

Northside Private Hospital Gosford – Waste Management Plan

A submission to Erilyan

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Executive Summary

The proposed development is of State Significance and is directed by Secretary's Environmental Assessment Requirements (SEARs) issued by the Department of Planning & Environment (DPE). SEARs application number SSD-10159 refers to the proposed development and outlines the following specific requirements for addressing waste management at the site:

- *Demonstrate how above ground parking and services (including waste management, loading zones, and mechanical plant) would be fully integrated into the design of the development.*
- *Central Coast Council's Waste Control Guidelines.*

The waste management areas are fully integrated into the design of the development and this Waste Management Plan (WMP) was developed in accordance with the Central Coast Council's Waste Control Guidelines, also drawing on state best practice guidelines to address waste management for the proposed Northside Private Hospital in Gosford. Waste is expected to be generated through demolition of existing buildings, construction of the proposed hospital building and infrastructure, and ongoing operation of hospital facilities once complete.

Construction and demolition (C&D) waste is expected to be managed in by the demolition and construction manager for the project, in conjunction with the waste management contractor engaged to service waste generated across these stages. C&D waste will be stored in stockpiles and bulk bins around the site as demolition and construction works progress, ensuring that safe management and access is maintained throughout the process.

Being a hospital, the operational aspect of the proposed development will involve the generation of a range of wastes as classified in the NSW EPA *Waste Classification Guidelines* (2014) and the *Protection of the Environment Operations (PoEO) Act 1997*. This includes the following "medical" and related wastes:

- Special waste;
- Liquid waste;
- Hazardous waste; and
- Restricted solid waste.
- General solid waste (putrescible); and
- General solid waste (non-putrescible).

Site waste management will be accomplished with a single main waste storage area which will house both medical and general waste streams for appropriate disposal, storage and collection. The waste storage area at the Site is located adjacent to a large loading dock which will facilitate the collection of all waste generated at the Site.

Medical wastes generated at the site may include potentially hazardous materials (cytotoxic, sharp, radioactive or biohazard) and will therefore be disposed, stored and collected according to the appropriate guidelines for safe handling and management, to ensure risks are minimised to medical, cleaning and waste service personnel.

Resource recovery and landfill diversion is a key focus of this WMP as applied to the proposed development, with a focus on recovering a majority C&D wastes which maintain high resource recovery potential. This WMP also explores provisions for infrastructure and education for hospital operations with the aim to separate recyclable materials, in particular focusing on the diversion of large quantities of food waste expected to be generated at the site.

Glossary

Terminology	Description
AS	Australian Standard
C&D	Construction and Demolition
Council	Central Coast Council
DCP	Development Control Plan
ENM	Excavated Natural Material
EPA	Environment Protection Authority
GDCP	Gosford Development Control Plan 2013
GLEP	Gosford Local Environmental Plan 2013
HETI	Health Education and Training Institute NSW
LGA	Local Government Area
MGB	Mobile Garbage Bin
PPE	Personal Protective Equipment
WHS	Work Health and Safety
WMC	Waste Management Committee
WMP	Waste Management Plan
WSP	Waste Service Provider
WSRA	Waste Storage and Recycling Area

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1 Introduction

MRA Consulting Group was engaged by Erilyan Pty Ltd (Erilyan), to prepare a Waste Management Plan (WMP) for the proposed Northside Private Hospital (hereafter referred to as “the Site”). The Site is located in the Northside Medical Precinct in Gosford, on the corner of Racecourse Road and Faunce Street West which is situated in the Central Coast Council (CCC) Local Government Area (LGA). The proposed development will include the following features:

- 14 operating theatres;
- 10 intensive care unit bays;
- 6 levels of inpatient unit wards containing a total of 238 beds;
- Car parking for approximately 450 cars;
- Hospital front of house; and
- Hospital back of house.

This WMP has been prepared to inform building design and operation in relation to the delivery of best practice waste management, in addition to promoting sustainable outcomes across each stage of development.

1.1 Waste Management Context

The Site is situated under the Gosford Local Environmental Plan (GLEP) 2014 and therefore, relevant sections of the Gosford Development Control Plan (GDCP) 2013 apply to this WMP. The GDCP (2013) outlines the following waste management objectives and guiding principles which have been considered through the preparation of this WMP:

Waste minimisation:

- To assist applicants in planning for suitable waste management, through the preparation of a waste management plan.
- To minimise resource requirements and construction waste through reuse and recycling and the efficient selection and use of resources.
- To minimise demolition waste by promoting adaptability in building design and focusing upon end of life deconstruction.
- To encourage building designs, construction and demolition techniques in general which minimise waste generation.
- To maximise reuse and recycling of household waste and industrial/commercial waste.

Waste management

- To assist applicants in planning for sustainable waste management, through the preparation of a waste management plan.
- To assist applicants to develop systems for waste management that ensure waste is transported and disposed of in a lawful manner.
- To provide guidance in regards to space, storage, steep narrow allotments, amenity and management of waste management facilities.
- To ensure waste management systems are compatible with collection services.
- To minimise risks associated with waste management at all stages of development.

The following supplementary documents have also been directly relied upon in the preparation of this WMP:

- *Better practice Guidelines for Waste Management in Commercial and Industrial Developments (NSW EPA, 2012);*
- *Clinical and Related Waste Management for Health Services Policy Statement (NSW Ministry of Health, 2017);*
- *Generic Hospital Waste Management Plan (NSW Ministry of Health, 1999); and*
- *Waste Classification Guidelines (NSW EPA, 2014):*
 - *Part 1: Classification of Waste, and*
 - *Part 3: Waste Containing Radioactive Material.*

This WMP has been developed to comply with all relevant Council's codes and with other statutory requirements.

1.2 Legislative Context

The following legislation, policies and guidelines are applicable to the appropriate functioning and management of waste at and generated from hospitals. These documents have been utilised in the preparation of this WMP.

State:

- Work Health and Safety (WHS) Act 2011;
- WHS Regulation 2011;
- Protection of the Environment Operations (POEO) Act 1997;
- POEO Waste Regulation 2014;
- POEO Amendment (Scheduled Activities and Waste) Regulation 2008;
- Notice of exemption under clause 16C Number 2001 E01, POEO Waste Regulation 2005;
- Radiation Control Act 1990;
- Radiation Control Regulation 2013;
- Gene Technology Act 2003;
- Dangerous Goods (Road and Rail Transport) Act 2008;
- Dangerous Goods (Road and Rail Transport) Regulation 2014;
- Poisons and Therapeutic Goods Act 1966; and
- Poisons and Therapeutic Goods Regulation 2008.

Federal:

- Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code) 2016 (given force in NSW via the NSW Dangerous Goods legislation);
- Gene Technology Act 2000; and
- Gene Technology Regulations 2001.

Policies and guidelines relevant to clinical and related waste include the following:

- AS/NZS 4031:1992 (Non-reusable containers for the collection of sharp medical items used in health care areas);
- AS/NZS 4261:1994 (Reusable containers for the collection of sharp items used in human and animal medical applications);
- AS/NZS 3816:1998 (Management of clinical and related waste);
- AS/NZS 2161.10 Parts 1-3:2005 (Occupational protective gloves);
- AS/NZS 4123 Parts 1-7:2008 (Mobile waste containers);
- AS/NZS 2243 Part 3:2010 (Safety in Laboratories);
- RPS No.20 Safety Guide for Classification of Radioactive Waste (ARPANSA, 2010);
- Code for the Safe Transport of Radioactive Material (ARPANSA, 2014);
- Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation (RPS14) (ARPANSA, 2008);
- Industry Code of Practice for the Management of Biohazardous Waste (including Clinical & Related Wastes) (WMAA, 2014);
- The Australian Council on Healthcare Standards (ACHS) EQulPNational;
- Guidelines Standard 15 (ACHS, 2012) NSW whole of government guidelines and policies
- Waste Classification Guidelines. Part 1: Classifying waste (EPA, 2014);
- Waste Classification Guidelines. Part 3: Waste containing radioactive material CLINICAL AND RELATED WASTE MANAGEMENT FOR HEALTH SERVICES PROCEDURES PD2017_026 Issue date: August-2017 Page 4 of 19 (EPA, 2014);
- Labelling of workplace hazardous chemicals Code of Practice (SafeWork NSW, 2016);
- Code of Practice: Hazardous manual tasks (SafeWork NSW, 2016) NSW Health guidelines and policies;
- PD2008_004 Community Sharps Disposal by Area Health Services;
- PD2013_043 Medication Handling in NSW Public Health Facilities;
- Guideline for Approval of Method to Treat Clinical Waste;
- PD2017_013 Infection Prevention and Control Policy;
- PD2017_010 HIV, Hepatitis B and Hepatitis C - Management of Health Care Workers Potentially Exposed;
- PD2007_052 Sharps Injuries - Prevention in the NSW Public Health System;
- PD2012_061 Environmental Cleaning Policy;
- Infection prevention and control practice handbook. Principles for NSW public health organisations (CEC, 2016);
- Environmental Cleaning Standard Operating Procedures. Module 3.4 Environment (CEC-HAI, 2012); and
- Environmental Cleaning Standard Operating Procedures. Module 6 Cleaning Agents (CEC-HAI, 2012).

2 Background

2.1 Description of Proposed Development

The proposed development is for a single hospital building located on a site with an approximate footprint of 10,300m². Proposed works at the Site include the main hospital facility, common areas, basement carparking and landscaped areas.

The Site is situated near the existing Gosford Public Hospital which is approximately 750m east of the Site. Figure 1 below shows the Site in relation to surrounding roadways and land uses.

Figure 1: Site in context with its area



Source: Nearmap, 2019.

2.2 Zoning and Land Use

The Site is zoned B6 (Enterprise Corridor) according to the GLEP (2014). Surrounding land uses include a range of other business uses (B6 and B5 – Business Development), recreation (Public (RE1) and Private (RE2)) and residential (R1 – General Residential).

The Site is currently occupied by several buildings and warehouses associated with the former use by Ausgrid as a substation for the surrounding area.

2.3 Strategies

Waste management for the Site considers better practice, necessary equipment, and integration with other guidance documents including the NSW Waste and Avoidance and Resource Recovery Strategy (NSW EPA, 2014), and National Waste Policy: Less Waste, More Resources (EPHC, 2009). The key policy aims that are considered are:

- Avoidance (to prevent the generation of waste);
- Reduce the amount of waste (including hazardous waste) for disposal;
- Manage waste as a resource; and

- Ensure that waste treatment, disposal, recovery and reuse are undertaken in a safe, scientific and environmentally sound manner.

