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WASTE MANAGEMENT PLAN

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DWYERS & OXFORD TAVERN REDEVELOPMENT

CNR CORRIMAL & CROWN STREETS, WOLLONGONG

CONCEPT PLAN

PREPARED FOR BELMORGAN PROPERTY DEVELOPMENT
FOR SUBMISSION TO DEPARTMENT OF PLANNING

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1.0 INTRODUCTION

The waste management plan to follow pertains to the Dwyers & Oxford Tavern redevelopment located at the corner of Corrimal Street & Crown Street, Wollongong. This waste management plan is an operational waste management plan and will address the operational phases of the development. A Construction Waste Management Plan will need to be prepared by the contractor engaged for the construction stage of the development.

The plan outlines measures to achieve the following purposes:

- Avoid the generation of unnecessary waste;
- Minimising the quantities of wastes generated ending up as landfill;
- Recovering, reusing and recycling waste generated on site where possible;
- Compliance with any codes and policies that may apply to the development.

For the purpose of this report the proposed development will consist of four (4) primary sections as follows:

- **Residential** – 55 residential apartments located in the Oxford Tavern site over eleven (11) levels – Levels 4 to 14.
- **Retail** – retail tenancies consisting of specialty retail stores, supermarkets, taverns, cinemas and mini-major tenancies located within both the Dwyers & Oxford Tavern sites with a total net lettable area of 28,688m^2.
- **Hotel** – a hotel within the Dwyers site with a total 200 rooms and a proposed restaurant.
- **Commercial** – commercial office tenancies within the Oxford Tavern site with a total net lettable area of 12,480m^2.

Each section of this development has been examined individually within this report; however, the waste management process must be effectively coordinated between all sections for the system to work.

All figures and calculations are based on room numbers as advised by our client and shown on architectural drawings. Calculations have been made using typical waste generation calculation information and industry standards.

All waste facilities and equipment are to be designed and constructed to be in compliance with Wollongong Council DCP Codes, BCA, Australian Standards and Statutory Requirements.

2.0 GENERATED WASTE VOLUMES

This assessment of waste volumes is an estimate only and will be influenced by the developments management and occupant's attitude to waste disposal and recycling We have based our calculations on a seven- (7) day operating week. Figures could be affected, however, by apartment occupancy rates.

2.1 Residential Apartments – Oxford Tavern

Using waste generation rates provided by Wollongong City Council, the total general waste generated by the apartments section of the development can be calculated as follows:

General Waste:

Section	Apartments	Waste Generation Rate per Unit	Waste Generation
		L/unit/week	*L/week*
Residential	55	80	4400
Total	**55**		**4400**

Using waste generation rates provided by Wollongong City Council, the total recyclable waste generated by the apartments section of the development can be calculated as follows:

Recyclable Waste:

Section	Apartments	Waste Generation Rate per Unit	Waste Generation
		L/unit/week	*L/week*
Residential	55	80	4400
Total	**55**		**4400**

2.2 Retail

Using typical waste generation rates and industry standards, the total waste generated by the retail section of the development can be calculated as follows:

Retail - Oxford Tavern

Retail Type	Area (sqm)	General Waste Generation Rate	**General Waste Generated**	Recycled Waste Generation Rate	**Recycled Waste Generated**
Tavern	1045	50 L/100sqm/day	523 L / day	50 L/100sqm/day	523 L / day
Retail	1810	80 L/100sqm/day	1448 L / day	50 L/100sqm/day	905 L / day
		Total	**1971** L / day	**Total**	**1428** L / day

Retail - Dwyers Site

Retail Type	Area (sqm)	General Waste Generation Rate	**General Waste Generated**	Recycled Waste Generation Rate	**Recycled Waste Generated**
Supermarket	3760	240 L/100sqm/day	9024 L / day	240 L/100sqm/day	9024 L / day
Mini Majors	2034	100 L/100sqm/day	2034 L / day	50 L/100sqm/day	1017 L / day
Major Retail	5390	50 L/100sqm/day	2695 L / day	50 L/100sqm/day	2695 L / day
Food Retail	185	80 L/100sqm/day	148 L / day	50 L/100sqm/day	93 L / day
Restaurants	1232	5 L/1.5sqm/day	4107 L / day	2 L/1.5sqm/day	1643 L / day
General Retail	7336	50 L/100sqm/day	3668 L / day	50 L/100sqm/day	3668 L / day
Cinemas	3312	50 L/100sqm/day	1656 L / day	50 L/100sqm/day	1656 L / day
		Total	**23332** L / day	**Total**	**19795** L / day

2.3 Supermarkets & Major Stores

The supermarket & major tenancies will store all waste on site and will be responsible for its storage, management and removal. The supermarkets & majors will utilise the loading dock for the storage and removal of all waste.

