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waste management plans for all urban developments	

WASTE MANAGEMENT PLAN

Proposed Development: Woolooware Bay Town Centre

461 Captain Cook Drive, Woolooware, New South Wales

Prepared for:

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WASTE MANAGEMENT SUMMARY

- The operator, as defined below, shall be responsible for managing the waste system and for developing and implementing adequate safe operating procedures.
- Waste shall be stored within the development (hidden from external view).
- Users and staff shall sort their waste and dispose garbage and recyclables directly into collection bins and compactors.
- Waste shall be collected within the onsite Loading Docks.
- A private contractor shall collect waste.

GLOSSARY

Operator: refers to the Facility Management, who shall manage site operations (via cleaners and contractors, if required).

User: refers to commercial tenants, who shall utilise the waste system.

1 SPACE AND SYSTEM FOR WASTE MANAGEMENT

1.1 Development Description and Use

This development shall consist of commercial tenancies. Commercial floor-areas are stated in Table 1 (below).

1.2 Estimated Garbage and Recycling Generation

The following table summarises the waste estimate (m^3/week):

Table 1: Waste Estimate

Waste Source	Base Qty (est.)		Garbage	Paper / Cardboard	Mixed Containers
East: Supermarket	area (m^2) =	4015	36.14	67.45	0.40
East: Retail*	area (m^2) =	2500	8.75	8.63	0.13
East: Food Court*	area (m^2) =	406	2.27	1.87	0.41
West: Restaurant	area (m^2) =	338	9.91	0.56	2.14
West: Supermarket	area (m^2) =	1319	6.60	44.32	0.13
West: Retail Major 3	area (m^2) =	705	0.49	6.35	0.00
West: Retail L1*	area (m^2) =	211	0.74	0.73	0.01
West: Retail L2*	area (m^2) =	600	2.10	2.07	0.03
West: Food Grocers*	area (m^2) =	300	5.04	1.01	0.02
West: Food Court*	area (m^2) =	407	2.28	1.87	0.41
West: Medical Centre	area (m^2) =	3084	5.24	1.54	0.15
West: Leisure Gym	area (m^2) =	2890	2.89	0.87	0.87
West: Club/Bar L1-4	area (m^2) =	4039	31.10	3.23	8.48
Subtotal (m^3/wk)			**113.55**	**140.49**	**13.17**
Total Waste (m^3/wk)		267.21			
Untreated Landfill Diversion Rate (%)		57.50			
Garbage Treatment at Advanced Resource Recovery Technology (ARRT) Facility:					
Recovered Resources (m^3/wk)		60.11			
Residual Garbage (m^3/wk)		53.44			
Final Landfill Diversion Rate (%)		80.00			

Notes:

- * = Specialty retail component.
- Waste figures are based on adjusted guidelines form the Department of Environment and Climate Change NSW.
- Resource recovery rates vary depending on the nature of the garbage waste stream and particulars of the processing facility (it is understood that the landfill diversion rate is a project ESD initiative).

1.3 Collection Services

Municipal collections would be insufficient as these are limited to a kerbside wheelie bin service. Therefore, a private contractor shall be engaged to collect waste. A communal waste system shall be adopted and the operator shall choose a waste collection provider, negotiate a service agreement, and pay for these services. The collector shall treat the garbage stream to recover resources (see Table 1).

1.4 Location, Equipment, and System Used for Managing Waste

The waste management system is summarised as follows:

- Tenancy and public receptacles at work/amenity areas.
- Loading Docks 1 and 2, each with garbage compactor, cardboard compactor, and collection bins (see Table 2).

The various collection waste-streams are summarised as follows:

Garbage: For collection purposes, garbage shall be stored within compactors.

Recycling: All recyclables shall be sorted onsite as follows: 1) Cardboard/paper compactor; and 2) bins for Mixed Containers (PET, glass, aluminum, steel, and HDPE). Also, the supermarkets shall include separate streams for plastic-wraps.

Garden Waste: Garden organics shall be collected and disposed by the future landscape maintenance contractor.

Compost: At this development, composting is considered impractical, as there would be minimal onsite demand for compost.

Putrescible: This waste stream (including fish, offal, fat, bones, etc.) shall be managed in accordance with council and state regulations. The storage, collection, and disposal shall be arranged with the assistance of a specialised contractor.

Clinical Waste: Clinical waste (medical, infectious, cytotoxic, sharps, chemical, pharmaceutical, radioactive, etc) shall be managed in accordance with the Code of Practice for the Management of Clinical and Related Wastes (5^{th} edition, 2007). A specialist clinical waste contractor shall be engaged to implement the code, provide facility design and operational details (incl. a Clinical WMP) for the safe handling and disposal of clinical waste, and for waste collection and treatment (refer to suggested contacts in Sect. 6).

