WASTE MANAGEMENT PLAN

PREPARED FOR

Logos Property Pty Ltd

ON BEHALF OF

Axis Architectural

Commercial Development

42B Kurrajong Road
Prestons NSW

21/11/2018

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REVISIONS

Revision	Date	Prepared by	Approved by	Remarks
A	11/07/2018	A Armstrong	E Saidi	Draft
B	20/08/2018	A Armstrong	E Saidi	Amendment
C	21/11/2018	A Armstrong	E Saidi	Amendment

DISTRIBUTION LIST

Recipient Name	Company	Revision
Craig Thomas	Logos Property	C

EXECUTIVE SUMMARY

This waste management plan covers the ongoing management of waste generated by the commercial development located at 42B Kurrajong Road, Prestons 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 residents and tenants.

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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.

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INTRODUCTION

The following waste management plan pertains to the commercial development located at 42B Kurrajong Road, Prestons NSW. This waste management plan is an operational waste management plan and will address the phases of the completed development.

The development will be a warehouse and office facilities for a logistics company.

For the purpose of this report the proposed development will consist of one (1), 1-level building incorporating:

- A GFA of 14,000m^2 allocated to a Warehouse; &
- A GFA of 806m^2 allocated to Office areas.

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

LIVERPOOL CITY COUNCIL

The commercial garbage and recycling will be guided by the acceptance criteria of the Liverpool City Council and will be serviced by a private waste contractor. All waste facilities and equipment are to be designed and constructed to be in compliance with the Liverpool City Council's *Liverpool Development Control Plan 2008,* Australian Standards and statutory requirements.

COUNCIL OBJECTIVES

- To minimise waste generation and disposal to landfill with careful source separation, reuse and recycling.
- To avoid the generation of waste through design, material selection and building practices.
- To ensure efficient storage and collection of waste and quality design of facilities

COUNCIL REQUIREMENTS

Access – Ensure waste systems are easy to use and collection vehicles are able to access buildings to safely remove waste and recycling;

Safety – Ensure safe practises for storage, handling and collection of waste and recycling;

Pollution Prevention – Prevent stormwater pollution that may occur as a result of poor waste storage and management practises;

Noise Minimisation – Provide acoustic insulation to the waste service facilities or residential units adjacent to or above chutes, waste storage facilities, chute discharge, waste compaction equipment and waste collection vehicle access points;

Ecologically Sustainable Development (ESD) – Promote the principles of ESD through resource recovery and recycling leading to a reduction in the consumption of finite natural resources;

Hygiene – Ensure health and amenity for residents, visitors and workers in the Liverpool City Council.

GENERATED WASTE VOLUMES

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

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 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 the correct separation of garbage and recycling items must be provided to all personnel to ensure the correct disposal of waste, including bulky goods (old furniture, large discarded items, etc.)

It is also recommended that the owners' corporation website contain information for personnel 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
- Personnel's obligations to WHS and building management.

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

COMMERCIAL WASTE PLAN

It has been advised that the proposed warehouse development will be for logistics operations including the temporary storage of goods for import, export or distribution and office operations.

Therefore, it is envisaged that:

- The office areas will produce standard office waste.
- The warehouse areas are likely to primarily produce packaging waste including cardboard and soft plastics.

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

Table 1: *Calculated Waste Generation – Commercial*

Type	NLA (m^2)	Waste Calculation ($L/100m^2/day$)	Generated Waste (L/week)	Recycling Calculation ($L/100m^2/day$)	Generated Recycling (L/week)
Warehouse	14000	10	9800	30	29400
Office	806	10	564.2	10	564.2
TOTAL	**14806**		**10364.2**		**29400**

BIN SUMMARY

Garbage: 2 x 3m^3 front loading bulk bin collected **twice weekly** (or as required)
Recycling (Cardboard): 2 x 4m^3 front loading bulk bin collected **twice weekly** (or as required)
Recycling (Soft Plastics): 2 x 4m^3 front loading bulk bin collected **twice weekly** (or as required)
Recycling (Co-Mingled): 2 x 1100L bulk bin collected **twice weekly** (or 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.

WASTE MANAGEMENT – WAREHOUSE

During daily operations, staff will dispose any waste and recycling generated in the appropriate bins.

