Nowra Private Hospital Extension – Waste Management Plan

A Submission to Erilyan Pty Ltd c/o Ramsay Health Care Limited

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MRA Consulting Group

Prepared by

MRA Consulting Group (MRA)
Registered as Mike Ritchie & Associates Pty Ltd
ABN 13 143 273 812

Suite 408 Henry Lawson Building
19 Roseby Street
Drummoyne NSW 2047

+61 2 8541 6169
info@mraconsulting.com.au
mraconsulting.com.au

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Disclaimer

In the spirit of reconciliation MRA Consulting Group acknowledges the Traditional Custodians of country throughout Australia and their connection to land, sea and community. We pay our respects to Aboriginal and Torres Strait Islander peoples and to Elders past, present and emerging.

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Glossary

Terminology	Definition
AS	Australian Standard
BOH	Back Of House
C&D	Construction and Demolition
C&I	Commercial and Industrial
DA	Development Application
DCP	Development Control Plan
EACS	Electronic Access Control System
EPA	Environment Protection Authority
ENM	Excavated Natural Material
FM	Facilities Management
HETI	Health Education and Training Institute NSW
LGA	Local Government Area
MGB	Mobile Garbage Bin
PPE	Personal Protective Equipment
SCC	Shoalhaven City Council
DCP or SDCP	Shoalhaven Development Control Plan 2014
LEP or SLEP	Shoalhaven Local Environmental Plan 2014
WHS	Work Health and Safety
WMC	Waste Management Committee
WMP	Waste Management Plan
WSP	Waste Service Provider
WSRA	Waste Storage and Recycling Area

1 Introduction

MRA Consulting group was engaged by Erilyan on behalf of Ramsay Health Care Limited, to prepare a Waste Management Plan (WMP) for the proposed extension of the Nowra Private Hospital (hereafter referred to as "the Site"). The Site is location on Weeroona Place, Nowra situated in the Shoalhaven City Council (Council) Local Government Area (LGA).

The development construction is proposed to be split into two stages outlined below. The DA and this WMP encompasses both stages, with the following scope:

Stage 1

Construction of:

- New day surgery including two operating theatres;
- New services and infrastructure to facilitate single level extension;
- New medical imaging tenancy space;
- Conversion of the existing day surgery to a day oncology unit; and
- BOH and support spaces to facilitate the new development.

Stage 2

Future Construction of a cold shell patient care area. Currently assumed to be:

- DOSA Expansion, including two operating theatres;
- 24 bed IPU;
- New IPU and support areas on level 1; and
- Additional 22 car parking spaces.

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 the development. The WMP will be submitted as part of the Development Application (DA) to Shoalhaven City Council.

1.1 Waste Management Context

The Site is subject to the *Shoalhaven Local Environment Plan* (SLEP) 2014 and therefore relevant sections of the *Shoalhaven Development Control Plan* (SDCP) 2014 apply for this WMP. The SDCP, *Chapter B7 – Waste Minimisation and Management Controls* –outlines the following waste management objectives and guiding principles which have been considered through the preparation of this WMP:

i. Reduce the amount of waste generated and the demand for landfill disposal.

ii. Maximise recovery, reuse and recycling of building/construction materials, household generated waste and industrial/commercial waste.

iii. Provide on-going management for waste handling and recovery on site (at the source).

iv. Provide guidelines on the preparation of waste management plans, matters for assessment, and the reduction and handling of waste.

v. Encourage the use of materials made from recycled products and materials that can be recycled and reused.

vi. Achieve source separation and improve design and location standards, which complement waste collection and management services, offered by Council and/or private service providers.

vii. Encourage building designs and construction techniques which will maximise future resource recovery.

viii. Assist in achieving Federal and State Government recovery targets and directive outcomes.

ix. Minimise the overall environmental impacts and foster the principles of ecologically sustainable 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.*

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 generated from hospitals. These documents have been utilised in the preparation of this WMP.

State:

- Work Health and Safety (WHS) Act 2011;
- WHS Regulation 2017;
- 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) 2020 (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 G-4 Guide for Classification of Radioactive Waste (ARPANSA, 2020);
- Code for the Safe Transport of Radioactive Material (ARPANSA, 2019);
- 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, 2020);
- The Australian Council on Healthcare Standards (ACHS) EQuIPNational;
- 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, 2019);
- Code of Practice: Hazardous manual tasks (SafeWork NSW, 2019) NSW Health guidelines and policies;
- PD2008_004 Community Sharps Disposal by Area Health Services;
- 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;
- GL2018_013 Work Health and Safety – Blood and Body Substances Occupational Exposure Prevention;
- PD2020_022 Cleaning of the Healthcare Environment;
- PD2012_061 Environmental Cleaning Policy;
- 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).

1.3 Objectives

Waste management for the Site considers better practice, necessary equipment, and integration with other guidance documents including the NSW Waste and Sustainable Materials Strategy 2041 (NSW DPIE, 2021), and National Waste Policy: Less Waste, More Resources (DE&E, 2018). 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;

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

1.4 Assumptions

This report is a Waste Management Plan, forming part of the design 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, Team 2 Architects, dated 15th December 2022;
- The waste streams and volumes expected to be generated during regular activities based on the following proposed additions proposed as part of the extension and refurbishment works:
    - New impatient units (IPUs);
    - New day surgery;
    - New operating theatres;
    - Conversion and upgrade of some existing rooms; and
    - New BOH and support spaces.
- Waste generation volumes are based on actual data derived from existing hospital operations, with like for like comparison of existing uses. 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.