A suitable Clinical Waste Store shall be provided as part of the fit out of the medical tenement (store size/design and all clinical waste streams/bins shall be specified by a specialist consultant).

Other Waste Streams: The disposal of hard/electronic/liquid waste, and home detox (paint/chemicals), etc shall be organised with the assistance of the operator.

Food and beverage tenants shall arrange the storage of used cooking oil and its collection by a recycler. The operator shall organise Grease Interceptor Trap servicing.

The following table summarises bin quantity/capacity, collection frequency, and area requirements (based on Table 1):

Table 2: Bin Schedule and Collection Frequency

Waste Area	Waste Stream	Bin Qty	Bin Litres	Collections per Week	Bin Area m^2
East: Dock 1 (shared waste system)	Garbage	24m^3 Compactor		1	30.0
	Cardboard	31m^3 Compactor		1	40.0
	Mixed Containers	1	660	4	1.2
	Hard/Other Waste	-	-	TBA	3.0
West: Dock 2 (shared waste system)	Garbage	24m^3 Compactor		1	30.0
	Cardboard	31m^3 Compactor		1	40.0
	Mixed Containers	5	660	4	1.2
	Hard/Other Waste	-	-	TBA	3.0
Net Bin Storage Area (excludes circulation), m^2:					**148.4**

Notes:

- The operator shall organise hard waste collections (as required).
- Bins and compactors shall be sourced by the operator (either purchased from a supplier or leased from the collection contractor). Also, the operator shall provide 240-lt bins and/or suitable trolleys for users to transfer waste from each tenancy to the compactors and collection bins.
- Subject to stakeholders' preference/capability (and as built constraints), compactor/bin sizes and quantities can be changed. Also, recyclables can be either commingled or split into bins for separate recycling streams.

1.5 Planning Drawings, Waste Areas, and Management of the Waste System

The plans shall illustrate sufficient space for onsite bin storage, as required by the above schedule.

Notwithstanding the above, collection days shall be staged appropriately and the operator shall stipulate procedures for effective management of the available space.

1.6 Collection Bin Information

The following bins shall be utilised (see Sect. 4.3 for signage requirements):

Table 3: Bin Details

Capacity (litres)	Height (mm)	Width (across front, mm)	Depth (side on, mm)	Empty Weight (kg)	Average* Gross Weight (kg)
660	1250	1240	780	43	130

Notes:

- * = Average Gross Weight is based on domestic waste studies (which vary subject to locality and waste-type). Expect greater weight for wet or compacted waste.
- Use the above details as a guide only – variations will occur. The above is based on Sulo plastic (HDPE) bins and Wastech steel bins. Also, steel 660-lt bins could be adopted, STCA.

Table 4: Sutherland Colour Coding

Bin	Garbage	Commingled Recycling	Green Waste
Lid	Red	Yellow	Lime
Body	Green	Green	Green

Note: Private bins shall be labeled to identify the waste generator and site address.

2 ACCESS FOR USERS, COLLECTORS, AND COLLECTION VEHICLES

2.1 User Access to Waste Facilities

Commercial tenants shall dispose their waste into collection bins located within their Loading Dock (if required, using a suitable bin/trolley). Users in the east side of the centre shall use the Dock 1 waste system (west users shall use Dock 2).

Site staff shall maintain the various amenity waste receptacles.

Note: If required, the operator shall have access to the Bin Areas to rotate the bins, ensuring that empty bins are available along the circulation area so that users are able to reach them.

2.2 Collection Arrangements and Access to Waste Facilities

- A private contractor shall collect waste within the onsite Loading Docks.
- Collection staff shall have access to the Bin Areas and transfer bins to the truck and back.
- Plastic bins (660-lt) shall be collected by rear-lift vehicles (nom. 8.8m long, 4m operational height, and 24 tonnes gross vehicle mass).
- Compactors (and associated containers) shall be collected by a matching hook-lift vehicle (nom. 11m long, approx. 4.5m operational height for articulated hooks, and 30 tonnes gross vehicle mass). The truck needs to be aligned with the longitudinal axis of the compactor and prop 2m in front.

3 AMENITY, LOCAL ENVIRONMENT, AND FACILITY DESIGN

3.1 Noise Minimisation Initiatives

- Collection bins shall feature rubber castors for quiet rolling during transfers.
- Waste areas shall meet BCA and AS2107 acoustic requirements.
- Local laws shall be observed for all operations in public and private areas.
- The waste collector shall protect the acoustic amenity by minimising noise during the collection, adhering to the NSW Protection of the Environment Operations (Noise Control) Regulation.

