

Dooleys Lidcombe Catholic Club
Construction and Operational Waste Management Plan
24 - 28 John St, Lidcombe NSW

Report Number 610.16491-R3

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Dooleys Lidcombe Catholic Club
24 John Street
LIDCOMBE NSW 2141

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1 INTRODUCTION

This Waste and Recycling Management Plan (WMP) has been prepared on behalf of DOOLEYS Lidcombe Catholic Club ("the Proponent") by SLR Consulting Australia Pty Ltd (SLR). It accompanies an Environmental Impact Statement (EIS) prepared in support of State Significant Development Application (SSD_7603) for the staged development of the DOOLEYS Lidcombe site ("DOOLEYS") at Nos. 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26 and 28 Board Street, Nos. 3, 5, 7, 11 and 17 Ann Street and Nos. 24-28 John Street, Lidcombe.

This application seeks staged development approval for tourist related purposes comprising a concept proposal (including building envelopes, basement envelope, land uses, internal roads and connections to external road network) and Stage 1 works (including early works, site preparation, basement excavation and above ground multi-deck car park) at DOOLEYS Lidcombe Catholic Club.

Details of the project are described below:

(1) Concept Proposal

A Concept Proposal has been prepared for the site to guide its future redevelopment and is intended to provide a statutory framework for the long term planning of the site. The concept proposal is for tourist related purposes, including building envelopes, basement envelope, land uses, internal roads and connections to external road network. Specifically, the concept proposal comprises:

- Two levels of basement car parking;
- New two storey podium containing new Club facilities and other facilities associated with the proposed hotel, including conferencing; food and beverage and gym;
- New 12 storey Club and hotel tower above the podium with approximately 260 rooms;
- New 5 storey above ground multi deck parking building (initially to provide car parking to enable the on-going operations of the existing Club through the redevelopment process); and,
- New internal road access and connection points to surrounding road network.

(2) Detailed Proposal for "Stage 1" development

This is a detailed proposal for early works, site preparation, excavation of the basement and construction of the above ground multi deck car park.

- Bulk earthworks for two levels of basement;
- Hoarding;
- Site establishment;
- Infrastructure preparation works;
- Construction Management including proposed site access and construction traffic management;
- Construction of an above ground multi deck car park located between Board Street and Ann Street.

The purpose of this WMP is to provide an assessment of the proposal as described above and detailed within the EIS.

1.1 Secretary's Environmental Assessment Requirements

The NSW Department of Planning and Environment (DPE) issued Secretary's Environmental Assessment Requirements (SEARs) for the Project on 10 May 2016. **Table 1** below identifies the SEARs relevant to this Air Quality Assessment report and the relevant sections of the report in which they have been addressed.

Table 1 Secretary's Environmental Assessment Requirements (SSD 7603)

Key Issue	Assessment Requirement	Addressed in Section
Waste	The EIS shall address potential air quality, noise, odour and waste impacts (including but not limited to the impacts of the proposed car park), in particular during the construction and operation of the development and appropriate mitigation measures.	Section 5, Section 6

Issued: May 2016; Department of Planning & Environment, NSW Government, File Reference: SSD 7603.

In addition, Cumberland Council (formerly Auburn Council) has noted that:

- Consideration of waste minimisation is required. All waste needs to be collected from within the site.

Refer to **Section 5.5** and **Section 6.8** to **Section 6.10** for waste avoidance and minimisation measures associated with the development.

1.2 Scope

The following report has been prepared based upon architectural drawings (Issue DA-0001 to DA-0290 and A-1008 to A-1014).

This WMP applies to the construction and on-going operation of the proposed development.

The provisions contained in the WMP must be implemented at all stages of the development, and may be subject to review upon expansion or changes in operational procedures.

- See **Section 5** for the Construction WMP.
- See **Section 6** for the Operational WMP.

1.3 Objectives

The principal objective of this WMP is to identify all potential wastes likely to be generated at the site during development and operational phases of the Project, including a description of how waste would be handled, processed and disposed of (or re-used/recycled), in accordance with the SEARs.

The specific objectives of this WMP are as follows:

- To encourage the minimisation of waste production and maximisation of resource recovery.
- To ensure the appropriate management of contaminated/hazardous waste.
- To identify procedures and chain of custody records for waste management.
- To assist in ensuring that any environmental impacts during the operational life of development comply with the SEARs and other relevant regulatory authority conditions.

2 PROJECT DESCRIPTION

Dooleys Lidcombe Catholic Club is located in Lidcombe approximately 17 km west of the Sydney CBD. The Club owns approximately 2.7 ha of land immediately adjacent to Lidcombe Railway Station in the Lidcombe Town Centre and is generally bound by John Street (east); Church Street (south); Olympic Drive (west) and Ann Street (north). Board Street bisects this precinct in an east west direction.

The location of the Project Site is shown in **Figure 2** and the Phasing Plan is provided in **Figure 3**. A breakdown by floor area of the concept proposal is presented below in **Table 2**.

Table 2 Indicative Gross Floor Area (GFA)

Site Description	Indicative GFA (m ²)
Hotel	13,340
Hotel Conference	1,644
Club (existing)	8,592
Club Gaming	2,075
Club Food and Beverage	3,584
Club	1,289
Circulation and Back of House	2,687
Total	33,211

The SSD will include a detailed proposal for the construction of an above ground multi deck car park located between Board Street and Ann Street. The car park will allow continuation of the Club's operations while the new Club and Hotel is constructed. The car park will continue to be used after the new Club and Hotel is completed, in addition to basement parking. The car park will be five storeys and will accommodate approximately 608 parking spaces.

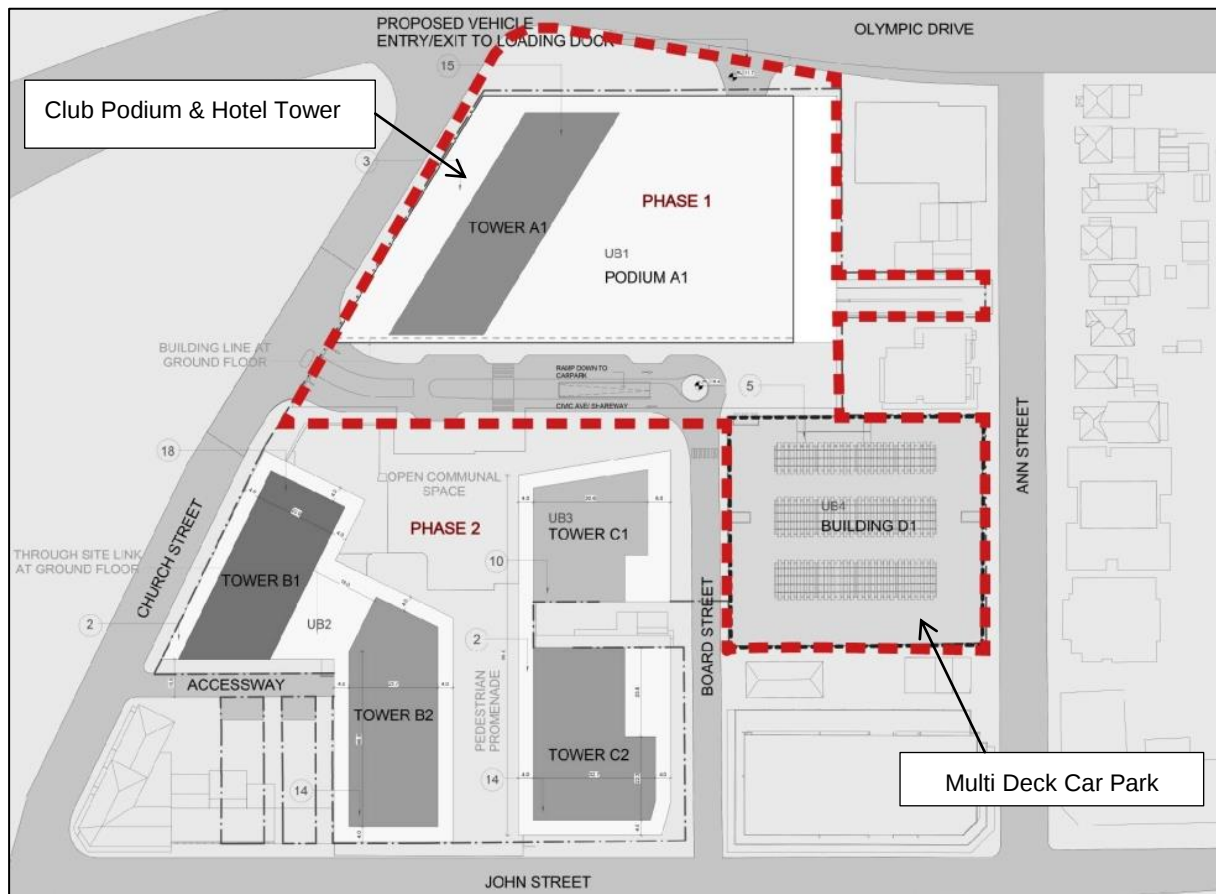
Vehicle access to the site is predominantly via Church Street and underground car parking is accessible from Board Street.

Figure 1 Site Location



Source: PTW Architects & Axil Architects, June 2016.

Figure 2 Phasing Plan



Source: AECOM, July 2016. Phase 1 development works are indicated by the red dotted line.

