WASTE MANAGEMENT PLAN

PREPARED FOR

The Tench Avenue Projects

ON BEHALF OF

Morson Group

Commercial Development

78-88 Tench Ave,
Jamisontown, 2750 NSW

22/02/2018

Ph: 1800 025 073

ELEPHANTS FOOT WASTE COMPACTORS PTY LTD **ABN** 70 001 378 294
Sydney Head Office 44-46 Gibson Ave Padstow NSW 2211 | **PH**: +612 9780 3500 | **Fax**: +612 9707 2588
Website: www.elephantsfoot.com.au | **Email**: info@elephantsfoot.com.au
Offices in Victoria & Queensland – **Toll Free**: 1800 025 073

REVISIONS

Revision	Copy No.	Date	Prepared by	Reviewed by	Approved by	Remarks
A	1	14/11/2016	H Wilkes	A Armstrong	N Beattie	Draft
B	1	17/11/2016	H Wilkes	A Armstrong	N Beattie	Revision
C	1	30/11/2016	H Wilkes	A Armstrong	N Beattie	Final
D	1	5/12/2017	H Wilkes	A Armstrong	N Beattie	Amendment
E	1	22/02/2018	H Wilkes	A Armstrong	A Armstrong	Updated Client Details

DISTRIBUTION LIST

Recipient Name	Company	Revision
Ivica Djuric	Morson Group	E
Peter Morson	Morson Group	E
Elliot Oxley	Morson Group	E

EXECUTIVE SUMMARY

This waste management plan covers the ongoing management of waste generated by the commercial development located at 78-88 Tench Ave, Jamisontown, 2750 NSW.

Waste audit and management strategies are recommended for new developments to provide support for the building design and promote strong sustainability outcomes for the building. All recommended waste management plans will comply with council codes and any statutory requirements. The waste management plan has three key objectives:

i. ***Ensure waste is managed to reduce the amount of waste and recyclables to land fill*** by assisting residents to segregate appropriate materials that can be recycled; displaying signage to remind and encourage recycling practices; and through placement of recycling and waste bins in the retail precinct to reinforce these messages.

ii. ***Recover, reuse and recycle*** generated waste wherever possible.

iii. ***Compliance*** with all relevant codes and policies.

To assist in providing clean and well-segregated waste material, it is essential that this waste management plan is integral to the overall management of the building and clearly communicated to tenants.

TABLE OF CONTENTS

GLOSSARY OF TERMS

TERM	DESCRIPTION
Baler	A device that compresses waste into a mould to form bales which may be self-supporting or retained in shape by wire ties and strapping
Chute	A ventilated, essentially vertical pipe passing from floor to floor of a building with openings as required to connect with hoppers and normally terminating at its lower end at the roof of the central waste room(s)
Collection Area/Point	The position or area where waste or recyclables are actually loaded onto the collection vehicle
Compactor	A Machine for compressing waste into disposable or reusable containers
Composter	A container/machine used for composting specific food scraps
Crate	A plastic box used for the collection of recyclable materials
Garbage	All domestic waste (Except recyclables and green waste)
Hopper	A fitting into which waste is placed and from which it passes into a chute or directly into a waste container. It consists of a fixed frame and hood unit (the frame) and a hinged or pivoted combined door and receiving unit
Recycling	Glass bottles and jars – PET, HDPE and PVC plastics; aluminium aerosol and steel cans; milk and juice cartons; soft drink, milk and shampoo containers; paper, cardboard, junk mail, newspapers and magazines
Green	Garden organics such as small branches, leaves and grass clippings, tree and shrub pruning, plants and flowers, and weeds
L	Litre(s)
Liquid Waste	Non-hazardous liquid waste generated by commercial premises that is supposed to be connected to sewer or collected for treatment and disposal by a liquid waste contractor (including grease trap waste)
Mobile Garbage Bin(s) (MGB)	A waste container generally constructed of plastic with wheels with a capacity in litres of 120, 240, 660, 1000 or 1100, 1500 or 2000
Putrescible Waste	Component of the waste stream liable to become putrid. Usually breaks down in a landfill to create landfill gases and leachate. Typically applies to food, animal and organic products.

LIST OF TABLES

INTRODUCTION

The following waste management plan pertains to the commercial development located at 78-88 Tench Ave, Jamisontown, 2750 NSW. This waste management plan is an operational waste management plan and will address the phases of the completed development.

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

- 3 buildings consisting of 11 tenancies
  - 2248 m^2 for retail outlets (See *APPENDIX A.1 – Site Plan*)

Table 1 *Retail Breakdown Matrix*

Building	Tenancy	Type	NLA (m^2)
Building 1 – Ground	T1	Steak house	388
	T2	Fish & Chip Restaurant	227
	T3	Italian Restaurant	212
	T4	Restaurant	146
Building 1 – Level 1	T10	Lebanese Restaurant & Bar	142
Building 2 – Ground	T5	Dessert Bar	123
	T6	Thai Restaurant	104
	T7	Vietnamese Restaurant	101
	T8	Coffee Club (existing tenancy)	314
Building 2 – Level 1	T11	Lebanese Restaurant & Bar	220
Building 3	T9	Burger Shack	271

It is assumed that waste will be managed and collected for the development as a whole, therefore the existing tenancy (T8) will be included in all elements of this waste management plan.

All figures and calculations are based on area schedules as advised by our client and shown on architectural drawings.

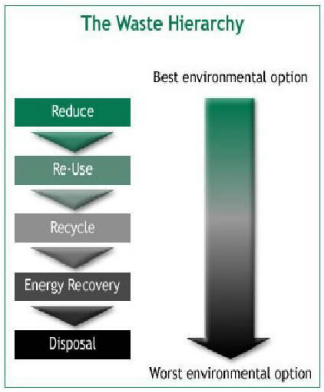
PENRITH CITY COUNCIL

The 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.