2.4 Commercial Offices – Oxford Tavern

Using typical waste generation rates and industry standards, the total waste generated by the commercial section of the development can be calculated as follows:

Commercial - Oxford Tavern

Retail Type	Area (sqm)	General Waste Generation Rate	**General Waste Generated**	Recycled Waste Generation Rate	**Recycled Waste Generated**
Commercial	12480	10 L/100sqm/day	1248 L / day	10 L/100sqm/day	1248 L / day
		Total	**1248** L / day	**Total**	**1248** L / day

Commercial - Dwyers

Retail Type	Area (sqm)	General Waste Generation Rate	**General Waste Generated**	Recycled Waste Generation Rate	**Recycled Waste Generated**
Commercial	2584	10 L/100sqm/day	258 L / day	10 L/100sqm/day	258 L / day
		Total	**258** L / day	**Total**	**258** L / day

2.5 Hotel Accommodation

Hotel Section	**Net Area / Occupancies**	**Waste Generation**		**Recycling Generation**		**Waste Generated**		**Recycled Generated**	
Hotel	200	5	L/occupancy/day	1	L/occupancy/day	1000	L/Day	200	L/Day
Bar/Restaurant	500	0.5	L/sq.m/day	0.1	L/sq.m/day	250	L/Day	50	L/Day
					Total	**1250**	**L/Day**	**250**	**L/Day**
						1.25	**cu.m/Day**	**0.25**	**cu.m/Day**

3.0 WASTE MANAGEMENT RECOMMENDATIONS

3.1 General Waste

Residential Apartments – Oxford Tavern

It is recommended that a garbage chute be provided for residents to access at each level of the residential building. The garbage chute will discharge into a rotational compactor that will have a capacity of five (5) 240L mobile garbage bins and will provide a compaction ratio of 2:1. A garbage room will be provided for residential waste.

Prior to collection, the appointed waste caretaker will transport the residential general waste bins to the loading dock for collection and return the bins to the weekly basis or as is deemed appropriate.

Each resident will be provided with a waste cupboard space for storage of general waste until it is disposed of.

Retail & Commercial

It is recommended that each retail & commercial tenant be responsible for their own in house storage of general waste. At the end of the day, staff from the retail tenancies will transport the waste to the retail/commercial garbage rooms located on Ground Level of each building. A designated refrigerated garbage room will be provided for the storage of putrescible waste generated by the restaurants (food retail) section of the Dwyers Site. A compactor for retail & commercial general waste in the loading dock within the Dwyers site will be provided.

All retail & commercial waste will be collected by a private waste contractor. All waste will be collected utilising the dedicated loading dock for each building. Access to the individual loading docks for each building for the collection vehicle is off Crown Street. It is proposed that due to the large scale of the development and the large amount of general waste generated, that a daily collection cycle be implemented for putrescibles food waste and the retail & commercial garbage room within the Oxford Tavern site.

Supermarkets & Major Tenancies

The supermarket tenancies will store all its waste on site and will be responsible for its storage, management and removal. A dump bin area will be provided for the storage of all general waste.

Hotel Accommodation
All general waste generated by the hotel section of the Dwyers site will be stored internally and transported by staff to the designated garbage room at Basement Level 1 as required. This garbage room will be for the storage all waste generated by the hotel including the restaurant and all administration areas.

Prior to collection, the appointed waste caretaker will transport all waste containers to the loading dock on Ground Level and return the bins to the garbage room once collection is complete.

It is proposed that due to the large scale of the development and the large amount of general waste generated, that a daily collection cycle be implemented.

3.2 Recyclable Waste

Residential
It is recommended that adjacent to each garbage chute intake point, two (2) 55L recycling crates be provided for the storage of any recyclable material. The appointed waste caretaker for the development will empty the crates as required into the 240L mobile garbage bins stored in the residential garbage room.

Prior to collection, the appointed waste caretaker will transport the residential recyclable waste bins to the loading dock for collection and return the bins to the residential garbage room once collection is complete. It is proposed that all residential waste be collected by an appointed private waste contractor on a weekly basis or as is deemed appropriate.

Each resident will be provided with a waste cupboard space for storage of recyclable waste until it is disposed of.

