



Waste Management Plan

Faculty of Arts & Social Sciences
(FASS) Building

May 2016

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1 Introduction

This Waste Management Plan (WMP) for SSD 7081 details the compliance of the University of Sydney's Faculty of Arts and Social Sciences (FASS) Building development, and redevelopment of the adjacent RD Watt building, with the Campus and Infrastructure Services (CIS) *Building and Architecture Standard*, NSW Department of Planning and Environment requirements, and general best practice for managing operational waste and recycling.

The WMP provides calculations of projected operational general waste and recycling, based on office, teaching, and lounge space floor areas and expected future occupancy and usage of both buildings, and recommendations for suitable equipment and storage and handling practices. Marked up building plans showing storage areas and movement pathways are also provided.

We would like to thank all those who contributed to the development of this report.

2 Waste & Recycling Volume Calculations

Expected quantities of general waste and recycling have been estimated based on the NLA of each building's functional areas: based on the information provided to us, these are as follows:

Table 1: FASS	NLA m²
Office	2406
Teaching	995
Lounge Areas (Students + Staff)	575
Total	3976

Table 2: RD Watt	NLA m²
Office	225
Teaching	200
Lounge Areas (Students + Staff)	41
Total	466

The following generation rates are based on Waste Audit & Consultancy Services' operational data for similar facilities and are based on Monday-Friday operation; the waste generation rates detailed on p.25 of the *Council of the City of Sydney Policy for Waste Minimisation in New Developments* have also been consulted for reference.

Table 3: Waste & Recycling Generation Rates (Litres/100 m²/Day)				
Functional Area	Paper/Cardboard Recycling	Commingle Recycling	Organic Recycling	General Waste
Office	8.0	1.5	0.5	10.0
Function Rooms	4.0	0.8	0.2	5.0
Lounge Areas (Students + Staff)	2.5	0.8	1.5	5.0

Using the NLA figures from Tables 1 and 2 and the generation rates in Table 3, where applicable, expected volumes of waste and recycling from each building are as follows:

Table 4: Waste & Recycling Generation (Litres/Day) – FASS Building					
Functional Area	Paper/CB	Commingle	Organics	General Waste	Total
Office	192.5	36.1	12.0	240.6	481.2
Teaching	39.8	8.0	2.0	49.8	99.5
Lounge Areas (Students + Staff)	14.4	4.6	8.6	28.8	56.4
TOTAL	246.7	48.7	22.6	319.1	637.1

Table 5: Waste & Recycling Generation (Litres/Day) – RD Watt Building					
Functional Area	Paper/CB	Commingled	Organics	General Waste	Total
Office	18.0	3.4	1.1	22.5	45.0
Teaching	8.0	1.6	0.4	10.0	20.0
Lounge Areas (Students + Staff)	1.4	0.3	0.2	2.1	4.0
TOTAL	27.4	5.3	1.7	34.6	69.0

Based on the above volumes, the following tables show projected weekly volumes for each waste and recycling stream, as well as details of equipment, collection frequencies, and required floor space for equipment within the storage room.

Calculations of required floor space are based on standard bin dimensions as set out in the The Department of Environment and Climate Change NSW (DECC) *Better Practice Guide for Waste Management in Multi-Unit Dwellings* 2008, p. 111 and are premised on 3 x weekly collection by the University's waste contractor and use of 240-litre and 120-litre MGBs (mobile garbage bins).

Table 6: Equipment & Storage Requirements – FASS Building					
Material Stream	Bin Size Litres	No. Bins	Collections/ Week	Litres/ Week	Storage Area Required* m²
Paper/Cardboard Recycling	240	2	3	1233.3	1.11
Commingled Recycling	120	2	3	243.3	0.71
Organics Recycling	120	2	3	113.2	0.71
General Waste	240	3	3	1595.5	1.66
Oil Recycling	Not required as no commercial kitchen in building				
Total Storage Area Required					4.2 m²
Total Storage Area Allocated					10 m²

Table 7: Equipment & Storage Requirements – RD Watt Building					
Material Stream	Bin Size Litres	No. Bins	Collections/ Week	Litres/ Week	Storage Area Required* m ²
Paper/Cardboard Recycling	240	1	3	137.2	0.55
Commingled Recycling	120	1	3	26.5	0.35
Organics Recycling	120	1	3	8.7	0.35
General Waste	240	1	3	34.6	0.55
Oil Recycling	Not required as no commercial kitchen in building				
Bin Wash Area					1.3
Total Storage Area Required					3.1 m ²
Total Storage Area Allocated					35 m ²

