APPENDIX 22 : WASTE MANAGEMENT PLAN

FJMT

6-16 Atchison Street Redevelopment

Operational Waste Management Plan

ARUP

FJMT

6-16 Atchison Street Redevelopment

Operational Waste Management Plan

July 2010

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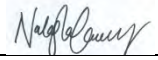
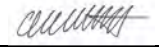
		Signature			
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Contents

Appendices

1 Introduction

1.1 Background

Architects Francis-Jones Morehen Thorp (FJMT) have been contracted to design the mixed use redevelopment of 6-16 Atchison Street at St Leonards on the lower north shore of Sydney. As part of the development application for the project, FJMT have contracted Arup to provide an Operational Waste Management Plan for the proposed development.

1.1 Purpose

This Operational Waste Management Plan (OWMP) will accompany a development application under Part 3A of the Environmental Planning and Assessment Act, 1979 for the development of 6-16 Atchison Street in St Leonards, Sydney.

The OWMP identifies waste sources during operation and proposes measures to manage waste in a way that satisfies all legislative requirements.

In summary, the key purposes of the OWMP are to:

- Address the operational waste management requirements for the proposal for approval under Part 3A of the EP&A Act;
- Provide guidance for the project in waste minimisation from operational activities;
- Nominate effective waste separation, recycling and re-use measures; and
- Develop management requirements operation.

1.2 Assumptions and limitations

The principles outlined in this OWMP will be incorporated into the building design and submitted with the Development Application for the project.

All figures and calculations are based on the building layout as provided to Arup on 27/06/10. Waste generation estimations have been made using industry estimates and devised from the waste estimation tables contained within City of Sydney's Policy for Waste Minimisation in New Developments 2005 (CoS Waste Policy).

All waste facilities and equipment should be designed and constructed in accordance with Section 19 (Waste Management) of the North Sydney DCP (2002) and in accordance with the BCA, and relevant Australian Standards.

2 Project Description

2.1 6-16 Atchison Street, St Leonards

The project is a 34 storey mixed use residential development at 6-16 Atchison St, St Leonards, comprising;

- 228 residential apartments;
- 38 hotel rooms/serviced apartments; and
- A cafe / restaurant on the ground level.

The proposed project is located approximately 200 metres to the east of the St Leonards railway station in the lower north shore of Sydney, in the North Sydney local government area.

3 Legislative Requirements

3.1 NSW State Legislation

The Protection of the Environment Operations Act, 1997

The Protection of the Environment Operations Act 1997 covers the requirements for waste generators in terms of storage and correct disposal of waste and establishes the waste generator as having responsibility for the correct management of waste, including final disposal.

Waste Avoidance and Resource Recovery Act 2001

The object of the Waste Avoidance and Resource Recovery Act 2001 is to encourage the most efficient use of resources, to reduce environmental harm, and to provide for the continual reduction in waste generation in line with the principles of ecologically sustainable development (ESD).

This Waste Management Plan relates to a new development in NSW and is therefore written with reference to the NSW Waste Avoidance and Resource Recovery Strategy 2003, made under the Act.

The following hierarchy for managing waste, from most desirable to least desirable, meets the objects of the Act:

- Avoid unnecessary resource consumption;
- Recover resources (including reuse, reprocessing, recycling and energy recovery); and
- Dispose (as a last resort).

The NSW Waste Reduction and Purchasing Policy (WRAPP)

The NSW Waste Reduction and Purchasing Policy (WRAPP) requires all state government agencies and state owned corporations to develop and implement a WRAPP plan to reduce waste in four scheduled areas:

- Paper products;
- Office equipment and components;
- Vegetation material; and
- Construction and demolition materials.

The WRAPP is not directly applicable to the project, but should be used as a suitable guiding document for waste initiatives.

3.2 North Sydney Development Control Plan (DCP) 2002

Section 19 of the North Sydney DCP is the applicable local planning guideline in regards to waste management in new developments in the North Sydney local government area. This Waste Policy is the guiding document for many of the waste initiatives and requirements for the Atchison Street development.

Appendix B of this OWMP includes the Waste Management Plan Form from the North Sydney DCP which must be completed and included within the development application for the project.