The waste and recycling will be guided by the services and acceptance criteria of the Penrith City Council. The retail and commercial waste will be collected by private contractor.

All waste facilities and equipment are to be designed and constructed to be in compliance with the Penrith City Council, Australian Standards and statutory requirements.

OBJECTIVES



- Facilitate sustainable waste management within the City of Penrith in accordance with the principles of Ecologically Sustainable Development
- Manage waste in accordance with the 'Waste Hierarchy' to:
    - Avoid producing waste in the first place;
    - Minimise the amount of waste produced;
    - Re-use items as many times as possible to minimise waste;
    - Recycling once re-use options have been exhausted; and
    - Dispose of what is left, as a last resort, in a responsible way to appropriate waste disposal facilities
- Assist in achieving Federal and State Government waste minimisation targets as set out in the *Waste Avoidance and Resource Recovery Act 2001* and *NSW Waste Avoidance and Resource Recovery Strategy 2007*
- Minimise the overall environmental impacts of waste by:
    - Encouraging development that facilitate ongoing waste avoidance and complements waste services offered by both Council and/or private contractors;
    - Requiring on-site source separation and other design and siting standards which assist waste collection and management services;
    - Encouraging building designs and construction techniques that minimise waste generation;
    - Maximising opportunities to reuse and recycling building and construction materials as well as other wastes in the ongoing use of a premise; and
    - Reducing the demand for waste disposal.

GENERATED WASTE VOLUMES

The assessment of projected waste volumes is a calculated estimate only and will be influenced by the development's management and occupant's waste disposal and recycling practices.

CONSTRUCTION AND DEVELOPMENT WASTE

The head contractor will be responsible for removing all construction-related waste offsite in a manner that meets all authority requirements. Please refer to the separate waste management plan submitted for construction waste as part of the Development Application.

BUILDING MANAGER/WASTE CARETAKER

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

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

- Organising, maintaining and cleaning the general and recycled waste holding areas (Frequency will depend on waste generation and will be determined based upon building operation);
- Transporting of bins as required;
- Organising both garbage and recycled waste pick-ups as required;
- Cleaning and exchanging all bins;
- Ensure site safety for residents, children, visitors, staff and contractors;
- Abide by all relevant OH&S legislation, regulations, and guidelines;
- Assess any manual handling risks and prepare a manual handling control plan for waste and bin transfers; and
- Provide to staff/contractors equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management activities

NOTE: It is the responsibility of the building manager to monitor the number of bins required for the development. As waste volumes may change according to the development's management and occupants' attitudes to waste disposal and recycling, bin numbers and sizes may need to be altered to suit the building operation.

REPORTING

It is recommended that building management ensure that all waste service providers submit monthly reports on all equipment movements and weights of any waste and recycling products removed from the development. Regular reviews of servicing should take place to ensure operational and economic best practise and to assist with sustainability reporting.

EDUCATION

Building management is responsible for creating and managing the waste management education process.

Educational material encouraging correct separation of garbage and recycling items must be provided to each tenant. This should include the correct disposal process for bulky goods (old furniture, large discarded items, etc.).

It is also recommended that the owners' corporation website contain information for tenants to refer to. Information should include:

- Recycling and garbage descriptions (Council provides comprehensive information);
- How to dispose of bulky goods and any other items that are not garbage or recycling; and
- Tenants' obligations to WHS and building management;

It is expected that leasing arrangements with retail/commercial operations contain direction on waste management services and expectations.

RETAIL WASTE PLAN

The *Better Practice Guide for Waste Management and Recycling in Commercial and Industrial Facilities* has been referenced to calculate the total number of bins required for the retail areas. Please note that calculations are based on generic figures; waste generation rates may differ according to the tenants' waste management practice. A seven day operating week has been assumed.

Table 2: *Calculated Waste Generation – Retail*

Tenancy	Type	GFA (m^2)	Waste Calculation ($L/100m^2$/day)	Generated Waste (L/week)	Recycling Calculation ($L/100m^2$/day)	Generated Recycling (L/week)
T1	Steak house	388	460	12493.6	230	6246.8
T2	Fish & Chip Restaurant	227	460	7309.4	230	3654.7
T3	Italian Restaurant	212	460	6826.4	230	3413.2
T4	Restaurant	146	460	4701.2	230	2350.6
T10	Lebanese Restaurant & Bar	142	460	4572.4	230	2286.2
T5	Dessert Bar	123	460	12493.6	230	6246.8
T6	Thai Restaurant	104	460	7309.4	230	3654.7
T7	Vietnamese Restaurant	101	460	3252.2	230	1626.1
T8	Coffee Club (existing tenancy)	314	460	10110.8	230	5055.4
T11	Lebanese Restaurant & Bar	220	460	7084	230	3542
T9	Burger Shack	271	460	8726.2	230	4363.1
Total		**1977**		**76153**		**38076.5**

WASTE MANAGEMENT

The tenants will be required to be responsible for their own storage of waste and recycling back of house (BOH). On completion of each trading day or as required, nominated staff/cleaners will transport their waste and recycling to the allocated retail waste area and place waste and recycling into the appropriate collection bins (*see APPENDIX A.1- Waste Rooms*).

GENERAL (PUTRESCIBLE) WASTE

All putrescible waste generated from the retail tenancies will be disposed of in 1100L MGBs. The tenancies will share waste bins. General waste will be collected frequently to minimise impacts from disposing of large amounts of perishable waste.

RECYCLING – CO-MINGLED

Tenants will be responsible for their own storage of recyclables back of house. On completion of each trading day or when required, nominated staff/cleaners will transfer their accumulated recyclables to the waste room. Comingled recyclables will be disposed of in 1100L MGBs which will be held in the waste room.

