

Appendix Y

Operational waste management plan

Elephant Foot Waste Compactors Pty Ltd

Date: 16/09/11

To Kann Finch Group:

We submit a waste management report for the office commercial development. The development activity on this project is the construction of one multi storey building, carpark levels, retail areas and commercial office areas.

Waste management report

Project – 33 Bligh St, Sydney

1.0 INTRODUCTION

The waste management plan to follow pertains to the complete commercial office development located at 33 Bligh St, SYDNEY. This waste management plan is an operational waste management plan and will address the operational phases of the development. The substation is typically unmanned and is unlikely to generate any significant waste streams.

The plan outlines measures to achieve the following purposes:

- Avoid the generation of unnecessary waste
- Minimising the quantities of wastes generated ending up as landfill;
- Recovering, reusing and recycling waste generated onsite where possible.

For the purpose of this report the proposed development will consist of;

Office area (GFA)		Total ~ 28,000m2
Café (GFA)	L14	Total ~ 200m2
Café (GFA)	L07	Total ~ 50m2

Each section of this development has been examined individually within this report however; the waste management process must be effectively coordinated between all sections for the system to work.

All figures and calculations are based on area schedules as advised by our client and shown on architectural drawings. Calculations have been made using

industry standard rates for waste generation and rates supplied in Sydney City Council Development Control Plan guidelines.

All waste facilities and equipment are to be designed and constructed to be in compliance with Sydney City Council Codes, BCA, Australian Standards and Statutory Requirements.

2.0 GENERATED WASTE VOLUMES

This assessment of waste volumes is an estimate only and will be influenced by the development's management and occupant's attitude to waste disposal and recycling. We have based our calculations on a five (5) day operating week. Figures could be affected however, by Tenancy occupancy rates, and the use of space by various retail outlets such as food outlets which may generate additional waste.

2.1 Commercial office/Cafe

Using standard industry waste generation rates, the total waste generated by the the development can be calculated as follows:

Calculation for commercial office areas.

GFA	Waste Generation	Non recyclable (Five day cycle)	Recyclable (20 ltr/100m2/day)
Sqm	ltr/100m2/day	ltr/week	ltr/week
28000	10	14000 ltr	28000 ltr

Calculation for café areas (Level 7 & Level 14).

GFA	Waste Generation	Non recyclable (Five day cycle)	Recyclable (20 ltr/100m2/day)
Sqm	ltr/100m2/day	ltr/week	ltr/week
250	30	375 ltr	250 ltr

3.0 WASTE MANAGEMENT

3.1 Garbage Waste

Commercial offices / retail

Each tenant is responsible for their own in house storage of general waste and recycling. During the course of the day or at the end of it, staff or cleaners will transport the materials to the designated garbage room located on Level 04 and place them in the allocated compactors (if provided).

All waste will be collected by the private waste contractor. The waste will be collected from the garbage room utilising the loading dock accessed off L5 Street level (O'Connell Street).

3.2 Recyclable Waste

All Tenants will sort at source (on each level), this can be achieved with the supply of recycling bins at each level. At the end of the day or during operating hours tenants or cleaners will transport the recyclables down to the waste room on level 04 & place each type into the correct bin or compactor, all bins & machinery must be labelled with every product grade. It is expected that the majority of recyclable waste generated by these tenants will most likely be paper recyclable products such as cardboard boxes and paper products. To reduce the volumes & minimize area required, a baler may be provided.

The calculation shows 5600 L/day of recyclables from the office areas where the bulk will be cardboard & paper products usually estimated at 35% of the loose volume equal to 1720 L/day cardboard and paper, once baled with vertical baler these products will be baled into approx 6 to 10 bales per week. This will be collected by a recycling company twice weekly.

The balance of recyclable product are estimated at 65% of clean office paper= 3640 L/day / 240 =16 bins. Collected three times per week thus will reduce the bins require on site down to 28 x 240 ltr bins. Private collector will supply.

The retail is estimated to generate 1 x 660 ltr for waste and 2 x 240 ltr recycling.

3.3 Collection of Waste

Commercial / retail Garbage

General waste calculated at 2800 L/day, this amount if left uncompacted will require high volumes of waste bins, increasing the time for the waste collection vehicle to be on site & blocking off loading dock or creating noise for surrounding premises.