2 Background

2.1 Description of Proposed Development

The proposed development site is identified as Lot 3 of DP 814820 in the *Shoalhaven Local Environmental Plan 2014*, at Weeroona Place, Nowra. The site is currently occupied by Nowra Private Hospital, and the primary access is from Weeroona Place. The immediate surrounds are characterised by single residential dwellings, aged care residential, childcare, catholic and local high schools.

The following is an aerial view of the Site and surrounds (see Figure 1).

Figure 1: Proposed development in relation to surrounding area

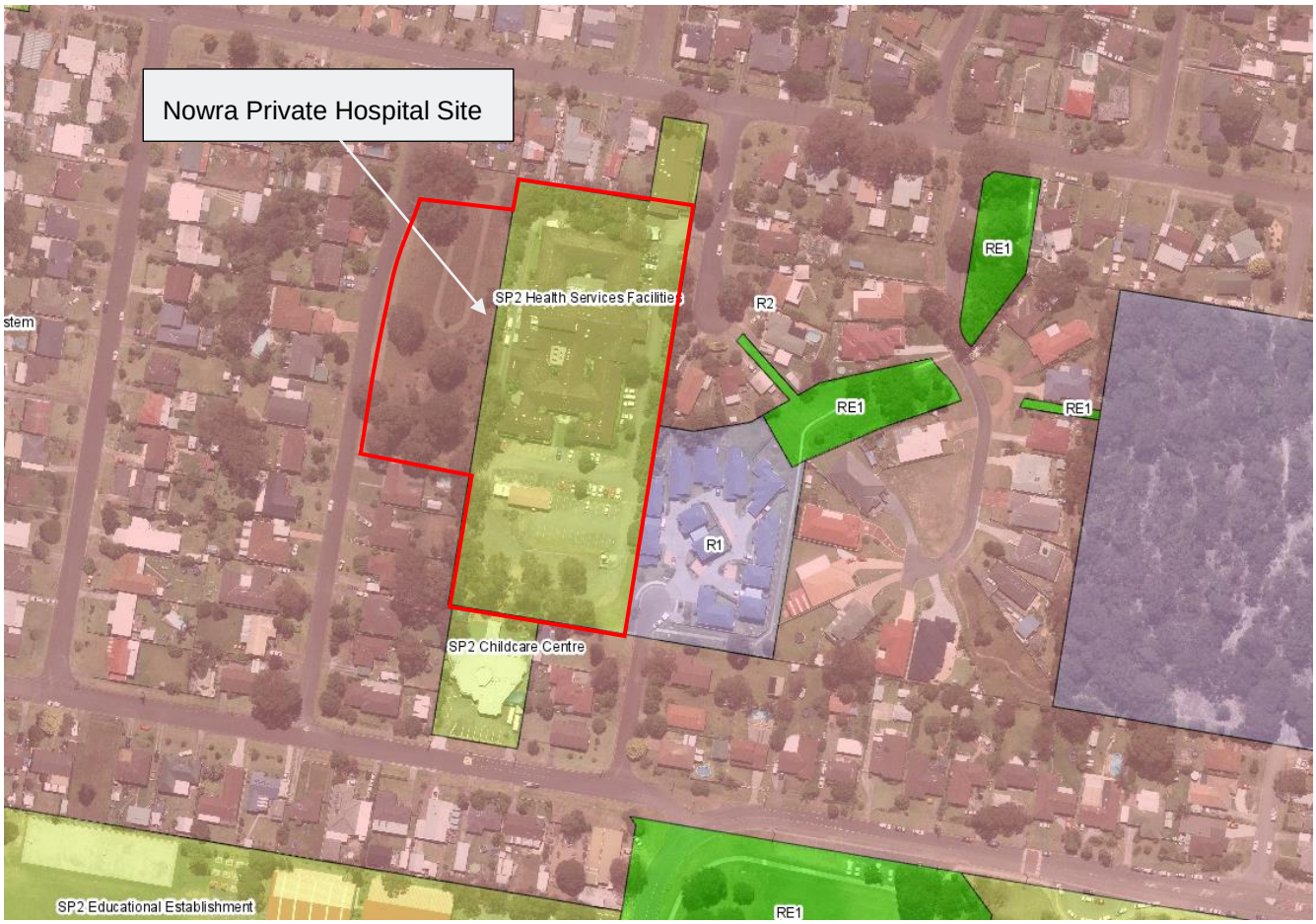
Source: Nearmap, 2022.

2.2 Zoning and Land Use

The Site is zoned as Part R2 – Low Density Residential, and Part SP2 – Infrastructure (Health Services Facilities) as per the Shoalhaven LEP 2014 (refer to Figure 2) which has the following objectives:

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.

Figure 2: Land use zoning map



Source: NSW e-planning spatial viewer, 2022.

3 Construction and Demolition Waste Management

Demolition, excavation and construction activities related to the proposed development will generate a range of construction and demolition (C&D) wastes.

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 works will involve 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. A potential location for material skip bins is identified in Appendix A.

The quantities, densities and bulking factors for waste and recyclables has been determined based on current practices. A waste storage area 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 site induction for all working personnel.