Retail & Commercial
Storage in-house of recyclable glass/plastic and paper/cardboard should be provided. Alternatively, all recyclable material can be stored together and sorted into the appropriate containers in the garbage rooms. Either way, separation of the glass/plastic and paper/cardboard will have to be carried out by the tenants. It is expected that the majority of recyclable waste generated by these tenants will most likely be paper recyclable products such as cardboard boxes and paper products. Designated compactors will be provided for the storage and removal of all cardboard and paper recyclable material. Tenants of the Oxford Tavern site will either store all recyclable waste in designated waste containers within the garbage room at Ground Level. Alternatively, all cardboard and paper products can be transported to the compactor units located on Ground Level of the Dwyers site.

Supermarket & Major Tenancies

The proposed supermarket and major tenancies will utilise the compactors for the storage of all paper and cardboard recyclable material.

Hotel Accommodation

All recyclable waste generated by the hotel section of the Dwyers site will be stored internally and transported by staff to the designated garbage room at Basement Level 1 as requires. This garbage room will be for the storage all waste generated by the hotel including the restaurant and all administration areas. Alternatively, any cardboard and paper products may be loaded into the designated compactor units on Ground Level.

Prior to collection, the appointed waste caretaker will transport all waste containers to the loading dock on Ground Level and return the bins to the garbage room once collection is complete.

It is proposed that due to the large scale of the development and the large amount of general waste generated, that a daily collection cycle be implemented.

3.3 External Collection of Waste

Residential

Residential waste will be collected by a nominated private waste contractor. Prior to collection, the appointed waste caretaker for the development will transport the appropriate residential waste bins to the loading dock. The waste caretaker will then be required to return the garbage bins to the residential garbage room once collection is complete. The collection process will occur utilising the loading dock. Access to the loading dock is off Crown Street.

It is proposed that collection occurs weekly for all residential waste.

Retail & Commercial

Retail & commercial waste will be collected by a nominated private waste contractor. The private collection vehicle will collect all waste from the individual loading docks accessed off Crown Street for each building.

It is recommended that all retail & commercial waste be collected on a daily collection basis due to the nature of the waste being produced and the large amounts of waste being generated. However, this should be closely monitored and the collection frequency varied to suit the needs of the various tenants. The compactor will be emptied as required by the appropriate contractor.

Supermarket & Major Tenancies

The supermarket and major tenancies will store all its waste on site and will be responsible for its storage, management and removal.

Hotel Accommodation

All waste generated by the hotel section will be collected by a private waste contractor on a daily basis to coincide with the collection periods for the rest of the development.

3.4 Waste Caretaker

It is strongly recommended that a waste caretaker be employed to manage the garbage system of this development. Further more, it is also strongly recommended that a part time care taker be employed to manage the system in the full time caretakers absence, i.e. on weekends and Public Holidays when the waste generation is expected to peak.

The caretaker's duties would include the following:

- Generally maintaining and cleaning the garbage rooms. (Recommended at least once per week)
- Organising, maintaining and cleaning the general and recycled waste holding areas. Due to the nature of the waste it is recommended that in addition to cleaning, the garbage rooms be deodorised **(recommended at least once per week)**.
- Sorting recycled waste into appropriate receptacles.
- Organising for both Garbage and Recycled Waste pick-ups as required.
- Transporting appropriate waste containers between garbage rooms and collection areas to coincide with collection cycles and vice versa.
- Assisting with the emptying of bins during collection.

3.5 Organic Waste

It is recommended that all organic waste be handled and managed by the personnel responsible for maintaining all landscaped area.

4.0 WASTE EQUIPMENT RECOMMENDATIONS

All following waste equipment and quantity recommendations have been made based on expected waste generation quantities.

4.1 Residential Apartments – Oxford Tavern

General Waste
Based on the previously stated waste generation our recommendations for waste handling equipment are as follows:

Garbage Compactor – Rotobin 5000 – MkII Rotational Compactor, as supplied by J D MacDonald or equivalent.

This type of compactor compacts directly into five (5) off 240L plastic wheeled bins. The Rotobin 5000 - MkII compactor can be easily adjusted to automatically operate in conjunction with a garbage chute and offers a standard 2:1 compaction ratio.

Qty Required – One (1) for Residential Apartments

Garbage Chute – 510mm diameter specifications to meet council requirements, as supplied by J D MacDonald.
The garbage chute will service all residential levels and will transport the waste directly to the garbage compactor.