All waste may be compacted potentially reducing the volume by ratio of 3:1 attached to a 1.5m³ rear lift bin. This would reduce all waste into one bin collected three times a week. A second bin should be always available because compaction ratios will vary according to the type of waste generated.

Tenants or cleaner would place garbage bags to the allocated hopper on the compactor and press start button all other motions will commence automatically (for full operation read all instructions on equipment).

An option of a bin lifter attached to the packer will ease and reduce manual handling for cleaners.

3.4 Waste Caretaker

All equipment movements in the room are managed by the building manager / cleaners at all times, no tenants will be allowed to transport waste or recyclables from the waste room, the tenants will only transport their waste to the room allocated.

The building manager / cleaner duties would include but not limited to the following:

- Generally maintaining and cleaning the garbage areas.
(Frequency will be dependent upon waste generation and will be determined based upon centre operation)
- Organising, maintaining and cleaning the general and recycled waste holding areas. Due to the nature of the waste it is recommended that in addition to cleaning, the garbage areas be deodorised
(Frequency will be dependent upon waste generation and will be determined based upon centre operation)
- Educating & updating all tenants on sorting methods for recycled waste into appropriate receptacles. Making all waste drop off points safe & accessible to tenants at all times
- Organising for both Garbage and Recycled Waste pick-ups as required.
- Assisting with the emptying of bins during collection.

4.0 WASTE EQUIPMENT RECOMMENDATIONS

The following waste equipment and quantity recommendations have been made based on expected waste generation quantities.

4.1 Commercial / Retail

General Waste

As indicated above all general waste may be compacted into a packer attached to a 1.5m³ rear lift bin, with one extra bin as spare.

Three collections required per week.

***Qty Required – 1 x Packer, 2 x 1.5m³ bins for general waste
These bins will be collected from the level 4.***

Recyclable Waste

Based on the previously stated waste generation our recommendations for waste handling equipment are as follows:

Vertical Baler- baler for all cardboard & plastic products.

Qty Required – One (1)

Note: All baled recyclable paper and cardboard products will be collected twice per week by a recycling company.

Collection Containers- Based on the previously calculated “waste generated”, 25 x **240L plastic wheeled bin for paper products**, requirements are, based on three weekly collection cycle:

5.0 GARBAGE ROOMS AND GARBAGE AREAS

There is a dedicated garbage / recycling room located on Level 4 adjacent to the loading dock for the storage of all waste. A nominated private waste and recycling contractor will collect all waste as per recommended collection cycle. Collection will occur using the level 5 O’Connell Street loading dock entry access to the garbage room, where the building manager will have all required bins ready in the loading dock ready for collection by the service provider.

3.6m height shown is sufficient for all collector vehicles to access the loading dock,

P.S: No front load collection allowed, this requires 6m height access.

Garbage rooms construction requirements:

The garbage room will be require to contain the following facilities to minimize odours, protect surroundings areas & make it a user friendly & safe area:

- 1- The room floor to be sealed with a two pack epoxy
- 2- All corners coved and sealed 100 mm up, this is to eliminate build up of germs.
- 3- A hot & cold water facility provided for washing all the bins.
- 4- A bucket trap type floor waste installed where all concrete levels are to direct the water to.
- 5- All wall painted with light colour & washable paint.
- 6- Equipment electric out lets to be installed 1700 mm above FFL.
- 7- The room must be mechanically ventilated
- 8- Optional automatic odour pest control system installed to eliminating all pest types. ”This can be done after hand over where management can install if needed”

- 9- All hinged doors are to self closing, roller doors must be key operated with only access to authorised personnel.
- 10- Appropriate signage placed on walls & above all bins clearly stating what type of waste or recyclable is to be placed in the bin underneath. This is the duty of the building manager to place after occupation.
- 11- Garbage collection area, must be provided adjacent to the garbage room with in the building envelope, all bin movements should on even surface away from ramps. No garbage is to be placed on public footpaths or building colonnade areas.

Please note: This waste management system is only indicative & is calculated using councils estimates.

Council of the City of Sydney

Policy for Waste Minimisation in New Developments

If you require any further information please do not hesitate to call me on 9780 3500.

