



WASTE MANAGEMENT PLAN

Project: Demolition of Existing Structures & Proposed Five (5) Storey Residential Development containing 50 Units over basement parking at 1-7 Markham Avenue, Penrith

Final Report
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For DA Submission

Prepared For: IDraft (Client)

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EXECUTIVE SUMMARY

MultiPro Consultants P/L was commissioned by IDraft Architects Pty Ltd to prepare a report detailing the Waste Management for the proposed development at 1-7 Markham Avenue, Penrith.

It is fundamental that a new medium or high density residential development/redevelopment (i.e. Residential Flat Building – RFB) provides a Waste Management System that is responsive to the development’s needs and a system that is capable of incorporating Council’s standard requirements and services for waste management. This waste management plan also covers the ongoing management of waste generated by the development and future residence. It is also essential to ensure waste during demolition and construction is managed to reduce the amount of waste and recyclables to land fill.

This Waste Management Plan (WMP) will comply with Penrith City Council’s codes and any statutory requirements for RFB developments. This WMP has four (4) main objectives to satisfy Council’s requirements -

- Site planning of the development accommodates on-site waste collection and allows the waste collection vehicle to enter/exit, manoeuvre within the site and access the nominated collection point in a safe and efficient manner;
- Site planning of the development ensures that the amenity and safety of all users (including residents, occupiers, caretakers, Strata/Body Corporate, cleaners and Council waste collection staff) at all stages of the waste management process;
- Waste management system selection ensures that it is safe and convenient for resident use; and
- Adequate waste storage area(s) are provided within the development site to store all required waste bins.

This report will ensure that Waste management practices consider resident and public amenity and safety at all stages of the waste management process, including storage, transferring and collection.



Fig.1 Waste Management Hierarchy

CONTENTS

1. Development Proposal	4
2. Development Controls and Objectives	4
3. Design Compliance Table	7
4. Waste Management for Demolition works	10
5. Waste Management during Construction Works	12
6. Waste Management – Ongoing for residence	13
7. Collection of Waste	15
8. Glossary of Terms	16
9. Waste Management Checklist	17
10. Report Limitations	18

1. DEVELOPMENT PROPOSAL

The following waste management plan has been prepared for the demolition of existing structures and vegetation, and the construction of a five (5) storey residential flat building containing 50 units over 2 levels of basement car parking across Lots 25-28, Deposited Plan 35563 – known as 1-7 Markham Avenue, Penrith.

For the purpose of this report, the analysis will be based on the following Unit structure –

Table 1 - Floor Plan/Number of Units

Floor Level	Units	%
Ground Floor Area	10 (Unit 1-10)	20%
Level 1 Floor Area	11 (Unit 11-21)	22%
Level 2 Floor Area	11 (Unit 22-32)	22%
Level 3 Floor Area	10 (Unit 33-42)	20%
Level 4 Floor Area	8 (Unit 43-50)	16%
Total	50	

Table 2 - Bedrooms per Unit

Bedrooms per Unit	Units	%
1 Bedroom	9	18%
2 Bedrooms	37	74%
3 Bedrooms	4	8%
Total	50	

All figures and calculations are based on floor plans as shown on the Architectural drawings prepared by IDraft Architects - drawing number 28316, Issue B dated 03/03/2017.

2. DEVELOPMENT CONTROLS AND OBJECTIVES

All waste facilities and equipment are to be designed, constructed and managed in accordance with Penrith City Council Development Control Plan (DCP) 2014 – C5 Waste Management Controls for Residential Flat Buildings (RFB), Australian Standards and Statutory requirements.

In reference to clause 5.2.2.4 of Council's DCP 2014 for RFB, the following Controls and Objectives apply –

- 1) The development must provide a waste bin storage area that is of sufficient size to accommodate all required waste bins associated with the development. This is to be achieved through the provision of a waste storage bin area located within the basement footprint of the development. For larger developments, multiple waste bins storage areas may be required.
 - a) The waste bin area is to be designed in accordance with Section 5.2.1 Siting and Design of Waste Bin Storage Areas for Residential Development.
 - b) Additional storage space for bulky items is to be provided for the development.
 - c) Swept paths demonstrating adequate manoeuvring area are to be provided with the application.