2.4 Assumptions

This report is a Waste Management Plan, forming part of the development documentation and assumes:

- Drawings and information that have been used in waste management planning for this WMP are the current design set for the development plan from the project architect, Health Projects International (HPI), dated 10/07/2019;
- Waste generation volumes are based on GDCP waste generation rates and *NSW Better Practice Guideline* figures. Waste management equipment and infrastructure recommendations have been made according to estimated waste generation for the Site and guidance from supporting regulatory documents outlined above; and
- This WMP is a living document and therefore, waste management equipment and systems described in this report are subject to change based on future operations and available technology.

3 C&D Waste Management

Demolition, excavation and construction activities at the Site will generate a range of construction and demolition (C&D) wastes. As outlined in Section 2.2, the Site is occupied by several existing buildings which will require demolition or deconstruction prior to the commencement of any construction works. The Site is also interspersed with trees towards the property boundaries, some of which may require removal prior to the construction phase. Throughout the development process, all materials will be reused and recycled where possible, minimising the disposal (landfilling) of materials other than those that are contaminated or otherwise unsuitable for reuse or recycling.

Waste storage during demolition, excavation and construction operations will consist of stockpiling of excavated and reusable material, as well as siting of skip bins for the separation of demolished and excess building materials for recycling. A skip bin (or bins) for residual waste and/or contaminated material will also be made available at the Site for disposal where necessary. Skip bins may require alternative placement across C&D operations to facilitate the safe and efficient storage of materials and will be retained within property boundaries to avoid illegal dumping.

The quantities, densities and bulking factors for waste and recyclables has been determined based on provisions set out in the GDCP. A waste storage area (Appendix A) shall be designated by the demolition and construction contractor and shall be sufficient to store the various waste streams expected to be generated during operations. Waste storage areas will be kept clear to maintain vehicular access and shall also be kept tidy to encourage separation of waste materials and for WHS reasons.

Waste management principles, management measures and facilities in use on the Site shall be included as part of the Site induction for all personnel working on the Site.

3.1 Demolition Waste

Demolition works at the Site will involve the demolition or deconstruction of existing buildings at the Site. Table 1 below outlines waste streams and material quantities expected through the demolition phase, including potential reuse and recycling opportunities, and anticipated material diversion percentage.

Table 1: Demolition waste generation estimates

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Concrete	600m ³	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor: crushing and recycling for recovered products (aggregates).
Asphalt	600m ³	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor: crushing and recycling for recovered products (aggregates).

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Bricks/pavers	200m ³	✓	✓	-	On site: cleaned and separated wherever possible for reuse or to enhance resource recovery. C&D processor: recovery for reuse where possible, crushing and recycling for recovered aggregate products.
Timber (treated & untreated)	40m ³	-	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor: recovery and recycling for recovered product (e.g. mulch) or organics processing.
Metal (ferrous)	25m ³	-	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor: metals recovery and recycling.
Metal (non-ferrous)	25m ³	-	✓	-	Onsite: to be separated wherever possible to enhance resource recovery. C&D processor: metals recovery and recycling.
Glass	25m ³	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. Glass recycler: recovery and recycling.
Fixtures and fittings	<10m ³	✓	✓	-	On site: reuse wherever possible or return to manufacturer. C&D processor: recovery and recycling.
Plasterboard	40m ³	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor or plasterboard processor: for

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
					recovered plasterboard products.
Floor coverings	40m ³	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D Processor: recovery and recycling.
Garden organics (Vegetation)	20-40m ³	✓	✓	-	Removal or vegetation to make way for construction. Total to be determined by a qualified arborist. Organics processor: storage on-site (from minor excavations) processing for recovered product (e.g. mulch or other blended recovered fines) or organics treatment.
Containers (cans, plastic, glass)	<2m ³	-	✓	-	Commercial contractor: recycling.
Paper/cardboard	<2m ³	-	✓	-	Commercial contractor: segregation of paper, cardboard or other streams.
Residual waste (general refuse)	<10m ³	-	-	✓	Separate recyclables where possible and disposal at principal licensed waste facility.
Hazardous/special waste (e.g. spills and contaminated wastes)	Unknown	-	-	✓	Management by a licensed asbestos and site hygienist should hazardous or special waste be found to exist at the Site.

3.2 Excavation & Construction

Construction works associated with the proposed development would include the following:

- Removal of minor vegetation;
- Excavation of basement and mezzanine levels for parking, loading and ancillary facilities;
- Construction of internal access and hardstand;
- Construction of a 9-storey building envelope; and
- Sitewide landscaping.

Table 2 outlines the expected excavation and construction waste quantities to be generated at the Site, in addition to the appropriate management methods for each material type.

The information below presents multiple options for materials reuse, recycling and disposal where applicable (e.g. return to manufacturer, recycled at construction and demolition (C&D) processor, or disposed to landfill if contaminated).

The following construction waste estimates provide a range for construction waste for new developments (GDCP). Low-end figures from the below ranges have been applied to estimated waste generation during construction as best practice material ordering and use is proposed to be employed.

- Timber - 5-7% of material ordered;
- Plasterboard - 5-20% of material ordered;
- Concrete - 3-5% of material ordered;
- Bricks - 5-10% of material ordered; and
- Tiles - 2-5% of material ordered.

Table 2: Construction waste generation estimates

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Excavation material	27,500m ³	✓	-	-	On site: testing (if necessary) for contamination and stockpiling of material for reuse as fill material. C&D processor: reuse/recycling of VENM and ENM Landfill if contaminated.
Concrete	250m ³	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor: crushing and recycling for recovered products (aggregates).

Type of waste generated		Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Bricks/pavers		10m ³	✓	✓	-	On site: cleaned and separated wherever possible for reuse or to enhance resource recovery. C&D processor: recovery for reuse where possible, crushing and recycling for recovered aggregate products.
Tiles	Roof	N/A	✓	✓	-	On site: cleaned and separated wherever possible for reuse or to enhance resource recovery. C&D processor: recovery for reuse where possible, crushing and recycling for recovered aggregate products.
	Floor and wall	10m ³	✓	✓	-	C&D processor: recovery for reuse where possible, crushing and recycling for recovered aggregate products.
Timber		10m ³	-	✓	-	Onsite: to be separated wherever possible to enhance resource recovery. C&D processor: recovery and recycling for recovered product (e.g. mulch) or organics processing.
Metal (ferrous)		10m ³	-	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor: metals recovery and recycling.
Metal (non-ferrous)		<5m ³	-	✓	-	Onsite: to be separated wherever possible to enhance resource recovery.

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
					C&D processor: metals recovery and recycling.
Plasterboard	50m ³	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse.
Glass	<10m ³	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse where possible. Glass recycler: recovery and recycling.
Fixtures and fittings	<2m ³	✓	✓	-	On site: reuse wherever possible or return to manufacturer. Reuse: surplus and offcut material returned to manufacturer for reuse where possible. C&D processor: recovery and recycling.
Floor coverings	<10m ³	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse where possible. C&D processor: recovery and recycling.
Packaging (used pallets, pallet wrap)	50m ³	✓	✓	-	On site: to be separated wherever possible to

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
					enhance resource recovery. C&D processor: recycling of timbers and plastic.
Garden organics (Vegetation)	<5m ³	✓	✓	-	Minimal garden organic waste from landscaping. Organics processor: storage on-site (from minor excavations) processing for recovered product (e.g. mulch or other blended recovered fines) or organics treatment.
Containers (cans, plastic, glass)	<5m ³	-	✓	-	Commercial contractor: recycling.
Paper/cardboard	25m ³	-	✓	-	Commercial contractor: segregation of paper, cardboard or other streams.
Residual waste (general refuse)	50m ³	-	-	✓	Separate recyclables where possible and disposal at principal licensed waste facility.
Hazardous/special waste (e.g. spills and contaminated wastes)	Unknown	-	-	✓	Management by a licensed asbestos and site hygienist should hazardous or special waste be found at the Site.

3.3 Waste Contractors and Facilities

To ensure best practice waste management, appropriate contractors and facilities have been proposed based on their location and service offerings (Table 4).

Table 3: Waste service contractors and facilities

Role	Details
Recommended Waste Collection Contractors	The following are local skip bin operators for consideration in the management of site excavation and construction waste: • Bingo Bins; • Skip Bins Central Coast; • Skip Bins Gosford; • Central Coast Skips; or another appropriate waste contractor as elected by the building contractor.
Principal Off-Site Recyclers	The following are local C&D processing facilities for consideration in the management of C&D waste generated at the Site: • Benedict Mayfield West; • Bingo Tomago; • Woy Woy Waste Management Facility; or another appropriate facility as elected by the waste management contractor.
Principal Licensed Landfill Sites	The following are local landfills for consideration in the management of residual and contaminated wastes generated at the Site: • Woy Woy Waste Management Facility; • Buttonderry Waste Management Facility; or another appropriate landfill or transfer station as elected by the waste management contractor.

3.4 Site documentation

This WMP will be retained on-site during the excavation and construction phases of the development, along with other waste management documentation (e.g. contracts with waste service provider). Responsibility for the WMP, waste documentation and processes during the excavation and construction phases will be with the Site manager or building manager.

A logbook that records waste management and collection will be maintained on site, with entries including:

- Time and date of waste collections;
- Description of waste type and quantity;
- Waste/processing facility that will receive the waste; and
- Vehicle registration and company name of collection contractor.

Waste management documentation, the logbook and associated dockets and receipts must be made available for inspection by an authorised Council Officer at any time during site works.

4 Operational Waste Management

4.1 Waste Classification

Given the nature of hospitals and the types of activities likely to occur at the proposed development, a range of waste types are proposed to be generated during regular activities from the use of the following facilities and amenities:

- 14 operating theatres;
- 10 intensive care unit bays;
- 3 stages of recovery units;
- 6 levels of inpatient unit wards containing 30 or 59 beds per level;
- Car parking for approximately 450 cars;
- Hospital kitchen for patient and staff meals;
- Lower Ground and Ground floor retail/ancillary tenancy units, including:
 - Food and beverage; and
 - General retail use (e.g. convenience store, flower shop, etc).
- Medical tenancies;
- Hospital front of house;
- Hospital back of house; and
- 2 levels (and other interspersed) plant room use.