3 BETTER PRACTICE FOR WASTE MANAGEMENT AND RECYCLING

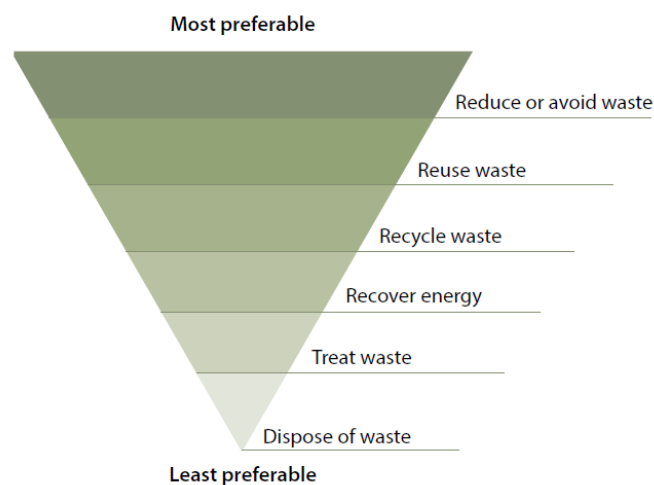
3.1 Waste Management Hierarchy

Where appropriate, this WMP aims to meet the principles of the waste management hierarchy, by promoting waste as a resource through the following in order of preference:

- Waste avoidance through prevention or reduction of waste generation. Waste avoidance is best achieved through better design and purchasing choices.
- Waste reuse, without substantially changing the form of waste.
- Waste recycling through the treatment of waste that is no longer usable in its current form to produce new products.
- Energy recovery through thermal treatment of residual waste materials and from green waste processing.
- Waste disposal, in a manner that causes the least harm to the natural environment.

The waste hierarchy pictured below demonstrates a classification of waste management options in order of their environmental impacts, as established under the Waste Avoidance and Resource Recovery Act 2001.

Figure 3 Waste Hierarchy



Source: NSW Waste Avoidance and Resource Recovery Strategy 2014-21 (2014, NSW EPA)

3.2 Benefits of Implementing Better Practice

- Enhanced social and environmental reputation of an organisation.
- Reduced costs associated with waste disposal.
- Benefits to all stakeholders and the wider community.
- Improved environmental outcomes.

4 WASTE LEGISLATION AND GUIDANCE

The legislation and guidance outlined in **Table 3** below should be referred to during the construction and operational phases of the development.

Table 3 Waste Legislation and Guidance

Legislation	Objectives
Waste Avoidance and Resource Recovery Act 2001	To promote extended producer responsibility in place of industry waste reduction plans. Specific objectives include: - To encourage efficient use of resources. - To minimise the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste. - To ensure that industry shares with the community the responsibility for reducing and dealing with waste. - To ensure the efficient funding of waste and resource management planning, programs and service delivery.
Protection of the Environment Operations Act (POEO) 1997 & Amendment Act 2011	Administered by the Environmental Protection Authority (EPA) to enable the Government to establish instruments for setting environmental standards, goals, protocols and guidelines. <i>Important Note: The owner of a premises, the employer or any person carrying on the activity which causes a pollution incident is to immediately notify the relevant authorities when material harm to the environment is caused or threatened.</i> A list of each relevant authority is provided in the POEO Amendment Act and will be noted in the site's incident register.
NSW EPA's Waste Classification Guidelines (Part 1) 2014	To assist waste generators to effectively classify, manage, treat and dispose of waste to ensure the environmental and human health risks associated with waste are managed appropriately and in accordance with the POEO Act and its associated regulations.
Secretary's Environmental Assessment Requirements (SEARs)	Waste management requirements of the development as outlined by the Department of Planning & Environment.
Auburn Development Control Plan (DCP) 2010	The DCP includes a section on Waste. Clause 4.0 outlines waste management requirements and performance criteria for commercial and industrial development.
Building Code of Australia (BCA) and relevant Australian Standards (AS)	The BCA (and AS) have the aim of achieving nationally consistent, minimum necessary standards of relevant health and safety, amenity and sustainability objectives efficiently.
NSW EPA's Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities 2012	The EPA's Better Practice Guidelines (2012) encourage efficient waste minimisation and resource recovery for commercial and industrial facilities and is used as a benchmark document when assessing waste production rates within Australia and details a range of waste management provisions.
NSW EPA's Waste Avoidance and Resource Recovery (WARR) Strategy 2014-21	A key component of the State Government's vision for the environmental and economic future of the state that will be supported financially by the <i>Waste Less, Recycle More</i> funding initiative providing long-term targets for 6 key result areas including reduced illegal dumping.

5 CONSTRUCTION WASTE MANAGEMENT

Demolition and construction stages of developments have the greatest potential for waste minimisation.

Phase 1 development works will take place according to a staging plan. Key demolition and construction activities associated with the staging plan are outlined below:

- demolition of existing residential dwellings;
- excavation of top soil from the site footprint;
- multi storey car park construction;
- south excavation and basement construction works;
- north excavation and basement construction works;
- south podium and tower structure construction; and
- north podium construction.

Reference should be made to the *Construction/Site Management Plan* and architectural drawing DA-0013 (Staging Plan) for further information.

5.1 Targets for Resource Recovery

The performance of each development contributes to overall NSW State recycling targets, which for the construction and demolition (C&D) sector, is 75% (increasing to 80% by the year 2021) of total C&D waste recycled (see NSW WARR Strategy 2014-21).

Waste minimisation measures that can be implemented to assist in achieving this resource recovery target are provided in the following sections. Waste audits will determine the actual percentage of wastes that were recycled and disposed of at landfill during the Project.

5.2 Waste Streams and Classifications

The construction phase of the development will generate the following broad waste streams:

- demolition waste including potential hazardous wastes (such as asbestos, lead etc) from the demolition of existing structures;
- construction wastes;
- plant maintenance waste;
- packaging waste;
- work compound (on-site employee) waste; and
- waste water. (Construction wastewater is not quantified in this WMP.)

Potential waste types along with their waste classification are provided in **Table 2**. For further information on how to determine a waste's classification, refer to the Waste Classification Guidelines (EPA 2014).

Table 4 Potential Waste Generation with Classifications

Waste Types	NSW Classification	Proposed Reuse / Recycling / Disposal Method
Demolition and Construction		
Cleared vegetation	General solid (non-putrescible) waste	Re-use on site, reuse for similar projects and/or disposal for composting at landfill
Excavated material (VEMN, EMN)	General solid (non-putrescible) waste	Reuse on-site where possible or reuse for similar projects. Sandstone may be incorporated in design or sold.
Sediment fencing, geotextile materials	General solid (non-putrescible) waste	Reuse at other sites where possible or disposal to landfill
Asbestos / lead paint	Special waste / hazardous waste	Disposal via appropriately licensed contractors to a suitably licensed facility
Concrete (solids and washouts) and asphalt	General solid (non-putrescible) waste	Reuse on-site where possible or recycled off-site
Steel reinforcing, other metal (eg wire mesh)	General solid (non-putrescible) waste	Off-site recycling
Conduits and pipes	General solid (non-putrescible) waste	Off-site recycling
Timber / timber formwork	General solid (non-putrescible) waste	Reuse on-site or off-site recycling
Metals and bulk electrical cabling	General solid (non-putrescible) waste	Off-site recycling
Plasterboard	General solid (non-putrescible) waste	Off-site recycling or disposal
Bricks	General solid (non-putrescible) waste	Off-site recycling
Glass	General solid (non-putrescible) waste	Off-site recycling
Light bulbs	Hazardous waste	Off-site recycling
Plant Maintenance		
Empty oil and other drums / tins (e.g. fuel, chemicals, paints, spill clean ups)	Hazardous waste if the containers were previously used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and from which residues have not been removed by washing or vacuuming. General solid (non-putrescible) waste if the containers have been cleaned by washing or vacuuming.	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility. (Note: Discharge to sewer subject to Trade Waste Agreement with local Council.) ¹
Batteries	Hazardous waste	Off-site recycling
Packaging		
Packaging materials, including wood, plastic (including stretch wrap or LLPE), cardboard and metals	General solid (non-putrescible) waste	Off-site recycling
Wooden crates	General solid (non-putrescible) waste	Reused for similar projects, returned to suppliers, or off-site recycling
Work Compound and Associated Offices		
Recyclable beverage containers	General solid (non-putrescible) waste	Recycling at off-site licensed facility
Clean paper and cardboard	General solid (non-putrescible) waste	Recycling at off-site licensed facility
General domestic waste generated by workers (soiled paper and cardboard, food stuffs, polystyrene)	General solid (non-putrescible) waste mixed with putrescible waste	Disposal at landfill
Pump-out waste and septage (sewage)	Liquid (trade) waste	Off-site disposal at licensed facility or disposal direct to sewer where arranged with Council

Note 1: Source: <http://www.environment.nsw.gov.au/waste/envguidlns/index.htm>

5.3 Construction Waste Generation Rates

The Construction Site Manager will need to specify the types and quantities of wastes produced during construction and on this basis, the numbers and capacity of skip bins can be determined.

Excavated materials will be estimated assuming the below:

Table 5 Assumed Material Generation Rates - Earthworks

Waste Material	Estimated Waste %	Volume/Weight Ratios (tonnes per m ³)
Soil / Rubble	100%	1.25 tonnes per m ³

Source: UK WRAP 2014

A guide/estimate of the potential waste percentages is provided based on published waste generation rates for construction and demolition projects, as indicated in **Table 6** and **Table 7**. These figures have been referenced from a number of sources including the Inner Sydney Waste Board's Waste Planning Guide for Development Applications (1998), Victoria's Ecorecycle Waste Wise Events toolkit, the UK's WRAP composition and conversion factors and the UK Department of Environment, Food and Rural Affairs (DEFRA) conversion factors. Conservative estimates have been made where indicative waste compositions were not available.