Table 8: Equipment & Storage Requirements – TOTAL					
Material Stream	Bin Size Litres	No. Bins	Collections/ Week	Litres/ Week	Storage Area Required* m ²
Paper/Cardboard Recycling	240	3	3	1370.5	1.66
Commingled Recycling	120	3	3	269.8	1.06
Organics Recycling	120	3	3	121.9	1.06
General Waste	240	4	3	353.7	2.22
Oil Recycling	Not required as no commercial kitchen in building				
Bin Wash Area					1.3
Total Storage Area Required					7.3 m ²
Total Storage Area Allocated (FASS + RD Watt)					45 m ²

* 30% has been added to allow for space between bins in the storage rooms

3 Waste Management & Recycling Systems

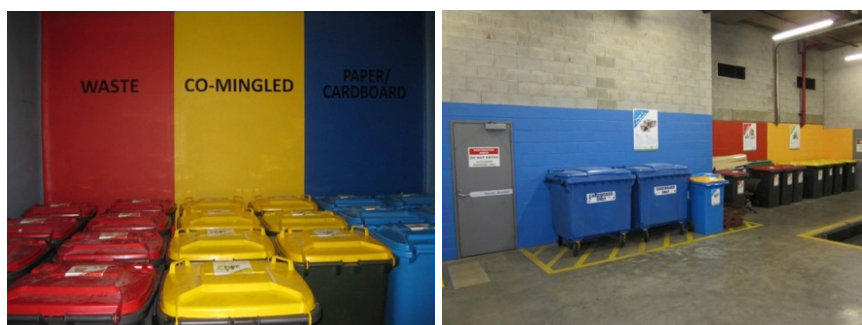
The waste and recycling systems to be implemented will comply with the University's requirements, which are detailed in the *CIS Building and Architecture Standard*, Sections 6.3.1 *Facility Centralised Waste Recycling Stations* and 6.3.2 *Facility Waste Storage And Collection*.

Cleaners will bring office waste and recycling to the basement storage room where the materials will be deposited in the designated bins.

All bins should be colour-coded to conform to the Australian standard as shown below, or otherwise an alternative scheme consistent with the University's existing systems.

Material Stream	Bin Body Colour	Lid Colour
Paper Recycling	Blue	Blue
Cardboard Recycling	Green	Blue
Food Organics	Burgundy	Burgundy
Commingled Recycling	Green	Yellow
Used Cooking Oil Recycling	NA	NA
General Waste	Green	Red

Storage areas should also be similarly colour-coded as shown in the examples below:



4 Storage Area Requirements

Office general waste and recycling will be stored in the following areas:

FASS Building: Level 1 Bin Storage Room

RD Watt: Level 1 Waste Store

There will be a 1.3 square metre bin wash facility in the Waste Store in RD Watt – all bin washing will be done in this area. No oil recycling facility will be required, as there will be no commercial kitchen within the development.

The *CIS Building and Architecture Standard*, Section 6.3.2 *Facility Waste Storage And Collection* specifies the following:

Designers must incorporate sufficient centralised segregated waste recycling and general waste collection storage facilities in new building designs or major refurbishments so they can be readily accessed by building users.

Waste storage rooms must be provided with appropriate impervious floor and wall finishes and must be provided with wash-down facilities including hot and cold water supplies and wastes. Provision must be made for a main waste recycling and general waste collection storage space sized to safely accommodate expected daily maximum quantities of waste and recyclables.

The main waste recycling and general waste collection storage room must include bin cleaning facilities and compactor as appropriate. Adequate and safe vehicle access, entry and egress provisions must be provided for movement and manoeuvring of heavy waste collection vehicles.

