Nepean Hospital Redevelopment Stage 1 – Operational Waste Management Plan

Prepared for the Blue Mountains Local Health District (LHD)

23rd July 2021

MRA Consulting Group

Nepean Hospital Redevelopment Stage 1 – Operational Waste Management Plan

A Submission to [CPB Contractors (ABN 98 000 893 667)] on behalf of the Blue Mountains Local Health District (LHD)
Job No. 221-5406-01-00

Prepared by

James Cosgrove – Senior Environmental Consultant
James.cosgrove@mraconsulting.com.au

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

Version History

Ver	Date	Status	Author	Approver	Signature
0.1	14/12/2020	Draft	James Cosgrove	-	-
0.2	15/12/2020	Review	Maya Deacock	James Cosgrove	-
1	23/07/2021	Final	Maya Deacock	James Cosgrove	

Disclaimer

Acknowledgements

MRA would like to acknowledge the assistance with preparation of this report provided by CPB Contractors.

Table of contents

List of Tables

List of Figures

Glossary

Terminology	Definition
AS	Australian Standard
BOH	Back of House
C&D	Construction and Demolition
C&I	Commercial and Industrial
Council	Penrith City Council
DCP	Development Control Plan
EACS	Electronic Access Control System
ENM	Excavated Natural Material
EPA	Environment Protection Authority
FM	Facilities Management
PDCP	Penrith Development Control Plan 2014
PLEP	Penrith Local Environmental Plan 2010
HETI	Health Education and Training Institute NSW
LHD	Local Health District
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
WMWG	Waste Management Working Group
WSP	Waste Service Provider
WSRA	Waste Storage and Recycling Area

Executive Summary

The Operational Waste Management Plan (OWMP) was prepared on behalf of CPB Contractors for the Nepean Blue Mountains Local Health District (LHD). The Operational Waste Management Plan (OWMP) satisfies the SSDA conditions, including specific Green Star credit requirements and addresses the operational requirements of the LHD for the new Stage 1 Tower. The OWMP was also developed with specific consideration to the overall Nepean Campus precinct and is capable of being adapted for other LHD facilities, i.e. existing operational campus buildings and future stages including the proposed Stage 2 hospital building.

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

The LHD sustainability Waste Management Working Group (WMWG) has identified a range of major and minor waste streams that are or have the potential to be managed at the site. These include but are not limited to the following:

Table 1: Waste stream management

Will be managed	Potential to be managed
• General waste	• Food waste
• Paper and cardboard	• Pharmaceutical Waste
• Commingled recycling	• Soft Plastics
• Secure document recycling	• Mixed metals
• Clinical (and related) waste	• Containers
• Printer cartridges (Close the loop/Planet Ark – certain areas of the hospital, not all)	• Textiles
	• Maintenance waste

The Stage 1 Tower will transfer or replicate many of the existing hospital campus departments and therefore, expect to generate similar types and volumes of waste. Hospitals are a key generator of Commercial and Industrial (C&I) related wastes as defined by the NSW Waste Avoidance and Resource Recovery (WARR) Strategy 2014-2021, of which the target recycling rate for waste generated by the sector is 70% (from 57% in 2010-11). The recycling rate currently experienced by the existing Nepean Hospital Campus is 8% on average across all departments (this includes clinical and related wastes). With reference to the above, efficiencies and strategies may be able to be employed to reduce waste disposed as clinical and general waste, while improving recycling rates.

Management of waste for the Stage 1 Tower will be broken down into stages. Intermediate dirty utility and disposal rooms will be located on each level for the storage and management of waste for each level and department. The main Stage 1 Back of House (BOH) situated on Level 01 will be utilised for the temporary storage and transfer of waste bins to/from various departments. A bin tug/trailer parking area is proposed near the Level 1 south exit to facilitate bin transport between the Stage 1 Tower and the existing campus loading

dock (or future stage loading areas when available) where waste will be collected by the site's contracted waste service provider.

Medical wastes generated at the site may include potentially hazardous materials (cytotoxic, sharp, anatomical or biohazard) and will therefore be disposed, stored and collected according to the Clinical and Related Waste Management for Health Services Guidelines, to ensure risks are minimised to medical, cleaning and waste service personnel.

Resource recovery and landfill diversion is a key focus of this OWMP, with a focus on the recycling material streams that are generated in proportionally high in volumes and improving operational efficiencies to ensure waste is managed effectively for the Stage 1 Tower. This OWMP also explores provisions for infrastructure and education for hospital operations, in addition to processes to audit and review the OWMP to ensure goals of the OWMP are being achieved, determine areas of improvement and ensure relevance of operational waste management expectations for the site.

The Version 1 formal issue of OWMP has incorporated the following changes from the draft:

- Addressing all comments received from the LHD following the review of draft OWMP;
- Level 05 Catheter Labs / CCU and Level 07 Cardiac / Haematology IPU information added;
- Existing waste data re-analysed to align with the daily volumes of each stream;
- Level 01 Back of House (BOH) area design brief adjusted as per the final design outcome

1 Introduction

MRA Consulting Group was engaged by CPB Contractors on behalf of the Nepean Blue Mountains Local Health District (LHD), to prepare an Operational Waste Management Plan (OWMP) for the proposed Stage 1 redevelopment of the Nepean Hospital (hereafter referred to as "the Site"). The Site is in the Nepean health precinct, located on the corner of Greater Western Highway and Parker Street which is situated in the Penrith City Council (PCC) Local Government Area (LGA). The proposed development features a fourteen-storey tower with an approximate Ground Floor Area (GFA) of 56,400m^2 (Refer to Appendix A for the Site Plan).

This OWMP 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 governed by the Penrith Local Environmental Plan (PLEP) 2010 and therefore, relevant sections of the Penrith Development Control Plan (PDCP) 2013 apply to this OWMP. The PDCP (2014) outlines the following waste management objectives and guiding principles which have been considered through the preparation of this OWMP:

a) To facilitate sustainable waste management within the City of Penrith in accordance with the principles of Ecologically Sustainable Development;

b) To manage waste in accordance with the 'Waste Hierarchy' to:

   i) Avoid producing waste in the first place;

   ii) Minimise the amount of waste produced;

   iii) Re-use items as many times as possible to minimise waste;

   iv) Recycle once re-use options have been exhausted; and

   v) Dispose of what is left, as a last resort, in a responsible way to appropriate waste disposal facilities.

c) To assist in achieving Federal and State Government waste minimisation targets as set out in the Waste Avoidance and Resource Recovery Act 2001 and NSW Waste Avoidance and Resource Recovery Strategy 2014-21;

d) To minimise the overall environmental impacts of waste by:

   vi) Encouraging development that facilitates ongoing waste avoidance and complements waste services offered by both Council and/or private contractors;

   vii) Requiring on-site source separation and other design and siting standards which assist waste collection and management services offered by Council and/or the private sector;

   viii) Encouraging building designs and construction techniques that minimise waste generation;

   ix) Maximising opportunities to reuse and recycle building and construction materials as well as other wastes in the ongoing use of a premise; and

   x) Reducing the demand for waste disposal.

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

- *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, 2020);*
- *Generic Hospital Waste Management Plan (NSW Ministry of Health, 1999); and*
- *Waste Classification Guidelines (NSW EPA, 2014):*
  - *Part 1: Classification of Waste.*
- *NBMLHD (2020) Sustainability Plan 2019-2023 and NBMLHD "Waste Management & Recycling Programs" Focal Point Document.*

This OWMP 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 are used in referenced for the preparation of, and/or in conjunction with the use of this OWMP and are current at the time of preparation of this version of the OWMP.

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;
- Guidelines Standard 15 (ACHS, 2017) 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);
- NSW Government Resource Efficiency Policy (OEH, 2014);
- Model Code of Practice – Labelling of Workplace Hazardous Chemicals: Code of Practice (Saw Work Australia, 2020);
- 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;
- 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;
- GL2018_013 Work Health and Safety – Blood and Body Substances Occupational Exposure Prevention;
- PD2020_022 Cleaning of the Healthcare Environment;
- 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, 2020);
- 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 Summary of Compliance

The following compliance table (Table 2) highlights relevant sections of this OWMP that address the specific SSDA and Green Star credit requirements in relation to waste management.

Table 2: OWMP table of compliance

Condition Number	Details	Section of OWMP where addressed
SSDA Condition – *D29. Prior to the commencement of operations, the Applicant must prepare a Waste Management Plan for the development and submit it to the Department/Certifying Authority. The Waste Management Plan must:*		
(a)	detail the type and quantity of waste to be generated during operation of the development;	Section 2.1 - 2.3, 2.7
(b)	describe the handling, storage and disposal of all waste streams generated on site, consistent with the Protection of the Environment Operations Act 1997, Protection of the Environment Operations (Waste) Regulation 2014 and the Waste Classification Guideline (Department of Environment, Climate Change and Water, 2009);	Section 2.5, 2.6, 2.8
(c)	detail the materials to be reused or recycled, either on or off site; and	Section 2.3
(d)	include the Management and Mitigation Measures included in Section 11 of the EIS.	Section 3.1 - 3.5
Green Star Requirement – Point 8A: 1 point is available where a waste professional prepares and implements an Operational Waste Management Plan (OWMP) for the project in accordance with best practice approaches and this is reflected in the building's design.		
(a)	Identify the site boundary, the waste streams relevant to the project, and the individual roles responsible for delivering and reviewing the OWMP;	Sections 1.1, 2.3, 3.1.3 Appendix A
(b)	Set diversion from landfill targets and/or targets for reducing total materials generation (general waste materials and recyclable/reusable materials), as well as monitoring and measurement procedures for waste and recycling streams by weight;	Section 3.1.2
(c)	Outline methods for encouraging the separation of waste streams, such as bins, storage areas, or recycling facilities in public areas as required;	Section 2.5 and 2.6
(d)	Identify storage areas for all waste streams and outline best practice safety and access requirements for their collection;	Section 4
(e)	Identify safe methods for vehicle access and transfer of waste; and	Section 4.4
(f)	Incorporate a review process to assess the success of the OWMP and make improvements, based on operational experience.	Section 3.6

1.4 Objectives

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

1.5 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 OWMP are the current design set for the development plan from the project architect, BVN Architecture, dated 30/10/2020;
- The waste streams and volumes expected to be generated during regular activities based on the following clinical services delivered under Stage 1:
    - Emergency Department.
    - Operating theatres.
    - Birthing & Women's' Health.
    - Endoscopy and Day Surgery.
    - Interventional Operations.
    - Central Sterilising Services.
    - Catheter Labs and Cardiac Care Services.
    - Neonatal Intensive Care and Special Care.
    - General and Speciality Inpatient Wards.
- The existing Logistic Centre and Kitchen Facility are situated further away from the new Stage 1 Tower and will be redeveloped under the Stage 2 work. Downstream waste process in these components are outside the scope of this OWMP, although the interface will be discussed in later part of the report.
- Waste generation volumes are based on actual data derived from existing Nepean Hospital operations, with like for like comparison of uses to the proposed Stage 1 development. 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 OWMP is a living document and therefore, waste management equipment and systems described in this report are subject to change based on changes to future operations and available technologies. It is the responsibility of the NBMLHD to review and update the OWMP on a regular basis or as required, to ensure the document remains consistent with operations at the site.