3.1 Demolition Works

This section details the demolition waste materials expected for the proposed development, including their quantities and management options, and was designed with consideration of the requirements in the DCP. The information below presents options for materials reuse, recycling and disposal where applicable (e.g. excavation material may be reused as a construction fill or disposed to landfill if contaminated). All materials are intended to be sent to a suitable, licenced landfill or resource recovery facility.

Table 1 below describes the expected demolition material quantities and appropriate management methods for the proposed development, related to the demolition or deconstruction of:

- Site preparation works, levelling and removal of natural material;
- Internal removal of elements within the existing day surgery to convert to an oncology unit; and
- Removal of some walls to the west of the site within the staff lounge to facilitate an extension of the facility.

Table 1: Demolition Waste generation estimates

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Concrete	100-180m^3	✓	✓	-	On-site: to be separated wherever possible to enhance resource recovery. Reuse: on-site for filling or under gravel carpark. C&D processor: crushing and recycling for recovered products (aggregates).
Asphalt	50-70m^3	✓	✓	-	On-site: to be separated wherever possible to enhance resource recovery. C&D processor: crushing and recycling for recovered products (aggregates).
Bricks/ pavers	20-30m^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)	10-20m^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)	10-20m^3	-	✓	-	On-site: to be separated wherever possible to enhance resource recovery. C&D processor: metals recovery and recycling.

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Metal (non-ferrous)	10-20m^3	-	✓	-	On-site: to be separated wherever possible to enhance resource recovery. C&D processor: metals recovery and recycling.
Glass	<5m^3	✓	✓	-	On-site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to the manufacturer for reuse where possible. Aggregate for concrete production. 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	10-20m^3	✓	✓	-	On-site: to be separated wherever possible to enhance resource recovery. C&D processor or plasterboard processor: for recovered plasterboard products.
Floor coverings	20-30m^3	✓	✓	-	On-site: to be separated wherever possible to enhance resource recovery. C&D Processor: recovery and recycling.
Garden organics (Vegetation)	<10m^3	✓	✓	-	Removal of vegetation to make way for construction. Onsite: Woodchipped for use in landscaping.

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
					Organics processor: storage on-site (from minor excavations) processing for recovered product (e.g. mulch or other blended recovered fines) or organics treatment.
Residual waste (general refuse)	40-50m^3	-	-	✓	Separate recyclables where possible and disposal at principal licensed waste facility.
Hazardous/special waste (e.g. spills and contaminated wastes)	Unknown	-	-	✓	It is possible that asbestos bearing material may be disturbed or removed during demolition works. Management by a licensed asbestos and site hygienist should hazardous or special waste be found to exist at the Site.

3.2 Construction

Construction works associated with the proposed development will include:

Stage 1

Construction of:

- New day surgery including two operating theatres;
- New services and infrastructure to facilitate single level extension;
- New medical imaging tenancy space;
- Conversion of the existing day surgery to a day oncology unit; and
- BOH and support spaces to facilitate the new development.

Stage 2

Future Construction of a cold shell patient care area. Currently assumed to be:

- DOSA Expansion, including two operating theatres;
- 30 bed IPU;
- New IPU and support areas on level 1; and
- Additional car parking spaces.

Table 2 outlines indicative volume to weight conversion factors for common construction materials.

Table 2: Building waste material by percentage and conversion factor for volume and weight

Building waste material	Tones per m^3	Waste as % of the total material ordered
Bricks	1	5-10%
Concrete	2.4	3-5%
Tiles	0.75	2-5%
Timber	0.5	5-7%
Plasterboard	-	5-20%
Ferrous metal	2.4	-

Low end figures from the above ranges have been applied to estimated waste generation during construction as best practice material ordering and use is proposed to be employed.

Table 3 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)

Table 3: Construction waste generation estimates

Type of waste generated		Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Excavation material		300-500m^3	✓	-	-	On site: stockpiling for reuse in parking and landscaped areas. C&D processor: reuse/recycling of VENM and ENM. Landfill if contaminated.
Concrete		60-80m^3	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor: crushing and recycling for recovered products (aggregates).
Bricks/pavers		<5m^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	<2m^3	✓	✓	-	
Timber		<5m^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.

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Metals	<5m^3	-	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor: metals recovery and recycling.
Plasterboard	<10m^3	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse.
Glass	<5m^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	Minor	✓	✓	-	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.

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Packaging (used pallets, pallet wrap, cardboard)	40-50m^3	✓	✓	-	On site: to be separated wherever possible to 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.
Residual waste (general refuse)	<20m^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 4: Waste service contractors and facilities

Role	Details
Recommended Waste Collection Contractor	The following are local skip bin operators for consideration in the management of C&D waste for the Site: • Shoalhaven Skips; • Coast Wide Skip Bins; • South Coast Waste & Recycling; • Bin Master Skip Bins; Or otherwise elected by the building contractor.
Principal Off-Site Recycler	The following are local facilities capable of recycling C&D waste generated at the Site: • West Nowra Recycling & Waste Depot Or other appropriate facility elected by the waste management contractor.
Principal Licensed Landfill Site	• West Nowra Recycling & Waste Depot Or other appropriate facility 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

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).

From the above-mentioned waste classifications, Table 5 below details the specific waste types expected to be generated, under each of the classifications.