The NSW EPA *Waste Classification Guidelines* (2014) defines several types of waste, according to Schedule 1 of the *Protection of the Environment Operations (PoEO) Act 1997. Part 1: Classifying waste* outlines the following waste types:

- Special waste;
- Liquid waste;
- Hazardous waste;
- Restricted solid waste;
- General solid waste (putrescible); and
- General solid waste (non-putrescible).

Additionally, the hospital will maintain a radiology department which may utilise radioactive substances, resulting in waste containing radioactive material. Waste containing radioactive material is defined in *Part 3: Waste containing radioactive material* of the *Waste Classification Guidelines* (NSW EPA, 2014).

From the above-mentioned waste classifications, Table 4 below details the specific waste types expected to be generated, under each of the classifications.

Table 4: Waste classification of hospital waste

Waste Classification	Waste Material	Additional Details
Special	Clinical and related waste: - Clinical, including: - human tissue (other than hair, teeth and nails), - bulk body fluids or blood, - visibly blood-stained body fluids, materials or equipment, - laboratory specimens or cultures, and - animal tissue, carcasses or other waste from animals used for medical research. - Cytotoxic; - Pharmaceutical, drug or medicine (defined under Section 8 of the <i>Poisons and Therapeutic Goods Act 1966 (NSW Ministry of Health)</i>; and - Sharps, being those things that: - Have sharp points or edges capable of cutting, piercing or penetrating the skin (such as needles, syringes with needles or surgical instruments), - Are designed for the purpose of cutting, piercing or penetrating the skin, and - Have the potential to cause injury or infection.	An exception to this classification occurs when special waste is mixed with restricted solid or hazardous waste. In these circumstances, the waste must be classified as special waste and restricted solid or hazardous waste (as applicable) and managed as both of those classifications.
Liquid	Liquid waste means any waste (other than special waste) that: - Has an angle of repose of less than 5 degrees above horizontal; - Becomes free-flowing at or below 60 degrees Celsius or when it is transported; - Is generally not capable of being picked up with a spade or shovel; and - Is classified as a liquid waste under an EPA gazettal notice.	If the waste meets the criteria outlined, it is classified as liquid waste, and no further assessment for classification is required.
Hazardous	The following waste types (other than special waste or liquid waste) have been pre-classified by the EPA as 'hazardous waste', being containers, having previously contained a substance of Class 1, 3, 4, 5 or 8 within the meaning of the Transport of Dangerous Goods Code, or a substance to which Division 6.1 of the Transport of Dangerous Goods Code applies, from which residues have not been removed by washing or vacuuming. Classes defined as follows: - Class 1 – Explosives; - Class 3 – Flammable liquids; - Class 4 – Flammable solids;	Transport of Dangerous Goods Code means the document called the Australian Code for the Transport of Dangerous Goods by Road and Rail (7th edition), approved by the Ministerial Council for Road Transport and published by the Commonwealth Government from time to time.

	- Class 5 – Oxidising substances and organic peroxides; and - Class 8 – Corrosive substances.	
Restricted Solid	N/A	N/A
General Solid (Putrescible)	The following wastes (other than special waste, liquid waste, hazardous waste or restricted solid waste) have been pre-classified by the EPA as 'general solid waste (putrescible)': - Disposable nappies, incontinence pads or sanitary napkins; - Food waste; and - Any mixture of waste referred to above.	Food waste means waste from the manufacture, preparation, sale or consumption of food but does not include grease-trap waste.
General Solid (Non-Putrescible)	The following wastes (other than special waste, liquid waste, hazardous waste, restricted solid waste or general solid waste (putrescible)) are pre-classified as 'general solid waste (non-putrescible)': - Glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal; - Paper or cardboard; - Containers, previously containing dangerous goods, from which residues have been removed by washing or vacuuming; and - Any mixture of waste referred to above.	Any mixture of waste containing both putrescible and non-putrescible general solid waste is considered to be putrescible.
Containing Radioactive Material	Wastes containing any natural or artificial substance that emits ionising radiation.	Any waste of this nature must be classified on the basis of both their radioactive and other characteristics, according to the step-by-step procedure outlined in the <i>Waste classification guidelines Part 3: Waste containing radioactive material</i> (NSW EPA, 2014).

4.2 Waste generation

As outlined in Section 4.1, various activities at the hospital will lead to the generation of different types of wastes. Sections 0 and 4.2.2 outline the expected waste generation for the various waste streams which have been separated into General waste categories and medical related waste (including clinical, hazardous and radioactive waste).

Table 5 outlines estimated waste generation rates derived the GDCP (2013) and NSW *Better Practice Guidelines for Waste Management in Commercial and Industrial Developments* (2012), related to various site-specific uses for the hospital.

Table 5: Waste generation rates (including stage 2 resources)

Level	Use	measured unit	General Waste Rate	Recycling Rate	Source
Basement Level 1	Kitchen	380m ²	10L/1.5m ² /day	2L/1.5m ² /day	GDCP
Lower Ground	Retail & ancillary (other)	485m ²	50L/100m ² /day	50L/100m ² /day	GDCP
Ground	Support & Admission	230m ²	10L/100m ² /day	10L/100m ² /day	GDCP
Ground	Retail & ancillary (other)	675m ²	50L/100m ² /day	50L/100m ² /day	GDCP
Ground	Retail (F&B)	62m ²	10L/1.5m ² /day	2L/1.5m ² /day	GDCP
Ground	Pharmacy	313m ²	185L/100m ² /day	60L/100m ² /day	EPA Better Practice Guidelines
Ground	Radiology and Pathology	1,057m ²	35L/100m ² /day	10L/100m ² /day	EPA Better Practice Guidelines
Level 1	Mental Health Beds	20 Beds	5L/100m ² /day	5L/100m ² /day	Minimal amounts per room/day
Level 1	Operating theatres and ICU	-	Mainly medically related waste (general wastes generated elsewhere)		
Level 2	Hospital Admin and Records	1,211m ²	10L/100m ² /day	10L/100m ² /day	GDCP
Level 2	CSSD	605m ²	10L/100m ² /day	10L/100m ² /day	GDCP
Level 2	Medical tenancies	1,292m ²	35L/100m ² /day	10L/100m ² /day	EPA Better Practice Guidelines
Level 3 - 8	Inpatient units (IPU)	238 Beds	5L/100m ² /day	5L/100m ² /day	Minimal amounts per room/day

4.2.1 General and Recyclable Waste

Based on figures outlined in Table 5, Council based waste generation rates only account for general waste and comingled recycling. These figures do not account for additional factors, including the likelihood of the general waste stream to contain a high proportion of food waste and the recycling stream to contain a high amount of paper & cardboard waste.

4.2.1.1 General and Food Waste

According various studies, including New Zealand study *Getting a Taste for Food Waste* (Goonan, Miroso & Spence; 2014), and *recycling Hospital Food Waste* (Metropolitan Waste and Resource Recovery Group (Victorian State Govt), 2017) – food waste in hospitals can represent up to 50% of the total waste generated by patients and food preparation uses, due to uneaten food returned by patients and food never served by the kitchen. Based on this assumption, it is estimated that of the total general waste generated by IPU beds, hospital staff room and food related uses, approximately 50% of this will be food waste which is reflected in Table 6.

4.2.1.2 Comingled Recycling and Paper & Cardboard

Table 5 also reflects recycling waste generation rates which refers to comingled recycling. This waste stream includes the following material types which would be expected to be generated by hospital uses:

- Paper;
- Cardboard;
- Food packaging; and
- Mixed material containers.

Of the above listed materials, paper and cardboard is expected to represent approximately 50% of all recyclable waste generated through hospital operations from activities including (but not limited to):

- Food and equipment delivery (paper/cardboard packaging);
- Office and administration;
- Physical record keeping; and
- Discarded reading materials.

Based on this assumption, it is estimated of approximately 50% of the total recycling waste generated by all hospital uses will be paper & cardboard. This is reflected in Table 7.

4.2.1.3 E-waste

E-Waste is expected to be generated regularly through the operation of the hospital. E-waste will be generated when electronic waste is damaged and/or replaced. Considering the scale of the development, there is likely to be enough volume of e-waste resulting from operation of the hospital to justify the separate storage and collection.

4.2.1.4 Grease trap waste

The food and beverage (F&B) use and hospital kitchen may produce grease and oil waste from food preparation into a grease trap (assuming meals are prepared at the Site).

Table 6: General waste generation estimations

Site Use	Space units	General Waste (L/day)	General Waste (L/week)	Food organics Waste (L/week)*	Revised General Waste (L/Week)
Kitchen	380m ²	2,533	17,733	8,867	8,867
Retail & ancillary (other)	484m ²	243	1,698	-	1,698
Support & Admission	230m ²	23	161	-	161
Retail & ancillary (other)	675m ²	338	2,363	-	2,363
Retail (F&B)	62m ²	413	2,893	1,447	1,447
Pharmacy	313m ²	579	4,053	-	4,053
Radiology and Pathology	1,057m ²	370	2,590	-	2,590
Mental Health Beds	20 Beds	100	700	-	700
Operating theatres and ICU	-	-	-	-	-
Hospital Admin and Records	1,211m ²	121	848	-	848
CSSD	605m ²	61	424	-	424
Medical tenancies	843m ²	452	3,165	-	3,165
Inpatient units (IPU)	238 Beds	1,190	8,330	4,165	4,165
Total		6,422	44,957	14,479	30,478

***Note:** Some uses expected to generate substantial quantities of food waste which can be diverted from the general waste stream. For the purposes of this WMP, 50% of general waste outlined for these uses is expected to be organics.

Table 7: Recycling Waste Generation Rates

Site Use	Space units	Comingled Recycling (L/day)	Comingled Recycling (L/week)	Paper & Cardboard (L/week)*	Revised Comingled Recycling (L/week)
Kitchen	380m ²	507	3,547	1,773	1,773
Retail & ancillary (other)	382m ²	243	1,698	849	849
Support & Admission	465m ²	115	805	403	403
Retail & ancillary (other)	1,061m ²	338	2,363	1,181	1,181
Retail (F&B)	112m ²	83	579	289	289
Pharmacy	313m ²	188	1,315	657	657
Radiology and Pathology	1,490m ²	106	740	370	370
Mental Health Beds	945m ²	100	700	350	350
Operating theatres and ICU	4,342m ²	-	0	0	0
Hospital Admin and Records	570m ²	121	848	424	424
CSSD	660m ²	61	424	212	212
Medical tenancies	675m ²	129	904	452	452
Inpatient units (IPU)	238 Beds	1,190	8,330	4,165	4,165
Total		3,179	22,250	11,125	11,125

***Note:** Hospital uses are expected to generate substantial quantities of paper & cardboard waste which can be separated from the comingled recycling stream to further improve resource recovery. For the purposes of this WMP, 50% of the comingled recycling stream outlined for hospital uses is expected to be paper & cardboard.