2 Operational Waste Management Planning

2.1 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 3 below details the specific waste types expected to be generated, under each of the classifications.

Table 3: 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.
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;	If the waste meets the criteria outlined, it is classified as liquid waste, and no further assessment for classification is required.

Waste Classification	Waste Material	Additional Details
	• 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.	
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)': • 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 *Waste classification guidelines Part 3:*

Waste Classification	Waste Material	Additional Details
		Waste containing radioactive material (NSW EPA, 2014).

Source: NSW EPA, 2014.

2.2 Medical Waste

For the purposes of this OWMP, 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 4 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 Sections 2 and 3.

Table 4: 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 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 3. Detailed management requirements under relevant regulations and standards refer to Appendix B.

All clinical waste stream bags and storage receptacles should be in staff-only area to avoid access by general public.

2.3 Stage 1 Planned Waste Streams

Based on consultations with the LHD Sustainability Waste Working Group and LHD General Services, the following key factors are considered in establishing the waste streams for Stage 1 of the redevelopment:

- Legislative and government requirements;
- Existing waste practice and contract arrangements for the existing campus;
- Inspirational targets in LHD substantiality policy (draft) documents;
- Operational efficiency under funding constraint; and
- Focus on high volume and cost waste streams.

2.3.1 Major Waste Streams

Major waste streams, which command the bulk of operational waste in Stage 1 and consistent with the existing campus, are recommended as follows:

- General Waste
- Clinical Waste
- Cytotoxic Waste
- Anatomical Waste
- Recycling 1 - Commingled
- Recycling 2 - Paper & Cardboard
- Recycling 3 - Secure Paper

2.3.2 Minor Waste Streams

The LHD Sustainability Waste Working Group has identified a list of potential additional minor waste streams for management and servicing at the site, and are discussed further in this OWMP.

Existing minor streams for continued management at the site include:

- Clinical Sharp waste – disposed into dedicated sharps bin in each patient care space as required, swapped with empty bins in Disposal Room for collection by the specialist waste contractors (it is noted that some materials currently disposed of as “clinical” waste may be able to be disposed of as general waste or a recycling stream and can be further reviewed through operations at the site to reduce the clinical waste disposal).
- Pharmaceutical Waste – disposed into dedicated pharmacy return bins in Medication Rooms, collected by the LHD Pharmacy staff.

A number of waste streams generated at the site are currently not recycled. The following list serves to demonstrate potential additional recycling streams through the addition of separate waste services either via the existing waste collection contractor, their sub-contractors or specialised services:

- Food Waste – Food waste potentially represents up to approximately 50% of the general waste stream generated. Food will be delivered from the Campus Kitchen to Stage 1 Tower in food trolleys and can generally be returned on food trays by the food trolley to the Campus Kitchen, for central processing. A separate food collection service or onsite primary processing (with a dehydrator or macerator, see Appendix J for examples) could significantly reduce waste sent to landfill and potentially reduce disposal costs for the site.

- Soft Plastics – consider one 240L in L03 Operating Theatre Deboxing room and one 240L bin in L04 CSSD Disposal Room.
- Metal (single use, e.g. from theatres) – Surgical trays and other metal implements that are typically single use may have the potential to be clean/treated and recycled, avoiding cost of clinical waste disposal. A single bin could be retained in the BOH area for this purpose, to be collected by the site waste contractor on a needs basis.
- Containers (CDS or glass) – after discussion with General Services, these shall be part of Com-mingled waste to be segregated in the Waste Facilities. The benefit of separate bin in Stage 1 is minimal and shall be considered at the South Main Entry and future Stage 2 FOH.
- Disposable curtain – consider removal and recycle by the supplier through procurement policy. Alternatively, if clean, disposable curtains may be able to be recycled with the soft plastics stream.
- Maintenance waste (light globes and etc) – to be collected and recycled by the FM team.
- Batteries – Planet Ark, Close the Loop. LHD to expand program.
- Printer cartridges - Planet Ark, Close the Loop. LHD to expand program.

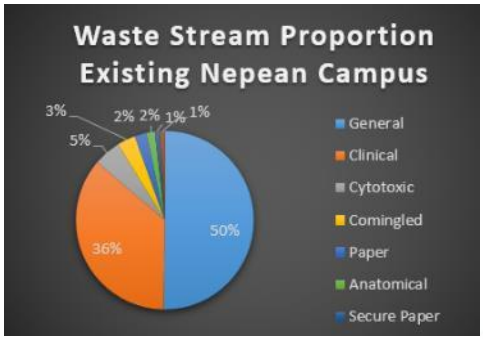
2.4 Operational Waste Projection

2.4.1 Existing Campus Waste Data

The LHD has offered rich waste data from the existing campus operations. The data provided insight into the typical waste streams and volumes expected from the expended services in the new Stage 1 Tower. Existing departments and services that are not relocated or provided in the new Stage 1 Tower have been excluded for the purpose of this study. The filtered existing waste data focus on relevant levels on North Block, South Block, East Block and West Block, and are presented in Appendix C. Figure 1 below provides an overall highlight of the waste data for the existing Nepean Hospital Campus which forms the basis of waste generation expectations for the Stage 1 development.

Figure 1: Nepean Hospital Existing Campus Waste Data

Sum of Tonnes p.a.	Column				
Row Labels	East Block	North Block	South Block	West Block	Grand Total
General	312.732	305.834	41.391	252.945	912.902
Clinical	290.175	155.534	46.428	162.498	654.635
Cytotoxic	13.841		6.920	69.204	89.965
Comingled		15.768	15.768	28.908	60.444
Paper	4.380	8.760	4.380	21.900	39.420
Anatomical		20.761	6.920		27.682
Secure Paper	0.461	2.957	2.726	10.656	16.800
Cardboard - general			10.512	5.256	15.768
Grand Total	**621.589**	**509.613**	**135.046**	**551.367**	**1,817.615**



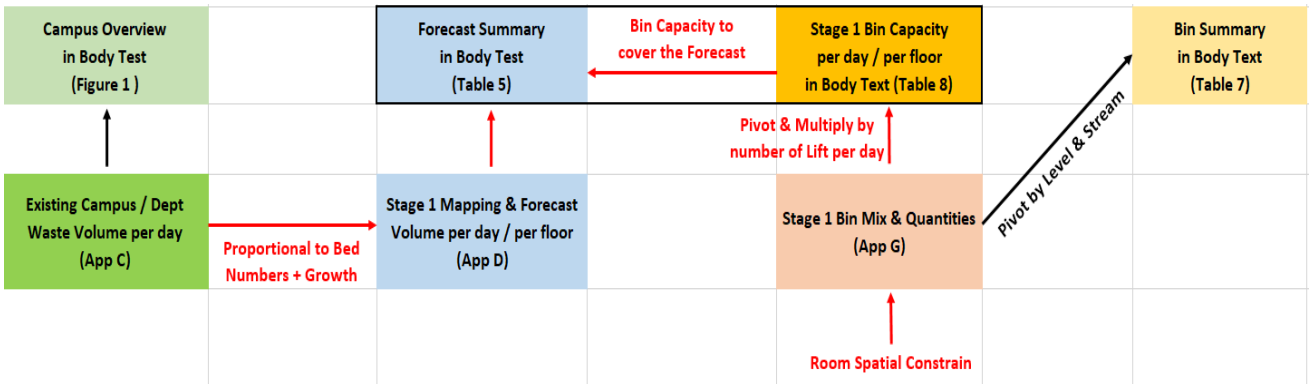
Some general observations from the above-mentioned data set are outlined as follows:

- General Waste and Clinical Waste make up approximately 86% of the total volume;
- Recyclable waste streams only make up 6% in departments that will operate in Stage 1 Tower;
- The recyclable waste volumes vary considerably among departments. Some departments currently do not recycle co-mingled waste or paper waste at all;
- Secure paper waste typically occurs in printing or administration areas, not in dirty utility or disposal room;
- Cytotoxic and Anatomical waste are only generated by certain departments; and
- Bin collection frequencies by General Services from the departments are often “as required” and independent to the collection frequency by the waste contractors from the campus loading dock.

2.4.2 Stage 1 Operation Waste Forecast

Based on the consultation with and feedback from LHD General Services, the relevant existing departmental waste data are used to project the waste generation for major streams. Figure 2 illustrates the data mapping and forecast methodology underlaying the bin capacity established in this report.

Figure 2: Waste Forecast Methodology



with the following assumptions:

- The waste generation streams / rates of the departments in Stage 1 will similar to that of exiting departments in the existing hospital campus;
- The waste volume is assumed to be proportional to the clinical services capacity, i.e. treatment spaces / bed numbers, seating capacity and etc;
- A growth factor of 1.1 is applied to the departments where the waste volume may increase due to efficiency gains, whilst this is unlikely to occur in wards areas;
- Operating theatres carry out a higher number of surgeries on weekdays compared to average daily cases across the week. Based on the statistics for 1st half of 2021, an extra factor of 1.26 is calculated and applied in the waste data forecast to cater for the weekday peak;
- Two of the seventeen operating theatres are planned to operate under a High-Volume Short Stay (HVSS) model. They may generate update to twice of waste compared to other theatres. An extra factor of 1.12 is calculated and applied to the waste data forecast of the entire theatre suite to accommodate for this outlier;
- A possible increase of disposable PPE post Coivd-19 can be generally accommodated within the redundancy of the total bin capacity provided, subject to further monitoring;
- The bin collection frequencies will be generally similar to the existing operations, however with an attempt to reduce the bin lift frequency where practicable for efficiency. Data from both existing departments and Stage 1 forecast are flattened to daily volumes for the purpose of comparison.