3.2 Litter Reduction and Prevention of Stormwater Pollution

The operator shall be responsible for:

- Promoting adequate waste disposal into the bins (to avoid waste-dumping).
- Securing the waste areas (whilst affording access to users/staff/contractors).
- Preventing overfilled bins, keeping lids closed and bungs leak-free.
- Abating any site litter and taking action to prevent dumping and/or unauthorised use of waste areas.
- Requiring the collection contractor to clean-up any spillage that might occur when clearing bins.

The above will minimise the dispersion of site litter and prevent stormwater pollution (thus avoiding impact to the local amenity and environment).

3.3 Ventilation, Washing, and Vermin-Prevention Arrangements

Waste areas shall feature:

- Ventilation in accordance with Australian Standard AS1668.
- Impervious flooring (also, smooth, slip-resistant, and appropriately drained).
- A graded bin wash area, hot and cold mixing hosecocks, hose, and a suitable floor-waste connected in accordance with the relevant authority requirements. The bin and wash areas may overlap, as stored bins can be moved-out so that a bin can be washed.

The operator shall regularly clean waste areas/equipment. Also, access doors (if any) and bin-lids shall be kept closed.

Garbage compactors shall be washed off-site at regular intervals (increasing the wash frequency during warm months).

3.4 Design and Aesthetics of Waste Storage Areas and Equipment

Waste shall be placed within the bins and stored in designated onsite areas (hidden from external view). Following waste collection activities, bins shall be returned to the storage areas as soon as practicable.

Waste facilities shall be constructed of durable materials and finishes, and maintained to ensure that the aesthetics of the development are not compromised. These facilities and associated passages shall be suitably illuminated (this provides comfort, safety, and security to users, staff, and contractors). Access doors (if any) shall feature keyless opening from within.

The design and construction of waste facilities and equipment shall conform to the Building Code of Australia, Australian Standards, and local laws.

The compactors and respective bin lifters shall be designed as recommended by a reputable manufacturer (these units are proprietary items). The supplier shall provide training to all users and include appropriate safety features and operating instructions to ensure safe operation. Access to waste storage, collection and compaction areas shall be restricted to trained personnel only.

4 MANAGEMENT AND SUSTAINABILITY

4.1 Waste Sorting, Transfer, and Collection Responsibilities

Garbage shall be placed within tied plastic bags prior to transferring into the collection bins. Cardboard shall be flattened and recycling containers un-capped, drained, and rinsed prior to disposal into the appropriate bin and compactor. Bagged recycling is not permitted.

Refer to Section 2 for waste transfer requirements and collection arrangements.

4.2 Facility Management Provisions to Maintain & Improve the Waste System

It shall be the responsibility of the operator to maintain all waste areas and components, to the satisfaction of users, staff, and the relevant authority (users shall maintain their internal waste receptacles).

The operator shall ensure that maintenance and upgrades are carried-out on the facility and components of the waste system. When required, the operator shall engage an appropriate contractor to conduct services, replacements, or upgrades.

4.3 Arrangements for Protecting Waste Equipment from Theft and Vandalism

It shall be the responsibility of the operator to protect the equipment from theft and vandalism. This shall include the following initiatives:

- Secure the waste areas.
- Label private bins according to property address.
- Waste shall be collected within the onsite Loading Docks (bins shall remain within the development at all times).

4.4 Arrangements for Bins/Equipment Labelling and Ensuring Users and Staff are Aware of How to Use the Waste System Correctly

- The operator shall provide appropriate signage for the bins. Signage is available at the following internet address: www.environment.nsw.gov.au/warr/RecyclingSigns.htm.
- The operator shall publish/distribute “house rules” and educational material to:
  - Inform users/staff about the waste management system and the use/location of the associated equipment (provide the summary in page 2 of this report).
  - Improve facility management results (lessen equipment damage, reduce littering, and achieve cleanliness).
  - Advise users/staff to sort and recycle waste with care to reduce contamination of recyclables.

4.5 Sustainability and Waste Avoidance/Reuse/Reduction Initiatives

The New South Wales' Waste Avoidance and Resource Recovery Act promotes waste avoidance and sets targets for increasing the recovery rate of solid waste for reuse and recycling.