4.2.2 Medical Waste

For the purposes of this WMP, all clinical, cytotoxic, pharmaceutical, chemical and radioactive wastes are considered to be 'medical' related waste. Medical wastes are classified as hazardous wastes under the Waste Regulation. The hospital will be required to obtain the relevant licencing as required by the Waste Regulation. Table 8 below describes in detail the different medical wastes expected to be generated by the proposed hospital during operation and how they should be appropriately managed. Additional details with regards to specific management methods are outlined in Section 4.3.2.

Table 8: Detailed description of medical waste streams

Waste Stream	Definition
Anatomical Waste	Identifiable human body parts such as limbs, organs, placenta and recognisable or large pathological specimens resulting from investigation or treatment of a patient It does not include deceased bodies.
Clinical Sharps Waste	Any clinical object capable of inflicting a penetrating injury which may or may not be contaminated with blood and or body substance. This includes needles, ampoules and any other sharp objects or instruments designed to perform penetrating procedures. May contain clinical material or Genetically Modified Organism (GMO) waste.
Clinical Waste (incl. Pathological Waste)	Clinical waste with the potential to cause injury, infection or offence: • Unrecognisable human tissue (excluding hair, teeth, nails and anatomical waste); • Bulk blood or other body fluids (or body substances); • Material and equipment visibly stained by blood or body fluids (includes incontinence pads and disposable nappies that come from an infectious patient); • Lab specimens, cultures or other waste from lab investigations; • Waste from medical or veterinary research; and • Genetically Modified Organisms (GMOs).
Cytotoxic Waste	Material contaminated with residues or preparations containing materials toxic or otherwise harmful to cells. This includes any residual cytotoxic drug or laboratory chemical and any discarded material or clinical waste associated with the preparation or administration or excretion of cytotoxic drugs May include Genetically Modified Organisms (GMOs) or tissues containing GMOs.
Pharmaceutical Waste	Pharmaceuticals or other chemical substances specified as regulated goods in the Poisons and Therapeutic Goods Act 2008. Includes any substance specified in a Schedule of the Poisons List under the Act, as well as any therapeutic good which is unscheduled Includes expired or discarded pharmaceuticals, filters or other material contaminated by pharmaceutical products.
Radioactive Waste	Waste material, including sharps and clinical waste contaminated with a radioisotope which arises from the medical or research use of radionuclides, e.g. during nuclear medicine, radioimmunoassay and bacteriological procedures, and may be in solid, liquid or gaseous form, and which emits a level of radiation above the level set by regulatory authorities

Source: NSW Ministry of Health, 2017.

4.3 Waste Storage and Recycling

A single waste storage and recycling space will be made available on the lower ground floor of the proposed development (See Appendix A). This area is sized to sufficiently accommodate the range of waste materials expected to be generated at the Site throughout regular operations.

It is proposed that clinical, hazardous and radioactive waste would be managed separately to general solid waste (putrescible and non-putrescible) to ensure general waste streams are not contaminated with potentially hazardous materials.

The main waste management area defined on the Lower Ground floor will be sectioned to ensure waste materials are appropriately separated according to their classification and promote resource recovery of valuable materials where possible.

Table 9: Mobile garbage bin specifications

Bin Capacity	140L	240L	360L	660L	1,100L
Height (mm)	1065	1080	1100	1250	1470
Depth (mm)	540	735	885	850	1245
Width (mm)	500	580	600	1370	1370
Footprint (m ²)	0.27	0.43	0.53	1.16	1.71

Table 10: Bulk bin dimensions

Bin Capacity	1.5m ³	3m ³	4.5m ³
Height (mm)	910	1225	1570
Depth (mm)	905	1505	1605
Width (mm)	1805	1805	1805
Footprint (m ²)	1.63	2.72	2.90

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

4.3.1 General, Organics and Recyclable Waste

Based on waste generation rates outlined in Section 4.2, Table 11 below outlines options for storage and management of key general solid waste streams that will be generated at the Site.

Table 11: Waste storage and collection options for key general solid waste streams

Waste Stream	Option Number	Type (size)	Number of units	Collection Frequency	Additional Notes
General Waste	Option 1	1,100L	4	7 x week	rear lift truck
	Option 2	1,100L	7	4 x week	rear lift truck
	Option 3	3m ³	2	7 x week	front lift truck
	Option 4	4.5m ³	1	7 x week	front lift truck
	Option 5	Compactor unit	1	Variable depending on size and compaction ratio	hook truck - would require direct access to compactor unit for collection
	Option 1	1,100L	4	4 x week	rear lift truck

Food Organics*	Option 2	3m ³	1	5 x week	front lift truck
	Option 3	Specialty organics processing unit	1	weekly or other appropriate schedule agreed with collection contractor (also dependent on unit size)	Further details and examples outlined in Appendix C
Comingled Recycling	Option 1	1,100L	6	2 x week	rear lift truck
	Option 2	1,100L	4	3 x week	rear lift truck
	Option 3	4.5m ³	1	3 x week	front lift truck
Paper & Cardboard	Option 1	1,100L	4	3 x week	rear lift truck
	Option 2	4.5m ³	1	3 x week	front lift truck
	Option 3	Paper and Cardboard baler	1	weekly or other appropriate schedule agreed with collection contractor	Further details and examples outlined in Appendix D

**organics waste should be collected every second day at a minimum to reduce the risk of the build-up of malodorous waste.*

4.3.1.1 E-waste

One 1,100L bin is proposed to store E-waste generated at the Site. This will be collected on a regular basis by a dedicated e-waste collection service or specialty service provision offered by the contracted waste contractor.

4.3.1.2 Grease trap waste

Grease and oil collected in a grease trap will be serviced by a liquid waste contractor who will be responsible for pumping out grease trap waste on a regular basis.

4.3.1.3 Other Problem Waste

Other problem wastes such as batteries, smoke detectors, light globes/fluorescent tubes and fire extinguishers are likely to be managed by the appropriate contractor engaged to maintain these services at the Site. Therefore, no specific measures to collect, store or dispose of these problem wastes has been considered for the proposed development.

4.3.2 Medical Waste

Mobile bins, trolleys and waste bags will be utilised in conjunction with sharps containers to manage medical related waste as defined in Table 4.

Prior to the commencement of operation at the Site, contracting of a waste contractor should be considered with reference to both general solid waste streams and medical waste. Some waste contractors may have capability and capacity to manage both types of waste, with specialised services for some or all medical waste materials expected to be generated at the Site. Waste contractors should be assessed on their ability to provide a full range of services for the hospital, considering that a consolidated contract may represent storage, collection and financial efficiencies.

Alternatively, specialised medical waste contractors should be engaged to provide storage and collection for all medical related wastes expected to be generated at the Site.

Table 12: Management methods of medical waste streams

Waste Stream	Anatomical waste	Clinical sharps waste	Clinical waste (incl. Pathological Waste)	Cytotoxic waste	Pharmaceutical waste	Radioactive waste
Bin colour	Yellow	Yellow	Yellow	Purple	Red	Red
Lid colour of bin	Orange	Yellow	Yellow	Purple	N/A	Red
Plastic bin liners	Orange	N/A	Yellow	Purple	N/A	Red
Labelling of bin and liners	Anatomical waste	Clinical sharps	Clinical waste	Cytotoxic waste	Pharmaceutical waste	Radioactive waste plus specific requirements below
Symbol					Nil	
Symbol (description)	Black biological hazard	Black biological hazard	Black biological hazard	White telophase	Nil	Yellow background with distinctive 'trefoil' symbol in black and the lettering 'CAUTION RADIATION' in black
Label (PC1 or PC2 GMOs)	N/A	Contains GMOs	Contains GMOs	Contains GMOs	N/A	N/A
Specific requirements	For incineration only	For incineration or autoclaving and shredding Sharps containers must be rigid-walled and meet the requirements specified in AS/NZS 4031 and AS/NZS 4261. Autoclave tape and bag indicators must be used to show autoclaving has been completed.	For incineration or autoclaving and shredding. Autoclave tape and bag indicators must be used to show autoclaving has been completed. Fluid may be able to be discharged into sewer depending on Liquid Trade Agreement between the health service and water utility. All clinical waste once treated by a process acceptable to NSW Health may be reclassified in accordance with the Waste Classification Guidelines before recycling or disposal. There are special precautions regarding disposal of waste related to cases of viral haemorrhagic fever.	For incineration only Collection, transport and handling only by licensed and registered waste management companies.	Storage, destruction and disposal methods must comply with PD2013_043 Medication Handling in NSW Public Health Facilities. Pharmaceutical waste must be incinerated at a licensed controlled waste facility. Certain pharmaceuticals may only be destroyed by authorised persons under the Poisons and Therapeutic Goods Act 1966. Pharmaceutical waste bins must be lockable.	Radioactive material to be stored onsite in appropriate storage area until it decays to below the thresholds of a "radioactive substance" as defined under the Radiation Control Act and Regulation Waste is to be classified with reference to the Safety Guide for the Classification of Radioactive Waste and in accordance with the EPA Waste Classification Guidelines. Radioactive waste must be labelled with the substance, activity level and the date at which it is measured Handling and storage to comply with a Radiation Management Plan in accordance with the Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation (ARPANSA 2008). When radioactive waste is to be transported, health services must comply with the Code of Practice for the Safe Transport of Radioactive Material (ARPANSA 2014).
Relevant Act and Regulation	AS/NZS 3816:1998 Management of clinical and related waste. AS/NZS 4123:2008 Mobile Waste Containers.	AS/NZS 3816:1998 Management of clinical and related waste. AS/NZS 4123:2008 Mobile Waste Containers. Protection of the Environment Operations Act 1997. Protection of the Environment Operations (Waste) Regulation 2014.	AS/NZS 3816:1998 Management of clinical and related waste. AS/NZS 4123:2008 Mobile Waste Containers. Protection of the Environment Operations Act 1997. Protection of the Environment Operations (Waste) Regulation 2014.	AS/NZS 4123:2008 Mobile Waste Containers. Protection of the Environment Operations Act 1997. Protection of the Environment Operations (Waste) Regulation 2014.	Poisons and Therapeutic Goods Act 1966. Poisons and Therapeutic Goods Regulation 2008.	AS/NZS 4123:2008 Mobile Waste Containers. Radiation Control Act 1990. Radiation Control Regulation 2013.
EPA licence requirements	No	No	No	No	No	Yes – Waste Classification Guidelines: Waste containing radioactive material (EPA, 2014)

Source: NSW Ministry of Health, 2017.