- 2) For developments comprising three or more storeys, the development is to incorporate a waste chute system that:
 - a) The waste chute system will provide a separate chute for both residual and recyclable material.
 - b) Waste Disposal points are to be provided on each residential level of the development located within a high trafficked area for residential use.
 - c) Larger recyclable goods are to be placed in a separate location identified by the strata management for collection.
 - d) The chute is to be designed to minimise noise and fire risk is reduced
 - e) The chute is to be completely enclosed and fire-rated and comply with the BCA.
 - f) The chute is to terminate in a garbage and recycling room and discharge directly into a receptacle.
 - g) The waste chute service room must be located directly under where the chute terminates. The room will need to accommodate the entire fleet of bins allocated to the development.
 - h) A separate bin storage room located in the basement will need to accommodate the entire fleet of bins allocated to the development.
 - i) A site caretaker/manager will be required to transfer all bins from the bin storage room to the collection room located on ground floor.
- 3) Council may consider an alternative solution to the waste chute system for developments comprising three or more storeys if the applicant can demonstrate:
 - a) That the alternative system provides a convenient method for the transfer of waste to a centralised location within the basement/ground floor;
 - b) Provides adequate room to cater for the storage and easy access to all waste bins required for the size of the proposed development; and
 - c) Does not require residents to walk to the ground floor with waste and dispose of the waste within designated bins.
- 4) The Waste Services Room is to be provided so that:
 - a) It is accessible for residents on each residential level of the development. The waste services room will include the access to the residual and recyclable chute with provisions for cardboard storage.
 - b) The maximum travel distance from any dwelling to the waste services room is not to exceed 75m.
 - c) The waste service room must be of adequate size to accommodate the required access to chutes or waste infrastructure assigned to the development
 - d) The room is to be designed to accommodate waste generation rates projected for the development
- 5) On-site collection is required to service the development. Adequate and safe access must be provided for Council's Standard Waste Collection Vehicles and waste collection staff as follows:
 - a) The route must be designed to allow collection vehicles to enter and exit the site in a forward direction with limited manoeuvring and reversing on-site;
 - b) The route of travel (including vehicle manoeuvring areas) for the waste collection point is to satisfy the typical dimensions of heavy rigid vehicle. This also includes adequate vehicle clearance for the vehicle. Australian Standard AS2890.2 Parking Facilities: Off-Street Commercial Vehicle Facilities provides typical dimensions and turning circles.

- c) The route of travel for the waste vehicle is to be adequately paved and of sufficient strength to support the waste collection vehicle.
 - d) The grades of entry and exit ramps must not exceed the capabilities of the waste collection vehicle and are to comply with AS2890.2 Parking Facilities: Off-Street Commercial Vehicle Facilities.
 - e) The waste collection point and parking area for the waste vehicle is to be clearly nominated with dimensions on the site plan. The collection point is to be of sufficient space to accommodate and safely manoeuvre all required waste bins.
 - f) Access to the nominated waste collection point for the development is to be designed to ensure that Council's standard waste vehicle can safely access and manoeuvre within the site. Typical dimensions (and turning circles) for a heavy rigid vehicle are provided within AS 2890.2 Parking Facilities: Off-Street Commercial Vehicle Facilities.
- 6) The on-site collection point is to be clearly nominated on the site plan which accompanies the development application. The collection point is to only temporarily store waste bins so that they can be serviced. The waste bin holding area is to be located fully within the development site. Consideration will be given to multiple waste bin holding areas for larger developments. The collection point is to be designed so that:
- a) It is of sufficient size to accommodate all required waste bins for the development;
 - b) It is located at ground level away from pedestrian entrances of the development and habitable windows (including both the development and adjoining dwellings);
 - c) It is to be clearly separated from car parking bays (on or off street), footpaths and landscaped areas
 - d) The bin-carting route is to ensure that bin transfer complies with the requirements of Work Health and Safety legislation.
 - e) The bin-carting route:
 - is to be direct and as short as possible;
 - is to be solid, concrete and non-slip;
 - is to be paved and be a minimum of 2m wide;
 - is to be free from obstructions and is not required to be carried over any steps;
 - is to be a maximum of 75m in length and a maximum grade of 7%; and
 - For larger bins (660L & 1100L), the maximum length of the route of travel is 10m.
- 7) Where on-site collection is not possible because of topographic or access constraints, and/or restrictive site dimensions, adequate arrangements need to be made for the convenient, safe and direct access between the waste storage room and the collection point. These arrangements need to be discussed at a pre-lodgement meeting with Council.
- 8) For developments where on-site collection is required or where Council collectors are required to enter a site for the purpose of waste collection services, an agreement will be required to be entered into with Council. This agreement is to be entered into with Council giving power and authority to Council to enter the site; and for the purpose of waste services. Council is also to be provided with indemnity against any future claims for damage and loss.
- 9) A separate area should also be provided for the storage and collection of bulky waste (such as old cardboard boxes) and old or discarded furniture/appliances. The sizing of the bulky waste area needs to be capable of holding the bulky waste generated from the development between scheduled pickups. The bulky waste area needs to be located near to the on-site loading bay).