The warehouse storeman/cleaners is responsible for circulating the warehouse after operating hours to tidy up, and ensuring that all waste is appropriately disposed of.

Building management will be required to contract private waste services for collection of garbage, recycling and other waste. The contractor will review and conduct an audit of the site's needs in relation to removal of specific wastes.

RECYCABLE PACKAGEING (CARBOARD AND SOFT PLASTICS)

Waste from packaging such as cardboard and soft plastics is likely to be the main waste stream generated by the facility.

The plastic wrapping, strapping and film used to protect goods in transit can be recycled.
A designated recycling bin has been allocated for the collection of such items.

Cardboard and paper waste will have a separate designated recycling bin.

PALLETS

Most wood pallets can be reused and repaired multiple times, aside from a small proportion designed for single use. Pallets that can't be reused can be recycled into a range of wood-based products.

Where possible the site should aim to reuse pallets within internal operations.

Broken or unrequired pallets will be stockpiled. When sufficient number of pallets has been accumulated, building management will be responsible for contacting a pallet recycling specialist to remove the pallet from site.

SPILL KITS

The use of spill kits including Hazchem kits for hydrocarbon and water based liquids. Liquids include hydrocarbons, emulsions, paints, solvents and nonaggressive chemicals; oil and petroleum. Kits may be placed indoors or outdoors locations dependant on requirement. Kits should be easily mobilised by one person and contained in a red 240L wheelie bin labelled for easy identification of use and contain organic granular absorbent and organic booms.

Building management will be responsible for determining whether spill kits will be required (and how many) prior to operation of the development.

WASTE MANAGEMENT – OFFICES

Typically, one or more bins for general waste and recycling are positioned next to each workers desk or work station. All these bins will be emptied by contract cleaners. The cleaners circulate around the workplace after normal office hours and also perform other cleaning tasks. Bins for general waste and recyclables are also located centrally in each office, generally in the kitchen area and printer room.

Cleaners empty the bins into bags which they transport around the office/s in a cart which is also used to store cleaning products, spare bags, PPE and consumables.

Bags of waste and/or recycling are transported to the collection bins by the cleaner.

COMINGLE RECYCLING

Any staff tea points will be supplied with a dedicated commingled MGB for the collection of all recyclable glass, aluminium, steel and plastic items. Staff will be responsible for sorting this material and allocating recyclables into the correct collection facility.

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.

Please note that all collection receptacles and bins should be branded with the appropriate stickers and the use of the Mobius loop or similar identifying recycling equipment.

OTHER OFFICE WASTE

Disposal and recycling of hard, electronic, liquid waste, toner cartridges batteries and any detox (paint/chemicals) shall be organised with the assistance of the building management.

These waste streams should not be disposed of with general waste. Building management will be responsible for arranging collections with suitable licensed waste contractors.

HAZARDOUS WASTE

The Environment Protection Authority (EPA) regulates the handling, storage, and processing of hazardous chemicals and waste under *the Protection of the Environment Operations Act (POEO Act) 1997.*

If the development operates above the thresholds for storage or processing of waste outlined in Schedule 1 of the POEO Act 1997, it must hold an Environmental Protection Licence and must comply with the conditions of that licence.

The following requirements apply in the event that hazardous waste is generated from the site:

- Building management/staff must ensure that different types of hazardous waste are stored without incompatible wastes being mixed together – this must be in a segregated, secure area.

- All waste storage facilities need to ensure that staff are trained for their role on site and are competent in their day to day responsibilities.
- All waste facilities need to demonstrate that wastes are stored and treated appropriately.
- Waste must not be stockpiled on site or discharged to the sewer without appropriate treatment and consent from the relevant sewage authority.
- Containers must be clearly and correctly labelled, well maintained and constructed from material that is compatible with the liquid waste being stored in accordance with the Australian Dangerous Goods Code.
- Wastes either transported to the site for treatment or off site for disposal that are classified as trackable waste must be tracked in accordance with Part 4 of the POEO (Waste) Regulation 2014 .
- Regular inspections and preventative maintenance of plant and equipment are important for reducing the risk of incidents occurring on site. A maintenance schedule should be documented for all plant and equipment. Keeping accurate records of your inspections and maintenance works is an important part of demonstrating good site management.
- Licensees are required to have a pollution incident response management plan (PIRMP) for each of their licensed activities according to the requirements set out in Part 5.7A of the POEO Act. The EPA have prepared guidelines on the preparation of a pollution incident response management plan to assist licensees.