Table 6 Guideline to Waste Composition and Volumes – Building Demolition

Material	Two Bedroom House (tonnes per 100 m ²)	Three Bedroom Brick House (tonnes per 120 m ²)
Sandstone	67	90
Timber / Gyprock	18	13
Concrete	4	4
Bricks	3	123
Steel	1	1
Roof Tiles	N/A	9
Other	3	0

Source: Inner Sydney Waste Board 1998

Table 7 Guideline to Waste Composition and Volumes – Building Construction

Material	Estimated Waste %	Conversion Factor (tonne per m ³)
Hard Material	32%	1.20
Timber	24%	0.34
Plastics	15%	0.25
Cement sheet	9%	0.50
Gypsum material	6%	0.20
Metals	6%	0.42
Paper/card	4%	0.40
Vegetation	3%	0.15
Soil	0.7%	1.20
Other (chemicals / paint)	0.3%	0.30

Source: UK WRAP 2014

The UK DEFRA and the UK Building Research Establishment (BRE) have developed a number of benchmark indicators to help determine approximate tonnages of waste produced during various construction projects including civil engineering and commercial retail works. The benchmarks include Environmental Performance Indicators (EPI) which measure the volume (cubic metres, m³) of waste produced per 100 square metres (m²).

The EPI indicators provided in **Table 8** have been used for the purposes of this WMP to estimate the amounts of construction wastes that could be generated by the Project.

Table 8 Environmental Performance Indicator for Waste Volumes from New Developments

Project Type	Average Volume (m3) of waste per 100 m ²
Industrial Buildings	14.0
Commercial Offices	20.4
Civil Engineering	28.1
Residential (e.g. hotel levels)	17.7

Source: UK BRE's www.smartwaste.co.uk

5.4 Estimation of Waste Volumes/Tonnages

5.4.1 Demolition of Existing Buildings

The estimated tonnages of waste materials generated by the demolition of existing buildings at the site have been calculated using the waste generation rates provided in **Table 6** and assuming 70% of the total existing residential building lot area (or 6,175 m² of a total area of 8,821 m² for the 23 residential building lots) comprises of a brick building (averaging three bedrooms).

Table 9 Estimated Waste Generation – Demolition of Existing Buildings

Material	Estimated Tonnes Generated
Sandstone	4,631
Timber / Gyprock	669
Concrete	206
Bricks	6,329
Steel	36
Roof Tiles	463
Other	-
Total	12,334

It is estimated that more than 70% of the predicted demolition waste arisings from the project site could be re-used (on-site or at another development) or recycled off-site.

It is noted that all waste generation rates are approximate only.

5.4.2 Excavation Works

The volume and corresponding weight of excavated materials resulting from the proposed development site (**Figure 2**) has been estimated based on the approximate area of each development area and excavation depths outlined in the *Construction/Site Management Plan* and architectural drawing DA-0014 (Basement Excavation Plan).

Excavated soils and/or rock may be re-used on the site, or used on similar sites, as fill material, provided no contamination is present and with approval from the EPA.

If sandstone is present, sandstone rock may be sold or used in the design of the building.

Table 10 Estimated Material Generation - Excavation Activities

Earthworks Site	Estimated Area (m ²)	Estimated Depth (m)	Estimated Volume (m ³)	Estimated Tonnes Generated
Topsoil Removal Area	27,221	0.4	3,528	4,411
South Excavation	11,700	6.0	70,200	87,750
North Excavation	4,200	2.0	8,400	10,500
Total	-	-	82,128	102,661

It is estimated that approximately 102,661 tonnes of excavated materials will be generated at the site during the various construction stages.

5.4.3 Construction of New Buildings

The estimated waste volumes and tonnes for each development area are presented in **Table 11** and **Table 12**. The waste arisings are based on the EPI estimates presented in **Table 8**. Actual waste tonnage and composition will vary however this estimate is provided to inform potential on-site or off-site re-use and recycling opportunities.

Table 11 Estimated Waste Generation for the Development

Building	Area (m ²)	Estimated Waste (m ³)
Multi Deck Car Park	21,000	5,901
Club (including BOH areas)	9,635	1,628
Hotel	14,984	2,652
Total	45,619	10,181

Table 12 Estimated Waste Volumes and Materials for the Development

Material	Split (%)	Waste (m ³)	Conversion factor	Waste (tonnes)
Hard material	32%	3,258	1.20	3,910
Timber	24%	2,444	0.34	831
Plastics	15%	1,527	0.25	382
Cement sheet	9%	916	0.50	458
Gypsum material	6%	611	0.20	122
Metals	6%	611	0.42	257
Paper / card	4%	407	0.40	163
Bio-organic	3%	305	0.15	46
Soil	0.7%	71	1.20	86
Other (chemicals / paint)	0.3%	31	0.30	9
Total	100%	10,181¹	-	6,263¹

Note: Totals may not add up due to rounding.

It is estimated that more than 70% of the predicted construction waste arisings from the project site could be re-used (on-site or at another development) or recycled off-site. As previously outlined, the NSW target for C&D waste recycling is 75% (increasing to 80% by 2021-22)¹.

It is noted that all waste generation rates are approximate only.

¹ NSW Waste and Avoidance Resource Recovery Strategy 2014-21

5.5 Waste Avoidance

The Construction Site Manager will identify opportunities for waste avoidance by:

- applying practical building designs and construction techniques;
- appropriate sorting and segregation of demolition and construction wastes to ensure efficient recycling of wastes;
- selecting construction materials taking into consideration to their long lifespan and potential for reuse;
- ordering materials to size and ordering pre-cut and prefabricated materials;
- reuse of formwork;
- planned work staging;
- use of naturally ventilating buildings to reduce ductwork;
- use of prefabricated components for internal fit outs;
- reducing packaging waste on-site by returning packaging to suppliers where possible and practicable, purchasing in bulk, requesting cardboard or metal drums rather than plastics, requesting metal straps rather than shrink wrap and using returnable packaging such as pallets and reels;
- careful on-site storage and source separation;
- subcontractors informed of site waste management procedures; and
- co-ordination and sequencing of various trades.

The Construction Site Manager will advise on material selection for the reduction of embodied energy and resource depletion. This includes:

- the use of recycled concrete and steel;
- the reduction of PVC use;
- the use of low VOC (volatile organic compounds) paints, floor coverings and adhesives;
- the use of low formaldehyde wood products and post-consumer reused timber or Forest Stewardship Council (FSC) certified timber where possible;
- the use of fittings and furnishings that have been recycled, are made from or incorporate recycled materials, and have been certified as sustainable or environmentally friendly by a recognised third party certification scheme; and
- the use of building materials, fittings and furnishings including structural framing, roofing and façade cladding chosen with consideration to their longevity, adaptation, disassembly, reuse and recycling potential.

It is noted that the Club/Hotel building has been designed to achieve a 5 star Green Building Council of Australia (GBCA) rating. The use of sustainable products should be reviewed as part of achieving this star rating.

5.6 Re-use, Recycling and Disposal

Effective management of construction materials and C&D waste, including options for reuse and recycling where applicable and practicable, will be conducted. Only project wastes that cannot be cost effectively reused or recycled are to be sent to landfill or appropriate disposal facilities.

Refer to **Table 4** for an outline of the proposed reuse, recycling and disposal methods for potential waste streams generated by the development.

The following specific procedures will also be implemented:

- concrete, tiles and bricks will be reused or recycled off-site;
- steel will be recycled off-site - all other metals will be recycled where economically viable;
- framing timber will be reused on-site or recycled off-site;
- windows, doors and joinery will be recycled off-site (where possible);
- waste oil will be recycled or disposed of in an appropriate manner;
- all used crates will be stored for reuse unless damaged;
- all glass that can be economically recycling will be;
- all solid waste timber, brick, concrete, rock that cannot be reused or recycled will be taken to an appropriate facility for treatment to recover further resources or for disposal to landfill in an approved manner;
- all asbestos, hazardous and/or intractable wastes are to be disposed of in accordance with Workcover Authority and EPA requirements;
- provision for the collection of batteries, fluorescent tubes, smoke detectors and other recyclable resources will be provided on site; and
- all waste and recycling will be disposed of via a Council approved system.

5.7 Waste Storage and Servicing

5.7.1 Waste Segregation

The project will be managed ensuring effective source separation and appropriate collection of waste during demolition and construction works.

For construction stages, consider minimum dedicated skips/bins/stockpiles for these materials:

- timber/wood;
- steel/scrap metal;
- bricks;
- concrete;
- general waste; and
- other waste (i.e. for the collection of materials that may be re-used on future projects).

Where limited room is available for segregation of construction materials, consultation with recycling facilities will be undertaken to determine which materials can be disposed of within the same skip and still be easily sorted post collection.

Separate receptacles for the safe disposal of hazardous waste types (i.e. light bulbs, batteries, etc) will also be provided.

5.7.2 Space and Siting Requirements

Waste storage areas will be accessible and allow sufficient space for storage and servicing requirements. The storage areas will also be flexible in order to cater for change of use throughout the Project. Where space is restricted, dedicated stockpile areas are to be delineated on the site, with regular transfers to dedicated skip bins for sorting.

The positions of the designated waste holding areas on site will change according to building works and the progression of the development, but must consider visual amenity, OH&S and accessibility in their selection. Appropriate siting of waste stockpile locations will take into account slope and drainage factors to avoid contamination of stormwater drains during rain events.

Further reference should be made to the *Soil and Water Management Plan* for stockpile management controls.

All waste placed in skips or bins for disposal or recycling shall be adequately contained to ensure that the waste does not fall, blow, wash or otherwise escape from the site. Waste containers and storage areas are to be kept clean and in a good state of repair.