Table 5: Waste classification of hospital waste

Waste Classification	Waste Material	Additional Details
Special	Clinical and related waste: • Clinical, including: o human tissue (other than hair, teeth and nails), o bulk body fluids or blood, o visibly blood-stained body fluids, materials or equipment, o laboratory specimens or cultures, and o animal tissue, carcasses or other waste from animals used for medical research. • Cytotoxic; • Pharmaceutical, drug or medicine (defined under Section 8 of the *Poisons and Therapeutic Goods Act 1966 (NSW Ministry of Health)*; and • Sharps, being those thigs that: o Have sharp points or edges capable of cutting, piercing or penetrating the skin (such as needles, syringes with needles or surgical instruments), o Are designed for the purpose of cutting, piercing or penetrating the skin, and o 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.

Waste Classification	Waste Material	Additional Details
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; • Class 5 – Oxidising substances and organic peroxides; and • Class 8 – Corrosive substances.	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.
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)':	Any mixture of waste containing both putrescible and non-putrescible general solid waste is considered to be putrescible.

Waste Classification	Waste Material	Additional Details
	• 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.	
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 *Waste classification guidelines Part 3: Waste containing radioactive material* (NSW EPA, 2014).

Source; NSW EPA, 2014.

4.2 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. Table 6 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.

Table 6: Detailed description of medical waste streams

Waste Stream	Definition
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

Waste Stream	Definition
	the preparation or administration or excretion of cytotoxic drugs May include Genetically Modified Organisms (GMOs) or tissues containing GMOs.
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.
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	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 *Waste classification guidelines Part 3: Waste containing radioactive material* (NSW EPA, 2014).

Source: NSW Ministry of Health, 2017.

Mobile bins, trolleys and waste bags will be utilised in conjunction with sharps containers to manage medical related waste as defined in Table 6. Detailed management requirements under relevant regulations and standards (refer Appendix B). All clinical waste stream bags and storage receptacles should be in staff-only area to avoid access by general public.

4.3 Existing Hospital Waste Management

The Site maintains existing waste management methods which will be incorporated into the expanded management system of the proposed extension. It is expected that existing waste management systems will be able to be adapted by increasing number or size of bins, and/or increase the frequency of collection to accommodate additional waste generated by the proposed extension of the hospital.

The current operation of the hospital makes use of the following waste management contractors and services:

- The principal waste contractor for the site is Veolia (formerly Suez) for all general waste and recycling streams. Clinical waste stream is serviced by Daniels Cleanaway.
- The type and number of waste infrastructure retained at the Site currently, including the frequency of collections per week are outlined as follows:
  - General waste bins
    - 2 x 3m^3 bins
    - Collected daily
  - Paper & Cardboard bin
    - 1 x 4.5m^3 bin
    - Collected every two days
  - Commingled Recycling bins (containers)
    - 12 x 240L bins
    - Collected every two days, six bins at a time via a cradle

- Clinical waste bins
  - 15 x 240L bins
  - Collected three times per week or as necessary

4.4 Operational Waste Forecast

The development includes refurbishment of existing areas as well as a new addition for the provision of additional operating theatres, medical imaging tenancy and new IPU on level 1.

Waste generation for each site use is addressed separately below. It is noted that landscaping at the site will be maintained by an external contractor who will remove all vegetation waste from ongoing maintenance activities.

4.4.1 Assumptions

The following assumptions have been adopted for operational waste generation for the proposed development:

- The waste generation streams / rates of the departments in the development will be similar to that of existing departments of the hospital;
- The waste volumes are assumed to be proportional to the clinical services capacity, i.e. treatment spaces / bed numbers, seating capacity, spatial capacity (area), etc; and
- Waste generation rate assumptions for proposed additional uses are estimated in Table 7, derived from existing waste management data, Shoalhaven council generation rates, state environmental guidelines and MRA experience with similar uses.

4.4.2 Waste generation by use

Based on the existing waste management procedures outlined in Table 6, proposed extension and addition works are likely to result in an increase in overall generation of waste at the Site. As such, waste generation is expected to increase depending on waste stream once stage 2 works are completed, based on the existing and proposed use of the Site. Additional waste will be managed through the addition of bins or frequency of collection of the information provided in Section 4.3 as required, once operational.

Table 7: Proposed additional waste generation by use

Use type	Additional area / beds	Waste Stream	Waste generation rate	Weekly waste generation
Administration / Staff Support Areas*	636m^2	General waste	10L/100m^2/day	445
		Recycling	2.5L/100m^2/day	111
		Paper/cardboard	5L/100m^2/day	223
		Secure document	2.5L/100m^2/day	111
Medical Imaging Tenancy	269m^2	General waste	10L/100m^2/day	188
		Recycling	5L/100m^2/day	94
		Clinical waste	10L/100m^2/day	188
		Secure document	5L/100m^2/day	94

Use type	Additional area / beds	Waste Stream	Waste generation rate	Weekly waste generation
IPU	30 beds	General waste	2.5L/bed/day	525
		Recycling	2.5L/bed/day	525
		Food waste	2.5L/bed/day	525
		Clinical Waste	2.5L/bed/day	525
Operating Theatres	4 theatres	General waste	60L/theatre/day	1680
		Recycling	30L/theatre/day	840
		Paper/Cardboard	30L/theatre/day	840
		Secure document	5L/theatre/day	140
		Clinical waste	60L/theatre/day	1680
Pharmacy	31m^2	General waste	20L/100m^2/day	43
		Recycling	45L/100m^2/day	98
		Clinical waste	10L/100m^2/day	22
		Secure document	2.5L/100m2/day	5
Totals		**General waste**		**2,882L**
		Recycling		**1,668L**
		Paper/cardboard		**1,063L**
		Secure document		**351L**
		Food waste		**525L**
		Clinical waste		**2,415L**

**Administration and staff support areas include areas for Reception, Interview rooms, Office, Staff dining, Discharge Lounge, Recovery & Recovery Lounge and Pre-Op areas.*

Note: additional waste management expectations highlighted above are derived from existing waste management data, council and state environmental guidelines and MRA experience with similar uses. Waste generation is estimated only. Food waste is estimated at 50% of the general waste volume.