WASTE ROOM AREAS

The designated waste area will need to hold:

- 2 x 3m^3 metal skip bins (garbage)
- 2 x 4m^3 metal skip bins (Recycling Cardboard)
- 2 x 4m^3 metal skip bins (Recycling Soft Plastics)
- 2 x 1100L MGBs (Recycling Co-Mingled)

These bins should be located in a designated outdoor undercover area and be safely accessible for all staff. Adequate space must be provided to clean and safely manoeuvre bins.

The recommended GFA of the waste storage area is 30m^2. **Note:** This area does not include any vehicle loading bays or space for vehicle movement.

COLLECTION OF WASTE

Building management will be required to contract private waste services for collection of garbage, recycling and other waste. The contractor will review and conduct an audit of the site's needs in relation to removal of specific wastes.

Specialist recycling collections may need to be engaged to collect and process the cardboard and soft plastic recycling waste streams.

General waste bins and the recycling streams will be collected directly from their storage location.

A front lift collection vehicle will be required to service the skip bins.

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 building 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.

WASTE AREAS

CONSTRUCTION REQUIREMENTS

The area 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 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);
- The are must be ventilated;
- Light switch installed at height of 1.6m;
- Waste areas 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

Building management is responsible for waste room signage including safety signage (*see APPENDIX A.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.

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.

Liverpool 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 BETTER PRACTICE GUIDE FOR WASTE MANAGEMENT SPECIFICATIONS

APPENDIX A.1 BIN DIMENSIONS

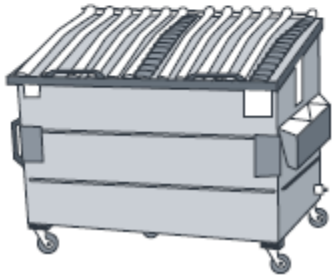
Mobile containers with a capacity from 500L to 1700L with four wheels

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

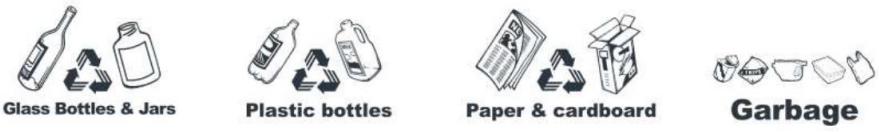
APPENDIX A.2 SIGNAGE FOR WASTE & RECYCLING BINS

WASTE SIGNS

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

Example wall posters

Example bin lid stickers



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.

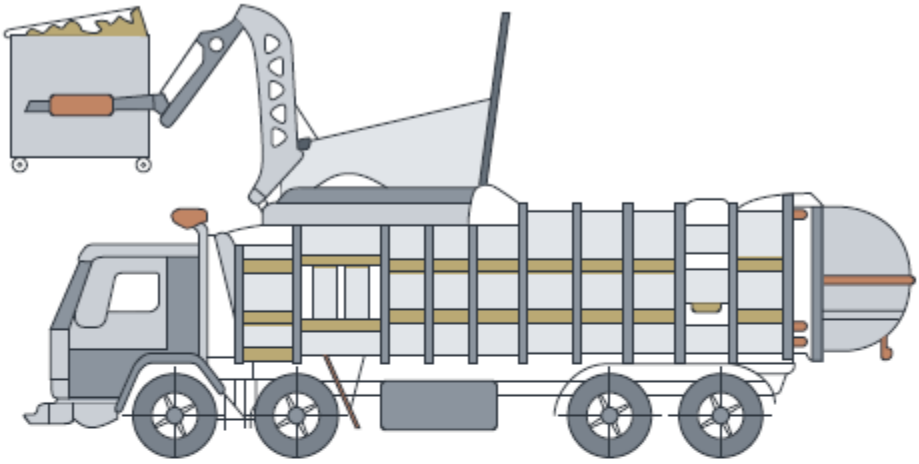
Examples of Australian Standards:

Australian Standards are available from the SAI Global Limited website (www.saiglobal.com).