The analysis, mapping and forecast data are presented in Appendix D and a summary provided in Table 5 below.

Table 5: Waste mapping and forecast data

Stage 1 Waste Daily Projection based on Existng Data								
Volume per Day								
Department	Streams							
	General	Clinical	Cytotoxic	Anatomical	Comingle	PaperCB	SecPaper	Grand Total
Emergency	3,721	1,565	0	0	447	480	390	6,602
Birthing Unit	3,258	2,186	0	310	980	753	118	7,604
DOSA & ENDO	3,018	1,566	0	0	0	0	115	4,699
Theatre & Recovery	21,279	21,171	0	0	0	0	28	42,478
CSSD	770	0	0	0	0	0	25	795
CCL/ECHO/CCU	888	2,274	96	0	888	792	56	4,994
NICU/SCN	590	387	0	0	185	590	26	1,777
IPU - Card/Onco	448	448	448	0	224	224	16	1,808
IPU - Maternity	384	384	192	0	192	192	20	1,364
IPU - Gastro/AnteN	361	490	245	0	0	232	16	1,344
IPU - Geriatric	538	538	0	0	140	538	38	1,794
IPU - Neuro	456	456	340	0	224	232	15	1,722
IPU - Resp/Thoracic	448	448	336	0	112	448	23	1,815
Grand Total	36,158	31,914	1,657	310	3,391	4,480	888	78,797

The above operational waste generation figures serve as a guide only and are highly variable due to a range of factors such as seasonal variation, fluctuation by elective surgeries, and a variety of other factors. The waste forecast outlined in this report can only serve as a reasonable starting point, subject to audit and adjustments after the initial operation period.

The LHD should review waste generation experienced at the site regularly as departments may produce less waste as recycling improves.

2.5 Waste Handling Equipment

2.5.1 Waste Bags/Liners

Waste bags should be used where applicable (e.g. IPU levels) 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 Stage 1 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.

2.5.2 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 2.8 for site specific waste and bin workflow.

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 6: 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 E for reference.

2.5.3 Waste Transport Tug and Trailer

Tugs and trailers will be used to transport MGBs from the Stage 1 Tower to the existing Campus Loading Dock located between North Block and West Block for further processing, storage and onward disposal by the waster contractor. The tug and trailer will be suitably fitted to carry the range of bins that will be utilised through operation of the Stage 1 Tower.

Specifications for the tug and trailer utilised for the site are provided by the LHD can be found in Appendix E.

2.6 Collection Points and Hubs

2.6.1 Individual Patient Care and Staff Support Spaces

Operational wastes are expected to be generated in clinical and staff support areas. Under AusHFG guideline, various smaller bins will be provided for immediate waste disposal. Bins smaller than 120L are typically retained for the localised generation of waste and are emptied by staff and/or cleaning staff into larger bins in the collection hubs on each floor.

In some dedicated treatment or administration areas, the local bins may be up to 120L or 240L. These MGBs will be directly swapped by site General Services.

2.6.2 Dirty Utilities (DU)

Dirty Utility (DU) rooms or Sub-Dirty Utility rooms are distributed throughout the clinical and related areas. The DUs, serving as collection hubs, are typically equipped with 120L and 240L MGBs covering general waste, clinical waste and comingled waste. Bins in DUs are directly swapped by the General Services.

2.6.3 Photocopy Rooms/Bays

Based on centralised printing / photocopy strategy, each floor is provided with one central Photocopy Room / Bay. Secure papers containing confidential information are expected to be predominantly generated here. A 240L Secure Paper bin and a 120L Recycle Paper bin are typically provided in Photocopy rooms / bays, to be directly swapped by the General Services for collection.

Despite the strategy being maintained by the LHD for bulk printing requirements, desktop printer(s) were added to clinical workrooms to facilitate casual printing in each Ward. Minor patient sensitive information generated from these decentralised printers are expected to be limited and managed by the department, where training shall be formulated/provided by the LHD based on relevant patient privacy and security policies as required.

2.6.4 Disposal Rooms

The Disposal Room is consistently located between the lift lobbies on each floor for easy access. This area as the waste collection and overflow hub on each floor is sized to accommodate the range of MGBs to serve the departmental operational waste requirements. MGBs in Disposal Rooms are typically sized as 240L or 660L for collection and transport efficiency. 660L bins are preferred for busy departments such as ED and Theatres, to reduce the servicing frequency required by General Services.

Appendix F provides examples of typical distribution of Dirty Utilities, Photocopy Room and Disposal on L00 ED L03 Theatres and L09 IPU.

2.6.5 L01 Back of House (BOH)

It is proposed that the Stage 1 BOH space will be used for a range of functions, including temporary bin storage, overflow and swap.

A Design Brief for this area is detailed in Section of this report 4. Additionally, the Stage 1 BOH space is likely to provide intermediate functions for waste management through development of the Stage 2 portion of the redevelopment and may undergo some repurposing based on outcomes of future development stages at the site.

2.7 Stage 1 Planned Bin Mix and Quantities

The current design contains the default bin types and quantities based on Australasian Health Facility Guidelines templates. Based on the mapping of existing department waste data and the resulting forecast, the MGB mix and numbers have been adjusted to meet the Stage 1 operational waste demand. Following commencement of operations for the Stage 1 Tower, the following factors will be considered in the ongoing provision of waste equipment and infrastructure for the management of waste for the site:

- An intent to increase the percentage of comingled, paper waste and other recycling streams to offset general waste, with the aim that bin mix in future can further reflect a gradual improvement in recycling and landfill diversion and over the years;
- Operational practices and training to better reduce the amount of clinical waste generated and/or disposed of;
- Garden waste generated as a result of maintenance of the Level 0 and Level 5 green spaces is expected to be managed by an external contractor. Should management of this waste be the responsibility of general services, a minimal number of garden waste bins could be retained in the Stage 1 BOH or relevant floor disposal room if necessary;
- Based on fluctuations of waste generation identified by FM personnel in weeks and months after Stage 1 is in operation, the collection frequency by General Services shall be flexibly adjusted to suit; and
- Interim audits to be carried out to review MGB mix and numbers provided.

The below summary (Table 7) highlights the MGB provision for each level and is also outlined in further detail with relevant background data in Appendix G.

Table 7: Stage 1 Tower bin provision (per level)

Sum of Adjust. Qty	Litre	Stream															Total
	660				240							120					Bin Number
Levels	General	Clinical	Comingle	Paper/CB	General	Clinical	Cytoxic*	Anatomical	Comingle	Paper/CB	SecPaper*	General	Clinical	Comingle	Paper/CB	SecPaper*	
LV 00	1			1	0	1	0		0		1	8	16	7	1	4	40
LV 01	1	2	1	1	4	4	0	1	2		1						17
LV 02	1				2	5	0		1	1	2		3				15
LV 03	5	6	1	2	6	5	0		3	0	1						29
LV 04					1	1	0		1	1	1		0				5
LV 05					3	2	1		2	3	2	2	3	1			19
LV 06					1	1	0		2	2	1	2	2	2			13
LV 07					2	2	2		3	2	1						12
LV 08					2	2	1		3	2	2						12
LV 09					2	2	1		3	2	1						11
LV 10					2	1	0		3	3	1		2				12
LV 11					2	2	1		3	2	1		1				12
LV 12					2	2	1		3	2	1		2				13
Total	8	8	2	4	29	30	7	1	29	20	16	12	29	10	1	4	210
Grand Total	22				132							56					210

Based on the above MGB provisions, the associated total operational waste capacity is as below (Table 8), meeting the forecast in Table 5. It is worth noting that certain “busy floors” will require up to 4 lifts per day to meet the required capacity due to spatial constraints on the maximum number of bins that can be accommodated on each floor.

Table 8: Stage 1 waste generation profile

	Stage 1 Bin Daily Capacity based on Adjusted Bin Numbers							
Lift per Day	1 TYP. 2 for LF 4 for L3	1 TYP. 3 for L5 4 for L3	1 TYP.	1 TYP.	1 TYP. 3 P/W for UF	1 TYP.	1 P/W TYP. 3 P/W for L0~L2	
Sum of Adj. Litres	1 TYP			Streams				
Levels	General	Clinical	Cytotoxic	Anatomical	Comingle	Paper/CB	SecPaper	Grand Total
LV 00	3240	2160	0	0	840	780	309	7,329
LV 01	3240	2280	0	240	1140	660	103	7,663
LV 02	2280	1560	0	0	240	240	206	4,526
LV 03	18960	20640	0	80	1380	1320	34	42,414
LV 04	240	240	0	0	240	240	34	994
LV 05	960	2520	120	0	600	720	69	4,989
LV 06	480	480	0	0	309	480	34	1,783
LV 07	480	480	480	0	309	480	34	2,263
LV 08	480	480	240	0	309	480	69	2,057
LV 09	480	480	240	0	309	480	34	2,023
LV 10	480	480	0	0	309	720	34	2,023
LV 11	480	600	240	0	309	480	34	2,143
LV 12	480	720	240	0	309	480	34	2,263
Grand Total	32280	33120	1560	320	6600	7560	1028.571	82,469

Note: Daily lift capacity (second row of the above) and waste generation rates are displayed as expected maximums for the Stage 1 Tower. Therefore, it is possible that daily operations will result in less waste than forecast.

Note 2: Daily lifts refers to the number of times General Services may be required to change out bins for a level or department, not the frequency of bin servicing conducted by the contracted waste service provider at the loading dock.

2.8 Summary of Waste Handling Workflow

The table below (Table 9) briefly summaries how each MGB will be handled based on its stream and sizes, subject to further consultation with the LHD staff and General Services. 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 General Services and removed to the Stage 1 BOH space on Level 1 as required, or based on defined schedule.
- Empty bins placed in disposal room as full bins are removed for servicing.
- Full bins stored in the Stage 1 BOH space removed via the linkway access to external bin tug/trailer loading area.
- Bins loaded onto a bin tug and trailer and transferred to the existing hospital campus loading dock for collection.
- Once bins are emptied by the collection contractor (at present Bingo) at the existing campus loading dock, bins to be returned to the Stage 1 BOH space.
- Bin washing and maintenance to occur within the existing campus loading dock as required.