Regards,

Eddy Saidi

Appendix B Waste and recycling generation rates for residential and commercial premises

Waste generation rates / area requirements

TYPE OF PREMISES	WASTE GENERATION	RECYCLING GENERATION
Backpackers Accommodation	40L / occupant / week	20 litres / occupant / week
Boarding House, Guest House	40L / occupant / week	20 litres / occupant / week
Food Premises:		
Butcher	80L / 100m ² floor area / day	Discretionary
Delicatessen	80L / 100m ² floor area / day	Discretionary
Fish Shop	80L / 100m ² floor area / day	Discretionary
Greengrocer	240L / 100m ² floor area / day	120L / 100m ² / day
Hairdresser	60L / 100m ² floor area / day	Discretionary
Restaurants	10L / 1.5m ² floor area / day	2L / 1.5m ² floor area / day
Supermarket	240L / 100m ² floor area / day	240L / 100m ² / day
Takeaway	80L / 100m ² floor area / day	Discretionary
Hotel	5L / bed / day 50L / 100m ² / bar area / day 10L / 1.5m ² of dining area / day	50L / 100m ² / of bar and dining areas / day
Licensed Club	50L / 100m ² / bar area / day 10L / 1.5m ² / of dining area / day	50L / 100m ² / of bar and dining areas / day
Motel (without public restaurant)	5L / bed / day 10L / 1.5m ² / of dining area / day	1L / bed / day
Offices	10L / 100m ² / day	10L / 100m ² / day
Retail (Other than food sales)	50L / 100m ² / floor area / day	25L / 100m ² / floor area / day
• Shops less than 100m ² floor space	50L / 100m ² / floor area / day	50L / 100m ² / floor area / day
• Shops over 100m ² floor space		
Showrooms	40L / 100m ² / floor area / day	10L / 100m ² / floor area / day

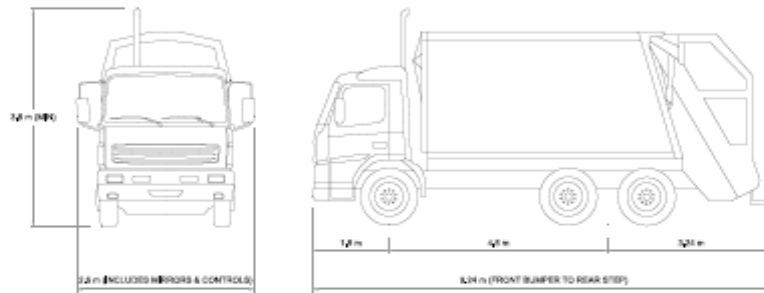
Source: Combined Sydney Region of Councils - Draft Waste Management Guidelines

Appendix C Collection Vehicles

Waste collection vehicles may be side loading, rear end loading or front end loading. The size of vehicle varies according to the collection service. Thus it is impossible to specify what constitutes the definitive waste truck. Developers must consult with Council regarding the type of vehicle used in that area.

The following characteristics represent the typical collection vehicle, however these are for guidance only.

Any turning circle considerations must also include allowances for driver steering error and overhangs. The steering error allowance must be at least 0.6 metres (absolute minimum) on both sides of the theoretical wheel path and 1 m as a desirable minimum.



Rear loading collection vehicle for MGBs

Length overall	9.54 m
Width overall	2.6 m
Operational height	4 m
Travel height	3.8 m
Weight (payload)	26 tonnes

Appendix D Vehicle Access/Turning Circles

Access and turning provisions

Best design practice for access and egress from a development calls for a separate entrance and exit to allow the collection vehicle to travel in a forward direction at all times. Where there is a requirement for collection vehicles to turn at a cul-de-sac head within a development, the design must incorporate either a bowl, 'T' or 'Y' shaped arrangement.

The design aspects that must be taken into account include the following:

- Placement of waste and recycling bins outside each home, or in a common collection area;
- The presence of parked cars on access roads;
- Trucks must only be expected to make a three-point turn to complete a U-turn; and
- Allow for collection vehicle overhang and possible interference with bins and road furniture.

Road geometry

The design parameters that must be complied with are:

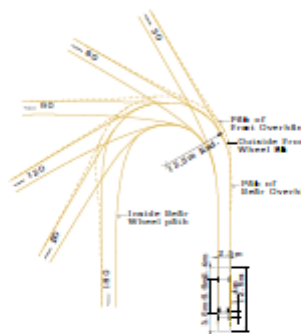
- A maximum desirable gradient of 10% for turning heads;
- A maximum longitudinal road gradient of 15%;
- A minimum kerb radius of 8.5m at the outside of turn where there is to be no kerbside collection;
- A minimum kerb radius of 10.0m at outside of turn if there is to be kerbside collection;
- A minimum pavement width of 5.0m if less than 24 car-parking spaces are required;
- A minimum pavement width of 6.5m if 25 or more car-parking spaces are required; (use of passing bays is acceptable); and
- An industrial-type strength pavement designed for a maximum wheel loading of 7 tonnes per axle in order to accommodate waste and recycling collection trucks. (The standard road pavement design specifications for an industrial driveway entry on public land is 150mm thick concrete, 20MPa concrete with F82 mesh).