RECYCLING – CARDBOARD

Tenants will be responsible for their own storage of recyclables back of house. On completion of each trading day or when required, nominated staff/cleaners will transfer their cardboard recycling to the waste room.

Cardboard is a major component of the waste generated by cafes/restaurants. All cardboard packaging generated by the retail operations will be fed into a vertical baler producing a 200kg baler by the nominated cleaners only (*see APPENDIX C.3*). The vertical baler will be located in the waste room. Bales will be placed on pallets awaiting scheduled collection from the retail waste room weekly or as required. A minimum of 4 bales is required per collection. Some recyclers may collect bales at no cost and supply baling equipment.

RECYCLING – GLASS

Glass bottles are likely to account for the highest composition of recycling waste generated at food and beverage facilities. It is recommended that a bottle crusher/s be installed to reduce and recycle all glass bottles generated by the cafe, bars and restaurants.

The glass generation rate is unknown and it is recommended that a supplier be contacted and a free trial period be negotiated to ascertain volume.

Glass crushers may be located in key generation points with the machine depositing crushed glass into 60L MGB (capacity 20 – 25kg to meet manual handling requirements.)

Each machine should be capable of crushing 100 bottles per minute. The glass crusher should be low noise, with no need to sort glass types or remove corks, caps, straws or lemon slices.

Collection of crushed glass product on a scheduled basis should be included in the service agreement with the glass crusher equipment provider.

The full glass MGBs will be transferred by staff to the waste room for collection by the appointed recycler according to the required collection schedule (*See APPENDIX C.2)*.

USED COOKING OIL

Retail management will make arrangements for the storage and collection of used cooking oil in in-ground grease arrestor which will be serviced by the appointed contractor on an as required basis (See APPENDIX C.4 In-ground Grease Arrestor)

WASHROOMS

Washroom facilities should be supplied with collection bins for paper towels (if used). Sanitary bins for female restroom facilities must also be arranged with an appropriate contractor.

Building management/cleaner will monitor use and ensure waste bins are exchanged and cleaned.

GREEN WASTE

There will be green waste generated by the buildings landscaped areas. Any green waste will be collected and removed from site by the maintenance contractor during scheduled or arranged servicing of these areas.

OTHER WASTE STREAMS

Disposal or recycling of electronic, liquid waste and home detox (paint/chemicals etc.) will be organised with the assistance of the building managers. These items must not be placed in waste or recycling bins due to safety and environmental factors.

BIN SUMMARY

Table 3: *Bin Summary – Retail*

Waste Stream	Bin Quantity & Size	Collection Frequency
Garbage	10x 1100 MGBs	Daily
Recycling (comingle)	3x 1100L MGBs	5x weekly
Recycling (Glass)	60L MGBs from Glass Crusher	As Required
Recycling (cardboard/paper)	Baled Cardboard	As required

NOTE: Subject to the stakeholders preference/capability (and as built constraints), bin sizes and quantities may be changed. As waste volumes may change according to the development's type, bin numbers and collection frequencies may be altered to suit the building operation.

RETAIL EQUIPMENT SUMMARY

Table 4: *Retail Equipment Summary*

Equipment	Notes
Suitable Bin Moving Equipment	Optional (*See APPENDIX C.1 for Typical Bin Mover*)
Cardboard Balers	Development will need to select a cardboard baler appropriate for the site. (See APPENDIX C.3 for a Typical Cardboard Baler)
Glass Crusher	Development will need to select a glass crusher or crushers appropriate for the site. (See APPENDIX C.2 for a Typical a Glass Crushers)

WASTE ROOM AREAS

The waste room will need to accommodate for the bin and equipment as described in *Table 5: Waste Room Areas* and allow enough room to clean and safely manoeuvre bins. A bin wash down area is provided in this area *(see APPENDIX A.2 – Waste Rooms).*

The areas allocated for each waste room are detailed in Table 5 below.

Table 5: *Waste Room Areas*

Location	Waste Room Type	Bin in Waste Room	Area (m^2)
Building 1	Waste room In carpark	10x 1100L MGBs (waste) Cardboard Baler Glass bins 3x Comingled Recycling 1100L MGB	97

COLLECTION OF WASTE

RETAIL

A private waste contractor will be engaged to collect all waste to the agreed collection schedule.

Servicing will occur via a wheel-in/wheel-out arrangement directly from the waste room. The collection vehicle will enter the site from Tench Ave and park in the designated waste pick up bay.

COLLECTION AREA

The collection areas will need to be reviewed by a traffic consultant to confirm that these (and other trucks if required) can enter and exit the site in a forward direction. The final number of truck movements will depend on management of waste contract; final configuration of waste and recycling arrangements therefore number of bin lifts and additional irregular truck movements for hard waste.

It is our understanding that a traffic consultant is preparing drawings to confirm the swept paths for waste collections, access and egress, internal manoeuvring to assume parked position for loading and to exit, load requirements as well as collection vehicle dimensions. This information and supporting drawings will be provided separate to this report.