5 Waste Management Systems

5.1 Sustainable Procurement

Hospital supply and purchasing department and the product evaluation committee will be committed to waste avoidance and waste minimisation. Where the use of disposable products is unavoidable, their environmental impact should be assessed. In addition to infection control, occupational health & safety, and value for money, environmental concerns will also be taken into consideration when evaluating purchasing of products. Existing research and evaluation information from other hospitals will also be considered.

Preference shall be given to products and packaging (where possible and practicable) which are:

- Manufactured from recycled raw materials (provided they are cost/performance competitive);
- Manufactured from renewable resources;
- Reusable (particularly nonclinical products); and
- Totally or partially recyclable or with recyclable components.

Where appropriate, tender documents shall require manufacturers, suppliers and distributors to:

- Correctly specify the materials used, their origin, the recommended method of disposal/reuse/recycling, and the likely impact on the environment;
- Avoid the use of materials known to be toxic to the environment including chlorofluorocarbon products and/or by-products, phosphates and heavy metals;
- Keep packaging to the minimum necessary for the safe transport and delivery of the product;
- Specify whether packaging is recycled, recyclable, reusable or biodegradable;
- Accept return of used packaging; and
- Clearly specify the energy rating on appropriate appliances and fittings.

Where appropriate and cost effective, reusable items should be purchased in preference to non-reusable items. Items which are intended for reuse should be able to withstand the appropriate cleaning, disinfection or sterilisation process.

Products should be supplied with detailed manuals outlining cleaning procedures. When comparing reusable items with non-reusable items, a life cycle analysis should be conducted and should include (but not be limited to):

- Product cost;
- Product lifecycle analysis;
- Labour;
- Transport;
- Cleaning;
- Energy (gas, electricity, etc);
- Water;
- Disposal; and
- Maintenance.

5.2 Site Waste Management Systems

NSW health activities have waste management responsibilities and need to operate in line with the minimum standards set out in the relevant policy directives. Health services are required to establish a Waste Management Committee (WMC) responsible for implementing the Waste Management Plan (see below). The WMC should have a clear term of reference and include representation from key areas/departments of the health service, other entities covered by the Waste Management Plan (WMP), WHS and include expertise in waste management. WMCs should regularly review contractors' reports regarding site waste stream management and collection data.

The WMC and site cleaners will be responsible for the monitoring of site waste management systems and ensuring resource recovery and contamination reduction methods are employed. Should any issues impacting on the operational efficiency, safety and suitability of waste management be identified, site cleaning staff should inform hospital management and/or the WMC for appropriate actions to be taken.

The WMC is responsible for:

- Using this WMP to inform waste management operations, design and infrastructure;
- Providing educational materials and information to users outlining:
 - Waste management system and use/location of associated equipment,
 - Sorting methods for recycled waste, awareness of waste management procedures for waste minimisation, maximising recovery and reducing contamination of recyclables,
 - Improving facility management results (lessen equipment damage, reduce littering, and achieve cleanliness).
- Making information available to users, site staff and visitors about waste management procedures;
- Ensuring contractors use loading areas correctly;
- Ensuring timing of waste collections does not clash with other deliveries or collections that may require use of the loading dock;
- Ensuring correct signage is installed and maintained in waste storage and service areas;
- Using contracts to define the allocation of responsibilities for waste management contractors;
- Holding a valid and current contract with licensed collector(s) for waste and recycling collection;
- Encouraging waste avoidance and achievement of resource recovery targets;
- Providing operational management for delivery of waste objectives; and
- Organising waste collections by elected contractor(s) for the Site.

Site cleaner duties include:

- Organising, maintaining and cleaning the waste storage and service areas;
- Arranging access to waste collection areas and bins on collection days;
- Cleaning and exchanging all bins;
- Monitoring any vermin and pest issues and arranging appropriate controls (traps or fumigating) and maintenance of doors or other points of potential entry; and
- Monitoring, cleaning of and arranging maintenance of the turntable.

Site uses are responsible for:

- Allocating space for a dedicated and enclosed waste and recycling storage area for intermediate storage before disposal to designated waste storage areas;

- Separating and storing recyclables;
- Separating and appropriately disposing medical ;
- Reusing materials where possible;
- Storage and management of liquid wastes (including fit-out i.e. bunding and grease trap, containers and appropriate collection); and
- Refrigerating waste prior to disposal if it may present an odour nuisance, so that storage of potential odorous waste is limited.

5.3 Site Waste Management and Handling

5.3.1 Waste containers and handling methods

Waste storage containers will be utilised at the Site during regular operations for the interim storage of waste at the source of waste generation, and prior to collection by the appropriate waste contractor.

All waste containers and bin liners are to be colour coded according to the intended waste stream to be handled/stored.

All clinical waste stream bags and receptacles stored, pending collection, should be in a secured area that permits restricted access.

5.3.1.1 Waste bags/liners

Waste bags should be used for the interim storage of general waste and clinical waste prior to disposal in MGBs for servicing. The following methods should be applied when handling waste bags, especially when in relation to clinical waste:

- Waste bags must not be filled to more than two-thirds their total capacity;
- Contents are to be secured within the bag when closing;
- Excess air should be excluded without compaction, prior to closure at the point of waste generation;
- Handling should be kept to a minimum to avoid unnecessary risk of spillage, contamination or injury;
- When handling, all bags should be held away from the body by the closed top and placed directly into a bin appropriate to the waste type;
- Clinical waste bins should be handled with appropriate PPE which includes the following:
 - Puncture resistant (rubber) gloves;
 - Apron; and
 - Protective eyewear.
- Pathology specimens and associated materials must be double packaged;
- Anatomical waste must be packaged to minimise risk of spillage or puncturing; and
- Sharps or sharp objects that may cause punctures in waste bags must never be placed in waste bags.

5.3.1.2 Mobile Garbage Bins (MGBs)/Trolleys

MGBs are reusable rigid-walled containers which vary in size, used to contain and transport general and clinical wastes. Similarly, trolleys are used to collect and transfer wastes contained in waste bags or non-mobile containers.

MGBs and trolleys must be dedicated solely for collecting and transporting waste to decrease spills, minimise collector contact with waste and minimise manual handling. MGBs and trolleys must be washable, with a lid

that is lockable. MGBs must be securely closed during movement but not necessarily locked, unless the MGB is a pharmaceutical waste bin. Refer to section 2.4.1 for further requirements.

MGBs and trolleys must never be overfilled, and the load should not be more than threequarters full (i.e. Less than 55 kg). Waste collection rounds should be performed as often as necessary to minimise housekeeping hazards.

If MGBs and trolleys are not removed and cleaned by the waste contractor then the following procedures are recommended to be regularly completed by the health service (21, 22):

- Rinse with cold water then wash with warm water and a neutral detergent, or equivalent (e.g. Chemical formulated for cold water use);
- Trolleys and MGBs should then be drained to sewer and left to dry;
- Clean trolleys and bins should be stored separately to soiled containers;
- Appropriate personal protective equipment must be worn when cleaning MGBs; and
- Wastewater may only be diverted to the sewer.

5.3.2 manoeuvring methods

All health services must optimise the waste collection process, reduce handling and transportation, and promote safe work practices. Waste transport routes should avoid food preparation and heavily used areas where possible. Waste collection times must be routine to facilitate effective upkeep and waste disposal practices.

Health services should comply with the record keeping requirements specified in the EPA clinical waste tracking exemption (as in force from time to time) for clinical waste, cytotoxic waste, sharps waste, pharmaceuticals and poisons, and radioactive waste.

Section 4.2.2 also gives tabular information from the *Clinical and Related Waste Management for Health Services (NSW Ministry of Health, 2017)*, outlining management methods for clinical, cytotoxic, pharmaceutical and radioactive waste.

5.4 Waste Storage and Recycling Area Specifications

A singled dedicated waste storage area has been allocated for clinical waste management needs of the proposed hospital and is sited separately to other food and clean storage areas. This storage area will be further divided to separate areas related to the management of general waste streams and medical related (clinical) waste streams as defined in section 4.1.

Storage areas will maintain bins and waste handling equipment consistent with that outlined in Section 4.3, and is sufficiently sized to accommodate future changes in the waste management and handling process once the hospital becomes operational. Construction must conform to Building Code of Australia, Australian Standards and local laws. Specifications include:

- Sited away from areas of high pedestrian traffic to minimise odour and amenity impacts;
- Enclosed to minimise exposure and reduce risk of odour and amenity impacts;
- Signage for safety and waste bin identification;
- Safety precautions, staff training and signage for plant;
- Noise attenuation for waste management and waste storage areas that limits effects to residents from compactor, bin transfer and collection vehicle noise;
- Floors constructed of concrete or other approved solid, impervious material that can be cleaned easily;

- Adequate supply of water with hose cock as close as practicable to the doorway or storage area;
- Ventilation in accordance with Australian Standards AS1668; and
- Security and lighting.

Additional measures shall be put in place for the wash bay, and Area B which will be entirely enclosed:

- Light colour finish for all room surfaces;
- Smooth, even surface covered with vertical wall and plinth faces;
- Grading and draining to an approved drainage fitting located in the room;
- Doorway ramp (if not level);
- Close fitting and self-closing door; and
- Suitable construction including limited entry paths to prevent vermin.

General management measures that should be applied to the Site waste storage area include:

- Regular cleaning to reduce likelihood odour and vermin occurrences;
- The storage area for anatomical and/or clinical waste may require refrigeration to prevent decomposition of the waste – Otherwise waste should be removed on a frequent basis to avoid this;
- Remain locked and be inaccessible to the public; and
- Maintain appropriate spill kits to manage waste types kept in the storage area.

5.5 Training and Information

Management are responsible under the WHS legislation for providing appropriate information, training, instruction and supervision to ensure that safe systems of work are developed and maintained to minimise the risk of injury associated with waste handling and facilitate efficient waste management.

All workers need to know how to handle waste safely and notify incidents, including casual staff, contractors and volunteers. It is the responsibility of each health service to identify all workers that require training and ensure that the training is undertaken to the standards required by this policy. This includes providing a waste management education module as part of the orientation for all new relevant staff.