4.4.3 Additional waste storage requirements

On the basis of the above additional waste generation rates, the following additional waste services may be applicable to the site once operational according to the proposed extension (see Table 8). It is expected that the proposed extension of the waste management area and increased rate of servicing and collection will suitably handle the increased waste management demand at the Site.

Table 8: Proposed additional waste infrastructure requirements to Stage 2 works

Waste Stream	Total additional weekly volume	Additional waste management requirements
General Waste	2,882L	Additional 3m^3 bin may be required to capture additional predicted general waste volumes, as maximum collection frequencies have been reached (daily collection). Management should observe existing bin fullness levels to determine waste bin efficiencies.
Recycling (commingled)	1,668L	Addition of 2 x 240L bins collected according to the same servicing schedule or increase collection schedule by once per week (to four times per week)
Paper and cardboard	1,063L	Volume change not expected to significantly impact on service arrangement for paper and cardboard. Recommend to add additional 240L bin and retain existing collection schedule.
Secure document	351L	Addition of 1-2 x 240L bins for secure documents if services available.
Food waste	525L	Introduce food waste bins if services available. Consider review of general waste stream to identify appropriate number of bins for servicing.
Clinical waste	2,415L	Addition of 3-4 x 240L bins collected according to a collection schedule of three times per week.

Note: above figures are estimates only and should be observed upon commencement of operations according to proposed extension works to determine the need for additional or different waste services.

4.5 Waste Handling Equipment

Waste bags should be used where applicable for the interim storage of general waste and clinical waste prior to disposal in MGBs stored in disposal rooms for transfer and servicing from the main building and BOH area 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 (except for cytotoxic or related wastes which may result in the expulsion of hazardous aerosols), 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.

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.

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.

All MGBS are to be colour coded according to the intended waste stream to be handled/stored. Table 9 below identifies MGB specifications which are used to determine space calculations of the WSRA.

Table 9: Mobile garbage bin specifications

Bin Capacity	120L	240L	360L	660L	1,100L
Height (mm)	930	1080	1100	1250	1470
Depth (mm)	540	735	885	850	1245
Width (mm)	480	580	600	1370	1370
Footprint (m^2)	0.26	0.43	0.53	1.16	1.71

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

Detailed MGB sizes and specification are presented in Appendix C for reference.

4.6 Disposal Rooms and Waste Storage Area

All general and recycling waste bins are kept in the waste storage area adjacent to the loading dock. All clinical waste bins are stored in a locked area contained within the waste storage area. Additionally, disposal rooms and dirty utility rooms are available for minor storage across the hospital (See Appendix A for further details).

Interim disposal rooms for the disposal of waste for each department and use of the hospital are located in storage rooms. Interim disposal rooms will be utilised to store waste prior to being transferred to the main waste storage and loading area located on the ground level.

4.7 Summary of Waste Handling Workflow

In general, the flow of waste management at the Site is as follows:

- Generation by department
- Storage of general waste and recyclables in under-desk bins and deposited in disposal room available on each level.

- Disposal room bins monitored by site cleaning and maintenance services and removed to the main waste disposal room on the ground floor, near the services loading dock.
- Once bins are emptied by the collection contractor or decanted into larger bins for collection at the BOH loading dock, bins to be returned to the relevant Disposal Room.
- Bin washing and maintenance to occur within the provided area of the ground floor waste disposal room.

Based on the anticipated waste generation rates for the development, the appointed contractors or waste service provider (WSP) will be required to collect waste generated from the proposed BOH Waste Loading Area.

The waste handling and process in the Loading Dock are outlined in further detail in section 5.

5 Waste Management Systems

5.1 Site Waste Management

5.1.1 Waste Management Systems

The Site waste management systems are defined by the strategies, methodologies and responsibilities in place to effetely manage all waste streams generated by ongoing operation of the development. The following section outlines a range of proposed site waste management systems, including:

- High level strategic waste management goals derived from State and Federal government waste strategy and policy.
- Defines roles and responsibilities across various Hospital personnel, departments and management sectors;
- Identifies methodologies for reducing the generation of waste for the Site;
- General practice for the effective and safe management of waste at the Site including necessary signage, training, provision of information, management of hazards and maintenance of storage areas; and
- Process of reviewing the goals and strategies set out in the WMP on an ongoing basis to ensure its contents remain relevant and provide suitable guidance for further improvement in site waste management and recycling.

5.1.2 Roles & Responsibilities

Hospital management and cleaning/maintenance services 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.