5.7.3 Servicing and Transport

The frequency of the waste removal will, in most cases, be dictated by the volume of material being deposited into each of the dedicated skips. Skips/bins are to be checked on a daily basis by the Site Manager to ensure that no overflow occurs. If skips/bins are reaching capacity, removal and replacement should be organised for the next 24 hours.

All skips/bins leaving the site will be covered with a suitable tarpaulin to ensure that the spillage of wastes from the skips whilst in transit is eliminated.

All waste collection for construction works are to be conducted between 7am and 7pm Monday to Friday, and between 7am and 1pm on Saturdays, or as per the SEARs. All site generated building waste collected in the skips and/or bins will leave the site and be deposited in the approved and appropriately licensed recycling centre, transfer station or landfill site.

5.7.4 Contaminated / Hazardous Waste

During the construction phases of the Project, there must be a commitment to engage qualified and certified contractors to remove all contaminated/hazardous materials (e.g. asbestos) and dispose of all contaminated/hazardous waste at an appropriately licenced facility, where applicable.

In the event that any contaminated or hazardous materials are unexpectedly uncovered during demolition or excavation works, the Site Manager is to stop work immediately and contact the relevant hazardous waste contractor prior to further works being undertaken in the area.

The Detailed Site Investigation Report (Coffey, 27/01/16) Revision V1 states that "review of the acid sulfate soil risk map for the area indicates that there is a low risk of encountering acid sulphate soils within the site".

5.7.5 Liquid Waste Management

Liquid waste is often produced from the washing down of plant and apparatus. Washdown of equipment, plant and machinery and concrete delivery trucks will take place off-site or on-site within a specified and appropriately bunded, washdown bay. There may be a local sewer that this waste water can be connected to; alternatively, this could be transferred into a localised waste water treatment facility or plant.

Any liquid wastes or dangerous goods wastes generated by the development (e.g. due to damage or leakage of containment) will be disposed of by a suitably qualified contractor to an appropriately licensed disposal facility.

5.7.6 Spills Management

Spills on the worksite are most likely to involve fuel, hydraulic oil or engine oil spilled from plant items, and paints and solvents.

If a spillage occurs, immediately identify the spilled materials and notify the Site Manager. Then contain the spill as soon as possible so it doesn't spread.

Containment measures for spillages will be provided at appropriate locations and in close proximity to staff car park areas, dangerous goods stores areas and main Project work areas (e.g. a spill kit containing non-combustible absorbent material).

Material Safety Data Sheets (MSDS) will also be located nearby spill kit areas for advice on spillage clean-up and disposal.

5.8 Signage

Standard signage will be posted in all storage/waste collection areas and all skips/drums/bins are required to be labelled correctly and clearly to identify materials stored within.

Refer to the EPA's website for construction and demolition waste and recycling signs.

Figure 4 Australian Standard Signs



Source: <http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm>

5.9 Training and Awareness

All staff (including sub-contractors and labourers) employed during the demolition and construction phases of the Project must undergo induction training regarding waste management for the Project site.

Site induction training is to cover, as a minimum, an outline of the WMP including:

- legal/compliance obligations;
- emergency response procedures on site;
- waste storage locations and separation of waste;
- litter management (both in transit and on site);
- the implications of poor waste management practices;
- correct use of general purpose spill kit; and
- responsibility and reporting (including identification of personnel responsible for waste management and individual responsibilities).

It is the responsibility of the Contractor or site operative to notify Council of the appointment of waste removal, transport or disposal contractors.

5.10 Monitoring and Reporting

The following measures will be undertaken to improve demolition and construction waste management and to provide more reliable waste generation figures:

1. Compare projected waste quantities with actual waste quantities produced.
2. Conduct waste audits of current projects (where feasible).
3. Note waste generated and disposal methods.
4. Look at past waste disposal receipts.
5. Record this information to track waste avoidance, reuse and recycling performance and to help in waste estimations for future waste management plans.

Records of waste volumes recycled, reused or contractor removed are to be maintained. Additionally, dockets/receipts verifying recycling and/or disposal in accordance with the WMP must be kept and presented to Council / the EPA when required.

Daily visual inspections of waste storage areas will be undertaken by site personnel and inspection checklists/logs recorded for reporting to the Site Manager on a weekly basis or as required. These inspections will be used to identify and rectify any resource and waste management issues.

Waste audits are to be carried out by the Construction Site Manager to gauge the effectiveness and efficiency of waste segregation procedures and recycling/reuse initiatives. Where audits show that the above procedures are not carried out effectively, additional staff training will be undertaken and signage re-examined.

Refer to the Construction/Site Management Plan and Quality Management Plan for further details of materials and waste monitoring and reporting.

5.11 Incident Response

Likely incidents to occur during the construction phase of the Project may involve fuel or chemical spills, seepage or mishandling of hazardous waste, or unlicensed discharge of pollutants to the environment. All environmental incidents are to be dealt with promptly to minimise potential impacts. An incident register must be maintained on-site at all times and include the contact details of the 24 hour EPA Pollution line.

5.12 Roles and Responsibilities

All personnel have a responsibility for their own environmental performance and compliance with all legislation.

BYCA is responsible for the management and disposal of construction waste. It will be the responsibility of BYCA to implement the WMP, and an employee and subcontractor responsibility to ensure that they comply with the guideline at all times.

The Construction Site Manager will ensure:

- the Client's waste services are not used and rubbish is not burned or buried at the site;
- compliance with the waste management procedures; and
- the Site Induction includes a briefing on Waste Disposal requirements.

Where possible, an Environmental Management Representative (EMR) should be appointed for the Project. Suggested roles and responsibilities are provided in **Table 13**.

Table 13 Building Contractor - Suggested Roles and Responsibilities

Construction Site Manager	• Compliance with waste management procedures. • Ensuring plant and equipment are well maintained. • Ordering only the required amount of materials. • Keeping materials segregated to maximise reuse and recycling. • Ultimately responsible for routinely check waste sorting and storage areas for cleanliness, hygiene and OH&S issues, contaminated waste materials, and also ensuring that all monitoring and audit results are well documented and carried out as specified in the WMP.
Environmental Management Representative (EMR) or equivalent role	• Approaching and establishing the local commercial reuse of materials where reuse on-site is not practical. • Establishing separate skips and recycling bins for effective waste segregation and recycling purposes. • Ensuring staff and contractors are aware of site requirements. • Provision of training of the requirements of the WMP and specific waste management strategies adopted for the Project. • Contaminated waste management and approval of off-site waste transport, disposal locations and checking licensing requirements. • Approval of off-site waste disposal locations and checking licensing requirements. • Assessment of suspicious potentially contaminated materials, hazardous materials and liquid wastes. • Monitoring, inspection and reporting requirements.

Daily visual inspections of waste storage areas may be delegated to other on-site staff. All subcontractors will be responsible for ensuring that their work complies with the WMP through the Project induction and contract engagement process.

It is the responsibility of the Construction Site Manager or site operative to notify the Principal Certifying Authority (Council) of the appointment of waste removal, transport or disposal contractors.

6 OPERATIONAL WASTE MANAGEMENT

Ineffective waste management for commercial premises can lead to environmental pollution, offensive odours, litter, attraction of vermin and occupational safety and hygiene problems.

Effective waste management reduces costs through the reuse of resources and minimisation of fees associated with removal, transportation and disposal of waste, and improves environmental outcomes locally, regionally and globally.

Effective waste management is achieved through the implementation of a WMP for the operational life of the development.

6.1 Targets for Resource Recovery

The performance of each development contributes to overall NSW State recycling targets, which for the commercial and industrial (C&I) sector, represents 57% (increasing to 70% by the year 2021) of total residential waste recycled (see NSW WARR Strategy 2014-21).

6.2 Waste Streams and Classifications

The operation of the Project will generate the following broad waste streams:

- domestic wastes generated on each level of the Hotel Tower (i.e. general waste and co-mingled recycling);
- commercial wastes generated on each level of the Club premises (i.e. general waste, co-mingled recycling);
- food organics recycling from food preparation areas;
- bulk packaging wastes including polystyrene and cardboard boxes;
- garden organic wastes from podium and potentially terrace areas; and
- stores, plant and general maintenance wastes.

Potential waste types along with their waste classification are provided below in **Table 8**. For further information on how to determine a waste's classification, refer to the Waste Classification Guidelines (EPA 2014).