GARBAGE ROOMS

CONSTRUCTION REQUIREMENTS

The garbage room will be required to contain the following facilities to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area:

- Waste room floor to be sealed with a two pack epoxy;
- Waste room walls and floor surface is flat and even;
- All corners coved and sealed 100mm up, this is to eliminate build-up of dirt;
- For retail/commercial: a cold water facility with hose cock must be provided for washing the bins;
- Any waste water discharge from bin washing must be drained to sewer in accordance with the relevant water board. (Sydney water);
- Tap height of 1.6m;
- Storm water access preventatives (grate);
- All walls painted with light colour and washable paint;
- Equipment electric outlets to be installed 1700mm above floor levels;
- The room must be mechanically ventilated;
- Light switch installed at height of 1.6m;
- Waste rooms must be well lit (sensor lighting recommended);
- Optional automatic odour and pest control system installed to eliminate all pest types and assist with odour reduction – this process generally takes place at building handover – building management make the decision to install;
- All personnel doors are hinged and self-closing;
- Waste collection area must hold all bins – bin movements should be with ease of access;
- Conform to the building code of Australia, Australian standards and local laws; and
- Childproofing and public/operator safety shall be assessed and ensured

SIGNAGE

The building manager/caretaker is responsible for waste room signage including safety signage (*see APPENDIX B.2*). Appropriate signage must be prominently displayed on walls and above all bins, clearly stating what type of waste or recyclables is to be placed in the bin underneath.

Signage will also be place on the door of waste room or areas to indicate the waste rooms or areas designated to each tenant.

VENTILATION

Waste and recycling rooms must have their own exhaust ventilation system either;

- Mechanically - exhausting at a rate of 5L/m² floor area, with a minimum rate of 100L/s minimum; or
- Naturally - permanent, unobstructed, and opening direct to the external air, not less than one-twentieth (1/20) of the floor area

Mechanical exhaust systems shall comply with AS1668 and not cause any inconvenience, noise or odour problem.

STORM WATER PREVENTION & LITTER REDUCTION

Building management shall be responsible for the following to minimise dispersion of site litter and prevent stormwater pollution to avoid impact to the environment and local amenity:

- Promote adequate waste disposal into the bins;
- Secure all bin rooms (whilst affording access to staff/contractors);
- Prevent overfilling of bins, keep all bin lids closed and bungs leak-free;
- Take action to prevent dumping or unauthorised use of waste areas; and
- Ensure collection contractors clean-up any spillage that may occur when clearing bins

ADDITIONAL INFORMATION

Transfer of waste and all bin movements require minimal manual handling therefore the operator must assess manual handling risks and provide any relevant documentation to building management. If required, a bin-tug, trailer or tractor consultant should be contacted to provide equipment recommendations. Hitches may require installation to move multiple bins to the collection area. Council must be informed of any hitch attachments required to be installed on bins.

LIMITATIONS

The purpose of this report is to document a Waste Management Plan as part of a development application and is supplied with the following conditions:

- Drawings, estimates and information contained in this waste management plan have been prepared by analysing the information, plans and documents supplied by you and third parties including Council and government information. The assumptions based on the information contained in the WMP is outside the control of EFRS;
- The figures presented in the report are an estimate only – the actual amount of waste generated will be dependent on the occupancy rate of the building/s and waste generation intensity as well as the building managements approach to educating residents and tenants regarding waste management operations and responsibilities;
- The building manager will make adjustments as required based on actual waste volumes (if waste is greater than estimated) and increase the number of bins and collections accordingly;
- The report will not be used to determine or forecast operational costs or prepare any feasibility study or to document any safety or operational procedures;
- The report has been prepared with all due care however no assurance or representation is made that the WMP reflects the actual outcome and EFRS will not be liable to you for plans or outcomes that are not suitable for your purpose, whether as a result of incorrect or unsuitable information or otherwise;
- EFRS offer no warranty or representation of accuracy or reliability of the WMP unless specifically stated;
- Any manual handling equipment recommended should be provided at the recommendation of the appropriate equipment provider who will assess the correct equipment for supply;
- Design of waste management chute equipment and systems must be approved by the supplier.

USEFUL CONTACTS

Elephants Foot Recycling Solutions does not warrant or make representation for goods or services provided by suppliers.

Penrith City Council Customer Service
Phone: (02) 4732 7777 Email: council@penrithcity.nsw.gov.au

SULO MGB (MGB, Public Place Bins, Tugs and Bin Hitches)
Phone: 1300 364 388

CLOSED LOOP (Organic Dehydrator)
Phone: 02 9339 9801

ELECTRODRIVE (Bin Mover)
Phone: 1800 333 002 Email: sales@electrodrive.com.au

RUD (Public Place Bins, Recycling Bins)
Phone: 07 3712 8000 Email: Info@rud.com.au

CAPITAL CITY WASTE SERVICES
Phone: 02 9359 9999

REMONDIS (Private Waste Services Provider)
Phone: 13 73 73

SITA ENVIRONMENTAL (Private Waste Services Provider)
Phone: 13 13 35

NATIONAL ASSOCIATION OF CHARITABLE RECYCLING ORGANISATIONS INC. (NACRO)
Phone: 03 9429 9884 Email: information@nacro.org.au