3.3 Other documents

City of Sydney Council Policy for Waste Minimisation in New Developments 2005

The Council of the City of Sydney Policy for Waste Minimisation in New Developments 2005 (CoS Waste Policy) supports the Department of Environment, Climate Change and Water's (DECCW) NSW Waste Avoidance and Resource Recovery Strategy 2003. This policy is not

applicable to St Leonards and the Atchison Street project, but it is a useful reference and has been used in this OWMP for the purpose of waste estimation.

4 Operational Waste

4.1 Waste estimation

Operational waste volumes for 6-16 Atchison Street have been estimated in order to determine the waste storage area and waste storage bins which will be required. These waste storage areas and bins have been allowed for in the design of the basement, the locations of which are shown in Appendix A.

All waste estimates are based on the waste generation rates for residential, retail and hotel developments as provided in the City of Sydney (CoS) Waste Policy 2005. The waste storage area required is calculated based on the bin sizes provided in the CoS Waste Policy.

CoS Bin Size

Bin Capacity (L)	Plan Area Bin (m^2)
50	0.26
120	0.27
240	0.43

Note that the North Sydney Council supplies only 56L, 120L and 240L bin sizes to residential buildings so these bin sizes have been used for the purpose of this OWMP. The 240L bins are the obvious choice for use in the basement and calculations based on 240L bins have been used in sizing of waste storage rooms. The use of a private contractor does however allow larger sized bins to be used if the use of 240L bins is deemed to be undesirable by the contractor, or by building management. Larger bin sizes may be more effective in terms of floor space area to volume ratio.

The breakdown of the Gross Floor Area (GFA) for 6-16 Atchison Street is presented in the table below. These estimates have been used for the waste calculations presented in this OWMP.

Floor areas

Description	GFA (m^2)	No units / rooms	Waste generation rate source
Residential	-	228 units	CoS Waste Policy generation rate for residential
Retail	200	-	CoS Waste Policy generation rates for restaurant
Hotel	-	38 rooms	CoS Waste Policy generation rate for hotel

Waste estimation for the project is described in the tables below. All estimates are based on the applicable waste generation rates in the CoS Waste Policy. Waste generation is calculated from Gross Floor Area (GFA) for retail, the number of units for residential and the number of beds for the hotel (assumed to be twice the number of rooms).

General Waste Estimation

Description	General Waste Generation Rate		General Waste (kg/day)
Residential	1.2	kg /unit /day	274
Retail	10	L/1.5m^2/day	175
Hotel	5	L/bed/day	50
Total			**498**

Key assumptions for general waste generation;

- The cafe / restaurant generates waste typical to a restaurant, with minimal recyclables. The GFA of the cafe includes approx 90m^2 of outdoor seating area
- The hotel /serviced apartments generate waste at a rate typical for a hotel
- The hotel includes no bars/restaurant/cafe
- It is assumed that the number of beds in the hotel is double the number of rooms

Recyclables Waste Estimation

Description	Recyclables Generation Rate		Recyclables (kg/day)
Residential	0.5	kg /unit /day	114
Retail	2	L/1.5m^2/day	35
Hotel	0	L/bed/day	0
Total			**149**

Key assumptions for recyclables generation;

- The cafe / restaurant generates waste typical to a restaurant, with minimal recyclables. The GFA of the cafe includes approx 90m^2 of outdoor seating area
- Recyclables from the hotel are negligible. Waste strategies during operation of the hotel should aim to divert some of the general waste stream towards recycling
- A small amount of green (vegetation) waste is likely to be generated by garden and outdoor areas of the development. Green waste bins should be clearly marked and stored in the basement for use when required.

4.2 Waste storage

The North Sydney DCP 2002 (Section 19.3) gives guidance on requirements for building design, including waste storage;

a. Design buildings to encourage waste minimisation (source separation, reuse and recycling).

i. Provide appropriate space on each property for temporary storage of recyclables, garbage and compost (see below)

ii. Ensure space is easily accessible from each part of the building and from the collection point.

iii. Include adequate access and manoeuvreing space, at least an area equivalent to the combined footprint of the bins.

iv. Provide administrative arrangements for ongoing waste management, including signs.

v. Locate and design waste storage and recycling areas to complement the streetscape.