Qty Required – One (1) for Residential Apartments

Compaction Containers – Wollongong City Council provides a weekly collection service for residential general waste. Utilising the previously calculated "Total General Waste Generated" for the residential section, the compacted waste per collection and appropriate ***240L Mobile Garbage Bin*** requirements per building are:

Residential Apartments:

General Waste	4400*L/ week*
Collections/Week	1
Compaction	2:1
Compacted Waste	2200L
No. of 240L Bins	**10**

It is suggested that an extra two (2) bins be purchased per compactor to allow uninterrupted operation of the compactor during collection times.

Qty Required – Twelve (12) 240L bins

Recycled Waste
Based on the previously stated recycled waste generation our recommendations for waste handling equipment are as follows:

Collection Containers **-** As adopted by the "Australia and New Zealand Environment and Conservation Council" (ANZECC) colour-coded receptacles are required.

It is recommended that a weekly collection service be provided by the nominated contractor or Wollongong Council. Therefore, utilising the previously calculated "Recyclable Waste Generated" for the residential section, the following ***240L Mobile Garbage Bins*** are required:

Qty Required – Nineteen (19) for co-mingled recyclables

5.2 Retail & Commercial

General & Recyclable Waste
Based on the previously stated waste generation, our recommendations for waste handling equipment are as follows:

Collection Containers – Based on the previously calculated "waste generated", the ***1100L plastic wheeled bin*** requirements are, based on a daily collection cycle:

Oxford Tavern Site:
Qty Required – Three (3) per collection for General Waste
Three (3) per collection for Recyclable Waste

Dwyers Site:
Qty Required – Four (4) per collection for General Waste
To be stored in refrigerated garbage room.

Garbage Compactor – Macapak 2000 Static Compactor, as manufactured and installed by JD MacDonald complete with $30m^3$ container.

Qty. Required – Three (3) Macapak 2000 Compactors

5.3 Supermarket & Major Tenancies

The supermarket & major tenancies will store all waste on site and will be responsible for its storage, management and removal. The supermarkets will utilise the loading dock for the storage and removal of all waste.

5.4 Hotel Accommodation

General & Recyclable Waste
Based on the previously stated waste generation, our recommendations for waste handling equipment are as follows:

Collection Containers – Based on the previously calculated "waste generated", the ***1100L plastic wheeled bin*** requirements are, based on a daily collection cycle:

Qty Required – Two (2) per collection for General Waste
One (1) per collection for Recyclable Waste

5.0 GARBAGE ROOMS & GARBAGE AREAS

Space has been allocated for garbage rooms for each building of the residential development. Floor plans of the garbage rooms are included on the DA drawings prepared for this application. The residential garbage room is on Ground Level of the Oxford Tavern site. There is also a dedicated retail garbage room on Ground Level of the Oxford Tavern site serving the retail and tavern tenants. There are dedicated garbage rooms for the retail and hotel sections of the Dwyer site for the storage of all waste. A refrigerated garbage room will be provided for the storage of putrescible waste generated by the restaurants/food retail. The garbage rooms will be located on the Ground Level of the development. The hotel section will be provided with a dedicated garbage room on Basement Level 1. A nominated private waste contractor will be engaged to collect all waste generated on a daily basis due to the large scale of the development. Collection will occur from the loading dock for each individual building. Access to each loading dock for the collection vehicle is off Crown Street.

Construction of both the garbage areas and garbage rooms is to meet all requirements set out in Wollongong City Council Codes, BCA and Australian Standards.

It is recommended that the waste management system be monitored in the initial stages to ensure that sufficient bins have been provided to handle the waste generated. The bin numbers above are only an approximate and the number of bins provided and collection frequency will need to be monitored and adjusted to suit the needs of the individual tenants. Also, the bin size above is only a recommendation. Tenants may nominate an appropriate bin size to suit their needs.

5.0 STATEMENT OF COMMITMENTS

This is a concept waste management plan for the Oxford Tavern & Dwyers Development. The main recommendations of this report include:

- Dedicated compactors to be used for general and recyclable waste for tenants of Dwyer's with a dedicated retail & commercial garbage room provided for the Oxford Tavern site;
- Compactors and garbage chutes to be used for the residential apartments;
- A dedicated refrigerated garbage room for food putrescible waste to be provided within the Dwyers site;
- Major tenancies to implement and manage their own waste management systems, equipment and collections;
- It is proposed that 1100L mobile garbage bins be used as a recommended size but tenants may nominate a more appropriate size for their particular use.
- Daily collection cycle is recommended for putrescible waste generated but can be modified to suit the tenant's particular needs.
- A waste caretaker to be employed to manage the waste management system for the development.