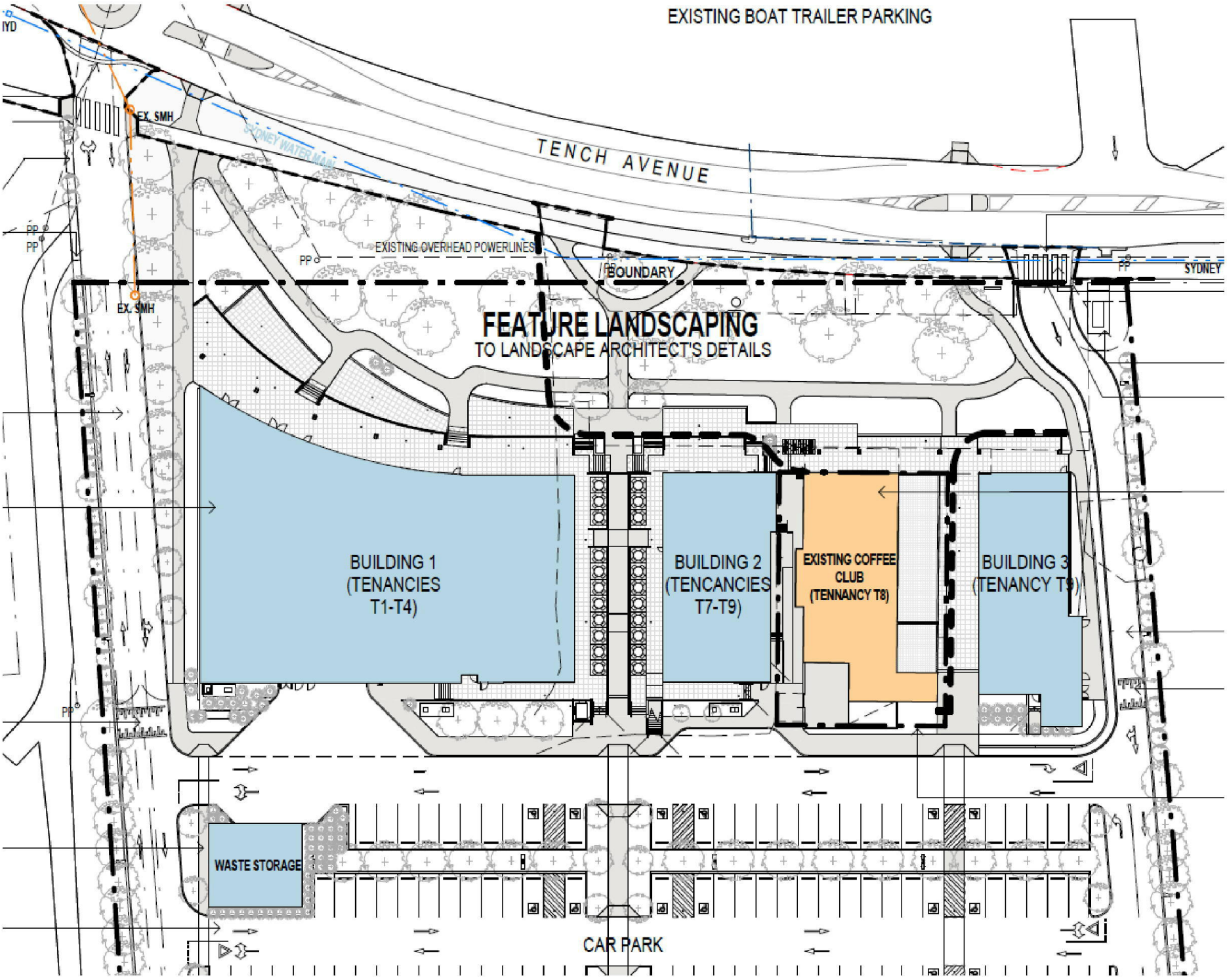
PURIFYING SOLUTIONS (Odour Control)
Phone: 1300 636 877 Email: sales@purifyingsolutions.com.au

Elephants Foot Recycling Solutions (Chutes, Compactors and eDiverter Systems)
44 – 46 Gibson Avenue
Padstow NSW 2211
Free call: 1800 025 073 Email: natalie@elephantsfoot.com.au