The above requirements have been met by the development, with recyclables and general waste to be stored in separate areas to ensure waste streams are not inadvertently mixed.

The waste storage areas for both general waste and recyclables will be provided in the Basement Loading Dock Level 1. An annotated plan of this basement level including the proposed waste storage areas, the location of the waste chute, loading dock and the bin wash is given as Appendix A to this OWMP.

The space allocation that has been made in the basement level is based on the waste generation figures presented in Section 6.2 and the associated bin requirements presented below. General household clean up collection occurs by appointment with North Sydney Council, as such no allowance has been made in this OWMP for this waste stream.

4.2.1 Key assumptions

Note that;

- The waste storage area figures are based on collection of waste and recyclables from the basement 3 times a week by a private contractor. A scenario of 6 times a week collection is also provided;
- A waste compactor is assumed to be used on all general waste and is operational at a compaction ratio of 2:1;
- The use of 240L bins is assumed to be the default option for the basement. Use of 56L and 120L bins in the waste storage areas on each of the floors of the building (used to temporarily store recyclables before being moved to the basement) may be preferable to 240L bins;
- The waste chute is to be constructed so that it discharges directly into the waste compactor carousel, minimising the requirement for waste handling.

4.2.2 Waste storage calculations

The waste storage calculations for the basement level storage areas are given below for each of the residential, retail and hotel uses, and in a combined total.

Residential (3 times a week collection with 2:1 compaction on general waste)

Bin Capacity Options (L)	N° bins General Waste	N° bins Recyclables	Plan Area Bin (m^2)	Total Plan Area General Waste (m^2)	Total Plan Area Recyclables (m^2)
56	44	37	0.26	11.44	9.6
120	21	17	0.27	5.67	4.6
240	11	9	0.43	4.73	3.9

The expected minimum space requirement for the residential component is:

- General waste – 11 x 240L bins
- Recyclables – 9 x 240L bins

Using this combination with a required plan area of 8.63m^2 would require waste storage areas to have at least twice this amount of floor area (e.g. 17.5m^2). This is to allow for access to the waste room and movement of bins, cleaning etc.

Retail (3 times a week collection with 2:1 compaction on general waste)

Bin Capacity Options (L)	N° bins General Waste	N° bins Recyclables	Plan Area Bin (m^2)	Total Plan Area General Waste (m^2)	Total Plan Area Recyclables (m^2)
56	14	12	0.26	3.64	6.8
120	7	6	0.27	1.89	3.5
240	4	3	0.43	1.72	3.0

The expected minimum space requirement for the retail component is;

- General waste – 4 x 240L bins
- Recyclables – 3 x 240L bins

Using this combination with a required plan area of 4.72m^2 would require waste storage areas to have at least twice this amount of floor area (e.g. 9.5m^2). This is to allow for access to the waste room and movement of bins, cleaning etc.

Hotel (3 times a week collection with 2:1 compaction on general waste)

Bin Capacity Options (L)	N° bins General Waste	N° bins Recyclables	Plan Area Bin (m^2)	Total Plan Area General Waste (m^2)	Total Plan Area Recyclables (m^2)
56	8	0	0.26	2.1	0.0
120	4	0	0.27	1.1	0.0
240	2	0	0.43	0.9	0.0

The expected minimum space requirement for the hotel is;

- General waste – 2 x 240L bins
- Recyclables – 0 x 240L bins

Using this combination with a required plan area of 1m^2 would require waste storage areas to have at least twice this amount of floor area (e.g. 2m^2).

Total development (3 times a week collection with 2:1 compaction on general waste)

Bin Capacity Options (L)	N° bins General Waste	N° bins Recyclables	Plan Area Bin (m^2)	Total Plan Area General Waste (m^2)	Total Plan Area Recyclables (m^2)
56	66	49	0.26	17.2	12.8
120	32	23	0.27	8.6	6.3
240	17	12	0.43	7.3	5.2

The expected minimum space requirement for the total development is;

- **General waste – 17 x 240L bins**
- **Recyclables – 12 x 240L bins**

Using this combination with a required plan area of 12.5m^2 would require waste storage areas to have at least twice this amount of floor area (e.g. 25m^2). This is to allow for access to the waste room and movement of bins, cleaning etc.