- 10) Council will consider alternate and innovative waste management systems for high density developments which deliver sound town planning and environmental outcomes for the development and broader community. The applicant is encouraged to discuss the innovative solutions with Council's Waste Management Team and during Council's Pre-DA service.

Other Key Legislations and information on Waste Management are to be referred to in the preparation of the development application documentation –

- NSW Waste Avoidance and Resource Recovery Strategy 2007 and Performance Report 2008 - Department of Environment and Climate Change;
- Waste Classification Guidelines (2008) - Department of Environment, Climate Change and Water

Design Compliance Table –

C5 Waste Management DCP 2014 & RFB Waste Management Guidelines

The table below has been prepared as a DCP compliance check in conjunction with the Architectural drawings provided by the client and prepared by IDraft Architects – drawing number 28316, Issue B dated 03/03/2017.

DCP Control/Objective		Compliant/Not Compliant or N/A	Comment
5.1 Waste Management Plans		Applicable	
A Controls			
1a)	WMP for demolition construction of buildings	Compliant	
1b)	WMP change of use of buildings	N/A	
1c)	WMP for Subdivision of Land /or buildings	N/A	
1d)	WMP for demolition construction of buildings	Compliant	
2)	WMP supported by scaled WM drawings		Refer to details on Architectural drawings
3)	WMP required for CDC	N/A	
4)	WMP enables Council/PCA to assess	Compliant	
5a)	WMP details – type & volume of wastes	Compliant	
5b)	WMP details – storage /treatment of waste	Compliant	
5c)	WMP– disposal of non-reusable/recycle	Compliant	
5d)	Ongoing WM	Compliant	
5.2 Development Specific Controls		Applicable	
5.2.1 Sitting and Design of Waste Bin Storage Areas for Residential Development			
2a)	Waste Bin Storage Area Size	Compliant	
2b)	All types of waste must be catered for	Compliant	
2c)	Sufficient space for waste & recycling	Compliant	
2d)	Sufficient space for WM equipment	Compliant	
3)	Waste Bin Storage Area (WBSA) Location - Basement	Non-compliant	WBSA provided at ground level and subject to Council approval
	WBSA Location – Ground Floor	Compliant	
	WBSA Location – Use & Operations not impact amenity on noise and odour	Compliant	
	WBSA Location –for collection (multi-units)	N/A	
4)	Waste Bin Area Layout (WBAL) – free from obstructions	Compliant	
	Aisle space of 1.2m is required to access & manoeuvre	Compliant	
	Bins to be rotated require additional space	Potential	Chute proposed with