APPENDICES

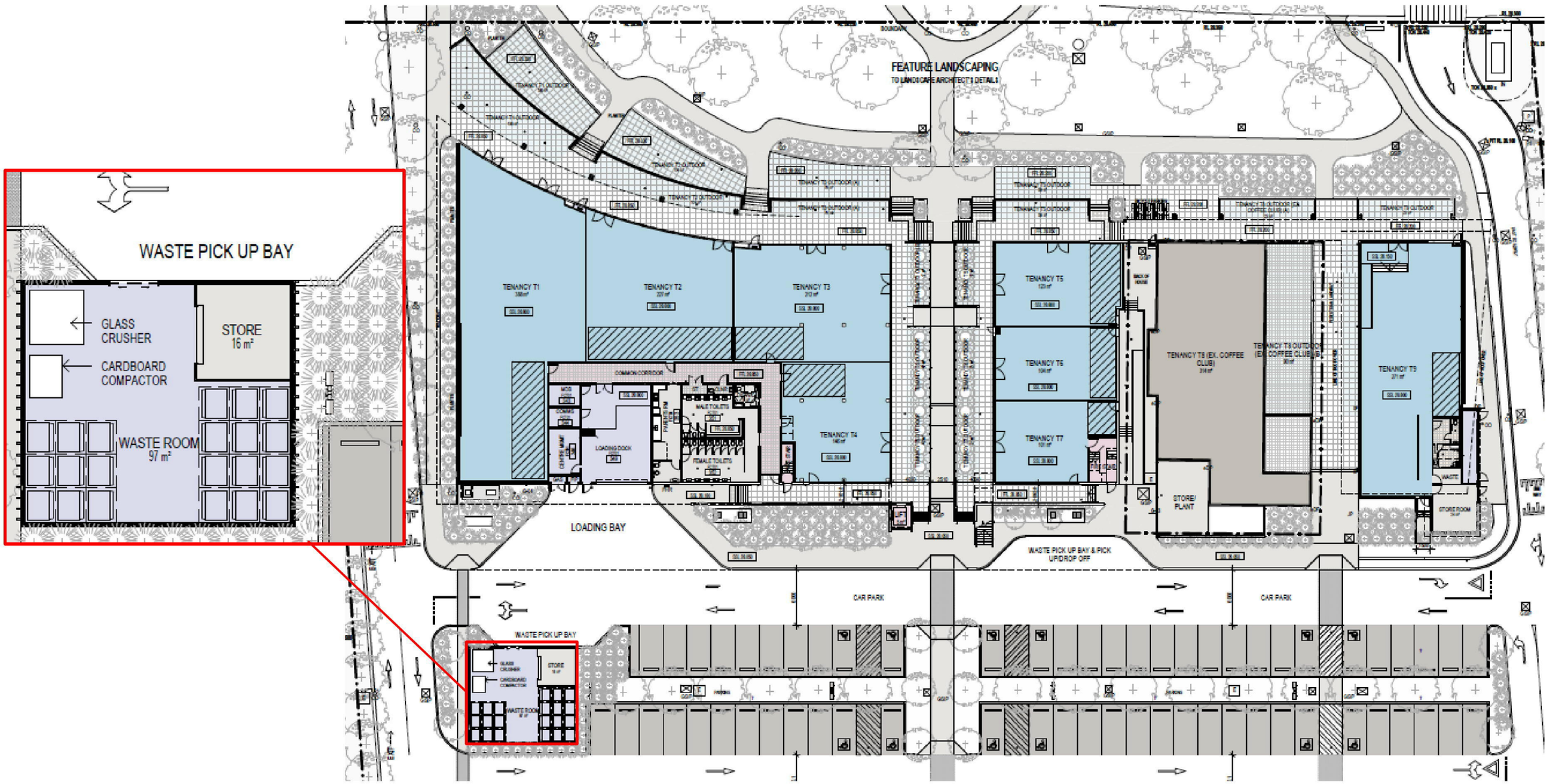
APPENDIX A DRAWING EXERPTS

APPENDIX A.1 SITE PLAN



Excerpt: Morson Group, Drawing DA03, Rev A, December 2017 – Overall Site Plan

APPENDIX A.2 WASTE ROOM AND COLLECTION AREA

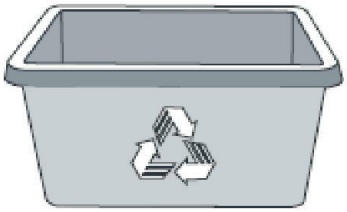


Excerpt: Morson Group, Drawing DA04, Rev C, Dec 2017 – Overall Ground Floor Plan

APPENDIX B BETTER PRACTICE GUIDE FOR WASTE MANAGEMENT SPECIFICATIONS

APPENDIX B.1 BIN DIMENSIONS

Crates



Crate size	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	450 mm

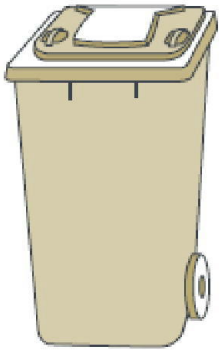
The above dimensions are indicative only of common crate sizes

Mobile garbage bins (MGBs)

MGBs with capacities up to 1700L should comply with the Australian Standard for Mobile Waste Containers (AS 4123). AS 4123 specifies standard sizes and sets out the colour designations for bodies and lids of mobile waste containers that relate to the type of materials they will be used for.

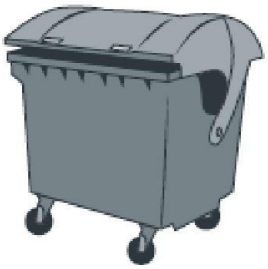
Indicative sizes only for common MGB sizes are provided below. Note that not all MGB sizes are shown; the dimensions are only a guide and differ slightly according to manufacturer, if bins have flat or dome lids and are used with different lifting devices. Refer to AS 4123 for further detail.

Mobile containers with a capacity from 80L to 360L with two wheels



Bin Type	80 Litre MGB	120 Litre MGB	140 Litre MGB	240 Litre MGB	360 Litre MGB
Height	870 mm	940 mm	1065 mm	1080 mm	1100 mm
Depth	530 mm	560 mm	540 mm	735 mm	885 mm
Width	450 mm	485 mm	500 mm	580 mm	600 mm

Mobile containers with a capacity from 500L to 1700L with four wheels

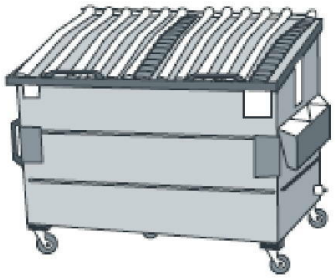


Dome or flat lid containers

Bin Type	660 Litre MGB	770 Litre MGB	1100 Litre MGB	1300 Litre MGB	1700 Litre MGB
Height	1250	1425	1470	1480	1470
Depth	850	1100	1245	1250	1250
Width	1370	1370	1370	1770	1770

Bulk bins greater than 1700L capacity

The following bulk bin dimensions are a guide only and may differ slightly according to manufacturer.
Not all available bulk bin sizes are shown.



Bin Type	2.0 m³ Skip	3.0 m³ Skip	4.5 m³ Skip
Height	865 mm	1225 mm	1570 mm
Depth	1400 mm	1505 mm	1605 mm
Width	1830 mm	1805 mm	1805 mm

APPENDIX B.2 SIGNAGE FOR WASTE & RECYCLING BINS

WASTE SIGNS

Signs for garbage, recycling and organics bins should comply with the standard signs promoted by the Department of Environment and Heritage.

SAFETY SIGNS

The design and use of safety signs for waste rooms and enclosures should comply with AS1319 Safety Signs for Occupational Environment. Safety signs should be used to regulate and control safety behaviour, warn of hazards and provide emergency information, including fire protection information. Below are some examples. Each development will need to decide which signs are relevant for its set of circumstances and service provided.