The Health Education and Training Institute NSW (HETI) offers online learning and training modules on waste processes through My Health Learning. Specific training in all procedures associated with the implementation of the WMP should be provided to:

- Waste generators;
- Handlers, collectors;
- Transporters; and
- Key management staff.

Training programs by the health service should aim to prevent injury and disease by ensuring the health services include:

- Infection control and hand hygiene procedures;
- Approved work practices, including specific waste handling and disposal, spill management, spill kit locations, etc;
- Regulatory requirements and methods of compliance;
- The provision and use of required PPE;

- WHS and public health information relating to the equipment and chemicals/drugs used in the health service, e.g. Hazardous chemicals, handling of hazardous goods, hazardous manual tasks, operating manuals for clinical devices, sharps injury prevention, etc;
- First aid and treatment for needle stick and blood and body fluid (or body substance) exposure;
- Emergency response procedures and facilities (e.g. Emergency showers, etc.); and
- Details of workplace vaccination program, post-incident counselling services with rights to privacy, etc.

Training programs must be revised as new equipment and work processes are introduced, or as technological change occurs, to ensure they do not introduce any new hazards.

Training and responsibility should also be provided around notifying incidents relevant to serious injury or illness. If a serious injury or illness, a death or a dangerous incident occurs, processes must be in place to ensure it is reported to SafeWork NSW immediately and the workers compensation insurer is notified within 48 hours. Staff must be made aware of and trained in processes for notifying incidents.

5.6 Signage

Signage that promotes resource recovery, waste minimisation, safety and amenity follows the Australian Standard for safety signs for the occupational environment (Standards Australia 1994).

Signage will be designed to consider language and non-English speaking backgrounds, vision impairment and accessibility (see Figures Figure 8, Figure 9 and Figure 10 – Appendix E). Illustrative graphics must form a minimum 50% of the area of the signage. Signage is to be prominently posted in each waste storage area indicating:

- Garbage is to be bagged and placed into waste bins;
- Details regarding acceptable recyclables and the location of their respective receptacles;
- Commingled recyclables are to be disposed of loose (not bagged);
- No standing and danger warnings applying to the area surrounding waste storage and collection areas;
- Contact details for arranging the disposal of bulky items; and
- Information on keeping the areas tidy.

5.7 Spill Management

Health services must manage waste spills as they occur in the facility, ensuring that:

- The WMP specifies procedures for waste spills;
- Personnel involved in spill management are trained in emergency procedures and handling requirements, including use of spill kits. Spill kits should be readily accessible throughout the health service and clearly labelled and mapped;
- Health services have personal protective equipment and emergency spill kits that are appropriate to the waste streams handled, so staff can safely and effectively clean spills and dispose of the waste;
- Spill kits should be disposed of with the relevant waste stream; and
- Spill kits are restocked with the necessary components immediately after use, returned to their locations and regularly inspected for malfunctioning or missing components.

The WMC or equivalent is responsible for identifying other types of spill kits that might be needed to address spills from other waste streams.

5.8 Prevention of Pollution and Litter Reduction

To minimise dispersion of litter and prevent pollution (to water and land via contamination of runoff, dust and hazardous materials), the operator shall be responsible for the following:

- Maintenance of open and common site areas;
- Ensuring waste storage areas are well maintained and kept clean, including:
 - Prevention of overflow,
 - Keeping lids closed, and
 - Checking for bung leaks and damage bins.
- Securing the waste storage area from vandalism and the escape of litter;
- Identification and appropriate disposal of goods with hazardous material content (paints, fluorescent tubes, smoke detectors);
- Acting to prevent dumping and unauthorised use of waste areas; and
- Requiring contractors to clean up any spillage that may occur during waste servicing or other work.

The above will minimise the dispersion of site litter, reduce stormwater pollution and thus reduce the risk of impact to local amenity and the environment.

5.9 Collection Method and Disposal

Based on the anticipated waste generation rates for the Site, a private contractor will be required to collect waste generated at the Site. The operator shall select a waste service provider (WSP), negotiate a service agreement, and pay for these services.

The recommended arrangements for the Waste storage area and loading dock are as follows:

- Entrance to the Site via entry point on Racecourse Road;
- Collection of General Solid Waste bins (either front or rear lift) to occur from the loading dock;
- Medical and related wastes will be similarly collected from the loading area; however, collection vehicles may not be large rear lift or front lift bulk collection trucks;
- Steel front lift bins shall be collected by a front-lift vehicle. Due to their weight, steel bin will be stored in a position that minimises the need to shift bins to/from the collection vehicle. Typical front-lift vehicle dimensions are as follows:
 - 11.5m length,
 - 6m operational height, and
 - 30 tonne gross vehicle mass.
- Any plastic MGBs (240L - 1100L) shall be collected by a rear-lift vehicle (similar vehicle to collect baled cardboard and e-waste if elected) with typical dimensions as follows:
 - 8.8m length,
 - 4m operational height (max truck height), and
 - 24 tonne gross vehicle mass.
- Identifiable areas will be required where users, visitors and WSP staff can recognise and avoid any risk associated with moving vehicles, and bin moving and handling;
- Exit from the Site will be achieved by completing a turn using the loading dock areas, and exiting the site via the Racecourse Road access point, in a forward facing direction.

All site waste collections will occur towards the rear of the Site, at the designated loading area. Bins for waste and recyclable would be serviced directly from the designated waste storage area, according to the collection schedule, to be agreed with the WSP.

5.10 Audits

Auditing is important to establish benchmarks and determine if waste is being appropriately managed by site staff and other personnel. Waste auditing should be conducted by/on behalf of the waste contractor, or by an independent waste consultant at a frequency to be determined with the waste management contractor (for example, on a yearly basis). As a standard method, waste audits should include the following methodologies:

- Checking waste streams are appropriately used and managed;
- Checking that bags and MGBs/trolleys are not filled with loads more than two-thirds or three-quarters of their capacity, respectively;
- Review of WMP;
- Interview with key waste facility users and management staff; and
- Review of records.

Auditing of waste streams and bin use can be achieved through visual audits of bins, over several independent times and days. A visual audit of waste bins should detail the following:

- Bin type (waste stream);
- Bin size (volume);
- Bin fullness at the time (as a percentage, if overflowing this should be recorded as 110%);
- If the bin is in good working order (no compromising damage or excessive wear and tear); and
- Separate documentation of approximate waste distribution (based on visual assessment and minimal manipulation of waste, details should be recorded on the types of waste in the bin).

An example of information from the above auditing procedure is shown in Table 13 and

Table 14 as follows:

Table 13: Visual waste audit data recording example

Bin number	Waste Stream	Bin size (L)	Bin fullness	Bin condition	Other details
1	General waste	660L	90%	Damaged wheel	-
2	General waste	660L	80%	Good	Considerable amount of food waste
3	Comingled recycling	240L	80%	Cracked lid	-
4	Paper & cardboard	240L	110%	Good	Bin overflowing

Table 14: Visual waste audit waste distribution example

Bin number	Waste Stream	Residual waste	recyclable containers	paper and cardboard	Organics	Other (specified)
1	General waste	60%	5%	10%	15%	10%
2	General waste	35%	10%	10%	40%	5%
3	Comingled recycling	10%	70%	5%	10%	5%
4	Paper & cardboard	5%	5%	80%	5%	5%

Hospital management should also work with waste management contractors engaged to service waste at the Site, to apply appropriate management measures according to the waste data gathered through the audit process.

6 Conclusions

This WMP has been developed to comply with Central Coast Council development controls and other relevant guidelines, regulations and policies. The WMP identifies the likely waste streams to be generated across each aspect of the proposed development – including demolition, construction and operation. Additionally, this WMP outlines specific management methods that can be employed to safely and effectively handle, store and collect waste generated at the Site.

Demolition will be diverted from landfill where possible, by separating recoverable materials onsite and sending mixed materials to a C&D waste processing facility to maximise resource recovery. Additionally, construction waste will be managed in a similar manner, with further efforts to reduce waste at this stage through efficient ordering of materials and reuse of excess materials where possible.

With reference to operational waste, waste has been identified as general or medical/clinical waste and details include waste generation, storage and handling methods have been identified.

7 References

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Central Coast Council (2014) Gosford Local Environmental Plan.

Environment Protection and Heritage Council (2009) National Waste Policy: Less Waste, More Resources. Available at: <http://www.nepc.gov.au/system/files/resources/906a04da-bad6-c554-1d0d-45216011370d/files/wastemgt-rpt-national-waste-policy-framework-less-waste-more-resources-print-ver-200911.pdf>.

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NSW EPA (2016) Recycling Signs, Posters and Symbols. Available at: <http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm>.

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Standards Australia (2008) AS 4123 Mobile waste containers.