The amount of space made available for waste storage in the basement plan (see Appendix A) is approximately 21.3m^2 for recylcables and 28m^2 for general waste (49.3m^2 in total) which is above the minimum requirement of 25m^2.

For comparison an option of having waste collected 6 times a week has been modelled.

Total development (6 times a week collection with 2:1 compaction on general waste)

Bin Capacity Options (L)	N° bins General Waste	N° bins Recyclables	Plan Area Bin (m^2)	Total Plan Area General Waste (m^2)	Total Plan Area Recyclables (m^2)
56	40	25	0.26	10.4	6.6
120	20	12	0.27	5.4	3.3
240	11	7	0.43	4.7	3.0

Collection from the basement 6 times a week gives a reduction in the number of bins required (18 compared to 29) and a reduction in floor space needed for storage (15.4m^2 compared to 25m^2).

Each of the options (collection 6 times a week or 3 times a week) are feasible as the waste storage areas provided in the basement (see Appendix A) are adequately large (being approximately 21.3m^2 for recyclables and 28m^2 for general waste).

4.3 Waste management requirements

4.3.1 Residential waste management

The following is likely to be adopted for residential waste management:

- General waste will be stored in a dedicated waste storage area in the basement;
- General waste will travel to the basement level waste compactor carousel via a waste chute;
- Recyclables will be stored in a dedicated recyclables waste storage area in the basement;
- Recyclables will need to be brought to the basement level in bins by building management. Bins will be transported via the 3 proposed residential lifts and then wheeled to the recyclables storage area;
- An adequate waste storage area for recycling bins is proposed on each residential floor. These areas are for short term storage of recyclables before transport to the basement level by building management;
- Waste collection is assumed to be by private contractor occurring not less than once every 3 days.

4.3.2 Retail waste management

The following is likely to be adopted for retail waste management:

- General waste will be stored in a dedicated waste storage area in the basement;

- Recyclables will be stored in a dedicated recyclables waste storage area in the basement.

4.3.3 Hotel waste management

The following is likely to be adopted for hotel waste management:

- General waste will be stored in a dedicated waste storage area in the basement;
- Any recycling waste generated will be transported to the basement via the 2 proposed hotel lifts and then wheeled to the waste storage area/s;
- Waste collection is assumed to be by private contractor.

4.3.4 Waste management in general

The following measures outline the general responsibilities associated with waste management for the Atchison Street development;

- The responsibility for cleaning the waste storage area will be on the building manager;
- Removal of waste to the waste storage rooms is the responsibility of building management;
- A multi-bin carousel compactor is proposed for use in the basement for general waste. The carousel can contain up to 8x240L bins and will need to be maintained by building management staff. The floor space required for a carousel compactor is approximately 3m x 3m. Compaction rates are assumed at 2:1;
- The waste chute is to be constructed so that it discharges directly into the waste compactor carousel. This minimises the requirement for waste handling, but building management will still need to regularly change over bins in the compactor and ensure the waste chute is operating correctly;
- Recyclables are to be moved to the basement level via the lifts;
- Labelling of the bins will be the responsibility of the building manager. This includes adequate signage identifying the waste and recycling area, and instructions outlining how to use the waste management system and what materials are acceptable for recycling;
- Transfer of bins from the storage area to the collection truck will be carried out by waste collection contractors. After emptying the bins the contractors will return them immediately to the waste storage room within the premises;
- If truck access is limited, loading dock areas have provision for some bins to be moved here by building management (for a short period) prior to collection by waste contractors; and
- The final allocation of responsibilities and collection regime will be subject to design development.

4.4 Sustainable consumption and waste minimisation

Education plays a critical role in achieving the awareness and participation in responsible waste practices that underpins any successful waste management program. This can involve tailor made education and awareness raising programs targeted at the site's occupants including residents, retail tenants, building managers, hotel operators and visitors and tourists.