		Compliance	Linear carousel - further details to be shown on CC drawings
5a)i	Waste Bin Storage Area Construction (WBSAC) –At least 75mm thick, graded & drained to Sydney Water requirements	Possible compliance	Such details and specifications to be provided on Construction Certificate drawings
5a)ii	finish to a smooth even surface		
5a)iii	walls to be solid impervious material		
5a)iv	ceilings to be smooth, non-absorbent, cleanable		
5a)v	Walls must be finished in a light colour		
5a)vi	Adequate supply of hot & cold water mixed through a mixing valve with hose cock		
5a)vii	Close fit & self-closing door can open within room		
5a)viii	Prevent entry of vermin		
5a)ix	Adequate light and ventilation		
5.2.2 Residential Development Controls		Applicable	
5.2.2.1 Controls applicable to all types of Residential Dev.			
1)	Kitchen of each dwelling be designed with sufficient space...	Possible compliance	Further details and specifications to be provided on Construction Certificate drawings
2a)	Design & location of WSA – complement surroundings	Compliant	
2b)	Have access to cold water supply for cleaning...	Compliant	
2c)	Not be visually prominent from public areas	Compliant	
3a)	Provide an area for composting – location & proximity of dwelling	Possible compliance	Details may be shown on DA plans or CC plans
3b)	The location of the drainage system	Possible compliance	See drainage plans
3c)	Whether the facility is designed appropriately for composting	Possible compliance	Details may be shown on DA plans or CC plans
3d)	Provision of sign posting to prevent non-composting waste being added		
5.2.2.2 Controls applicable to Dwelling Houses & Dual Occs		N/A	
5.2.2.3 Controls applicable to Multi-dwelling Housing		N/A	
5.2.2.4 Controls applicable to Residential Flat Buildings		Applicable	
1)	Waste Bin Storage Area to be sufficient size & located within the basement footprint, Larger developments may require multiple areas	Possible compliance	Located on ground floor – subject to Council approval
1a)	WBSA to be designed as per 5.2.1 – Siting and Design	Possible compliance	See above
1b)	Additional storage space for bulky items	Compliant	
1c)	Swept paths for adequate manoeuvring area		
2)	For developments comprising 3 or more levels - a waste chute system (WCS) is required.	Applicable	
2a)	WCS be provided separate location for residual & recyclable material	Compliant	
2b)	Waste disposal points at each level within high traffic areas	Compliant	
2c)	Larger recycling goods in separate location identified by Strata Management for collection	Possible compliance	TBC confirmed by Strata Management
2d)	WCS to minimise noise and fire risk	Possible compliance	Further details may be shown on DA plans or CC plans
2e)	WCS is completely enclosed and fire-rated, BCA compliant		
2f)	WCS is to terminate in garbage & recycling and discharge in receptacle	Compliant	
2g)	WCS service room be located directly under chute		
2h)	A separate bin storage room in basement to accommodate	Non-compliant	A separate bin storage

	entire fleet		room is provided on ground floor but shared with Waste Chute System
2i)	Caretaker required to transfer bins to collection room located on ground floor	Not Applicable	See control 3 a)-c) below
3)	Alternative WCS for 3 or more storeys – subject to	Applicable	
3a)	That the alt system provides convenient method for transfer of waste to a centralised location	Compliant	
3b)	Provides adequate room to cater for the storage and easy access to all waste bins required for the size of the dev.	Compliant	
3c)	Does not require residents to walk to the ground floor with waste	Compliant	
4)	The Waste Service Room (WSR) is provided so that:	Applicable	
4a)	Accessible for residents on each level to the WSR	Compliant	
4b)	Maximum distance of travel – not exceeding 75m	Compliant	
4c)	WSR must be adequate size to accommodate access to chutes or waste infrastructure	Possible compliance	Clearances and isle widths to be clearly shown in WSR
4d)	WSR design to accommodate waste generation rates for the development	Compliant	
5)	On-site Waste Collection is required to service the development...	Non-compliant	See Council's Waste advice dated 16/02/2017 – On-street loading bay proposed and is less than 10m travel for bin collection subject to Council approval
5a)	Collection vehicles to enter & exit in forward direction...		
5b)	Waste collection point to satisfy typical dimensions of HRV		
5c)	Route is adequately paved		
5d)	Compliant grades for entry and exit		
5e)	Waste collection point and parking area is clearly nominated with dimensions on site plan		
5f)	Safe access & manoeuvring within the site		
6)	On-site collection to be clearly nominated on the plans... and designed so that -	Non-compliant	Subject to 'On-site Waste Collection' arrangements as per Council's preliminary assessment advice dated 16 February 2017 – On-street loading bay proposed and is less than 10m travel for bin collection subject to Council approval
6a)	Sufficient size to accommodate all required waste bins		
6b)	Located at ground level away from pedestrian entrances & windows...		
6c)	Separated from car parking bays(on or off street), footpaths and landscape areas		
6d)	Bin-carting route complies with WHS regulations		
6e)	Is direct and as short as possible		
	Is to be solid concrete & non-slip		
	Minimum 2m wide paved		
	Free from obstructions		
	Maximum 75m in length and max grade 7%		
	For 660l & 1100l bins – max length of travel is 10m.		
7)	Where on-site collection is not possible, other methods to be discussed with Council	Noted	Applicant to discuss with Council
8)	For onsite collection an agreement will be required to be entered into with Council...		Pending on-site collection design & arrangement
9)	A separate area should be provided for bulky waste and located near the on-site loading bay.	Possible compliant	Provided on-street with an indented bay. Subject to Council approval.
10)	Council will consider alt & innovative waste management systems for high density dev & to discuss with Council...	N/A	Standard methods to be implemented at this stage
5.2.3 Mixed Use Development Controls		N/A	
5.2.4 Non-Residential Development Controls		N/A	

