



The review should include account representative(s) from both the cleaning and waste contractors, and consider:

- Monthly data collection
- Progress to objectives and targets
- Changes to waste/cleaning contractor
- Changes to destination facilities (and any subsequent changes to non-acceptable contaminants)
- Review of *Waste Management Systems* and discussion of successes and possible improvements
 - Signage
 - Education
 - Persistent contaminants
 - Opportunities to alter product procurement to reduce problematic wastes
 - Feedback from waste service users on availability of bins and services provided
- Review of *Contamination Management* procedures

The following table may be used as a simple template to guide annual performance reviews. These reviews should be held with all parties to the waste contract, cleaners and representatives of site staff/teams.

Initiative Category	Type	Details or Actions
Commitment to waste management	Manager of Facilities	<i>e.g. Increase spot checks of data on monthly reporting, drive the implementation of initiatives to reduce operational cost to the Museum</i>
	Site Staff	<i>e.g. confusion around waste signage identified, new signage to be installed across site and education re-delivered to all staff.</i>
	Contractor	<i>e.g. repeated misuse of installed waste services by contractors on site, training delivered during induction to be updated, and additional requirement included in tender details and contracts.</i>
	Cleaning Staff	<i>e.g. ineffective identification of contamination due to high turnover, additional training to be delivered to all existing and new staff by the cleaning contractor to reduce recycling contamination</i>
Enhancing the WMP	Education plans	<i>e.g. all new and existing staff trained, repeat training to be delivered annually</i>
	Signage	<i>e.g. signage updated across public areas, to meet industry best practice</i>



Infrastructure	e.g. public area bins updated according to best practice separation, composition audit of waste used to determine short comings of signage and infrastructure – more bin required in office areas to support separation of recyclables.
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Monitoring regime	e.g. full reporting provided by [waste service provider], matched against
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