Site waste management services will be provided to help in the implementation of waste reduction strategies and in implementation of best practice waste management approaches.

Site-wide waste monitoring and information systems will be used to collect and disseminate information on quantities of waste generated, to provide the information needed to drive continuous improvement in waste reduction.

Site-wide procurement strategies should be established to assist tenants in selecting products which will generate minimal amounts of waste as well as promoting those which can be recycled at the end of their life, or are biodegradable and compostable.

5 Conclusion

The purpose of this Operational Waste Management Plan is to inform and accompany the Development Application for the 6-16 Atchison Street redevelopment under Part 3A of the Environmental Planning and Assessment Act (EP&A Act).

The Operational Waste Management Plan concludes that waste management practices can be implemented under the proposed design, and that adequate storage and handling facilities for the project waste streams from the development are catered for within the central basement facility.

Appendix A

Basement plan

fjmt
francis-jones morehen thorp

Basement Loading Dock B1

Proposed Mixed Use Redevelopment - 6-16 Atchison St, St Leonards

1:200 @ A3

JUNE 2010

PA-100-16

Appendix B

North Sydney DCP Waste Management Plan Form

APPLICATION FORM

Waste Management Plan

1. LAND USE OR ACTIVITY PROPOSED

PROPERTY DETAILS

Unit No:_____ House No:_____ Street: _____

Suburb:_____ Lot + DP/SP:_____

Owner: _____

APPLICANT'S DETAILS

Name:_____

Postal Address: _____ DX:_____

Suburb & Postcode:_____

Phone No: _____

BUILDINGS AND OTHER STRUCTURES CURRENTLY ON SITE

BRIEF DESCRIPTION OF PROPOSAL

The details provided on this form relate to the management of waste for this project.

Signature of Applicant _____ Date _____

PRIVACY STATEMENT

The personal information requested on this form will only be used to fulfil the purpose for which it is being collected as described on this form. The supply of information by you is voluntary, but if you cannot, or do not wish to, provide the information sought, we may not be able to process your application. Council is to be regarded as the agency that holds the information and will endeavour to ensure that this information remains accurate and up-to-date. You may make an application for access or amendment to this information held by Council. This application form is accessible to the public upon written application, subject to Council's Privacy Management Plan, Section 12 of the Local Government Act 1993 and the Freedom of Information Act 1989.

I have read and understand the Privacy Statement

Signed: ..... Date: .....

2. DETAILS OF WASTE MANAGEMENT - DEMOLITION PHASE

MATERIALS ON SITE			DESTINATION		
Type of materials	**Estimated**		**Reuse and Recycling**	**Disposal**	
	Vol. (m3)	**Wt. (t)**	**ON-SITE Specify proposed reuse or on-site recycling methods**	**OFF -SITE Specify contractor and recycling outlet**	**Specify contractor and landfill site**

PLEASE NOTE - Ensure that all details are in the correct columns

3. DETAILS OF WASTE MANAGEMENT - CONSTRUCTION PHASE

MATERIALS ON SITE			DESTINATION		
Type of materials	**Estimated**		**Reuse and Recycling**	**Disposal**	
	Vol. (m3)	**Wt. (t)**	**ON-SITE Specify proposed reuse or on-site recycling methods**	**OFF -SITE Specify contractor and recycling outlet**	**Specify contractor and landfill site**

PLEASE NOTE - Ensure that all details are in the correct columns

4. ON-GOING MANAGEMENT OF WASTE

TYPE OF WASTE TO BE GENERATED	EXPECTED VOL. PER WEEK	PROPOSED ON-SITE STORAGE AND TREATMENT FACILITIES	DESTINATION
Please specify e.g. food waste, glass, paper, metal, off cuts etc	**Litres or m3**	**e.g. waste storage and recycling area, garbage chute, on-site composting compaction equipment**	**Recycling Disposal Specify contractor**

PLEASE NOTE - Ensure that all details are in the correct columns

5. ONGOING MANAGEMENT OF WASTE

Describe how you intend to ensure ongoing management of waste on-site (.e.g. lease conditions, caretaker/manager on-site).