5.3 General Controls		
5.3.1 Site Management	Compliant	See below
5.3.2 Selection of Building Materials	Compliant	See below
5.3.3 Designing for Waste Minimisation	Compliant	See below
5.3.4 Sitting and Design of Waste Storage and Collection Areas	Possible Compliant	Subject to the above
5.3.4.1 Access to Waste Storage and/or Collection Areas	Possible Compliant	Subject to the above
5.3.4.2 Design of Waste Storage and/or Collection Areas	Possible Compliant	Subject to the above
5.3.5 Management of Waste Storage and Collection Areas	Compliant	See below
5.4 Hazardous Waste Management	Noted	Applicant to discuss with Council on requirements
5.5 On-site Sewage Management		

3. WASTE MANAGEMENT FOR DEMOLITION WORKS

Based on a review of a survey plan prepared by New South Surveys dated 26/10/2015, the site consists of a number of existing structures –

- Property No.1 – Consists of 1 single storey clad dwelling, a carport, front and rear patios, 2 metal sheds, concrete driveway paved area, large tree within front setback and vegetation.
- Property No.3 – Consists of 1 single storey clad dwelling, a fibro garage, front and rear patios, decking, concrete paved area, vegetation;
- Property No.5 – Consists of 1 single storey fibro dwelling, a carport, front and rear patios, 1 metal shed, concrete paved area, large tree within rear setback and vegetation.
- Property No.7 – Consists of 1 single storey fibro dwelling, a awning/carport, front and rear patios, fibro garage, concrete paved area, number of large trees within the site and vegetation.

This is a crucial stage of the development with the utmost potential for waste minimization, particularly near the Penrith CBD area where there are high levels of redevelopment, relatively high disposal fees and where other quarry materials are located on the periphery.

One of the main objectives (if it is possible) is to reduce waste and to re-use existing building materials or parts therefore, for the proposed use. With vigilant on-site sorting and storage and by staging work programs, it is possible to re-use many materials, either on-site or off. Instead of simply pulling down a building, this waste management plan encourages the practice of recycling on site. This may require a series of colour-coded or clearly labelled bins on-site rather than one size fits all.

Table 3 - Demolition Waste Estimate

Materials On-site		Destination		
Type of Material	Estimation Only - Volume [m ³] or Area [m ²]	Re-Use and Recycling Method		Disposal Method
		On-site	Off-site	Contractor/Land fill/Other
Asbestos	[If found]	N/A	Removal & collection by an Approved Contractor	By an Approved Contractor – Disposal to Landfill Kemps

				Creek
Green Waste – Tree removal, vegetation	2m ³	Recommend Trees to be removed to be chipped onsite for re-use on Landscaping.	All other green waste may be recycled offsite to Aust. Native Landscapes or Similar.	N/A
Bricks, tiles	20 m ³	Recommend cleaning and re-use lime mortar bricks for fill	Recommend concrete mortar bricks recycled or reuse crushed brick for road pavements – i.e Brandown/SUEZ Recycling	N/A
Concrete	100 m ³	Crushed concrete for Sediment & Erosion control temporary access	Brandown/ SUEZ Recycling can manage concrete off-site.	N/A
Timber – treated or untreated Hardwood/Pine/ Other	25 m ³	May use timber for formwork etc. Any excess timber may be chipped for landscaping.	SUEZ Recycling can manage treated or untreated timber off-site.	N/A
Plasterboard	10 m ³	Breakup and remove from site.	Bulky Waste may be managed by Approved Contractor – i.e SUEZ Recycling	N/A
Weatherboard/Cladding	10 m ³	Breakup and remove from site.	Bulky Waste may be managed by Approved Contractor – i.e SUEZ Recycling	N/A
Metals – Aluminium/Zinc/ Other	16 m ³	Nil	Metals may be managed by Approved Contractor – i.e Sell & Parker Recycling Blacktown	N/A
Bathroom – Bath tub, vanity, toilet	5 m ³	Nil	Resale or Recycling Facilities that would accept these items	N/A
Glass – Windows	5 m ³	Nil	Resale or Recycling Facilities that would accept these items	N/A