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

APPENDIX A.3 TYPICAL COLLECTION VEHICLE INFORMATION

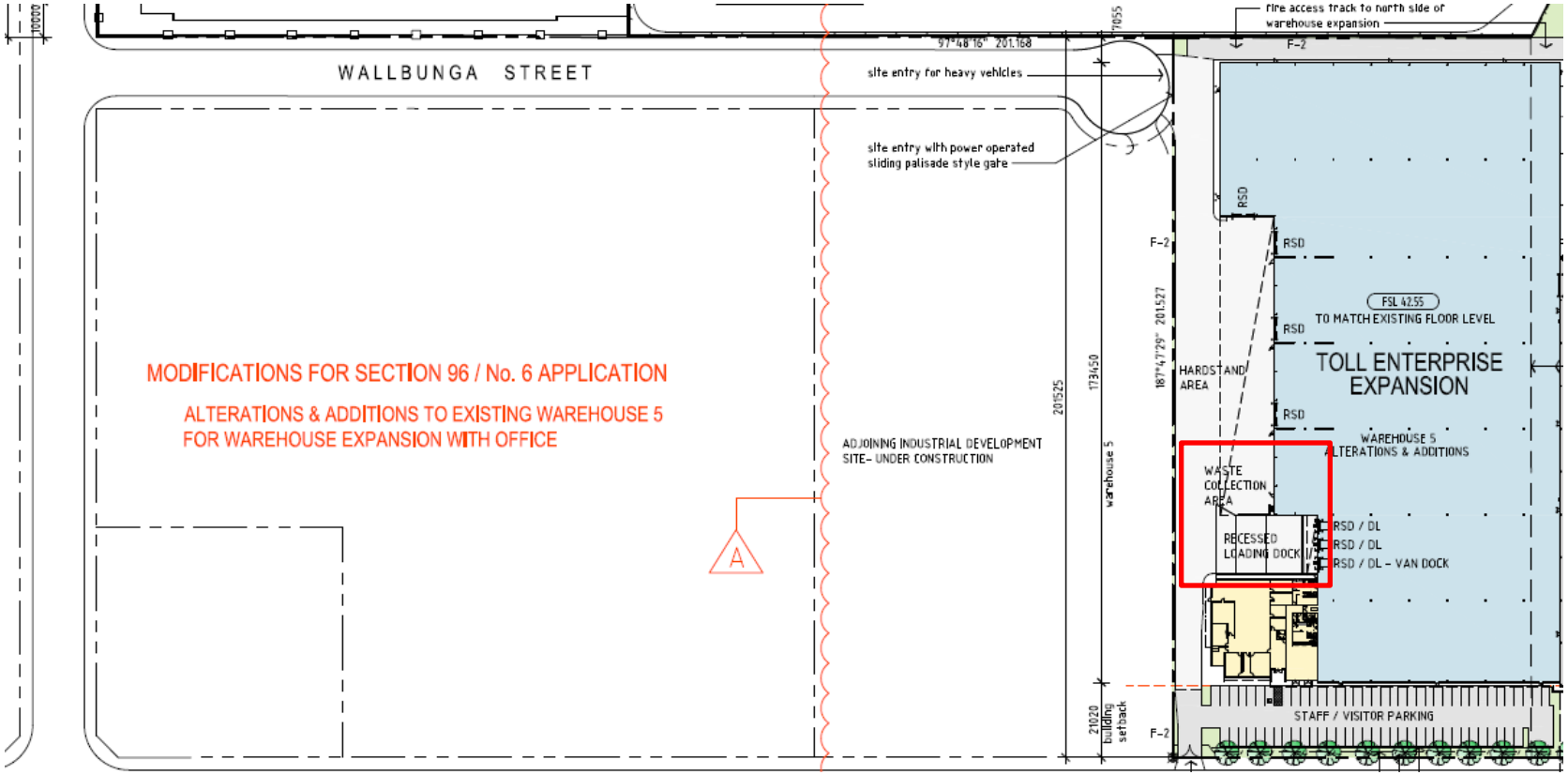
Front-lift loading collection vehicle



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 B WASTE AND RECYCLING



Excerpt – Axis Architectural, Drawing DA-A102 Rev N 30/07/16 – Site Plan