Table 9: Waste handling workflow

Major Stream: Bins <= 50L	From	Action	To	By	Remarks
General Waste	Individual rooms	emptied	large bins in Disposal	Cleaner	
Clinical Waste (see note)	Individual rooms	emptied	large bins in Disposal	General Services	
Recycle Comingle	Individual rooms	emptied	large bins in Disposal	Cleaner	
Recycle Paper	Individual rooms	emptied	large bins in DU / Disposal	Staff	
Food Waste	Bedroom, Bays	returned	Campus Kitchen	Food Service	*on food trolley*
Major Stream: Bins >= 120L	**From**	**Action**	**To**	**By**	**Remarks**
General Waste	DU, Clean-up, etc	swapped	Campus Dock	General Services	*transit in BOH in batches*
Clinical Waste	DU, Clean-up, Treatment, etc	swapped	Campus Dock	General Services	*transit in BOH in batches*
Cytotoxic Waste	Disposal, Clean-up	swapped	Campus Dock	General Services	*transit in BOH in batches*
Anatomical Waste	Disposal	swapped	Campus Dock	General Services	*transit in BOH in batches*
Recycle Comingle	DU, Disposal	swapped	Campus Dock	General Services	*transit in BOH in batches*
Paper / Cardboard	Disposal, Photocopy, Deboxing	swapped	Campus Dock	General Services	*transit in BOH in batches*
Secure Paper	Photocopy, Workroom, Reception	swapped	L01 BOH (overflow) then Dock	General Services	*transit in BOH in batches*
Minor Streams	**From**	**Action**	**To**	**By**	**Remarks**
Pharmacy returns	CU / Medication	Retrieved	Cenral Phamarcy	Pharmacist	
Sharps	Any clinical area	Retrieved	Disposal Room	Staff	*then by General Services to Dock*
Metal	OT/CSSD Disposal or L01 FM	Retrieved	Campus Dock	General Services	*a 120L BMG in the BOH only?*
Plastic Wraps	OT/CSSD Disposal or L01 FM	Retrieved	Campus Dock	General Services	*in L03 Deboxing & L04 Dispoal only?*
Disposable Curtain	Any clinical area	Retrieved	Off Site	Curtain Supplier	*as sustainable procurement*
Batteries	L02 FOH or L01 FM	Retrieved	Off Site	LHD Initiative Partner	
Printer Cartridges	Photocopy, Workroom, Reception	Retrieved	Off Site	LHD Initiative Partner	*or the cartridge supplier*

Based on the anticipated waste generation rates for the Site, the appointed contractors or waste service provider (WSP) will be required to collect waste generated from the existing Loading Dock. The waste handling and process in the Loading Dock and beyond are outside the scope of Stage 1 OWMP.

3 Waste Management Systems

3.1 Site Waste Management

3.1.1 Waste Management Systems

Site waste management systems are defined by the strategies, methodologies and responsibilities in place to effectively manage all waste streams generated by ongoing operation of the Stage 1 Tower. 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 OWMP on an ongoing basis to ensure its contents remain relevant and provide suitable guidance for further improvement in site waste management and recycling.

3.1.2 Waste Targets

The NSW Waste Avoidance and Resource Recovery (WARR) Strategy 2014-2021 sets targets for municipal, commercial and industrial (C&I), and construction and demolition waste (C&D). Hospitals are a key generator of C&I related wastes, of which the target recycling rate for waste generated by the sector is 70% (from 57% in 2010-11). The recycling rate currently experienced by the existing Nepean Hospital Campus is 8% on average across all departments (this includes clinical and related wastes). While clinical wastes are typically not all recoverable for recycling, audit data from NSW and Victorian hospitals (NSW Health, 2020 and Victorian Department of Health and Human Services, 2018) indicates that up to 60% of material that is disposed as “clinical waste” consists of general waste or recyclable material and of this, 45% of general waste is recyclable. Additionally, operational efficiencies may be possible to reduce clinical waste generated and further efficiencies through the addition of key recycling streams may be able to reduce material being sent to landfill or treatment.

The Stage 1 Tower will transfer or replicate many of the existing hospital campus departments and therefore, can expect to generate similar types and volumes of waste. Hospitals represent some of the lowest percentage recycling rates in the commercial and industrial sector due to a range of factors including material types, scale of operations and resourcing for waste management. Therefore, the NSW state target of 70% is unlikely to be achievable by the existing campus or future development stages. As such, state targets should be used as a guide for best practice and improvements made to systems and strategies with the following focus in mind:

- Prioritise waste avoidance - reducing general waste and paper waste by 5-10% each year through:
    - Sustainable sourcing of recycled content and recyclable materials (such as a disposable curtain retrieval policy with supplier),
    - Mandate packaging waste removal / recycling policy to other consumable suppliers, and
    - Implement paper-less document and record process.
- Encourage waste segregation and recycling - to covert general waste to comingled and/or paper/cardboard waste by 5-10% each year through
    - Develop and implement effective waste management procedure,
    - Focus on recovering material streams that are generated in high volumes and are easiest/simplest to implement, for example:
        - Onsite processing or separation of food waste for collection and offsite processing as food waste represents approximately 30-50% of the general waste stream in the C&I sector when not separated.

        - Soft plastic and plastic film are common in general hospital operations including in theatres and patient wards.
    - Roll out and reinforce staff training and education in waste management and handling, and
    - Monitor, review and improve operational waste management practice.

3.1.3 Roles & Responsibilities

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) which is understood to be established with the existing hospital campus as the Waste Management Working Group (WMWG) and is responsible for implementing the Waste Management Plan (see below). The WMWG should have a clear term of reference and include representation from key areas/departments of the health service, other entities covered by the Operational Waste Management Plan (OWMP), WHS and include expertise in waste management. WMCs should regularly review contractors' reports regarding site waste stream management and collection data.

The WMWG and General 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 Contracts and Procurement Team 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.

The WMWG is responsible for:

- Using this OWMP 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.

General 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 and staff (champions) 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 (where relevant, if at all).

3.1.4 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.
- 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.

3.2 Information and training

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 relevant procedures associated with the implementation of the OWMP should be provided to:

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

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. WMWG and General 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.

Waste management and recycling data gathered by the WMWG and General Services will be transparent and made available transparent to all staff on regular basis. Data gather should be used to inform departments how they are tracking in terms of waste management and recycling efficiency and goals, and provide a tangible incentive for departments to improve upon. The hospital may elect to provide some alternative incentives for best performers and focus system changes and training to departments with the least improvement.

3.3 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 B and Appendix H). 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.

3.4 Spill Management

Daily operation of the Stage 1 Tower, 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:

- The OWMP 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. A spill kit may be stored centrally in the Stage 1 BOH space for whole building use in the event of a spill.

3.5 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.

3.6 OWMP Review

3.6.1 Overview

An Operational Waste Management Plan (OWMP) is a living document, meant to provide continuous guidance and further improvement of operational waste for the subject site use. As such, to ensure the OWMP retains relevance to the site and continues to provide valuable operational guidance, the document and its contents should be reviewed on a regular basis. Since the OWMP provides guidance and goals for the management of operational waste, there are several metrics with which to review the OWMP and valuable data can therefore be gathered through the general overview and monitoring of site waste management systems by operational and management staff, in addition to professional audits of operational waste.

The following section outlines a review process for application at the site, to assess the success of operational waste management according to this OWMP and ensure measures are put into place to achieve operation waste management goals of this OWMP and GBCA Green Star requirements as set.

Review of onsite waste generation and management systems should be a continuous process conducted by the Sustainability Waste Working Group and General Services. Detailed review and auditing of the OWMP should be conducted by a suitably qualified waste professional.

Regular Monitoring
General waste and recycling waste disposal can be monitored per department or level proposed for the Stage 1 Tower. Bin fullness and source separation effectiveness can be measured (visually) by General Service or WMWG personnel and compared over time. A comparison of bin fullness will give an indication of recycling habits and visual characterisation of waste and recycling bins will give an indication of the proportion of material stream generation and the uptake of recycling methodologies.

Alternatively, methods of automatic monitoring of part or all of the Stage 1 Tower departments may be achievable with an RFID or similarly adapted system to track waste bins retained and managed at the site. It is not expected that an automated system such as RFID will pursued for Stage 1 and may be able to be implemented in future, in parallel with future development stage. Data gathered by such as system may include specific bin location/department, bin fullness, rate of filling and bin weight. This type of system would incur some capital and operational expenditure and may be subject to the service offerings of the contracted waste service provider for the site.

Auditing
In addition to the above, it is recommended that a waste audit be conducted at regular intervals following commencement of proposed operations, to measure the success of the WMP in more detail and identify specific areas for improvement. The key objectives of a bin audit are to:

- Identify baseline waste generation rates and disposal/recycling practices at commencement of operations at the site operations (within 6 months of project completion or nearing full use of the facility as developed);
- Identify typical operational waste generation rates and disposal/recycling practices sometime following baseline assessment to determine improvement or regression;
- Identify areas for improvement and opportunities for ongoing reductions in residual waste and improvement in the avoidance or diversion of recyclable materials;
- Monitor effectiveness of existing services (bin sizes, waste streams, etc.);
- Show compliance with Green Star obligations or identify areas for improvement to do so;
- Provide recommendations for implantation or further assessment; and
- To provide educational advice back to individual tenancies regarding the contents of recycling and general waste in order to reduce contamination (non-recyclables in recycling) and leakage (recyclables in general waste).

The following review processes are a guide only and should be reviewed with regard to performance and results. A detailed methodology will be prepared by the contracted waste auditor prior to any auditing or provision of any recommendations.

Recycling
Alternative methods of recycling (e.g. cardboard baling, bottle crushing, soft-plastic collection, food waste collection/processing, etc.) may be considered in terms of understanding the total recycling rates for the site. This can be achieved via visual inspection or collaboration with specific the building owner, waste contractors and waste auditor to determine their effectiveness.

3.6.2 Regular Monitoring

As outlined above, bins should be monitored regularly to ensure they are being used appropriately and to identify any misuse by department staff. Should any misuse of bins be identified (e.g. disposal of non-recyclable waste in recycling bins or disposal of recycling in general waste compactor), strategies may be put into place at this time to address the issue, including but not limited to further education of tenancies.

3.6.3 Waste Auditing

General Services, in conjunction with the WMWG, the waste contractor or an independent waste auditor, may elect to establish an auditing program. 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 OWMP;
- 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 10 and Table 11 as follows:

Table 10: Visual waste audit data recording

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 11: Visual waste audit waste distribution

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.