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Appendix A Site Plans

Figure 2: Site layout plans

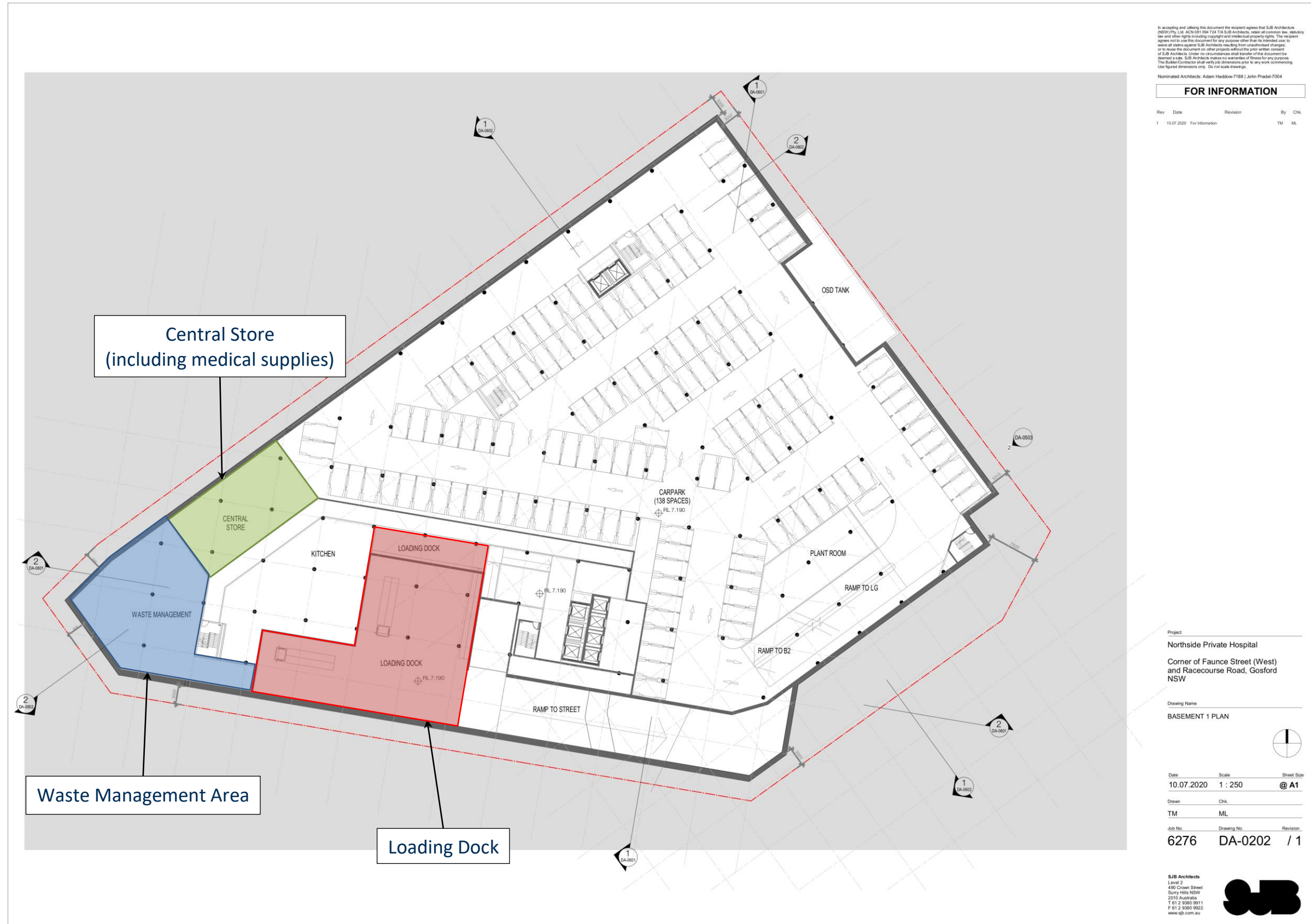


Figure 3: Site demolition profile (buildings for demolition highlighted in blue)



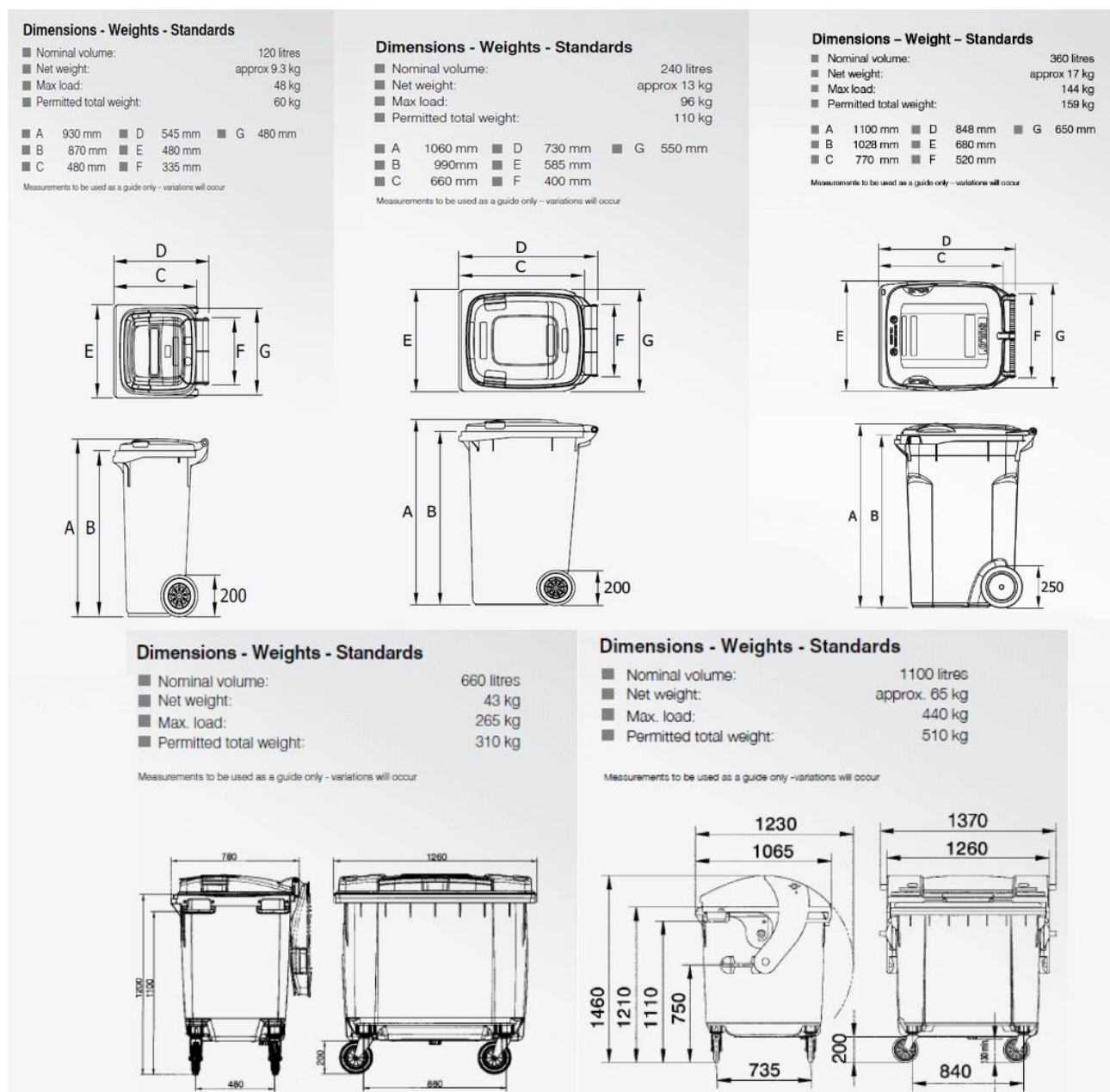
Source: Nearmap, 2019

Appendix B Bin Types

This WMP proposes the use of MGBs (rear-lift) and/or bulk (front-lift) bins. Each bin type is specific to each store as the bin size will impact on the vehicle access requirements. This section outlines the dimensions of each bin type. Some bin types below are not in the recommended bin types throughout the WMP, but may be useful for planning purposes should other options be preferred.

Rear-lift wheelie bins are ideal for sites with limited restrictions like specialty retail and small offices. Lightweight and easy to manoeuvre, these small-sized containers are easy to use and can be secured with lockable lids.

Figure 4: Rear-lift mobile bins (120L, 240L, 360L, 660L & 1,110L)



Source: www.sulo.com.au. Sizes may vary with manufacturer or supplier.

Figure 5: Front-lift steel bulk bin sizes and dimensions

Bin Size/Waste Stream	Height (h)	Width (w)	Depth (d)	
1.5 cubic metre	900 mm	1800 mm	900 mm	
3.0 cubic metre	1200 mm	1800 mm	1325 mm	
4.5 cubic metre	1500 mm	1800 mm	1600 mm	

Source: KS Environmental. Figures are indicative only and may vary depending on manufacturer and supplier.

Appendix C Organics Processing Infrastructure

Figure 6: Example of equipment for on-site organics processing

CLOSED LOOP ORGANICS UNIT SPECIFICATIONS

Closed Loop's organic recycling units are fully contained, commercial aerobic on-site composting units that can reduce food waste by up to 90 per cent in 24 hours.

CLO10s		Capacity/day: 20kg Electricity usage/month: 500kWh (maximum) Electricity requirements: AC 240V Power rating: 50Hz, 2.1kW Overall footprint (mm): 1160 (w) x 620 (d) x 1030 (h) Overall dry weight: 240kg
CLO30s		Capacity/day: 60kg Touchscreen Controls Automatic Operation Electricity usage/month: 1100kWh (maximum) Elec. requirements: AC 3 phase, 20 amp, 5 pin dedicated outlet Power rating: 415V, 50Hz, 4kW Overall footprint (mm): 1960 (w) x 870 (d) x 1250 (h) Overall dry weight: 450kg
CLO50s		Capacity/day: 100kg Touchscreen Controls Automatic Operation Electricity usage/month: 1700kWh (maximum) Elec. requirements: AC 3 phase, 20 amp, 5 pin dedicated outlet Power rating: 415V, 50Hz, 6kW Overall footprint (mm): 2155 (w) x 1060 (d) x 1350 (h) Overall dry weight: 660kg
CLO100s		Capacity/day: 200kg Touchscreen Controls Automatic Operation Electricity usage/month: 3500kWh (maximum) Elec. requirements: AC 3 phase, 20 amp, 5 pin dedicated outlet Power rating: 415V, 50Hz, 13kW Overall footprint (mm): 2584 (w) x 1250 (d) x 1580 (h) Overall dry weight: 1100kg

OPTIONAL FEATURES

- Load cells for accurate measurements of inputs and outputs (CLO30 and above)
- Internet connection for SMS Alerts and remote connection (CLO30 and above)
- 120 Litre Bin Lifter (CLO100)

Source: Closed Loop organics unit specifications

Dehydrators

Dehydrators reduce the volume of food and garden organic waste by removing the majority of water held by the waste. The products from dehydrators include extracted water which can be re-used, as well as dehydrated organic material which can be used as a soil amendment or fuel. Dehydrators differ from composters as they only dehydrate waste and do not produce compost.

Typical materials

- ☑ Food organics

Specifications

- **Loading:** Manual, Semi-Automatic (pump/hopper)
- **Unloading:** Manual
- **Consumables:** N/A
- **Working Life:** 10-20 Years
- **Power:** 415V
- Sewage/waste water hookup may be required to operate a dehydrator. This may require additional Council approval.
- Lateral and Overhead clearances need to be considered in some cases, and are variable.

Please note: Dehydrators will only be approved for a rebate when the outputs are sent to a commercial composting service or licensed facility or if the equipment has a resource recovery exemption.