Source: Better Practice Guide to Waste Management in Multi-Unit Dwellings, 2008, DECC

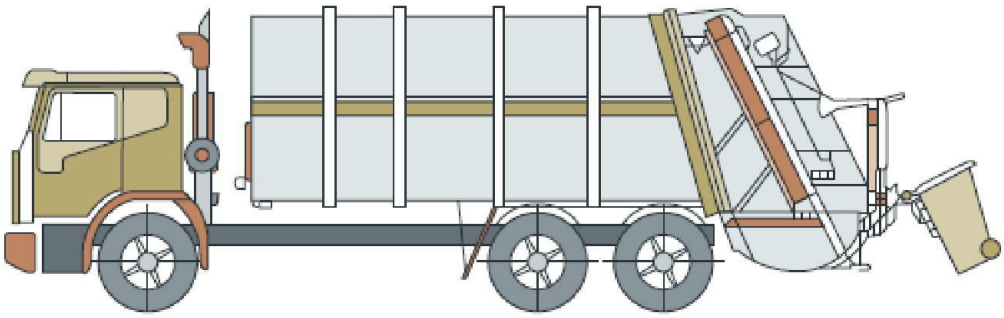
APPENDIX B.3 TYPICAL COLLECTION VEHICLE INFORMATION

Collection vehicles

Waste collection vehicles may be side loading, rear-end loading, front-end loading or crane trucks. The size of vehicle varies according to the collection service. Thus it is impossible to specify what constitutes the definitive garbage vehicle. Developers should consult the local council and/or relevant contractors regarding the type of vehicle used in that area.

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

It may be possible to engage a collection service provider to use smaller collection vehicles to service developments with narrow roadways and laneways, or for on-site collections. However, as the availability of smaller vehicles to make services varies between councils and private contractors, wherever possible the development should be designed to accommodate vehicles of a similar size to that reported below.

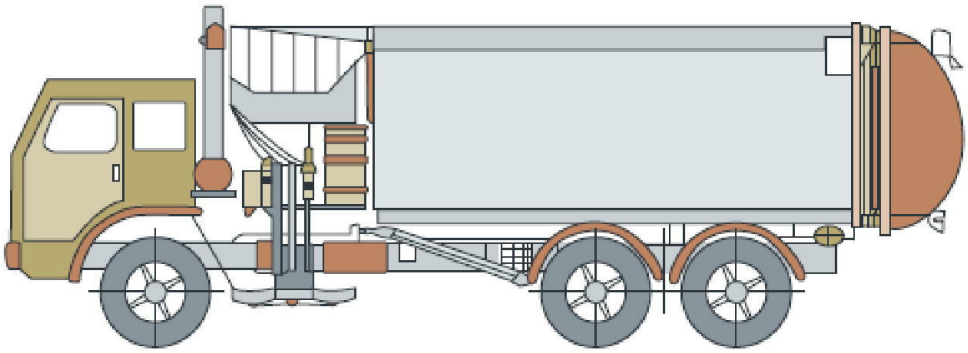


Rear loading collection vehicle

This is commonly used for domestic garbage and recycling collections from MUDs. It can be used to collect waste stored in MGBs or bulk bins, particularly where bins are not presented on the kerbside.

Rear loading collection vehicle	
Length overall	10.24m
Width overall	2.5m
Operational height	3.5m
Travel height	3.5m
Weight (vehicle only)	12.4 tonnes
Weight (payload)	9.5 tonnes
Turning circle	18.0m

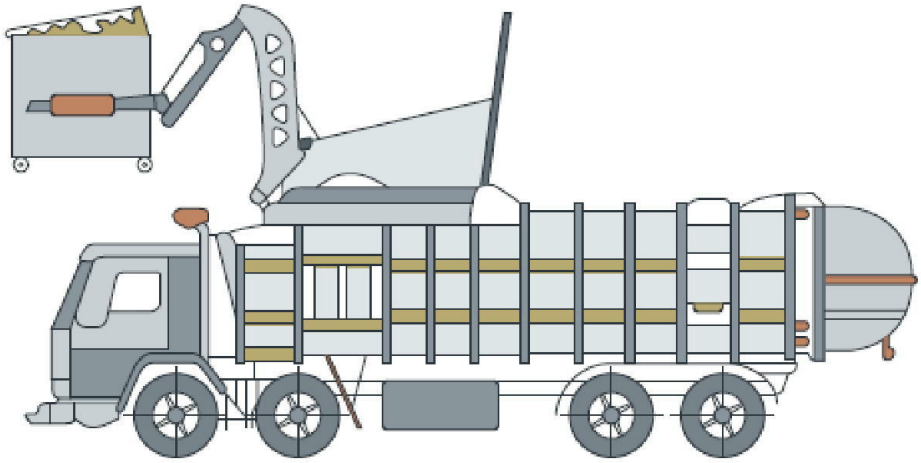
Side-loading collection vehicle



Side-loading collection vehicle	
Length overall	9.64m
Front overhang	1.51m
Wheelbase	5.20m
Rear overhang	2.93m
Turning circle kerb to kerb	17.86m
Turning circle wall to wall	20.56m
Front of vehicle to collection arm	3.8m
Maximum reach of side arm	3.0m
Travel height	3.63m
Clearance height for loading	3.9m

This is the most commonly used vehicle for domestic garbage and recycling collections. It is only suitable for collecting MGBs up to 360 litres in size.

Front-lift loading collection vehicle



Front-lift loading collection vehicle	
Length overall	10.52m
Front overhang	1.51m
Wheelbase	5.84m
Rear overhang	3.17m
Turning circle kerb to kerb	22.10m
Turning circle wall to wall	23.66m
Travel height	3.82m
Clearance height for loading	6.1m

This is mainly used for collecting commercial and industrial waste, and is only suitable for bulk bins with front lift pockets (not MGBs).

APPENDIX C WASTE MANAGEMENT EQUIPMENT SPECIFICATIONS

APPENDIX C.1 TYPICAL PUBLIC PLACE WASTE BINS

** Products and specifications may change according to manufacturer.*

SOURCE: *SULO Environmental Technology*

APPENDIX C.2 EXAMPLE GLASS CRUSHERS

Bottle Buster

The bottle buster has a capacity of reducing 80 bottles to approximately a 20 litre container.