Hospital management is responsible for:

- Using contracts to define the allocation of responsibilities for waste management contractors; and
- Holding a valid and current contract with licensed collector(s) for waste and recycling collection.
- 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 correct signage is installed and maintained in waste storage and service areas;
- Encouraging waste avoidance and achievement of resource recovery targets; and
- Providing operational management for delivery of waste objectives.

Cleaning and maintenance services' duties include:

- Organising waste collections by elected contractor(s) for the Site.
- 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;
- 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 waste management equipment and related infrastructure (such as bin tug / trailer).

Individual departments 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 waste;
- 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 (where relevant, if at all).

5.1.3 Sustainable Procurement

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;
- Clearly specify the energy rating on appropriate appliances and fittings; and
- As part of tender evaluation via weighting.

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 Information and Training

The current waste contractor and/or an independent qualified waste consultant can also be engaged to provide advice and training with regards to site waste management procedures and strategic goals. Hospital management and hospital cleaning/maintenance services may benefit from training by the waste contractor or independent waste consultant to guide training programs for broader hospital departments and 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.

5.3 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 Appendix D). 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.

5.4 Spill Management

Daily operation of the development, including management of general waste and potentially hazardous or contaminated materials (chemicals, contaminated clinical waste such as blood) may result in spills that require clean-up. Health services must manage waste spills as they occur in the facility, ensuring that:

- 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.

5.5 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.

6 References

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NSW EPA (2014) *Waste Classification Guidelines.*

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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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Shoalhaven Development Control Plan 2014.

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Standards Australia (1994) *AS 1319: Safety signs for the occupational environment*, Homebush, NSW: Standards Australia.

Standards Australia (2008) *AS 4123 Mobile waste containers*.