Note for Client - Details of on-site waste management for demolition should be provided on the plans accompanying the Development Application (location of on-site storage areas/containers, vehicular access points, etc) – It is recommended that this detail be shown on the construction certificate drawings.

Notes for Developer/Builder:

- Details of work area to be used for on-site separation, treatment and storage (including weather protection) must be directed on site by the developer/builder
- Vehicle access to the site and to storage and/or container areas must be directed on site by the developer/builder

- Location of on-site storage space for materials (for re-use) and containers for recycling and disposal must be directed on-site by the developer/builder

4. WASTE MANAGEMENT FOR CONSTRUCTION WORKS

During this phase waste management is just as critical as demolition works as there will still be a large quantity of builders waste during the course of construction. It is recommended that the following measures be considered when looking to save resources by re-use or recycle and minimise waste at the construction works stage:

- Minimising site disturbance, limiting unnecessary excavation;
- Considering measures such as ordering the right quantities of materials and prefabrication of materials where possible;
- Reusing formwork during construction – onsite or during roadwork's on the verge;
- Careful source separation of off-cuts to facilitate re-use, re-sale or efficient recycling; and

It is also recommended that the following details be directed by the developer/builder on site:

- Location of Waste Storage and recycling area(s), garbage and recycling room
- Location of temporary storage space
- Site office, lunch sheds and amenities shed
- Access for vehicles

The allocated waste storage and recycling areas may be flexible in size and layout to cater for future changes during construction. The size can be calculated on the basis of estimated waste generation rates and proposed bin sizes.

Table 4 - Construction Waste Estimate

Materials On-site		Destination		
Type of Material	Estimation Only - Volume [m ³] or Area [m ²]	Re-Use and Recycling Method		Disposal Method
		On-site	Off-site	Contractor/Landfill II/Other
Excavation Material / VENM	8000 m ³	N/A	Removal & collection by an Approved Contractor	By an Approved Contractor – Disposal to Landfill Kemps Creek (nearest)
Green Waste – Tree removal, vegetation	[Covered in Table 3 - demolition estimate]	Recommend Trees to be removed to be chipped onsite for re-use on Landscaping.	All other green waste may be recycled offsite to Aust. Native Landscapes or Similar.	N/A
Bricks, tiles	[Covered in Table 3 - demolition estimate]	Recommend cleaning and re-use lime mortar bricks for fill	Recommend concrete mortar bricks recycled or reuse crushed brick for road pavements – i.e Brandown/SUEZ Recycling	N/A
Concrete	[Covered in Table 3 - demolition estimate]	Crushed concrete for Sediment & Erosion control temporary access	Brandown/ SUEZ Recycling can manage concrete off-site.	N/A
Timber – treated or untreated	3 m ³	May use timber for formwork etc. Any	SUEZ Recycling can manage treated or	N/A

Hardwood/Pine/Other		excess timber may be chipped for landscaping.	untreated timber off-site.	
Metals – Aluminium/Zinc/Other	3 m ³	Nil	Metals may be managed by Approved Contractor – i.e Sell & Parker Recycling Blacktown	N/A
General Builders Waste – wiring, electrical pipes,	5 m ³	Nil	Nil	Local Waste Facility – Kemps Creek or Eastern Creek

Note for Client - Details of on-site waste management for construction should be provided on the plans accompanying the Development Application (location of on-site storage areas/containers, vehicular access points, etc) – It is recommended that this detail be shown on the construction certificate drawings.