Relevant standards

AS 4024.1 2006 Series: Safety of Machinery by Third Party Independent verification

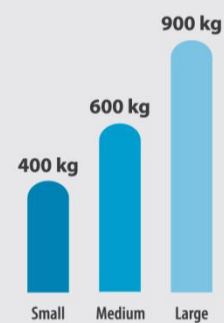


Price (\$AUD)



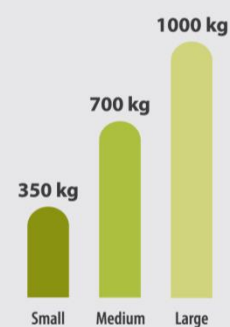
Dehydrator size

Machinery weight (kg)



Dehydrator size

Processing (kg/week)



Dehydrator size

Pre-Digestion with disposal to sewer

Biologically converts solid food waste into liquid. System uses microorganisms to decompose food waste into a liquid that can be disposed to sewer.

Typical materials

- ☒ Food organics
- ☒ NOT large bones and oils
- ☒ NOT fibrous material
e.g. corn husks

Specifications

- **Loading:** Manual
- **Consumables:** Microbes need to be replaced yearly
- **Working Life:** 15 Years
- **Power:** 208V, 3 Phase Power
- Cold water hook up required
- Sewer connection required (must have approval from a water authority to hook up to sewer)
- Lateral and Overhead clearances need to be considered in some cases, and are variable
- Can be linked with a grinder to manage bones and fibrous materials.

Cost:

\$55,000 – \$75,000

Machinery weight:

1300 lbs (small unit)

Processing (per hour):

300 lbs (small unit)

1000 lbs

(medium unit)

1500 lbs (large unit)

Relevant standards

AS 4024.1 2006 Series: Safety of Machinery by Third Party
Independent verification



Macerators

Macerators reduce the volume of food waste by turning the solid food waste into pulp. The pulp slurry is pumped to an exterior holding tank for collection by a licensed contractor. Macerators are usually a leased piece of equipment. Leased equipment is not eligible under the Bin Trim Rebate Program.

Typical materials

- ☒ Food organics
- ☒ NOT oyster and mussel shells
- NOT fibrous material
e.g. corn husks

Cost:

\$50,000 – \$60,000

Machinery weight:

140 kg

Processing:

2000 kg per hour

Specifications

- **Loading:** Manual
- **Unloading:** Semi-Automated
- **Consumables:** N/A
- **Working Life:** 15 Years
- **Power:** 415V
- Cold water hook up required
- Lateral and Overhead clearances need to be considered in some cases, and are variable.

Please note: Macerators will only be approved for a rebate when used in conjunction with a commercial collection service to a licensed organic recycling facility or a Resource Recovery Exemption compliant land application system.



Relevant standards

AS 4024.1 2006 Series: Safety of Machinery by Third Party Independent verification

Source: NSW EPA, Better Practice Guidelines for Waste Management in Commercial and Industrial Developments.

Appendix D Paper & Cardboard Baler

Figure 7: Baler examples

Vertical balers



B-series



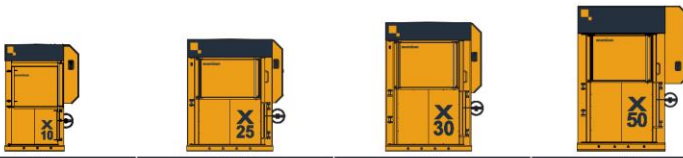

Technical specifications	B3	B5 W ¹⁾	B20 ¹⁾	B30 ¹⁾	B30 W	B50
Press force (t)	3	5	20	30	30	50
Power supply	1x230V 50Hz 10A	1x230V 50Hz 10A	3x400V 50Hz 16A	3x400V 50Hz 16A	3x400V 50Hz 16A	3x400V 50Hz 32A
Noise level (dB)	65-68	65-68	62-64	62-64	62-64	70-75
Cycle time (sec)	26	33	21 / 33	34 / 51	43	31
Dimensions WxDxH (mm)	845 x 745 x 1965	1355 x 895 x 2370	1765 x 1025 x 2770	1765 x 1025 x 2920	2075 x 1275 x 3280	1860 x 1055 x 3180
Weight (kg)	310	600	1240	1560	1670	2025
Filling opening WxH (mm)	700 x 460	1000 x 500	1200 x 550	1200 x 610	1525 x 560	1200 x 600
Bale size WxDxH (mm)	700 x 500 x 650	1000 x 700 x 800	1200 x 800 x 850	1200 x 800 x 950	1525 x 800 x 1100	1200 x 800 x 1200
Bale weight cardboard (kg)	30-50	80-110	200-250	280-350	375-500	400-500
Bale weight plastic (kg)	40-60	90-130	250-300	350-450	400-600	450-550



Try the Vertical Door 1)
A model VD has a vertical door, which gives an ergonomical filling of waste.

- Value for money
- Simple and safe
- Low noise level

X-series

Technical specifications	X10	X25 ^{2) + 3)}	X30 ³⁾	X50
Press force (t)	10	25	30	50
Power supply	3x400V 50Hz 16A	3x400V 50Hz 16A	3x400V 50Hz 16A	3x400V 50Hz 32A
Noise level (dB)	59-60	59-60	59-60	71
Cycle time (sec)	18	23	25	22
Dimensions WxDxH (mm)	1315 x 1040 x 1900	1745 x 1260 x 1995	1745 x 1260 x 2295	1950 x 1325 x 2580
Weight (kg)	665	1410	1710	2590
Filling opening WxH (mm)	800 x 610	1090 x 530	1090 x 655	1090 x 610
Bale size WxDxH (mm)	800 x 600 x 600	1200 x 800 x 800	1200 x 800 x 1000	1200 x 800 x 1100
Bale weight cardboard (kg)	70-90	200-300	280-350	375-450
Bale weight plastic (kg)	80-110	250-350	350-450	400-550



Galvanized balers 2) - NEW
Bramidan has developed a range of galvanized balers especially designed for wet or demanding environments.

Try the Automatic Door 3)
A model AD has a sliding door that closes and opens fully automatically, giving a quick filling of waste.

- Durable construction
- Compact design
- Low noise level

These balers are very suitable when there are no special hygienic requirements for stainless material, but where demands on surface treatment are so severe that an ordinary painted baler would have a very short lifetime.

Wastech Engineering P/L
33 Wedgewood Road
Hallam, VIC 3803
T 03 8787 1600
F 03 8787 1650
E info@wastech.com.au
www.wastech.com.au

BRAMIDAN
www.bramidan.com

WASTECH
Design. Develop. Deliver.

Source: Wastech baler range brochure.

MILL SIZE BALERS MODEL H500 & H600

KEY FEATURES

AUTOMATIC DOOR OPENING • SAFE & EASY TO USE & MAINTAIN • LOW NOISE LEVEL

INFORMATION

H600 Details:

- Ideal Bale Size to maximise use of transport
- Small Footprint - No need for space to rear of machine
- Low machine height - 2,17 metres
- Multiple pressing options
- Full Automatic upper door opening to maximise input of material
- Automatic door opening, closing & bale ejection
- Emergency Stop facility



Safe and easy bale out system.
Very easy to operate.

With a pressing force of up to 50/60 tonnes, the balers makes bales of up to 450/500 kg.
The H600 bales are tied with steel wires.



Model	H500	H600
Bale weight*	350 - 450 kg	350 - 500 kg
Bale size (mm)	H: 800 W: 1200 D: 800	H: 800 W: 1200 D: 1100
Pressing cycle	41 sec.	36 sec.
Degree of compression	85 - 90%	85 - 90%
Working pressure	Up to 50 tonnes	Up to 60 tonnes
Door opening (mm)	Height (from floor): 940	Height (from floor): 1180
Feed opening	H: 670 W: 1200 D: 780	H: 550 W: 1160 D: 780
Dimensions		
H500:		
Height:	3100 mm	
Width:	1600 mm	
Depth:	1300 mm	
H600:		
Height:	2170 mm	
Width:	1890 mm	
Depth:	1400 mm	
Weight	2050 kg	2430 kg
Motor	7,5 kW - 400 V / 25 Amp	7,5 kW - 400 V / 25 Amp
Noise level	70 dB	70 dB
Approval	CE & GS	CE & GS

* Depending upon kind of material

Mil-tek WORLDWIDE

- The leading supplier of balers and waste presses worldwide.
- Dedicated sales and service offices in more than 50 locations around the world.
- The widest and most flexible product range on the market.
- Providing solutions to reduce cost and comply with legislation.
- Implementing recycling and modern waste handling techniques worldwide.
- Save Time, Save Space, Save Money.

AIR POWERED BALERS

Ver. 2009/EN_INT-5271

CE GS ISO 14001

						
Model 102 Cardboard & Plastic	Model 205 Cardboard & Plastic	Model 305 Cardboard & Plastic	Model 306 Cardboard & Plastic	Model 509 Cardboard & Plastic	X-Press General Waste	Model 101 Can Crusher

www.Mil-tek.com

Source: Mil-tek baler range brochure.

Appendix E Standard Signage

Waste Signage

Signs for garbage, recycling and organics bins should comply with the standard signs promoted by the NSW Office of Environment and Heritage (NSW OEH 2008b).

Standard symbols for use in signage, bin facade and educational materials are promoted through the NSW Environment Protection Authority. They are available for download from the NSW EPA website (NSW EPA 2016), in black and white and colour versions. The Australian Standard series AS 4123 (Part 7) details colours for mobile waste containers (Standards Australia 2008).

Figure 8: Examples of standard signage for bin uses



Safety Signs

The design and use of safety signs for waste and recycling rooms and enclosures should comply with AS 1319 (Standards Australia 1994). Safety signs should be used to regulate, and control safety related to behaviour, warn of hazards and provide emergency information, including fire protection information. Below are some examples. Clear and easy to read 'NO STANDING' and 'DANGER' warning signs must be fixed to the external face of each waste and recycling room where appropriate.

Figure 9: Example and layout of safety signage

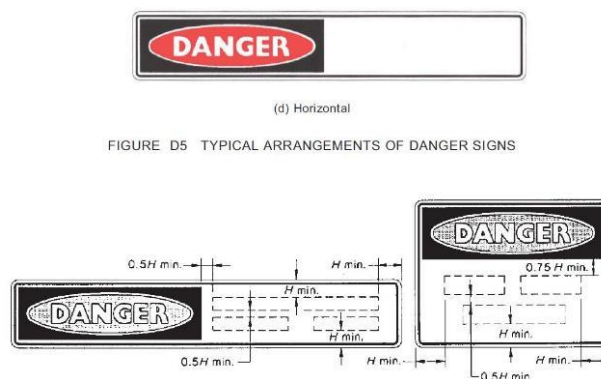


Figure 10: Example of additional recycling information signage



Source: Planet Ark.