Audit Timing
Waste audits should be conducted at regular intervals following commencement of operations at the site. As a point of reference, the approximate timing for site waste audits is as follows:

- Within 6 months of commencement of operations by all proposed departments (to determine a baseline);
- 12 months following initial audit (compare to baseline); and
- Yearly or other regular schedule to ensure consistency with goals.

Fieldwork for waste audits should be undertaken across several days/weeks to improve the sample accuracy of the audit.

Auditing Methodology
Waste audits may be conducted using all of the following / or combination of:

- WH&S Numerical Profile.
- Requirements of ACHS EQuIP Mandatory Criteria for Waste.
- Requirements of this Area Policy Directive that is based on current Codes of Practice.
- NSW Government Waste Reduction and Purchasing Policy (WRAPP).
- Victorian Government Health Services Waste Audit Guidelines.

4 L01 BOH Space Design Brief

4.1 Background

In Stage 1 Main Works Offer, an approximate 140m^2 space at Level 1 southeast corner was identified as Facilities Management (FM) Logistic Shell (see Figure 3) (Stage 1 BOH). Subsequently, a Warming Kitchen function was assigned but then revoked, with a final intention for the area to be reserved for waste storage and transfer, and linen storage (refer to Aconex AURORA P-CI-000076).

Figure 3: Level 1 facilities management shell space

Part of the OWMP scope is to develop a design brief to allow this shell area to be suitably completed with the rest of the Tower to support Stage 1 operational waste and general services management. For this purpose, the area will be referred as Stage 1 Back of House (BOH).

4.2 Required Functions

Based on consultation with and input from LHD and project stakeholders, it is understood that the Stage 1 BOH area will accommodate the following key functions:

- Cleaning equipment storage and charging;
- Cleaning consumable storage; and
- Bin overflow, transition and spare bin storage.

The above mentioned functions and other general requirements of the Stage 1 BOH area are outlined in further detail in the following sub-sections (being Sections 4.2.1 to 4.2.4).

4.2.1 Cleaning Equipment Storage and Charging

It has been identified by the General Services that the following resilient floor cleaning machines will require storage and charging in the BOH area. The detailed equipment specifications are provided in Appendix I and Table 12.

Table 12: Cleaning machine summary

General Services - Cleanning Equipment	Qty	Proposed Product	L (m)	W (m)	H (mm)	Weight (kg)	Charging
Lv 0 - ED: Own walk behind - require storeage and power	1	HAKO ScrobMaster B45 CL	*1.35*	0.76	1.12	200	Standard GPO
Lv 1 - Birhting: Own walk behind - require storeage and power	1	HAKO ScrobMaster B45 CL	*1.35*	0.76	1.12	200	Standard GPO
Lv2/3 - Shared walk behind - require storage and power	1	HAKO ScrobMaster B45 CL	*1.35*	0.76	1.12	200	Standard GPO
Lv 4 - CSSD: Own walk behind - require storage and power	1	HAKO ScrobMaster B45 CL	*1.35*	0.76	1.12	200	Standard GPO
Lv 5/7/8 - Shared walk behind - require storage and power.	1	HAKO ScrobMaster B45 CL	*1.35*	0.76	1.12	200	Standard GPO
Lv 6 - NICU: Own walk behind - reauires storage and power.	1	HAKO ScrobMaster B45 CL	*1.35*	0.76	1.12	200	Standard GPO
Lv 9/10 - Shared walk behind - require storage and power.	1	HAKO ScrobMaster B45 CL	*1.35*	0.76	1.12	200	Standard GPO
Lv 11/12 - Shared walk behind - require storage and power.	1	HAKO ScrobMaster B45 CL	*1.35*	0.76	1.12	200	Standard GPO
Depending on hallways may require **1 x sweeper** to service new tower.	1	Tennat Sweeper 6100	*1.52*	0.81	1.52	492	Standard GPO
Depending on hallways may require **1 x auto scrubber** to service new tower.	1	Tennat Robotic Scruber T7AMR	*1.65*	0.85	1.45	503	Standard GPO
Total Cleaning Machine	**10**	Spatial and services in L01 FM Shell				**2,595**	

The sub-area within the BOH shall provide:

- Adequate space for equipment parking, charging, access and circulation (approx. 20m2, TBC by the architect);
- Machine parking positions, assume side-by-side, to be verified against the current slab adequacy by the structural engineer;
- Epoxy flooring;
- Vinyl wall protection 150~1500mm AFL with washable paint above
- Acoustic medical ceiling tiles at 2700mm AFL
- 1x Double GPO for charging of each machine;
- Adequate ventilation provisions for charging; and
- Automatic door with EACS to be used for cleaning equipment and consumables only.

4.2.2 Cleaning Consumable Storage

A transition / storage space is required for cleaning products and consumables, prior to their on-ward distribution to Cleaner's rooms on each floor. The room shall provide:

- The storage function similar to a General Store with approx.15m2;
- Maximum amount of heavy-duty shelving units with adjustable shelves;
- Provide a mobile Spill Kit on the shelf;
- Epoxy flooring;
- Vinyl wall protection 150~1800mm AFL with washable paint above;
- Acoustic Medical Ceiling tiles at 2700mm AFL; and
- One and half leaf door with automatic active leaf and EACS.

4.2.3 Segregated Bin Overflow and Storage

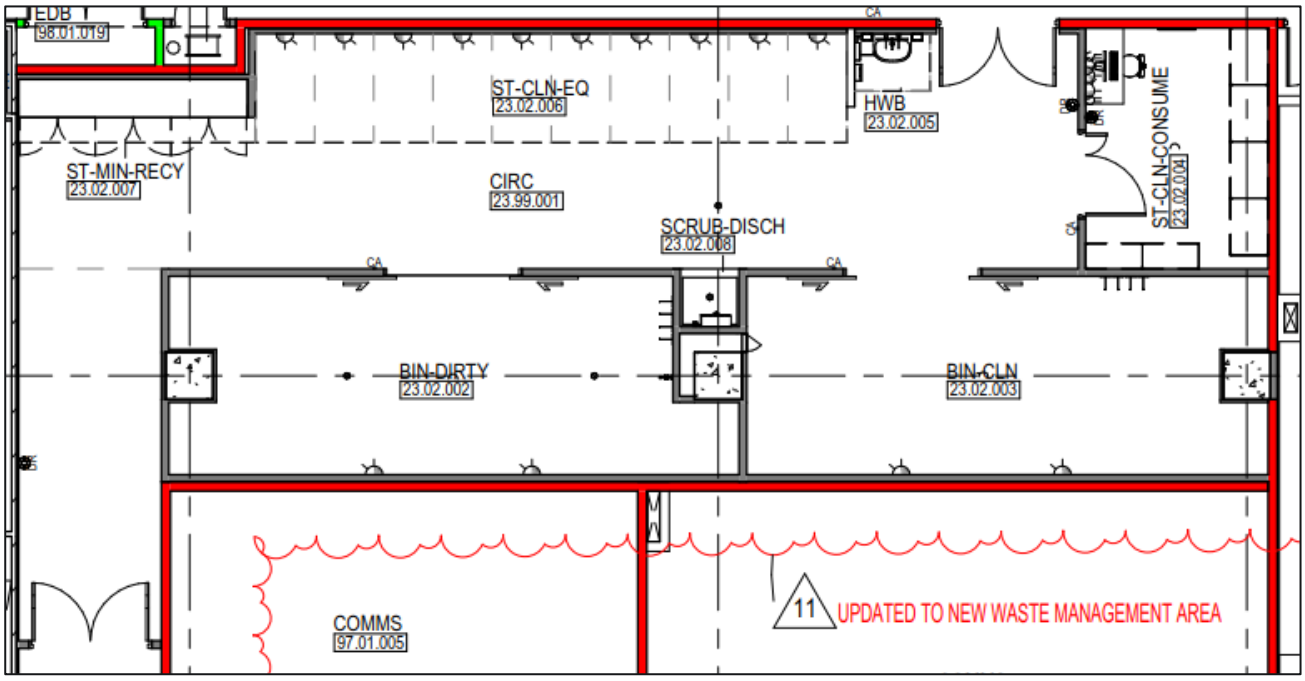
The reminder of the BOH area will accommodate the following waste management requirements:

- Overflow / transition / spare storage area for clean MGBs and dirty MGBs;
- The clean and dirty areas separately enclosed for infection control, roughly in even split;
- Crossover during transport shall be minimised however won't be completely avoided due to spatial constraints;
- Adequate circulation clearance for bin access and manoeuvre for MGB up to 660L;
- A tap and hose for floor cleaning in the dirty bin store, with door threshold and slab fall to suit. Note that bin cleaning will be conducted in the campus loading dock, not in the Stage 1 BOH.
- Trafficable waterproofing dirty area and epoxy flooring in clean area;
- Wall vinyl protection 150~1500mm AFL with washable paint above;
- Moisture resistant ceiling tiles at 2700mm AFL;

- Adequate ventilation / exhaust provision by mechanical;
- Spare GPO provisions on south wall; and
- Automatic sliding door for infection control (secured staff only area – no lock required).

The configuration of the clean bin and dirty bin stores have been guided by and developed in parallel with this OWMP, as illustrated below (Figure 4):

Figure 4: BOH Configuration Plan



As evidenced by the MGB mix / quantities and the required footprint in Section 2.7, it's not possible for the BOH area to accommodate a single clean/dirty swap for the entire MGB fleet in the Tower. The General Services shall develop a process to swap clean and dirty MGBs by streams / levels in batches.