In addition we suggest the following best practice measures for the waste rooms to minimise odours, deter vermin, protect surrounding areas, and make each a user-friendly and safe area:

- Floor to be sealed with a two pack epoxy
- Walls and floor surfaces are flat and even
- All corners covered and sealed to 100mm up to eliminate build-up of dirt
- A bin wash facility with hose cock with tap height of 1.6m, and drainage to sewer
- All walls painted with light colour and washable paint
- Electric outlets to be installed 1700mm above floor levels
- The room must be mechanically ventilated
- Waste rooms must be well lit (sensor lighting recommended), with switch installed at 1.6m
- All personnel doors are hinged and self-closing
- Conformity with the Building Code of Australia, Australian Standards and local laws
- (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

5 Bin Movements

5.1 FASS Building

Cleaning staff will collect waste and recycling from each floor nightly and bring the materials to the Level 1 Bin Storage Room, where there will be dedicated bins for each stream. Once these bins are full, cleaners will take them to Level 2 (ground level) using the atrium lift, then wheel the bins through the lobby and across the courtyard to the main Waste Store on Level 1 of the RD Watt Building.

From here, cleaners will wheel the bins down the eastern of the two access pathways to the collection point on Science Road, and present them for collection at kerbside (see Section 5.2 for remaining details of bin presentation and collection processes).

5.2 RD Watt Building

Cleaning staff will collect waste and recycling from each floor nightly and bring the materials to the Level 1 Waste Store, where there will be dedicated bins for each stream, including space for all waste and recycling from the FASS Building.

Removal of waste and recycling will be aligned with the University's existing collection timetable so that bins are put out as close to the collection time as possible. It is our understanding that the current collection schedule is 3 x weekly, Mon-Wed-Fri. All bins should be put out for collection at the close of business on Fridays to avoid storage of waste within the buildings over the weekend.

Cleaning staff will also have to bring the bins back to each building as soon as possible following collection, and return them in their correct configuration in each of the storage rooms. These staff will also be responsible for washing bins as required. We suggest that this be done on a weekly basis, to prevent buildup of odours and possible infestations.

Marked up building plans showing movement pathways are provided in Section 7.

6 Compliance Conditions

The table below details compliance with the requirements of the NSW Department of Planning and Environment for waste management planning for developments, which state that a Waste Management Plan containing the following elements is to be submitted to the certifying authority before a Construction Certificate can be issued:

Ref.	Requirement	Compliance Statement
C22a	The amount of demolition, excavation, and construction wastes likely to be generated and how these materials are to be sorted and dealt with	Please refer to separate Preliminary Construction and Traffic Management Plan
C22b	The design and construction of the internal roads, driveways, turning circles, and other infrastructure required for waste services in the development is in accordance with the stated document	Not applicable as regards internal roads etc. as waste presentation and collection will take place at kerbside
C22c	All waste generated by the approved development (including residents, businesses, and any other activity on the site) is to be collected by a private waste contractor	Will comply
C22d	Bulky waste items are to be collected by a private waste contractor	Will comply
C22e	An on-site caretaker to manage the storage and removal of waste generated by the approved development	Will comply
C22f	Retention of demolition, excavation, and construction waste/recycling dockets on site to confirm which authorized waste/recycling facilities received the material for recycling and disposal	Please refer to separate Preliminary Construction and Traffic Management Plan

7 Marked Up Building Plans

The detailed drawings below have been marked up from the following DA drawings:

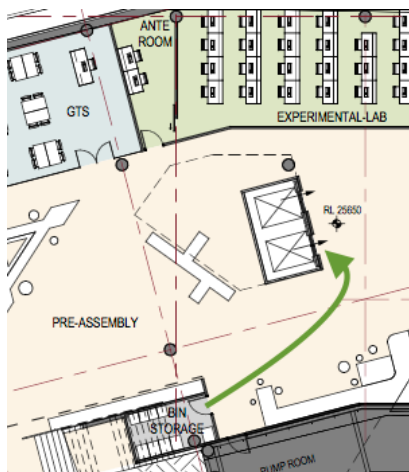
DA1010-LEVEL 1 PLAN [A]

DA1020-LEVEL 2 PLAN [A]

These show waste storage areas in each building, movement pathways from the FASS Building to the RD Watt Building, and movement of bins to the collection point on Science Road.

FASS Building

The green arrow indicates the movement pathway for bins from the Level 1 Bin Storage Room to the atrium lift, a distance of around 10 metres.



RD Watt

Green arrows show the movement pathway for bins from the FASS Building to the RD Watt Waste Store on Level 1; red arrows indicate the pathway for waste and recycling from the café to the kerbside collection point on Science Road.



This report has been prepared by:

Peter Hosking

Director, Waste Audit & Consultancy Services (Aust.) Pty Ltd
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