case study

Circulate, NSW EPA Industrial Ecology

Governor Macquarie Tower Defit

DEXUS, Lend Lease & The GPT Group

Sydney, NSW

The current rate of recovery from building strip-out is estimated to be 20% - however best practice trials indicate that a much higher rate is easily achievable. The results obtained from the Governor Macquarie Tower (GMT) defit trial, carried out by Industrial Ecology facilitators, Edge Environment, suggest that 80% recovery rates are possible.

It is estimated that 25,000 tonnes of building strip-out waste is generated in the Sydney CBD annually, of which only 5,000 tonnes is currently recycled

Background

Edge Environment, in collaboration with Better Building Partnership were presented with an opportunity to trial and document methods and solutions that could be implemented by industry to increase resource diversion rates from building strip-out on eight floors of Sydney Governor Macquarie Tower.

The challenge: Strip out levels 34 to 41 of the Governor Macquarie Tower building **at no extra cost**.

Situation

Better Building Partnership represents a number of Sydney's leading commercial and public sector landlords, including AMP Capital Investors, Brookfield Office Properties Australia, Charter Hall, City of Sydney, DEXUS Property Group, Frasers Property, The GPT Group, Investa Property Group, Lend Lease, Mirvac, Stockland, University of Sydney and University of Technology.

Photo: Structured demolition of Levels 34-41 underway – furniture, gypsum board and stud walls, glass and cabinetry removed. Broadloom carpet and ceiling tiles still remain.

Statistics

- 400,000m^2 of leased office space among Better Building Partnership members turns around in the Sydney CBD each year.
- Office strip-out recycling rates can be as low as 20%.
- Every 1,000m^2 of office space generates around 63 tonnes of waste during strip-out.
- Barriers to diverting building defit material from landfill include:
  - time constraints
  - contractual responsibilities between sub-contractors
  - design and specification process of the fit out by the tenant.
- The strip-out of levels 34 to 41 of Governor Macquarie Tower (GMT) were presented to Industrial Ecology facilitators, Edge Environment, who implemented a number of systems and procedures to shift overall resource recovery from 20% to 61% at no extra cost. With additional time to identify solutions for furniture recovery/reuse, a recovery rate of 80% is possible.

Solution

Recycling offers not only an environmentally responsible solution to landfill, but also an ability to significantly reduce costs.

Edge Environment planned a series of coordinated activities which resulted in creating a new industry standard of resource recovery, targeting 80% recovery, up from a standard practice of 20%.

Reprocessing pathways used in the GMT strip-out included:

- **metals** were recycled through Sell & Parker and Sims Metal Management. Metals items included: furniture (i.e. metal storage/filing cabinets, workstation framing), internal steel stud framing, wiring, door locking hardware and plumbing fittings
- **concrete, rubble and tiles** were recycled by Concrete Recyclers
- **plasterboard** was recycled through Regyp
- **glass** was recycled by either CSR Bradford Insulation or Campbelltown Recyclers
- Good 360 and Buildings Alive were the primary recipients of furniture removed prior to strip out
- **insulation from the internal walls** was recovered and bagged for re-use by Demolitions Plus.

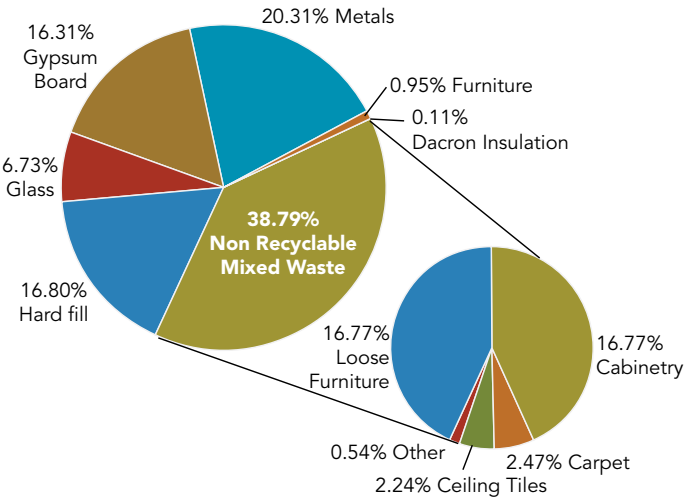
Overall diversion targets were met through a series of coordinated activities including:

- workshops
- investment in establishing new markets for resources
- development of best practice guidelines
- demonstration projects
- policy negotiations
- standardisation of reporting procedures and documentation
- promotional activities such as conference presentations, articles in industry magazines and blogs to increase awareness.

Outcomes

The GMT trial demonstrates the current ability of demolition contractors to achieve high diversion rates in commercial office strip outs. An overall resource recovery rate of 61% was achieved and tracked through receipts (where possible) from reprocessing/disposal facilities.

Material streams included in the office strip-out trial included:



The trial identified the following currently (domestically) non-recyclable waste streams, each of which is being addressed to move the industry toward 80% resource recovery:

- ceiling tiles
- carpet (tiles and broadloom)
- composite timbers
- loose furniture (not able to be rehomed through charity).

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Industry lessons for building office defit

1. **For effective furniture removal, develop sufficient lead time**
   - Give as much notice to industry as possible before defit events commence.
   - Ensure all items for re-use are primarily removed.

2. **Ensure that 100% recyclable material is highlighted to demolition contractors.** These include glass, plasterboard, hard fill and metals.

3. **Explore 'Take-Back' schemes**
   - Some suppliers offer closed loop solutions for their materials, for example Armstrong (ceiling tiles) and Interface (carpet tiles) recover their materials and feed them back into the supply chain.
   - Specifying these suppliers guarantees greater resource recovery from defit.

4. **Variations to current contract procurement**
   - Changes to procurement contracts can ensure demolition contractors compete on material diversion in addition to cost.

5. **Variation to demolition processes**
   - Changes to demolition processes to ensure:
     - segregation of clean material streams
     - organized approach to material recovery
     - onsite separation and removal.

6. **Accountability and transparency**
   - Provide consistent reporting guidelines to ensure all levels of operations understand processes to increase diversion of office building material from landfill.

Clockwise from top left, the materials for removal separated – plasterboard; metals; insulation; example of the furniture recovered from GMT.

Edge Environment
Edge Environment is a leading consulting firm specialised in supporting companies to measure, understand and manage the environmental and social impacts of their products, services and operations. Edge Environment are actively involved in researching innovation and sustainable solutions, working in partnership with clients to develop viable green solutions while affecting real environmental change.

Under the NSW EPA's Circulate, Industrial Ecology program, Edge worked in the Sydney region to divert over 6,000 tonnes of waste from landfill. Projects engage, but are not limited to, large market players in the manufacturing, property and food supply chain sectors developing resource recovery projects across demolition, organics, packaging and industrial waste streams.

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Circulate, NSW EPA Industrial Ecology
Over four years, Circulate, NSW EPA Industrial Ecology seeks to engage with 1000 medium-to-large enterprises to establish approximately 100 industrial ecology projects. During this period the program is targeting 160,000 tonnes of landfill diversion and $21 million dollars in additional income and/or savings for participating businesses. The program will focus on the recovery of wastes currently being sent to landfill.

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This project is a NSW EPA
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