Table 14 Potential Waste Generation with Classifications

Waste Types	NSW Classification	Proposed Reuse / Recycling / Disposal Method
General Operations		
General garbage (including non-recyclable plastics)	General solid (putrescible and non-putrescible) waste	Disposal at landfill
Recyclable beverage containers (glass and plastic bottles, aluminium cans), tin cans	General solid (non-putrescible) waste	Co-mingled recycling at off-site licensed facility
Food organics	General solid (putrescible) waste	Option to segregate for off-site recycling. Alternatively dispose to landfill with general garbage.
Bulk cardboard	General solid (non-putrescible) waste	Cardboard recycling at off-site licensed facility
Bulk polystyrene	General solid (non-putrescible) waste	Disposal at landfill
E-waste, batteries, printer toners and ink cartridges	Hazardous waste	Off-site recycling (via Council designated depots/drop-off events)
Light bulbs	Hazardous waste	Off-site recycling (via Council designated depots/drop-off events)
Clothes	General solid (non-putrescible) waste	Off-site recycling (i.e. Vinnies)
Crates, pallets	General solid (non-putrescible) waste	Return to suppliers for re-use
Maintenance		
Spent Smoke Detectors ¹	General solid (non-putrescible) waste OR Hazardous waste (some Commercial varieties)	Disposal at landfill OR offsite disposal at licensed facility
Glass (other than containers)	General solid (non-putrescible) waste	Off-site recycling
Fluorescent tubes and light bulbs	Hazardous waste	Off-site recycling
Cleaning chemicals, solvents, area wash downs, empty oil / paint drums / chemical containers	Hazardous waste if containers used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming. General solid (non-putrescible) waste if containers cleaned by washing or vacuuming.	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility. (Note: Discharge to sewer subject to Trade Waste Agreement with local Council.) ¹
Air-conditioning parts and filters	General solid (non-putrescible) waste	Disposal to landfill
Garden organics (lawn mowing, tree branches, hedge cuttings, leaves etc)	General solid (non-putrescible) waste	Reuse on site or contractor removal for recycling at licensed facility

Source: <http://www.environment.nsw.gov.au/waste/envguidlms/index.htm>

Note 1: The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) require that when more than 10 smoke alarms (particularly americium-241 sources) are collected for bulk disposal they must be treated as radioactive waste and the requirements of the National Health and Medical Research Council's *Code of practice for the near-surface disposal of radioactive waste in Australia (1992)* must be met. Contact ARPANSA for more information. http://www.arpansa.gov.au/radiationprotection/factsheets/is_smokedetector.cfm

6.3 Industry Waste Generation Rates

Approximate waste generation rates provided by EPA data are used to calculate the anticipated waste amounts for the proposed development and are presented in **Table 15**. Average waste generation rates provided below will be used to calculate anticipated waste amounts for the proposed redevelopment.

Table 15 Estimated Waste & Recycling Generation Rates

Type of Premises	Hotel Area	General Waste Generation (Average)	Recycling Generation ¹ (Average)	General Waste Generation (Maximum)	Recycling Generation ¹ (Maximum)
Restaurants	Restaurant / Kitchen / Servery	190 L/100 m ² /day	190 L/100 m ² /day	460 L/100 m ² /day	460 L/100 m ² /day
Cafés	Cafés	215 L/100 m ² /day	130 L/100 m ² /day	500 L/100 m ² /day	220 L/100 m ² /day
Hotels, bars, pubs	Bars	80 L/100 m ² /day	35 L/100 m ² /day	300 L/100 m ² /day	85 L/100 m ² /day
Licensed Club	Gaming areas	25 L/100 m ² /day	20 L/100 m ² /day	35 L/100 m ² /day	27 L/100 m ² /day
Offices	Office / Reception areas	8 L/100 m ² /day	6 L/100 m ² /day	16 L/100 m ² /day	12 L/100 m ² /day
Services	Cleaning areas	55 L/100 m ² /day	10 L/100 m ² /day	160 L/100 m ² /day	30 L/100 m ² /day
Showroom	Gym	10 L/100 m ² /day	25 L/100 m ² /day	22 L/100 m ² /day	100 L/100 m ² /day
Hotel	Hotel rooms	4 L/bed/day ²	1 L/bed/day ²	3.4 L/occupied room/night	10.2 L/occupied room/night
TAB	Sports Bar	40 L/100 m ² /day	20 L/100 m ² /day	-	-
Car parking	Car parks	1 L/bed/day	-	-	-

Source: NSW EPA's Better Practice Guidelines for Waste Management and Recycling in C&I Facilities 2012 and NSW Boards Fact Sheet "Buying into waste Management".

Notes

1. Recyclable waste generation includes paper and cardboard waste, as well as mixed recyclables (bottles, cans etc)
2. Waste generation rate has been modified to include recycling amounts.

6.4 Existing Club Waste Generation Rates

Review of monthly club waste data between May 2015 and April 2016 shows that the existing Dooleys Lidcombe Catholic Club generates the following average monthly waste generation rates:

Table 16 Average Monthly Waste & Recycling Generation Rates¹

Material Type	Average Monthly Tonnes	Average Annual Tonnes	Percentage of Total (%)
General Waste	13	161	37.6%
Co-mingled Recycling	4	47	10.9%
Food Organics ²	17	206	48.0%
Cardboard	1	14	3.4%
Confidential Waste	0.1	1	0.2%
Total	36	429	100%

Source: Historical Waste Metrics, Dooleys Lidcombe Catholic Club 2016

Notes:

1. Volumes converted using EPA waste density guidelines
2. Food organics waste from two restaurants (56% of total food waste) and the bistro (44%) at the existing club.

According to the above data, the Club is currently achieving a recycling rate of approximately 62% to 66%.

In addition, Dooleys Lidcombe Catholic Club have calculated that the existing Bistro and Café provide approximately 17,010 meal covers on average per month and that 0.4 kg of food waste is generated on a per meal basis. Monthly average food waste generation rates for the existing Club premises are outlined below:

Table 17 Average Monthly Food Waste (Pulped) Collected by Pulpmaster, May 2015 – April 2016

Location of Unit	Average Monthly Weight (kg)
Bistro/Café	8,030
VNH	5,181
8 Dragons	3,960
Total	17,171

Source: Historical Waste Data, Dooleys Lidcombe Catholic Club, 2016

6.5 Estimation of Waste Volumes/Tonnes

Using the above assumed waste generation rates and floor areas / number of rooms provided for the hotel, club and car park development, conservative waste generation volumes for the proposed development have been calculated and are presented in **Table 18**.

The estimated volumes have been converted into tonnes per day by applying conversation rates taken from Victoria's Ecorecycle Waste Wise Events toolkit for 'garbage' (0.15 tonnes per 1,000 L) and 'co-mingled containers' (0.063 tonnes per 1,000 L).

Table 18 Anticipated Club Operational Waste Generation Rates (L/day)¹

Storage Room	Area	Garbage Generation	Recycling Generation	Garbage Generation	Recycling Generation
	m ²	Average L/day	Average L/day	Average L/wk	Average L/wk
Level 3					
Club Other	808	65	48	452	339
Sub-Total	808	65	48	452	339
Level 1					
F&B	218	414	414	2,899	2,899
Yum Cha	228	433	433	3,032	3,032
F&B	438	832	832	5,825	5,825
Sports Bar	329	132	132	921	921
Cocktail Lounge & Bar	315	252	252	1,764	1,764
Furniture Store	27	15	15	104	104
Meeting Rooms	239	24	60	167	418
Conference	967	97	97	677	677
Sub-Total	2,908	2,478	2,514	17,346	17,597
Ground Floor					
Reception	381	30.48	23	213	160
Café	87	187.05	113	1,309	792
Noodle Bar & Kitchen	102	194	194	1,357	1,357
Alfresco	537	53.70	134.25	376	940
Gaming Area	843	84	211	590	1,475
Mehjong 1	10	1	3	7	18
Phoenix Room	326	33	82	228	571
Cashier	19	2	1	11	8
Terrace & Kitchen	57	108	108	758	758
Bar Terrace	47	38	16	263	115
Bar	300	240	105	1,680	735
Terrace	83	158	158	1,104	1,104
Pizza Oven	41	78	78	545	545
Terrace	397	754	754	5,280	5,280
Bistro	717	1,362	1,362	9,536	9,536
Kitchen	229	435	435	3,046	3,046
Conference & Terrace	435	827	827	5,786	5,786
Retail Store	44	17.60	17.60	123	123

Storage Room	Area	Garbage Generation	Recycling Generation	Garbage Generation	Recycling Generation
	m ²	Average L/day	Average L/day	Average L/wk	Average L/wk
Sub-Total	4,655	4,602	4,621	32,212	32,347
Basement (01 & 02)					
Club Staff Dining	64	122	122	851	851
Sub-Total	64	122	122	851	851
Club Activity Areas Total	7,627	7,201	7,256	50,409	50,795
Estimated Tonnages				7.6	3.2

Notes:

1. All waste generation rates are approximate.

Using the above waste generation rates, it is estimated that the Club will generate approximately 393 tonnes of general waste and 166 tonnes of recycling per year (a total of approximately 560 tonnes per year).

Alternatively, operational waste generation rates for the Club may be estimated taking into account the proposed increase in gross floor area (GFA) of the premises. The GFA of the Club is proposed to increase from 8,592 m² to 9,635 m² (including BOH areas), representing an overall increase in GFA of approximately 12%. The number of restaurants will also increase as part of the redevelopment proposal. Assuming waste generation rates increase proportionally to changes in GFA, the Club is estimated to generate between approximately 480 to 700 tonnes per year, or 40 to 58 tonnes of waste and recycling per month.

The estimated waste arisings associated with the Hotel Tower and the Multi Deck Car Park are provided below in **Table 19** and **Table 20**.

Table 19 Anticipated Hotel Operational Waste Generation Rates (L/day)¹

Storage Room	Measure	Garbage Generation	Recycling Generation	Garbage Generation	Recycling Generation
		Average L/day	Average L/day	Average L/wk	Average L/wk
Hotel Tower	No. of Beds				
10 Storey Hotel Tower (Level 4 – 14)	330 ²	1,320	330	9,240	2,310
Sub-Total	330	1,320	330	9,240	2,310
Level 2	Area (m²)				
Bar	229	183	80	1,282	561
Kitchen / Dining	357	678	678	4,748	4,748
Gym	67	7	17	47	117
BOH / Admin	182	15	11	102	76
Sub-Total	835	883	786	6,179	5,503
Ground Floor					
Café	253	544	329	3,808	2,302
Reception	171	14	10	96	72
Office	39	3	2	22	16
Sub-Total	463	561	342	3,925	2,391
Basement 01					
Workshop	103	57	10	397	72
Office	90	7	5	50	38
Staff Kitchen / Dining	100	190	190	1,330	1,330
Sub-Total	293	254	206	1,777	1,440
Basement 02					
Security & Office	146	12	9	82	61
Sub-Total	146	12	9	82	61
Hotel Activity Areas Total	-	3,029	1,672	21,203	11,705
Estimated Tonnages				3.2	0.7

Notes:

1. All waste generation rates are approximate.
2. Maximum occupancy rate assumed for 260 rooms.

The Hotel is estimated to generate up to 165 tonnes of general waste and 38 tonnes of recycling per year (a total of 204 tonnes per year).