The unit can be modified to have the glass fall onto any size container.

Features & Benefits
Machine size: W600 x D600 x H1200mm
Feed bottles continuosly
Can be fitted over 20 – 240 liter bin *
Power supply: 240 volt standard power point required
Fully automatic operations
No installation required
12 months warranty – reliable after sales service

BOTTLECYCLER

BottleCycler Machine	
Unit dimensions:	Height 150 cm, width 50 cm, depth 65 cm
Unit weight:	90 kg
Noise level:	68 dB (approx.. speaking voice level)
Processing speed:	Approximately 60 wine bottles or 80 beer bottles per minute

BottleCycler Bin	
Bin dimensions:	Height 60 cm, width 48 cm, depth 52 cm
Full bin weight:	65 kg rolling weight
Holding capacity:	Approximately 300 crushed beer bottles or 200 crushed wine bottles
Volume reduction:	2 x 120 litre bins = Approximately 1 x small 60 litre BottleCycler bin 10 x bar bins = Approximately 1 x small 60 litre BottleCycler bin

Technical Requirements	
Power:	Standard 240 V, single phase, 10 amp 3-phase can be supplied on request
Installation:	Freestanding or built-in joinery Allow 30 cm space on top to insert bottles
Ventilation space:	Free flow underneath The unit is on feet and is partly adjustable
Drip tray:	Unit has a rubber protection iris, which can be removed and cleaned easily
Glass colour separation:	In Australia no separation is required, as BottleCycler provides a glass collection service in all metropolitan areas. The glass collected is then recycled.

Preferred Location On Site	
Close to basin:	For emptying liquids out of bottles Although the machine will accept liquids, the machine will become dirty faster with residue
Close to the serving area:	In order to eliminate double-handling

Optional Extras	
Chute:	Machine can be installed in the cellar with only the top box being in the bar area
Wheels:	Wheels under the unit, which add 40 mm on each side and 10 mm in height

APPENDIX C.3 EXAMPLE CARDBOARD BALERS

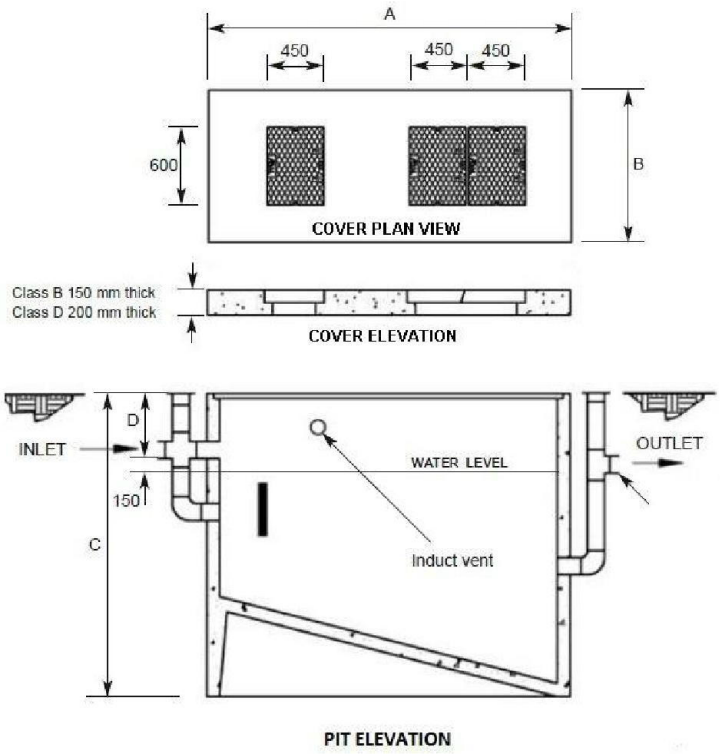
EF100VX Vertical Baler

The EF100VX ia a low height baler making it easy to install with no onsite assembly required. It is a low noise baler with a fast cycle time and front loading ropes. This unit requires 3 phase power.

EF100VX produces bales of cardboard up to 90kg. It can be used to bale a range of materials including plastic film, shredded paper, PET and cardboard.

Description	Specification
Machine Dimensions H x W x D (mm)	1945x1265x835
Machine Weight (kg):	650
Feed Opening H x W (mm):	670×800
Bale Size H x W x D (mm):	800x600x600
Bale Weight (cardboard):	Up to 90 kg
Compaction Force:	10 Tonnes
Motor:	4kW
Electric Supply:	400/230 volt
Cycle Time (sec):	18
Type of Tie/No. of ties:	9mm Tape/ 2 off
Type/No. of Retaining Claws Front:	Serrated edge / 2 off
Type/No. of Retaining Claws Rear:	Serrated edge / 2 off
Method of Removing Bales:	Mechanical Ejection
Depth of Chamber Below Feed Opening (mm):	700
Access for Forklift/Pallet Truck:	Yes, Side
Electric Rating Standard:	IP55
Electric Rating Optional:	IP65
Sound Level:	60 dBA

APPENDIX C.4 IN-GROUND GREASE ARRESTOR



NOTES:

- Up to and including 4000 Litres, the inlet and outlet connections are 100mm diameter
- The 5000 Litre unit has 150mm diameter inlet and outlet connections
- Step Irons and platforms are available for all sizes of grease arrestors
- If depth of pit to invert exceeds 1m then a platform and steps are required.
- Standard units are suitable for in-ground use only.
- Inlet/outlet Pipe and fittings are made of PVC and are not supplied with unit and are subject to local authority standards
- (PVC fittings are not supplied with unit and subject to local authority standards)
- All units are coated internally with Bitumen

Source: *Better Concrete Products, http://www.bcp.com.au/grease-arrestors.html*