WorkCover (2011) Managing Work Environment Facilities Code of Practice

Appendix A Site Plans

Figure 3: Stage 2 - Ground floor plan waste storage, loading and collection

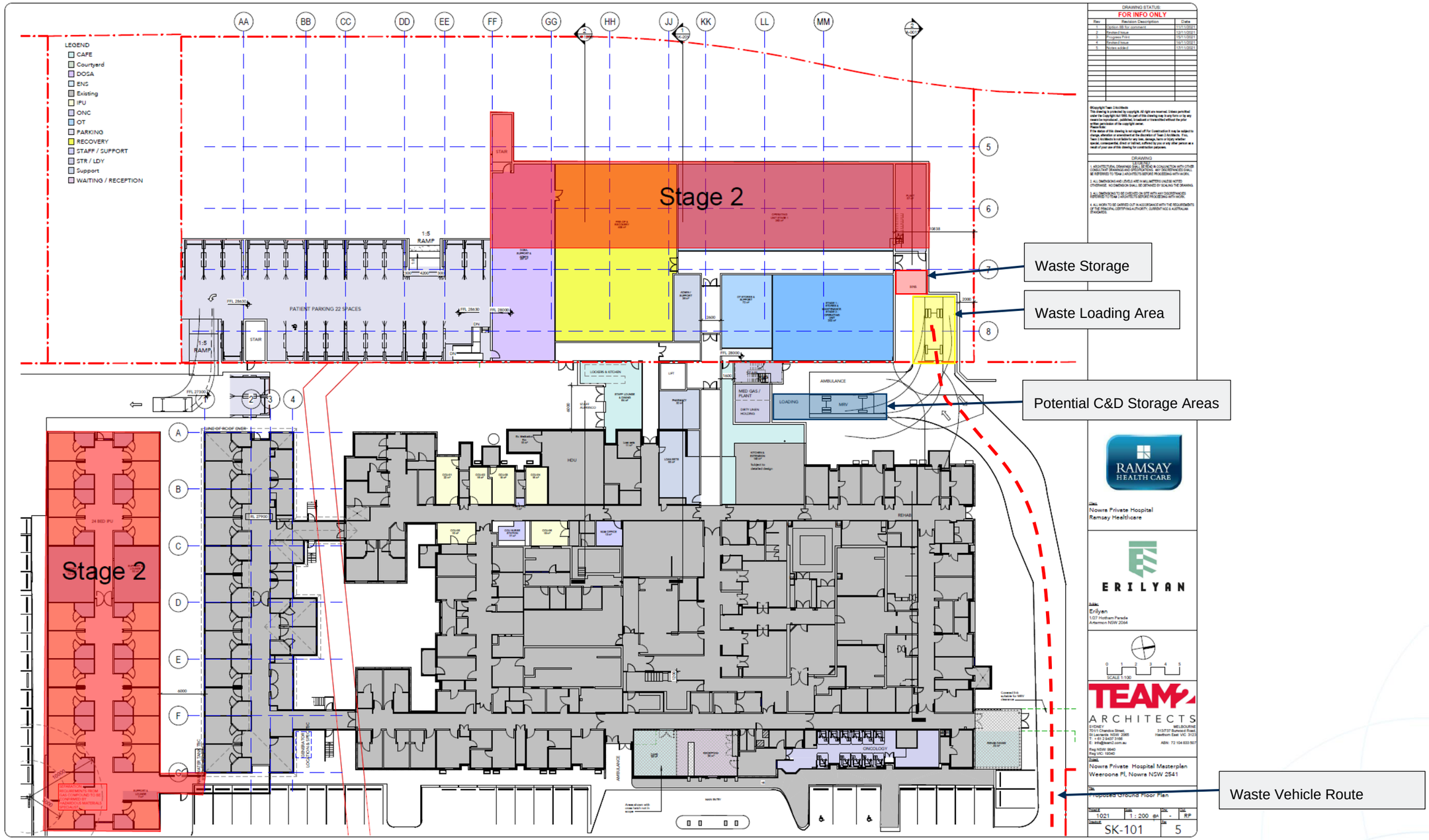
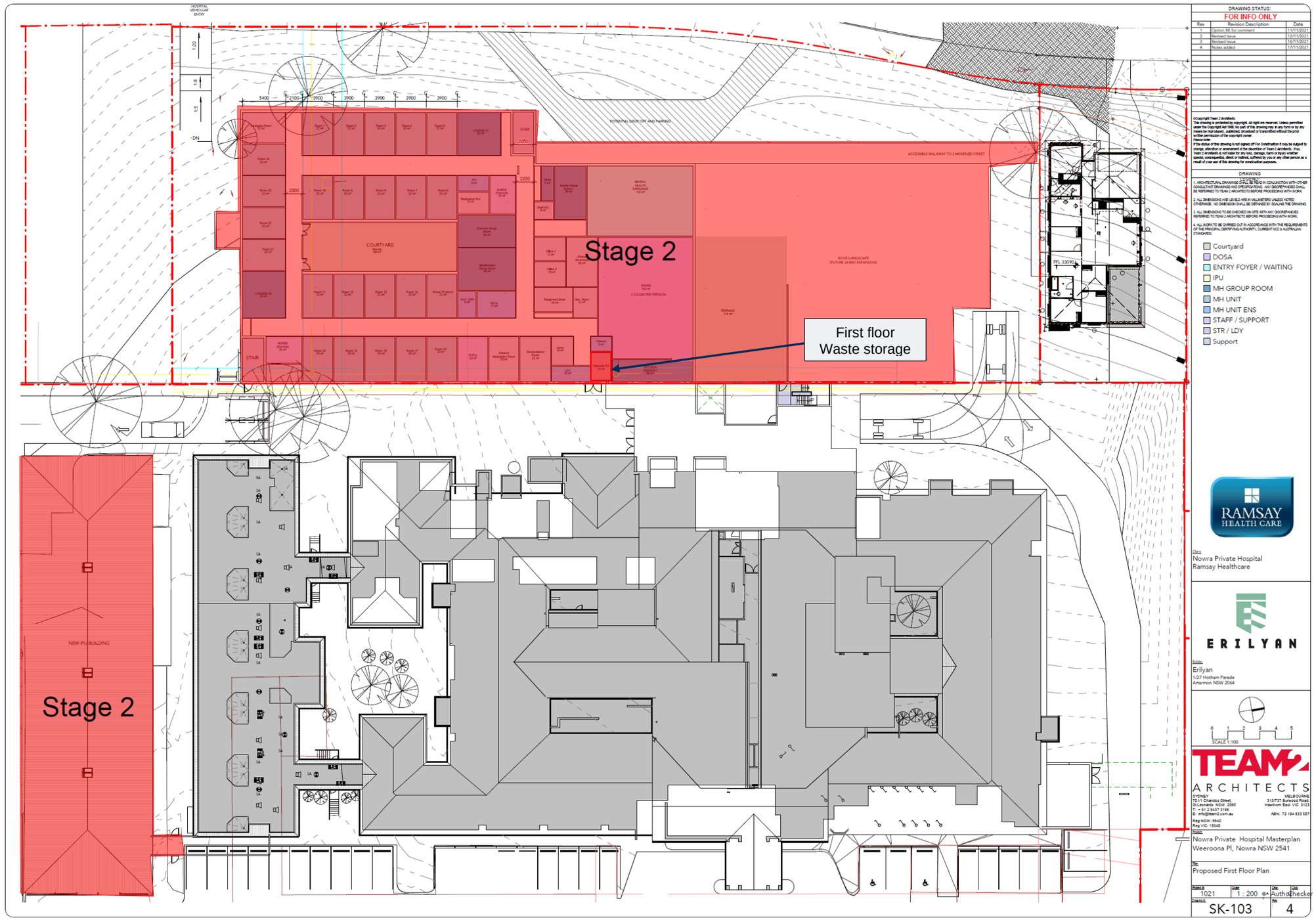


Figure 4: Stage 2 - First floor waste storage



Appendix B Management Requirements of Medical Waste Streams

Table 10: Management Requirements 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).

Waste Stream	Anatomical waste	Clinical sharps waste	Clinical waste (incl. Pathological Waste)	Cytotoxic waste	Pharmaceutical waste	Radioactive waste
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)