Table 20 Anticipated Multi Deck Car Park Operational Waste Generation Rates (L/day)¹

Storage Room	Area	Garbage Generation	Recycling Generation	Garbage Generation	Recycling Generation
	m ²	Average L/day	Average L/day	Average L/wk	Average L/wk
Basement 01 & 02 (South)	9,784	98	98	685	685
Multi Deck Car Park (North)	21,000	210	210	1,470	1,470
Estimated Tonnages				0.3	0.1

Notes:

1. All waste generation rates are approximate.

The Basement Car Park (South) and Multi Deck Car Park (North) are estimated to generate up to 10 tonnes per year and 16 tonnes per year of waste and recycling respectively.

It is noted that all waste generation rates are approximate only.

It is recommended that scheduled waste audits be undertaken approximately one month into the operational phase of the development to quantify actual waste generation rates generated by the development. The assessment of generated waste volumes will be influenced by management and employee attitude to recycling and disposal, and the adequacy of signage and education provided for occupants staying in hotel rooms.

6.6 Waste and Recycling Equipment

6.6.1 General Bins

Bins which encourage source separation of recyclables will be utilised within all offices, administration, back of house and kitchen areas for use by employees and tenants using the site. General waste and recycling bins should be placed together to encourage source segregation of recyclables (i.e. milk bottles, containers, paper etc) from landfill wastes where possible.

Separate collection of clean office paper and cardboard, and printer toner and ink cartridges will also be undertaken in office areas containing printers. Public place bins will be located at entry/exit points to buildings and car parking areas for use by customers, where suitable. Slimline and/or 240 L mobile garbage bins (MGBs) will be utilised in kitchen areas for placement of landfill waste (excluding food organics) and recyclable containers.

Recycling bins may also be provided in hotel rooms where feasible. This will have two benefits; increased recycling rates and potential cost savings with diversion of waste from general (landfill) waste bins. The best placement for recycling bins is next to existing waste bins to provide convenient options for source segregation of recyclable materials. Other areas for recycling bins include the front desk, meeting rooms, conference rooms and the lobby. See **Section 6.10.1** for education requirements associated with the implementation of a hotel recycling program.

6.6.2 Mobile Garbage Bins

It is anticipated that the development will utilise 240 L, 660 L and 1100 L MGBs to transfer waste and recycling from activity areas to waste storage areas. MGBs will be stored in the Club and Hotel bin storage rooms or (for general waste and cardboard) emptied into compactors located in the basement nearby the loading dock. Typical dimensions for MGB sizes planned for use by the development are as follows:

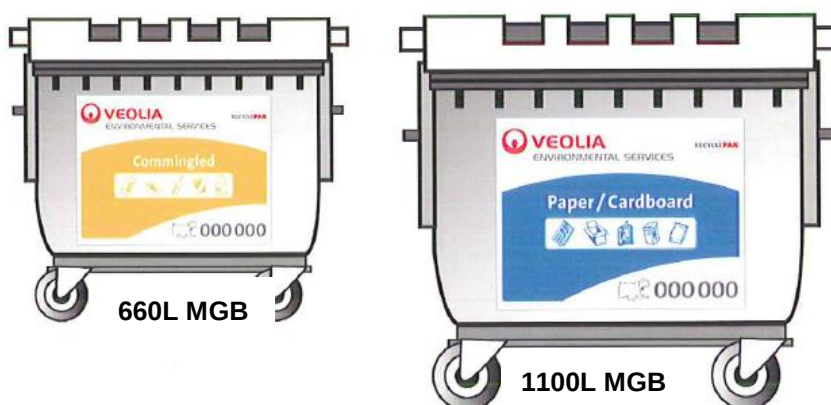
Table 21 Typical Dimensions for MGBs

Bin Type	Height (mm)	Depth (mm)	Width (mm)	Approx. Footprint (m ²)
240 L	1,080	735	580	0.43 (allow 0.5)
660 L	1,250	850	1,370	1.16 (allow 1.3)
1100 L	1,470	1,245	1,370	1.70 (allow 2.0)

Source: Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities 2012

Note 1. Allowance = MGB footprint + 15%.

Figure 5 Example MGBs



Source: Veolia

6.6.3 Estimated Number of Bins and Space Allocation

As a guideline to determine storage space requirements, **Table 22**, **Table 23** and **Table 24** outline the estimated waste storage area requirements for different types of bins that will either be used for the transfer or storage of waste and recycling. Please note that these calculations refer to the footprint required for storage of bins only. Access requirements and bin cleaning areas are excluded.

Table 22 Estimated Number of Bins and Storage Space Requirements – Club

Waste Type	Bin Type	Bin Numbers (assuming compaction of all General Waste)	
		Per Day	Per Week
Level 2			
General waste	660 L	1	N/A ¹
Recycling		2	3
Sub-Total		3	3
Level 1			
General waste	660 L	4	N/A ¹
Recycling		4	27
Sub-Total		8	27
Ground Floor			
General waste	660 L	7	N/A ¹
Recycling		8	50
Sub-Total		15	50
Basement (01&02) including Car Park			
General waste	660 L	1	N/A ¹
Recycling		1	3
Sub-Total		2	3
Estimated Total General Waste	660 L	13	-
Estimated Total Recycling		14	81 ²
Total Bin Space Allocation (m ²)		36	< 108

Notes:

1. Assumes general waste bins emptied daily into waste compactor in the basement.
2. A large proportion of recycling will be cardboard (approximately 25% of total cardboard and co-mingled recycling) which will be emptied daily into a waste compactor in the basement therefore the number of recycling bins required on a weekly basis is likely to be more in the range of 60 x 660 L.

It is estimated that the Club will utilise up to 27 x 660 L MGBs per day for transfer and storage of waste and recycling, therefore a space allocation of approximately 36 m² per day will be required. It is noted that general waste bins and cardboard recycling bins will be emptied on a daily basis into waste compactors located in the basement therefore weekly space allowances for these waste types are not required. Where co-mingled recycling is collected on a weekly basis, approximately 60 x 660 L co-mingled recycling MGBs and a space allocation of approximately 80 m² would be required. If 1100 L MGBs are appropriate for transfer, this will reduce storage space requirements to approximately 70 m² per week.

Additional space (approximately 15.7 m²) will need to be provided for approximately 8 x 1100 L² crushed glass bins which will also be stored with Club bins (see **Section 6.6.6** for more information).

² Email dated 30/11/15 from private waste contractor to Dooleys' Sustainable Project Manager.

Table 23 Estimated Number of Bins and Storage Space Requirements – Hotel

Waste Type	Bin Type	Bin Numbers (assuming no compaction)	
		Per Day	Per Week
Hotel Tower (Level 4 to 14)			
General waste	660 L	2	14
Recycling		1	4
Total		3	18
Bin Space Allocation (m²)		4.0	24.1
Hotel Facilities (Level 2)			
General waste	660 L	2	10
Recycling		2	9
Total		4	19
Hotel Facilities (Ground Floor)			
General waste	660 L	1	6
Recycling		1	4
Total		2	10
Basement (Level 01 & 02)			
General waste	660 L	1	3
Recycling		1	3
Total		2	6
Estimated Total General Waste		660 L	6
Estimated Total Recycling	5		20
Total Bin Space Allocation (m²)	14.7		71.0

It is estimated that the Hotel Tower will utilise up to 3 x 660 L MGBs per day for storage of waste and recycling, therefore a space allocation of approximately 4.0 m² per day or 24.1 m² per week will be required depending on the waste collection frequency. Where recycling is not carried out in hotel rooms, the estimated recycling amount will be disposed of within general waste bins.

It is estimated that the Hotel (all facilities) will utilise up to 11 x 660 L MGBs per day for the storage of waste and recycling, therefore a space allocation of approximately 14.7 m² per day or 71.0 m² per week will be required depending on the waste collection frequency.

Table 24 Estimated Number of Bins and Storage Space Requirements – Multi Deck Car Park

Waste Type	Bin Type	Bin Numbers	
		Per Day	Per Week
General waste	660 L	1	3
	240 L	1	7
Recycling	660 L	1	3
	240 L	1	7
Total Estimated	660 L	2	6
Bin Space Allocation (m²)	660 L	2.7	8.0

The Multi Deck Car Park will utilise up to 2 x 660 L per day for storage of waste and recycling, therefore a space allocation of approximately 2.7 m² per day or 8.0 m² per week will be required depending on the waste collection frequency.

It should be noted that the space allocations provided in this report refer to the storage of general waste and recycling bins only and do not include access and bin transfer requirements or bin washing facilities.