4.2.4 Other General Requirements

Other general requirements for the BOH area are as follows:

- Automatic double door and EACS control to the entry and exit door to the BOH;
- Turning radius for cater for the largest MGB and clean machine in the specification;
- Wifi coverage for future implementation of any RFID monitoring technology;
- Placement of services shall avoid impact on fire wall integrity already in place as possible;
- Placement of plumbing shall consider separation / protection against the Comms rooms south to the area;
- Mechanical engineer to confirm if the area requires independently ventilation / exhausted in lieu of return air mixed with other areas under the AS1668;
- Allow extra space for two 120L or one 240L bins in the BOH for collection of minor recyclable waste streams, if required in future;
- One handwash basin to be accommodated in the area for infection control and hygiene practices, with soap and with antiseptic handwash dispenser provided nearby; and
- Coordination of all required disciplinary design and compliances, including operational signage.
- Detergent/ Chemical Mixer provided

4.3 Access from and to Departments

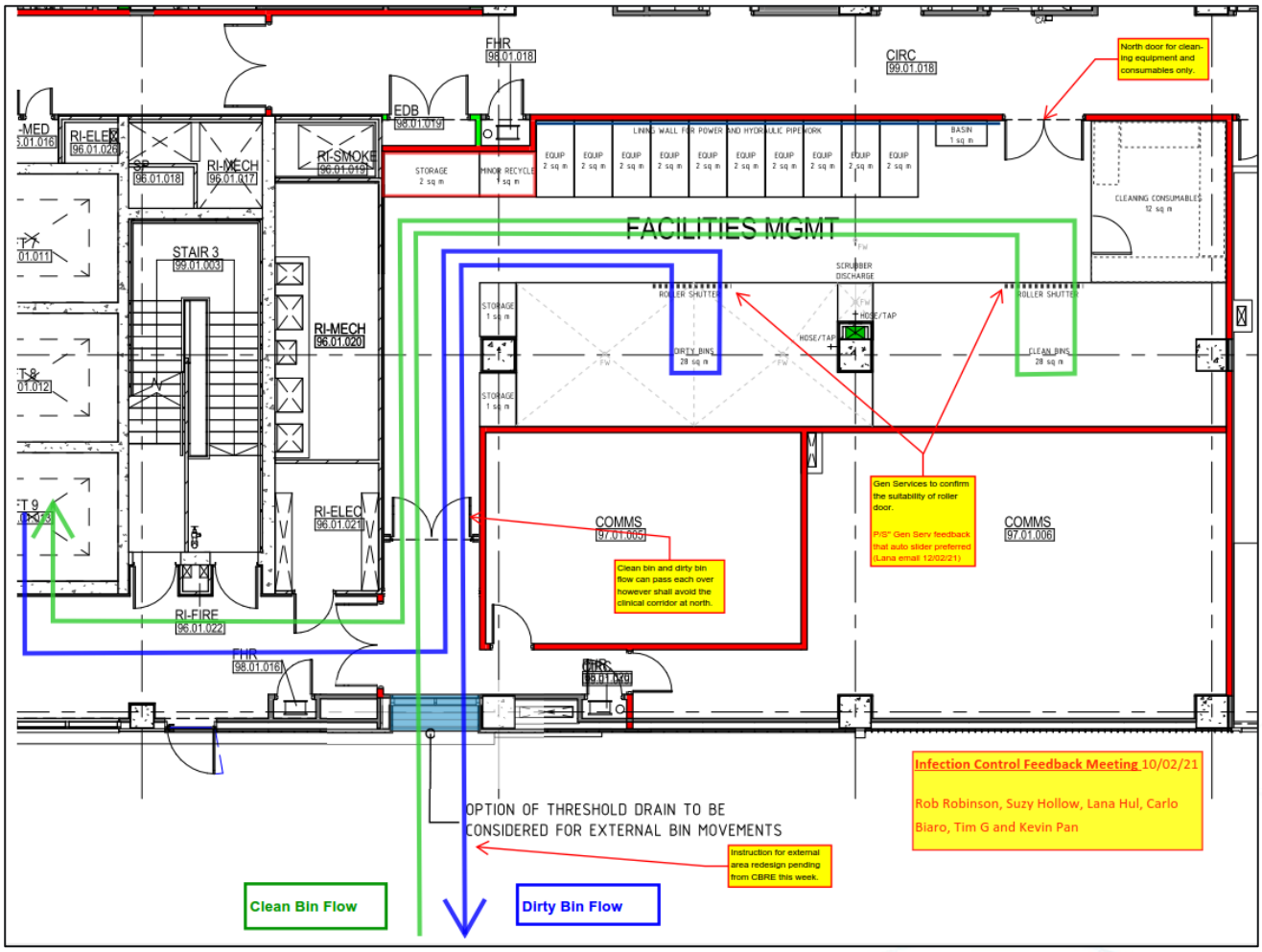
The transfer of MGBs between various departments and the L01 BOH area will utilise six patient/general purpose lifts (lift 4 to 9) as shown on site plans (Appendix A). Transfer of bins would be coordinated by General services and generally occur outside of peak periods (such as visiting hours) to avoid congestion general purpose lifts.

The circulation, access and workflow shall consider the following factors:

- Up to 248 MGBs to be switched out daily, i.e. up to total 496 movements between clean and dirty MGBs;
- Average 1 MGB in/out of the BOH area per minute, assume operates 8 hours a day (bins may be transferred in bulk with assistive equipment for efficiency where practicable); and
- Minimise the interface with clinical workflow where possible.

Based on the consultation and feedback with the LHD Infection Control, the following clean bin and dirty bin flows to/from the BOH is to inform the final design.

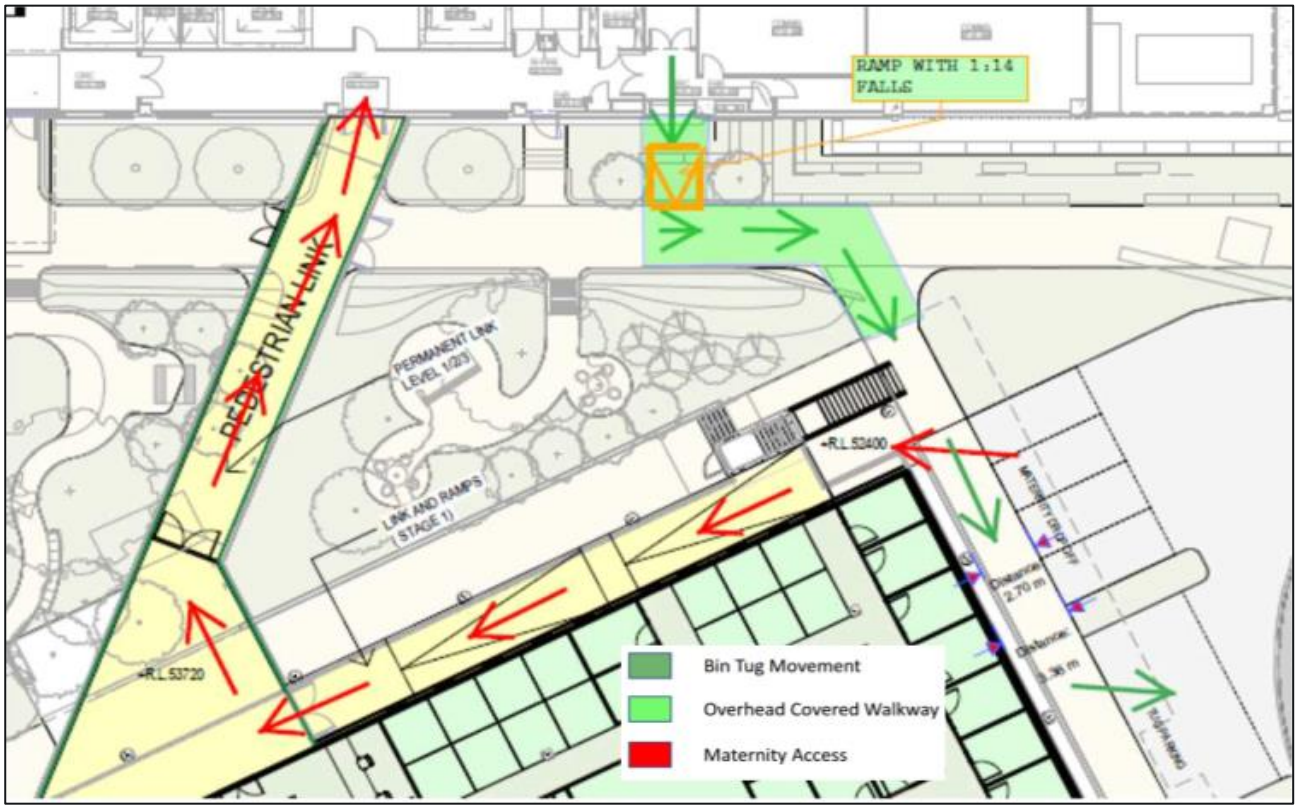
Figure 5: Clean Bin and Dirty Bin Flow to/from the BOH



4.4 Transport to Campus Waste Centre

The transfer of MGBs between the Stage 1 BOH and the campus Loading Dock will be undertaken by waste tug and trailers (specs detailed in Appendix E). The design of the external area south to Level 1 shall provide the easiest possible solution to facilitate the manual handling of several hundred bins daily, from the tower to the tug / trailer loading zone.

Figure 6: Bin Transfer Path and Bin Tug / Trailer Parking



Based on discussions with the LHD WMWG and General Services, consideration has been given to:

- Location of tug/trailer parking / MGB loading zone as close to Stage 1 Tower as possible, in coordination with the Birthing Drop-off parking;
- The transfer path between the Stage 1 BOH, inclusive of the tug/trailer parking area and MGB loading zone will be covered;
- Creating the shortest route from the Stage 1 BOH to tug/trailer parking / MGB handling area;
- Provide a level path or general ramp from the south exit door directly outside of the Stage 1 BOH area;
- Minimise the crossover of MGB transfer route and the birthing drop-off passage;
- Ensure the MBG loading zone can accommodate minimum 8 x 240L or 4 x 660 bins (trailer capacity), preferably with some visual screening from the public and visitors.
- Allow adequate turning circle for the waste tug and the trailer manoeuvre; and
- Provide lighting and signage to support the MGB loading / uploading operation.

The above external flow strategy has been reviewed and preferred by the LHD, in the context of L01 Maternity south external access, L01 Linkway and Pathology development in the East Block. The design development finalisation of south court external works is subject to on-going consultation with various LHD stakeholders, including infection control, to advise on any potential SafeWork NSW issues prior to being approved for implementation.

5 Conclusions

This OWMP has been developed to comply with the relevant SSDA and Green Star requirements, other relevant guidelines, regulations and policies. The OWMP identifies and addresses key details, strategic objectives, methodologies, responsibilities and processes for review associated with the management of waste for the Stage 1 Tower – these include (but are not limited to):

- Identifying the likely waste streams to be generated across each aspect of the Stage 1 Tower – General Solid Waste, Clinical (and related) and radioactive waste streams.
- Highlighting Strategic targets and goals for waste management and recycling at the site, focused high value waste/recycling streams first.
- Provision of General methods for the storage, handling, collection and servicing of waste streams expected to be generated at the site (including equipment and infrastructure requirements and recommendations).
- Highlighting key waste management areas and their function across the Stage 1 Tower.
- Outlining roles and responsibilities of various hospital personnel and management groups (including the delivery of training & education materials, monitoring of bins and improvement of systems).
- Detailing a review process with which the goals of this OWMP can be monitored and revised as necessary, in future.