The operator shall promote the observance of the above legislation and encourage users and staff to participate in minimising the impact of waste on the environment. For improved sustainability, the operator shall consider the following:

- Perusal of the New South Wales Environment and Heritage Website: www.environment.nsw.gov.au.
- Consideration of state's Waste Hierarchy (in order of preference): 1) waste avoidance, 2) resource recovery (reuse/recycle), and 3) waste disposal.
- Participation in council and in-house programs for waste minimisation.
- Establishment of waste reduction and recycling targets; including periodic waste audits, keeping records, and monitoring of the quantity of recyclables found in landfill-bound bins (sharing results with users/staff).

4.6 Waste Management Plan Revisions

For any future appropriate council request, changes in legal requirements, changes in the development's needs and/or waste patterns (waste composition, volume, or distribution), or to address unforeseen operational issues, the operator shall be responsible for coordinating the necessary Waste Management Plan revisions, including (if required):

- A waste audit and new waste strategy.
- Revision of the waste system (bin size/quantity/streams/collection frequency).
- Re-education of users/staff.
- Revision of the services provided by the waste collector(s).
- Any necessary statutory approval(s).

5 SUPPLEMENTARY INFORMATION

- The operator shall ensure that bins are not overfilled or overloaded.
- Waste incineration devices are not permitted, and offsite waste treatment and disposal shall be carried-out in accordance with regulatory requirements.
- For bin traffic areas, either level surfaces (smooth and without steps) or gentle ramps are recommended, including a roll-over kerb or ramp. Should ramp gradients, bin weight, and/or distance affect the ease/safety of bin transfers, the operator shall consider the use of a suitable tug.
- The operator and waste collector shall observe all relevant OH&S legislation, regulations, and guidelines. The relevant entity shall define their tasks and:
  - Abide by all relevant OH&S legislation, regulations, and guidelines.
  - Ensure the collector's compliance with NSW WorkCover Code of Practice for Collection of Domestic Waste.
  - Address the manual handling risk for waste and bin transfers (as per the National Code of Practice for Manual Handling).
  - Observe the NSW WorkCover Code of Practice for risk assessments. Obtain and provide to staff/contractors equipment manuals, training, health and safety procedures, risk assessments, and adequate personal protective equipment (PPE) to control/minimise risks/hazards associated with all waste management activities. As a starting point, these documents and procedures shall address the following:

Task (to be confirmed)	Hazard (TBC)	Control Measures (TBC)
Sorting waste and cleaning bins	Biological hazard & bodily puncture	Personal protective equipment (PPE). Develop a waste-sorting procedure
Bin manual handling	Sprain, strain, crush	PPE. Maintain bin wheel-hubs. Limit bin weight. Provide mechanical assistance to transfer bins
Compactor operation	Crush/strike/cut by moving bin system and shear points	PPE, staff training, signage and warning system, maintain access restrictions
Bin transfers and emptying into truck	Vehicular strike, run-over	PPE. Develop a hazard control plan and collection procedure. Maintain visibility. Use a mechanical bin-tipper
Truck access (reversing & manoeuvring)	Vehicular incident, strike, run-over	PPE. Use a trained spotter. Develop a truck-manoeuvring and traffic-control procedure

Note: The above shall be confirmed by a qualified OH&S professional who shall also prepare site-specific assessments, procedures, and controls (refer to Section 6).

6 CONTACT INFORMATION

Sutherland Shire Council (local council), ph 02 9710 0333

SITA Environmental Solutions (private waste collector), ph 131335

SteriCorp Limited (clinical waste collector), ph 1300 667 787

Eco-Safe Technologies (odour control equipment supplier), ph 03 9706 4149

Solution for Workplace Health and Safety (OH&S consultant), ph 0425 802 669

Sabco Commercial (supplier of cleaner's trolleys), ph 1800 066 522

Sulo MGB Australia (bin supplier), ph 02 4348 8128

JD MacDonald Pty Ltd (compactor supplier), ph 03 9271 6400

Note: The above includes a complimentary listing of contractors and equipment suppliers. The stakeholders shall not be obligated to procure goods/services from these companies. Leigh Design does not warrant (or make representations for) the goods/services provided by these suppliers.

7 LIMITATIONS

The purpose of this report is to document a Waste Management Plan, as part of a Development Application.

This report is based on the following conditions:

- Operational use of the development (excludes demolition/construction stages).
- Drawings and information supplied by the project architect.
- The figures presented in this report are estimates only. The actual amount of waste will depend on the development's occupancy rate and waste generation intensity, the user's disposition toward waste and recycling, and the operator's approach to waste management. The operator shall make adjustments, as required, based on actual waste volumes (if the actual waste volume is greater than estimated, then the number of bins and/or the number of collections per week shall be increased).
- This report shall not be used to determine/forecast operational costs, or to prepare feasibility studies, or to document operational/safety procedures.