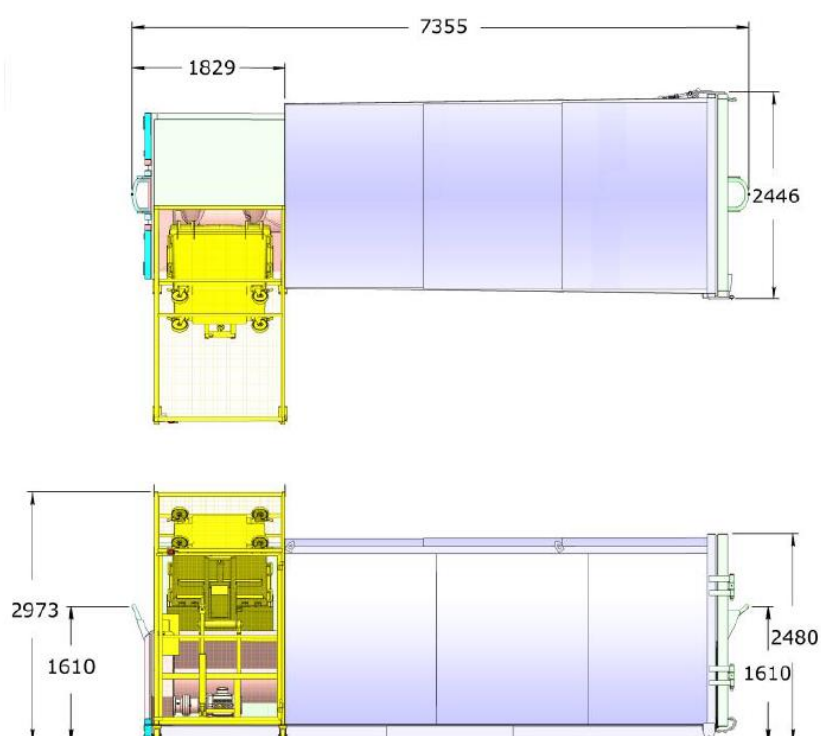
Approximately 15% additional floor space area should be allowed for within waste and recycling storage areas. Providing additional storage space allows flexibility in the choice of bins should general waste or recycling generation rates vary from those estimated.

Where appropriate, use of 1100 L MGBs in place of 660 L MGBs will decrease the number of bin pickups required by private waste collection vehicles and reduce the overall cost associated with waste and recycling collections.

6.6.4 Waste Compactors

Waste compactors will be utilised by the development for the compaction and storage of general waste and cardboard. It is anticipated that the Club areas will be serviced by 2 x 22 m³ waste compactors³ that will be stored in the basement in a designate room nearby the loading dock area. Compaction will occur at a compaction rate of 2:1 or 3:1 depending on private contractor specifications. The compactors will be designed to enable bin lifter loading as shown below.

Figure 6 Example Waste Compactor Dimensions



Source: Example Wastech Rota-Pak Compactor

³ Email dated 30/11/15 from private waste contractor to Dooleys' Sustainable Project Manager.

6.6.5 Pulpmaster Units

Pulpmaster units are currently used to manage food waste generated by the Club. The proposed redevelopment will comprise of twice as many restaurants as the existing Club premises. It is currently anticipated that 3 x Pulpmaster 5000 units will be sufficient to manage the additional food organic waste. Pulpmaster units will be stored in the bistro/cafe and restaurant back of house areas. Additional units may be installed for kitchen staff convenience.

Food waste is collected in purple food caddies (23 L) and carried to the Pulpmaster unit for emptying into the machine for pulping. Pulped food waste is then transferred via a pipeline to a storage tank. Food waste inputs and the operational status of each unit are monitored in real time by Pulpmaster. The storage tank is then emptied by Pulpmaster as required.

Separate storage tanks will be stored in the Basement 01 and 02 levels.

The dimensions of the Pulpmaster 5000 unit and the various tanks sizes available are shown below:

Table 25 Dimensions of Pulpmaster Equipment

Bin Type	Height (mm)	Depth (mm)	Width (mm)	Approx. Footprint (m ²)
PM 5000 Unit	1233	760	690	0.5 (excl. connections)
2700 L Tank	1900	1100	2120	2.3
4000 L Tank	2780	2108	-	3.5
6000 L Tank	3585	2108	-	3.5

Source: Pulpmaster

Figure 7 Example of a Food Caddy, Pulpmaster Unit and Tank



Source: Pulpmaster

6.6.6 Glass Crusher Unit

An on-site glass crusher (i.e. BottleCrushers unit or equivalent) will be utilised for both the Club and Hotel. Glass crushing machines reduce glass bottle volumes by up to 75% and can be located nearby bar areas. Crushed glass will be collected separately in MGBs (8 x 1100 L MGBs anticipated). Weight restrictions and criteria for collections will be determined in consultation with private waste collection contractors.

6.6.7 Collection Frequencies

Collection frequencies will be determined in consultation with private waste contractors engaged for waste collection and treatment / disposal. Collection frequencies will be coordinated to ensure no conflicts arise during delivery of goods / other waste and recycling pickups.

The following collection frequencies are anticipated for the development site:

Table 26 Anticipated Collection Frequencies

Waste Receptacle Type	Anticipated Collection Frequency
General Waste Compactor	Weekly
Cardboard Recycling Compactor	Weekly
Pulpmaster Tank	Weekly or as required
Grease Arrestor Tank	Weekly or as required
Co-mingled Recycling MGBs	Weekly
Glass Recycling MGBs	Weekly
Confidential Paper Recycling MGBs	Monthly or as required
Bulky Waste (broken furniture etc)	As required
E-waste Recycling Cage / Skip	As required
Fluorescent Tubes / Light Bulbs Recycling Boxes	As replaced
Crates / Pallets Return	Upon goods delivery

It is anticipated that compactors will be loaded from the side at a low level rather than from the rear of the compactor. A clearance of 5 m in the basement is adequate for compactor lifting.

6.6.8 Waste and Recycling Storage Rooms

Space will be provided for the storage of all waste and recycling generated by the development. Separate designated bin rooms in the basement nearby the loading dock have been planned for the storage of waste generated from the Club and from the Hotel.

Table 27 Dimensions of Waste and Recycling Storage Rooms

Area	Height (m)	Approx. Footprint (m ²)
South Building		
Pulpmaster Tank Room	3.0	40
Club Grease Arrestor Room		34
Club Bin Room		97
Hotel Bin Room		100
Compactor Area		164
North Building		
Multi Deck Car Park Bin Room	2.8	9.2

Review of **Table 25** above indicates that sufficient space is planned for the anticipated number of required bins in each waste and recycling storage room, assuming weekly waste collections of Club and Hotel generated wastes stored in compactors and MGBs.

Figure 8 Basement 01 - Waste & Recycling Storage & Collection Point

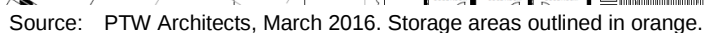
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Figure 10 Level 4 Hotel Waste & Recycling Interim Bin Storage



Source: PTW Architects & Axil Architects, June 2016. Storage areas outlined in orange.

6.6.8.1 Construction of Waste and Recycling Storage Rooms

The design of waste collection and storage areas has incorporated a number of measures to ensure best practice waste management. Waste and recycling storage rooms will be constructed to the following requirements:

- The waste storage rooms will be constructed in accordance with the requirements of the BCA ensuring impervious floors, walls and ceilings.
- The floors of waste rooms and recycling rooms must be constructed of concrete at least 75mm thick or other approved material graded and drained to a Sydney Water Corporation approved drainage fitting located in the rooms.
- The floor must be finished to a smooth even surface coved at the intersection with walls and plinths and provided with a ramp to the doorway where necessary.
- The walls of the waste and recycling rooms must be constructed of approved solid impervious material and shall be cement rendered internally to a smooth even surface coved at all intersections.
- The ceilings of waste and recycling rooms must be finished with a rigid smooth faced non-absorbent material capable of being easily cleaned.
- The waste and recycling rooms must be provided with an adequate supply of hot and cold water mixed through a centralised mixing valve with hose cock which is fitted with an aerator to increase water efficiency.
- A close fitting and self-closing door openable from within the room must be fitted to all waste and recycling rooms.
- Waste rooms and recycling room(s) must be constructed in such a manner as to prevent the entry of vermin.
- Waste and recycling rooms must be located for convenient access by users and must be well ventilated and well lit.

- Smoke detectors will be fitted in accordance with Australian Standards and connected to the fire prevention system of the building.
- Clear and easy to read signs and warning signs must be fixed to the external face of each waste and recycling room where appropriate.
- Compacters and/or other mechanical devices must be childproof where used in the storage of waste.

6.6.9 Stormwater Treatment for Car Parking Areas

Car parking areas must drain to a stormwater treatment device capable of removing litter, oil, grease and sediment prior to discharge to the stormwater system. All stormwater treatment devices are required to be regularly maintained and cleaned to ensure these devices remain effective, with all solid and liquid wastes collected from these devices disposed of in accordance with this WMP and the POEO Act.

6.6.10 Bulky / Hazardous Waste Storage

Sufficient space will be provided within the development for the storage of larger bulky items, recyclable electronic equipment (e-waste) including tvs, printers, computers, batteries, fluorescent tubes and smoke detectors, that cannot be disposed of in the general or recyclable waste stream.

- All hazardous wastes (i.e. fluorescent tubing, batteries, e-wastes and smoke detectors) should be recycled at an appropriately licensed facility.
- Fluorescent tubes and other light globes can be recycled via prepaid packs suitable for Australia Post to recycling facilities in Australia.
- E-waste (electronic waste such as computers, mobile phones, printer toners and ink cartridges) and batteries contain heavy metal contaminants and should be recycled at an appropriately licensed recycling facility.
- Commercial-use smoke detectors should be returned to the supplier for disposal (it is a condition of the supplier's licence to sell smoke detectors) and not disposed of with general landfill waste as they contain small amounts of radioactive material. Contact the supplier and/or the EPA or ARPANSA for information on how to return used smoke detectors.

Space will also be allocated to store reusable items such as crates, pallets, kegs so that storage in high transit areas is avoided.