6 References

Department of Agriculture, Water and the Environment (2018) *National Waste Policy: Less Waste, More Resources*. Available at: http://www.environment.gov.au/system/files/resources/d523f4e9-d958-466b-9fd1-3b7d6283f006/files/national-waste-policy-2018.pdf

Goonan S, Mirosa M & Spence H 2014, '*Getting a Taste for Food Waste: A Mixed Methods Ethnographic Study into Hospital Food Waste before Patient Consumption Conducted at Three New Zealand Foodservice Facilities*', Journal Of The Academy Of Nutrition And Dietetics, Vol. 14, No. 1 pp. 63-70.

Metropolitan Waste and Resource Recovery Group (2017), *Recycling hospital food waste: Department of Health and Human Services*, Victorian State Government.

NBMLHD (2020) *Sustainability Plan 2019-2023*

NSW Audit Office (2002) Performance Reports – Managing Hospital Waste.

NSW EPA (2012) NSW Better Practice Guideline for Waste Management in Commercial and Industrial Facilities, Australian Standards and Statutory Requirements.

NSW EPA (2014) *Waste Classification Guidelines.*

NSW EPA (2014) *NSW Waste Avoidance and Resource Recovery Strategy 2014-21*.

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

NSW Health (Environmental Health) (2020) *Clinical and Related Waste Management for Health Services*.

NSW Ministry of Health (1999) *Generic Hospital Waste Management Plan*

Penrith City Council (2014) *Penrith Development Control Plan.*

Penrith City Council (2010) *Penrith Local Environmental Plan*.

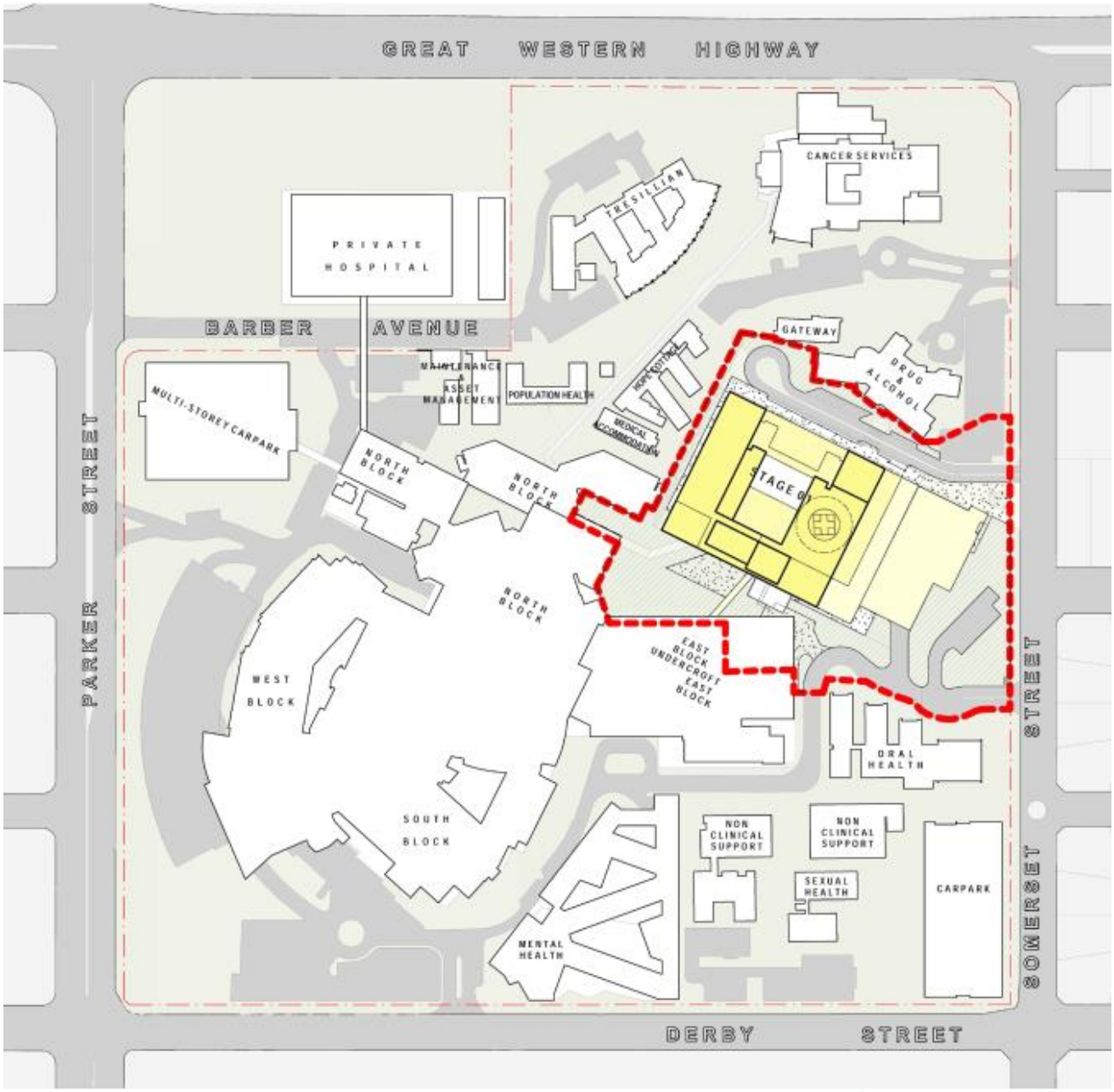
Standards Australia (1994) *AS 1319: Safety signs for the occupational environment*, Homebush, NSW: Standards Australia.

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

VIC Dept. of Health and Human Services (2019) *Health Services Waste Audit Guidelines.*

WorkCover (2011) Managing Work Environment Facilities Code of Practice.

Appendix A Site Plans



Appendix B Management Requirements of medical waste streams

Table 13: 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 Existing Campus Waste Data