5. WASTE MANAGEMENT – ONGOING FOR RESIDENCE

The residential waste plan will be prepared taking into account various options to managing waste based on the number of units proposed for the development and the allocated area/space for the storage room. It is up to the Architect to determine what space is available to accommodate the storage as well and addressing onsite collection.

Table 5 - Waste Generation Rates – Penrith City Council

As per Clause 2.2 of the Residential Flat Building Waste Management Guide - Council's DCP 2014, the following waste generation rates have been calculated through the use of the Australian Standards Waste Generation Guide and Council's Residential Waste audits to accurately determine the generation rates of each collection stream –

Weekly Waste Generation Volumes (L)	240L Bin Allocation	660L Bin Allocation	1100L Bin Allocation
Residual	1 Bin per 2 dwellings	1 Bin per 9 dwellings	1 Bin per 18 dwellings
Recycling	1 Bin per 2 dwellings	1 Bin per 9 dwellings	1 Bin per 18 dwellings

Table 6 - Calculated Waste Generation Based on 50 Units

Weekly Waste Generation Volumes (L)	240L Bin Allocation	660L Bin Allocation	1100L Bin Allocation
Dimension – HLW(mm)	1100x740x600	1400x1260x800	1330x1240x1090
Residual – No. Bins required	25	6	3
Min storage area required for bins =	60m ² for all bins (approx based on bin size, aisle width, rectangular storage room, 0.2m separation)	28m ² for all bins (approx based on bin size, aisle width, rectangular storage room, 0.2m separation)	20 m ² for all bins (approx based on bin size, aisle width, rectangular storage room, 0.2m separation)
Total litres	6000L	3960L	3300L
Recycling – No. Bins required	25	6	3
Min storage area required for bins =	(see above)	(see above)	(see above)
Total litres	6000L	3960L	3300L
Note: All bin allocations are rounded up to the next whole number			

Waste Storage Room

The minimum storage room area required for 6 x 1100L bins is a minimum 20m² as per the table 6 above. The room must meet the criteria as set out in 4.6 of the Waste Management Code for RFB.

Bulky Household Goods Collection Room

The minimum Bulky Household Collection room required for 50 units is a minimum 8m². The room must meet the criteria as set out in 4.7 of the Waste Management Code for RFB.

Inclusion of Dual Waste Chute System

The architectural plans supplied by IDraft shows a proposed chute system. Based on this initiative, the developer will be required to add service bins to the total bin allocation for each unit. Service bins are bins that remain under the chute while the full bins are presented for collection. The number of service bins allocated to each unit **2 service bins are required for every dual chute** the calculation that system implemented in the development

Table 7 - Bin Selection Summary

Based on the proposed RFB type development containing 50 Units, the required capacity and quantity have been summarised respectively in the table below –

Table 7 - Waste Type	Residual			Recycling		
	Quantity	Capacity (L)	Collection Rate (times/wk)	Quantity	Capacity (L)	Collection Rate (times/wk)
Waste Storage Room	3	1100	Twice Weekly	3	1100	Weekly
Service Bins for Dual Chute System	1	1100	Remains in chute & rotate with others	1	1100	Remains in chute & rotates with others

On-going Management of Premises - recommendations

- Interim Waste Storage areas and/or bins and communal waste storage areas and /or bins will be well sign posted to ensure correct usage;
- Cleaning staff/contractors will be employed to transfer wastes and recyclables from the interim storage containers to the communal storage areas and ensure that the storage bins and storage area is kept clean and in good order;
- An information kit will be provided for all tenants addressing their waste and recycling requirements, and details of the location and operation of the waste storage areas;
- Waste Audits are to be conducted annually to determine waste output and to improve waste avoidance and resource recovery practices.
- Strata Managers (If applicable) to ensure the above On-going Management of waste and recycling is adhered to in the bylaws.

6. COLLECTION OF WASTE

The waste generated by this development is to be collected by Council. The current proposal shows a garbage bay room and bulk waste room located at ground level towards the southern side of the building adjacent to the access ramp.

As per Council's Development Control for Waste collection, on-site collection is required to service this type of development. Based on the current design, a heavy rigid vehicle (HRV) is able to enter the site with limited manoeuvring and reversing on-site adjacent to the garbage bin area. The route of travel (including vehicle manoeuvring areas) for the waste collection point satisfies the typical dimensions of heavy rigid vehicle.