6.7 Waste Transfer and Servicing

6.7.1 Transfer of Waste and Recycling to Storage Rooms

Cleaners will collect waste generated in hotel rooms in waste bins attached to service trolleys. Collected waste and recycling will be disposed of into suitable MGBs stored in the Level 4 lift lobby. MGBs will then be transferred via the service lift to the basement for storage in the Hotel bin room.

Cleaners / tenants will be responsible for transferring waste between the Club podium floors and the basement waste storage room. Examples of the type of bin trolleys that may be used for transfer of waste and recycling are provided below. Transfer pathways and cleaning schedules will be organised to ensure waste management practices do not conflict with pedestrian access ways and patron use of Club facilities.

Figure 11 Example Waste Trolleys



Source: Dooleys Lidcombe Catholic Club and Source Separation Systems

Private waste collection contractors and the Facility Manager will be responsible for the transfer of all bins between the bin rooms and the collection point during pickups.

The following waste servicing and access requirements will be implemented:

- All doors will be openable from both inside and outside the storage areas and must be wide enough to allow for the easy passage of waste and recycling bins, and waste equipment.
- Convenient and step-free access between the waste and recycling storage areas(s) and the collection point will be provided.
- The gradient of the waste and recycling storage rooms and any associated access ramps will be sufficiently level so that access for the purpose of emptying containers can occur in accordance with WorkCover NSW Workplace Health and Safety requirements. The EPA's Better Practice Guide (2012) recommends that the bin transfer grade should not exceed 1:30 for bins of greater than 360L capacity.
- Arrangements will be in place so that the waste and recycling storage rooms are not accessible to the general public.

6.7.2 Access to Waste Storage Rooms and Collection Points

Main waste transfer routes from waste and recycling storage rooms to the waste collection point in the loading dock have been planned to avoid pedestrian and vehicle thoroughfares as much as possible.

Paths between the waste and recycling storage rooms and the collection point in the loading dock will be level and free of steps or kerbs.

Waste storage areas must allow access by waste collection vehicles to travel in a forward direction while servicing bins with the access driveways to be of sufficient strength to support the collection vehicles in use. Waste collection vehicles vary in size and type according to the waste collection service employed. Access to waste collection areas by collection vehicles may be impeded where inadequate turning circle areas are provided. Access to waste collection areas will therefore be designed in consultation with contracted waste collectors to ensure adequate provisions (such as appropriate turning circles and clearance where in-house collection is required) are in place for collections vehicles to be able to service the development efficiently and effectively, with limited need to reverse.

It is typically a requirement that access to waste storage areas should be assessed for medium to heavy rigid vehicles (MRV - HRV). The loading dock will be serviced by a range of trucks including front-lift vehicles required to empty MGBs and hook-lift vehicles for waste compactor transport. Typical truck dimensions are provided below. Refer to **Figure 8** for an overview of loading dock access arrangements.

Table 28 Truck Dimensions

Vehicle Type	Length(m)	Width (m)	Height (m clearance)
Hook-lift vehicle	10.6	2.5	4.6
Rear-lift garbage truck	Up to 10.24	2.5	Up to 3.5 m
Front-lift garbage truck	Up to 11.5	2.5	Up to 6.2 m

6.7.3 Waste Collection Contractors

Written evidence of a valid and current contract/s with licensed waste collector/s will be held at the premises. Waste and recycling must only be collected by appropriately licensed and EPA approved waste contractors. Liquid wastes / wastewater must only be collected by licensed waste contractors as approved by Sydney Water and the EPA.

6.8 Guidelines for Minimisation of Packaging Waste

A Purchasing Policy will be implemented for the cafes/restaurants and will include strategies for waste minimisation such as:

- Source materials (i.e. napkins and takeaway containers, cups and utensils) that use recycled content.
- Bulk purchasing or the purchase of items that use minimal packaging.
- Investigation of supply chain options that ship products in reusable packaging and/or return to supplier options for packaging such as polystyrene boxes.
- Avoid use and distribution of plastic bags, particularly light single use plastic bags that are likely to become a source of windblown litter at the site.

6.9 Re-use, Recycling and Disposal

The following measures will be implemented on site:

- food waste that can easily be separated from other wastes (such as food waste in food preparation / kitchen areas, food waste in employee kitchen and lunch areas, and food waste scraps cleaned during table service) will be pulped and collected for recycling;
- used cooking oil will be collected for recycling in all kitchens;
- green waste collected from gardens and landscaped areas within the site will be reused where appropriate as mulch for landscaping at the site or recycled off-site;
- co-mingled recycling, beverage container recycling, paper and cardboard recycling will be carried out at the site where feasible;
- recycling bins will be co-located with general waste bins where possible to provide customer and employees with an option for recycling;
- clear signage will be provided for customer and employee waste bins to identify the materials that can be deposited in the bins;
- signage and/or bins will be colour-coded using Australian Standard bin colours to identify general landfill waste, co-mingled or beverage container recycling, and paper/cardboard recycling;
- paper/cardboard recycling will be provided on-site for employee use in office / administration / printer areas (particularly clean office paper and cardboard boxes);
- printer toner / ink cartridge recycle boxes (free register for Planet Ark's Close the Loop program servicable by Australia Post) will be provided in all printer rooms;
- provision for the collection of batteries and other recyclable resources (such as e-waste, fluorescent tubes, light bulbs, printer toners and ink cartridges) will be provided on site; and
- all garbage will be disposed of via a Council/EPA approved system.

6.10 Communication Strategies

Waste management initiatives and management measures should be clearly communicated to building managers, owners, employees, customers and cleaners. Benefits of providing this communication include:

- improved satisfaction with services;
- improved amenity and safety;
- improved knowledge and awareness through standardisation of services;
- increased ability and willingness to participate in recycling;
- reduced contamination of recyclables stream;
- increased awareness or achievement of environmental goals and targets;
- increased recovery of recyclables and organics (where implemented) material; and
- greater contribution to state-wide targets for waste reduction and resource recovery.

To realise the above benefits, the following communication strategies should be considered:

- Use consistent signage and colour coding throughout the development.
- Ensure all staff are trained in correct waste separation and management procedures.
- Provide directional signage to show location of and routes to waste storage areas.
- General waste and co-mingled recycling bins should be clearly labelled and colour-coded to ensure no cross contamination, where applicable.
- Any employees/cleaners should adhere to the WMP for compliance, in consultation with Management.
- Repair signs and labels promptly to avoid breakdown of communications.

The full set of signage can be found on the EPA's website:

- <http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm>
- <http://www.cityofsydney.nsw.gov.au/live/waste-and-recycling/collection-days-and-bins>

6.10.1 Hotel Recycling Program

A recycling program may be undertaken within the Hotel. Educating guests about recycling may be undertaken through website content, guest books, media boards, signage and colour coding of bins. Clear signage should be provided to indicate what items can be disposed of in each bin. Recycling could be restricted to beverage containers and paper/cardboard to reduce the potential for contamination, with all other waste items disposed of in the general (landfill) waste bin where there are any doubts about what can and can't be recycled. Employees (including reception staff and housekeeping) should also be trained in good recycling practices.

6.11 Monitoring and Reporting

Audit and / or visual assessment of bins prior to collection should be undertaken by Management within the first three months of being operational and once peak operations have been realised to ensure the Waste Management System is sufficient for the development's needs, and also on a half-yearly basis to ensure WMP provisions are being maintained.

Where audits show that recycling is not carried out effectively, additional staff training should be undertaken by Management and signage re-examined.

For reporting and billing purposes, it is anticipated that an average waste generation rate will be used to determine tenant waste management fees. Compositional audits may be carried out once the premises become operational to determine more accurate billing service fees if required.

6.12 Roles and Responsibilities

It should be the responsibility of Management to implement the WMP and a responsibility of the employees and cleaners to ensure that they comply with the guideline at all times.

Management should routinely check waste sorting and storage areas for cleanliness, hygiene and OH&S issues, and also ensure all monitoring and audit results are well documented and carried out as specified in the WMP.

An outline of waste management responsibilities are presented in **Table 29**.

Table 29 Waste Management Responsibility Allocation

Responsible Person	General Tasks
Management / Facility Manager	Ensure the WMP is implemented throughout the life of the operation.
	Update the WMP on a regular basis (e.g. annually) to ensure the Plan remains applicable.
	Undertake liaison and management of contracted waste collections.
	Organise internal waste audits on a regular basis.
	Manage any complaints and non-compliances reported through waste audits etc.
	Perform inspections of all waste storage areas and waste management equipment on a regular basis.
	Organise cleaning and maintenance requirements for waste management equipment.
	Monitor bins to ensure no overfilling occurs.
	Ensure effective signage, communication and education is provided to alert visitors/employees/cleaners about the provisions of this WMP and waste management equipment use requirements.
	Monitor and maintain signage to ensure it remains clean, clear and applicable.
	Ensure waste and recycling storage rooms are kept tidy.
	Transport of all bins to the collection point on a daily basis.
	Ultimately responsible for the management of all waste management equipment, cleaning requirements, waste transfer and collection arrangements.
Tenants / Staff	Removal of general waste, recyclables, cardboard, hazardous waste and food organics from tenanted areas for transfer to centralised waste and recycling collection rooms on a daily basis or as required.
	Appropriate use of pulpmaster units for food disposal.
Cleaners	Emptying of hotel room bins. Emptying of bins in common areas and administration areas.
	Monitor bins to ensure no overfilling occurs.
	Transport of bins to the waste and recycling storage room and/or collection point on a daily basis.
	Cleaning of all hotel bins and waste and recycling storage rooms on a weekly basis or as required.
Gardening Contractor, as applicable	Compliance with the provisions of this WMP.
	Removal of all garden organics waste generated during gardening maintenance activities for recycling at an off-site location or reuse as organic mulch on landscaped areas.