Collection from enclosures

Collection vehicles may enter building basements for the

Sample turning circle design

source ALSTRODAC design single unit truck / BLS (12.5m)
scale 1:200 radius 12.5m
ABSOLUTE MINIMUM RADII
For use at mandatory stop only. Turning speed up to 5km/h.



Notes- 1. Locate base of kerbs at least 0.6m clear of wheel path.
2. Allow 0.6m clearance outside path of overhang and ensure that this area is kept free of road furniture.

collection of waste and/or recyclables provided the following requirements are met:

- The gradient of the ramp access to basement must not exceed 1:8;
- The height to the structural members and upper floor ceiling must allow for a typical collection vehicle travel height / operational height consistent with type of vehicle employed;
- The provision of space clear of structural members or vehicle parking spaces adequate to allow typical three-point turn of collection vehicles; and
- The basement floor must be of industrial-type strength pavement and designed for a maximum wheel loading of 7 tonnes per axle in order to accommodate waste and recycling collection trucks. (The standard road pavement design specifications for an industrial driveway entry on public land is 150mm thick concrete, 20MPa concrete with F82 mesh).

Appendix E Standard Signage for Waste and Recycling Bins

www.resource.nsw.gov.au



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www.resource.nsw.gov.au



Appendix F Waste Management Equipment

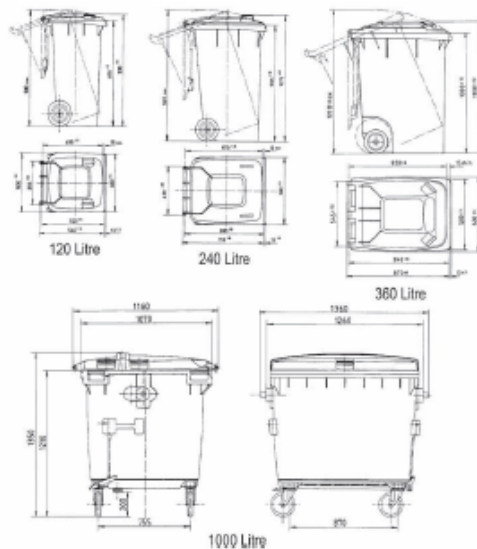
Crates

Bin Type	50L Crate	70L Crate	90L Crate
Height	320 mm	395 mm	420 mm
Length	575 mm	575 mm	450 mm
Width	445 mm	445 mm	400 mm

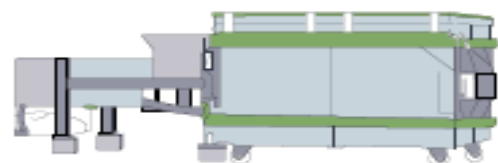


Mobile Garbage Bins (MGBs)

Bin Type	120L MGB	140L MGB	240L MGB	1000L MGB
Height	940 mm	1065 mm	1080 mm	1350 mm
Length	560 mm	540 mm	735 mm	1160 mm
Width	485 mm	500 mm	580 mm	1360 mm



[Council of the City of Sydney Policy for Waste Minimisation in new developments](#)



Static compactor with bulk bin

Compactors

Compactors are used to compress the waste (or recyclables) into smaller collection containers. The compaction ratio is typically set at around 2:1. Higher ratios are not used as they may result in heavier bins, causing OH&S problems, mechanical damage and breakage of recyclable materials. Best practice compaction systems compact directly into a 240 litre MGB or a bulk bin, reducing the requirement of manually loading the compacted waste into bins or skips.

Compactors are extremely useful for mixed waste, cardboard/paper and plastic/aluminium containers. They are less useful for steel containers and must not be used for glass.

Compactors require regular maintenance. In particular, systems fed from a chute can be prone to blockages or failure of the "electronic eye", which can result in waste overflowing or backing up the chute.

As a result if the 2:1 compaction ratio, the requirement for waste storage bins is halved.