The collection areas will need to be reviewed by a traffic consultant to confirm that the HRV can or cannot enter and exit the building in a forward direction. The final number of truck movements will depend on the management of waste contract and Council.

A traffic consultant will need to prepare drawings to confirm the swept paths for waste collection, access and egress, driveway side and height clearances, impact on adjoining driveway ramps, manoeuvring internally, load requirements etc. This information and supporting plans must be provided separately to satisfy Council's requirements.

Alternative Solutions -

If collection of waste on site is not achievable, then the client may need to address the following –

- An improved planning outcome is achieved for the site; and/or
- Site characteristics restrict or limit the development accommodating waste collection vehicles entering and exiting in a forward direction;
- The client must demonstrate that the waste collection vehicles alternative access into the site (if any) to the nominated collection point does not compromise public, resident and contractor safety.
- The development application must be supported by scaled plans illustrating the turning paths and circles required for waste collection vehicles to enter the site in one movement. The plans are to identify any features on site or within the road reserve that may restrict movements.
- Alternative solutions must be to the satisfaction of Councils Waste Management Department.

7. GLOSSARY OF TERMS

The following are standard terms used within this document as specified within Penrith City Council's guidelines for Residential Flat Building – Sept 2016

Term	Definition
Bulk Bins	Large bins which have four swivel wheels so can be moved in any direction.
Collection Point	The nominated point from which waste and recycling is collected by Council's waste service.
Temporary Waste Storage Room	Communal room provided within the basement footprint that stores all required waste and recycling bins. Site cleaners and caretakers can access the area to move bins from this area to the collection point Where a waste chute system is provided an area that enables residents to access bins to dispose of items too big to go down the chute should be provided.
Service Cupboard	Room provided on each residential level that contains the required waste and recycling bins for residents on that level. Where a waste chute system is provided, the room will also include access to the waste chute (waste hopper).
Loading Area	The area provided adjacent or within proximity to the waste bin holding area that enables the waste collection vehicle to park and service the development.
Heavy Rigid Vehicle	Heavy Rigid Vehicle is defined as per Australian Standard 2890.2
Mobile Garbage Bins	Small bins that have two wheels so can only be moved forwards and backwards (not sideways).
Residential Flat Building	A building containing 3 or more dwellings, but does not include an attached dwelling or multi dwelling housing.
Waste Collection Area	The nominated area within the development site where the bins will be carted to (from storage area) and temporally stored for collection.
Waste Chute System	Ventilated, vertical pipes passing through each floor of a multi -storey building with access on each residential level. Resident access to the chute is through a chute hopper contained within a temporary waste storage room.
Waste Chute Room	The room in which the chute terminates and garbage drops from the chute into a bulk bin. The area can store and contain any required volume handling equipment. The waste chute compartment is to be located within or immediately adjacent to the communal waste storage room. No resident access to this area for safety reasons.

8. WASTE MANAGEMENT CHECKLIST

To be completed by the client prior to lodging the Development Application

	Yes	No
Is the Waste Management Plan Completed?		
Are facilities available for the separation of wastes and recyclables?		
Has the area been allocated for the storage and collection of waste?		
Are the waste storage and collection areas located so as to provide easy access for both occupants and collection services?		
Do your plans show details of on-site storage space for construction materials, waste materials and recyclables?		
Is the project planned to maximise the reuse of materials?		
Have arrangements been made for the ongoing management of waste?		

9. WASTE MANAGEMENT CHECKLIST FOR SITE WORKS

To be completed by the builder/applicant prior to Construction -

	Yes	No
Is the Waste Management Plan acknowledged on-site?		
Are waste responsibilities clarified for all personnel and sub-contractors?		
Are works scheduled to minimise time between delivery and installation?		
Is the site planned and managed to minimise waste?		
Have you arranged for the sale of recycled and salvaged materials?		
Are waste bins covered, sign-posted and properly used?		
Is the site signage in place indicating environmental waste commitment?		

10.REPORT LIMITATIONS

The intention of this report is to document a Waste Management Plan (WMP) as part of a development application with Penrith City Council and is prepared by MultiPro Consultants (MC) with the following notes, restrictions and conditions for the client –

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