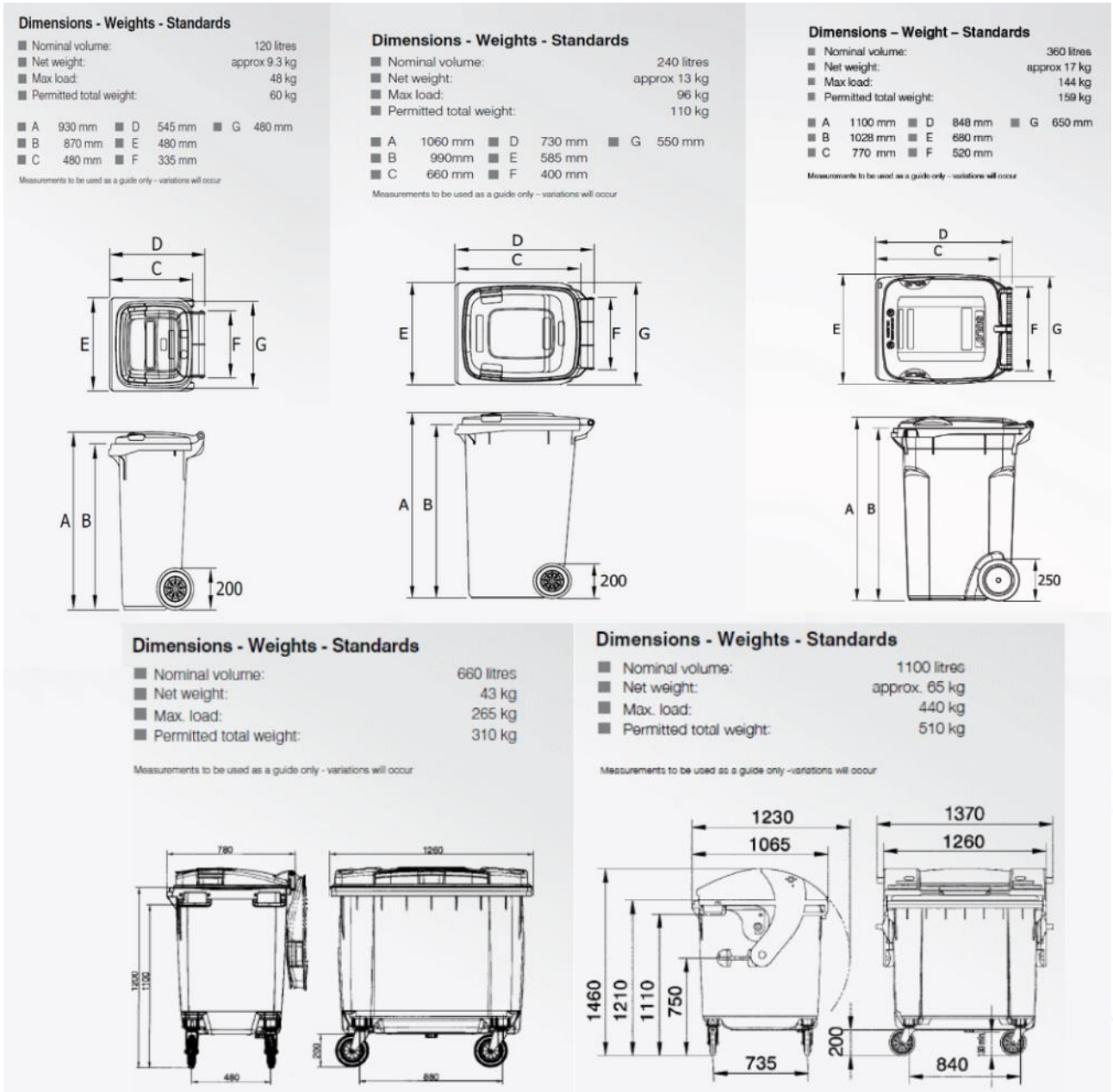
Source: NSW Ministry of Health, 2017.

Appendix C Waste handling Equipment Specs

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 5: Rear-lift mobile bins (120L, 240L, 360L, 660L & 1,100L)*



**Sizes may vary with manufacturer or supplier.*

Appendix D 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 6: 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 7: Example and layout of safety signage

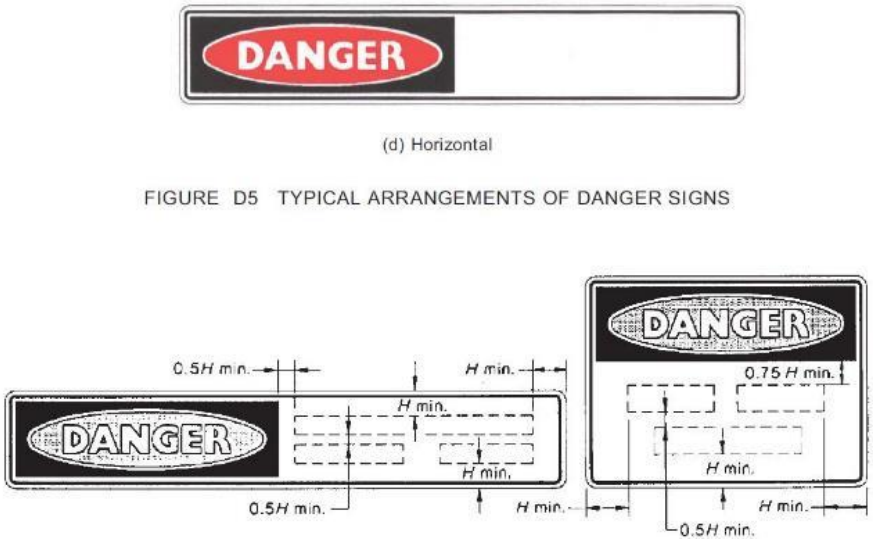


Figure 8: Example of additional recycling information signage for common and staff areas

Source: Planet Ark.

MRA Consulting Group

Suite 408 Henry Lawson Building
19 Roseby Street
Drummoyne NSW 2047

+61 2 8541 6169
info@mraconsulting.com.au
mraconsulting.com.au

MRA Consulting Group