This Page Intentionally Left Blank

EXISTING DEPARTMENT WASTE DATA

Building Name	Service	Functional Decription (Ward)	Level	Bed Number	General Services description	LHD Waste Category Lvl 1	LHD Waste Category Lvl 2	Bin Size (L)	QTY	Total Vol (L)	Lifts per Frequenc	Frequency	lifts per year	Vol per year	Vol per day (L)
East Block	Surgery & Anaesthetics (Speciality	E3H	3		240 Clinical	Clinical Waste	Clinical	240	1	240	1	d	365	87600	**240.00**
East Block	Surgery & Anaesthetics (Speciality	E3H	3		240 General	Non-Clinical Waste	General	240	1	240	1	d	365	87600	**240.00**
East Block	Surgery & Anaesthetics (Speciality	E3H	3	**30**	240 Cytotoxic	Clinical Waste	Cytotoxic	240	1	240	1	d	365	87600	**240.00**
East Block	Surgery & Anaesthetics (Speciality	E3H	3		240 Paper	Non-Clinical Recycling	Paper	240	1	240	1	d	365	87600	**240.00**
East Block	Surgery & Anaesthetics (Speciality	E3H	3		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	m	12	2880	**7.89**
East Block	Recovery	Recovery	2		660 General	Non-Clinical Waste	General	660	2	1320	3	d	1095	1445400	**3,960.00**
East Block	Recovery	Recovery	2	**26**	660 Clinical	Clinical Waste	Clinical	660	1	660	3	d	1095	722700	**1,980.00**
East Block	Recovery	Recovery	2		660 Clinical	Clinical Waste	Clinical	660	1	660	1	d	365	240900	**660.00**
East Block	Theatres	Theatres	2		660 General	Non-Clinical Waste	General	660	2	1320	3	d	1095	1445400	**3,960.00**
East Block	Theatres	Theatres	2	**6**	660 Clinical	Clinical Waste	Clinical	660	2	1320	3	d	1095	1445400	**3,960.00**
East Block	Theatres	Theatres	2		660 Clinical	Clinical Waste	Clinical	660	1	660	1	d	365	240900	**660.00**
East Block	Theatres	Theatres	2		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	m	12	2880	**7.89**
North Block	CSSD	CSSD	1	**11**	240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	m	12	2880	**7.89**
North Block	Recovery	Day Surgery	2		240 Clinical	Clinical Waste	Clinical	240	1	240	1	d	365	87600	**240.00**
North Block	Recovery	Day Surgery	2	**15**	240 General	Non-Clinical Waste	General	240	1	240	1	d	365	87600	**240.00**
North Block	Recovery	Day Surgery	2		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	w	52	12480	**34.19**
North Block	Drs Change Room	Drs Change Room	1		660 General	Non-Clinical Waste	General	660	2	1320	1	d	365	481800	**1,320.00**
North Block	Theatres (Day Surgery)	Theatres	2		660 General	Non-Clinical Waste	General	660	3	1980	3	d	1095	2168100	**5,940.00**
North Block	Theatres (Day Surgery)	Theatres	2		660 Clinical	Clinical Waste	Clinical	660	2	1320	2	d	730	963600	**2,640.00**
North Block	Theatres (Day Surgery)	Theatres	2	**8**	660 Clinical	Clinical Waste	Clinical	660	1	660	1	d	365	240900	**660.00**
North Block	Theatres (Day Surgery)	Theatres	2		120 Anatomical	Clinical Waste	Anatomical	120	1	120	3	d	1095	131400	**360.00**
North Block	Theatres (Day Surgery)	Theatres	2		240 Bottle	Non-Clinical Recycling	Comingled	240	1	240	3	d	1095	262800	**720.00**
North Block	Theatres (Day Surgery)	Theatres	2		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	w	52	12480	**34.19**
North Block	Geriatric	Ward N1F	1		240 Clinical	Clinical Waste	Clinical	240	1	240	1	d	365	87600	**240.00**
North Block	Geriatric	Ward N1F	1	**26**	240 General	Non-Clinical Waste	General	240	1	240	1	d	365	87600	**240.00**
North Block	Geriatric	Ward N1F	1		240 Paper	Non-Clinical Recycling	Paper	240	1	240	1	d	365	87600	**240.00**
North Block	Geriatric	Ward N1F	1		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	fn	26	6240	**17.10**
North Block	Gastro, GACC, Neurology, Stroke/C	Ward N2F	2		240 Clinical	Clinical Waste	Clinical	240	1	240	1	d	365	87600	**240.00**
North Block	Gastro, GACC, Neurology, Stroke/C	Ward N2F	2	**29**	240 General	Non-Clinical Waste	General	240	1	240	1	d	365	87600	**240.00**
North Block	Gastro, GACC, Neurology, Stroke/C	Ward N2F	2		240 Paper	Non-Clinical Recycling	Paper	240	1	240	1	d	365	87600	**240.00**
North Block	Gastro, GACC, Neurology, Stroke/C	Ward N2F	2		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	m	12	2880	**7.89**
South Block	Delivery Suite (Birthing)	Delivery Suite	2		240 Clinical	Clinical Waste	Clinical	240	3	720	1	d	365	262800	**720.00**
South Block	Delivery Suite (Birthing)	Delivery Suite	2		240 General	Non-Clinical Waste	General	240	3	720	1	d	365	262800	**720.00**
South Block	Delivery Suite (Birthing)	Delivery Suite	2		240 Cardboard	Non-Clinical Recycling	Cardboard - general	240	1	240	1	d	365	87600	**240.00**
South Block	Delivery Suite (Birthing)	Delivery Suite	2	**11**	240 Recycle	Non-Clinical Recycling	Comingled	240	1	240	1	d	365	87600	**240.00**
South Block	Delivery Suite (Birthing)	Delivery Suite	2		120 Anatomical	Clinical Waste	Anatomical	120	1	120	1	d	365	43800	**120.00**
South Block	Delivery Suite (Birthing)	Delivery Suite	2		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	w	52	12480	**34.19**
South Block	NICU	NICU	2		240 Cardboard	Non-Clinical Recycling	Cardboard - general	240	1	240	1	d	365	87600	**240.00**
South Block	NICU	NICU	2	**39**	240 Recycle	Non-Clinical Recycling	Comingled	240	1	240	1	d	365	87600	**240.00**
South Block	NICU	NICU	2		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	w	52	12480	**34.19**
South Block	SCN	Ward S4D	4		240 General	Non-Clinical Waste	General	240	1	240	1	d	365	87600	**240.00**
South Block	SCN	Ward S4D	4	**16**	240 Paper	Non-Clinical Recycling	Paper	240	1	240	1	d	365	87600	**240.00**
South Block	SCN	Ward S4D	4		120 Clinical	Clinical Waste	Clinical	120	1	120	1	d	365	43800	**120.00**
South Block	Antenatal	Ward S4EA	4		240 Clinical	Clinical Waste	Clinical	240	1	240	1	d	365	87600	**240.00**
South Block	Antenatal	Ward S4EA	4	**26**	120 Cytotoxic	Clinical Waste	Cytotoxic	120	1	120	1	d	365	43800	**120.00**
South Block	Antenatal	Ward S4EA	4		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	m	12	2880	**7.89**
South Block	Postnatal	Ward S4EP	4		120 Clinical	Clinical Waste	Clinical	120	1	120	1	d	365	43800	**120.00**
South Block	Postnatal	Ward S4EP	4	**30**	120 General	Non-Clinical Waste	General	120	1	120	1	d	365	43800	**120.00**
South Block	Postnatal	Ward S4EP	4		240 Bottle	Non-Clinical Recycling	Comingled	240	1	240	1	d	365	87600	**240.00**
South Block	Postnatal	Ward S4EP	4		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	fn	26	6240	**17.10**
West Block	Emergency	Acute Care	2		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	w	52	12480	**34.19**
West Block	Emergency	Emergency	2		660 General	Non-Clinical Waste	General	660	3	1980	1	d	365	722700	**1,980.00**
West Block	Emergency	Emergency	2		120 Clinical	Clinical Waste	Clinical	120	7	840	1	d	365	306600	**840.00**
West Block	Emergency	Emergency	2		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	bm	6	1440	**3.95**
West Block	Emergency	Fast Track	2	**51**	240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	w	52	12480	**34.19**
West Block	Emergency	Short Stay	2		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	w	52	12480	**34.19**
West Block	Emergency	Medical Administration	2		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	w	52	12480	**34.19**
West Block	Emergency	Sub Acute Care	2		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	w	52	12480	**34.19**
West Block	Emergency	Triage	2		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	w	52	12480	**34.19**
West Block	Endoscopy	Endoscopy	1		240 General	Non-Clinical Waste	General	240	1	240	2	d	730	175200	**480.00**
West Block	Endoscopy	Endoscopy	1		240 Clinical	Clinical Waste	Clinical	240	1	240	2	d	730	175200	**480.00**
West Block	Endoscopy	Endoscopy	1	**22**	240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	fn	26	6240	**17.10**
West Block	Endoscopy	Endoscopy	1		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	m	12	2880	**7.89**
West Block	Endoscopy	Endoscopy	1		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	bm	6	1440	**3.95**
West Block	Medical Imaging	Medical Imaging	1		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	w	52	12480	**34.19**
West Block	Medical Imaging	Medical Imaging	2		660 General	Non-Clinical Waste	General	660	3	1980	1	d	365	722700	**1,980.00**
West Block	Medical Imaging	Medical Imaging	2		240 General	Non-Clinical Waste	General	240	2	480	1	d	365	175200	**480.00**
West Block	Medical Imaging	Medical Imaging	2		240 Paper	Non-Clinical Recycling	Paper	240	2	480	1	d	365	175200	**480.00**
West Block	Medical Imaging	Medical Imaging	2		240 Bottle	Non-Clinical Recycling	Comingled	240	2	480	1	d	365	175200	**480.00**
West Block	Medical Imaging	Medical Imaging	2		660 Clinical	Clinical Waste	Clinical	660	1	660	1	d	365	240900	**660.00**
West Block	Medical Imaging	Medical Imaging	2		120 Clinical	Clinical Waste	Clinical	120	1	120	1	d	365	43800	**120.00**
West Block	Medical Imaging	Medical Imaging	2		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	fn	26	6240	**17.10**
West Block	Geriatric	Ward 3B	3		240 General	Non-Clinical Waste	General	240	1	240	1	d	365	87600	**240.00**
West Block	Geriatric	Ward 3B	3		240 Paper	Non-Clinical Recycling	Paper	240	1	240	1	d	365	87600	**240.00**
West Block	Geriatric	Ward 3B	3	**24**	240 Clinical	Clinical Waste	Clinical	240	1	240	1	d	365	87600	**240.00**
West Block	Geriatric	Ward 3B	3		120 Bottle	Non-Clinical Recycling	Comingled	120	1	120	1	d	365	43800	**120.00**
West Block	Geriatric	Ward 3B	3		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	fn	26	6240	**17.10**
West Block	Respiratory / Thoracic	Ward 4A	4		240 General	Non-Clinical Waste	General	240	1	240	1	d	365	87600	**240.00**
West Block	Respiratory / Thoracic	Ward 4A	4		240 Cardboard	Non-Clinical Recycling	Cardboard - general	240	1	240	1	d	365	87600	**240.00**
West Block	Respiratory / Thoracic	Ward 4A	4	**30**	240 Clinical	Clinical Waste	Clinical	240	1	240	1	d	365	87600	**240.00**
West Block	Respiratory / Thoracic	Ward 4A	4		240 Cytotoxic	Clinical Waste	Cytotoxic	240	1	240	1	d	365	87600	**240.00**
West Block	Respiratory / Thoracic	Ward 4A	4		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	m	12	2880	**7.89**
West Block	Neurosurgery	Ward 4B	4		240 General	Non-Clinical Waste	General	240	1	240	1	d	365	87600	**240.00**
West Block	Neurosurgery	Ward 4B	4		240 Bottle	Non-Clinical Recycling	Comingled	240	1	240	1	d	365	87600	**240.00**
West Block	Neurosurgery	Ward 4B	4	**30**	240 Clinical	Clinical Waste	Clinical	240	1	240	1	d	365	87600	**240.00**
West Block	Neurosurgery	Ward 4B	4		240 Cytotoxic	Clinical Waste	Cytotoxic	240	1	240	1	d	365	87600	**240.00**
West Block	Neurosurgery	Ward 4B	4		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	m	12	2880	**7.89**
West Block	Oncology / Heamatology	Ward 4C	4		240 General	Non-Clinical Waste	General	240	1	240	1	d	365	87600	**240.00**
West Block	Oncology / Heamatology	Ward 4C	4		240 Paper	Non-Clinical Recycling	Paper	240	1	240	1	d	365	87600	**240.00**
West Block	Oncology / Heamatology	Ward 4C	4	**30**	240 Clinical	Clinical Waste	Clinical	240	1	240	1	d	365	87600	**240.00**
West Block	Oncology / Heamatology	Ward 4C	4		240 Cytotoxic	Clinical Waste	Cytotoxic	240	1	240	1	d	365	87600	**240.00**
West Block	Oncology / Heamatology	Ward 4C	4		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	fn	26	6240	**17.10**
West Block	Rheumatology, Immunology, Infect	Ward 5A	5		240 General	Non-Clinical Waste	General	240	1	240	1	d	365	87600	**240.00**
West Block	Rheumatology, Immunology, Infect	Ward 5A	5	**21**	240 Clinical	Clinical Waste	Clinical	240	1	240	1	d	365	87600	**240.00**
West Block	Rheumatology, Immunology, Infect	Ward 5A	5		240 Cytotoxic	Clinical Waste	Cytotoxic	240	1	240	1	d	365	87600	**240.00**
West Block	Rheumatology, Immunology, Infect	Ward 5A	5		120 Secure	Non-Clinical Waste	Secure Paper	120	1	120	1	fn	26	3120	**8.55**
West Block	Cardiology / CCU / CDOU	Ward 5B	5		240 General	Non-Clinical Waste	General	240	1	240	1	d	365	87600	**240.00**
West Block	Cardiology / CCU / CDOU	Ward 5B	5	**30**	240 Clinical	Clinical Waste	Clinical	240	1	240	1	d	365	87600	**240.00**
West Block	Cardiology / CCU / CDOU	Ward 5B	5		240 Cytotoxic	Clinical Waste	Cytotoxic	240	1	240	1	d	365	87600	**240.00**
West Block	Cardiology / CCU / CDOU	Ward 5B	5		240 Bottle	Non-Clinical Recycling	Comingled	240	1	240	1	d	365	87600	**240.00**
West Block	Cath Lab / Echo	Ward 5C	5		240 General	Non-Clinical Waste	General	240	1	240	1	d	365	87600	**240.00**
West Block	Cath Lab / Echo	Ward 5C	5		240 Paper	Non-Clinical Recycling	Paper	240	1	240	1	d	365	87600	**240.00**
West Block	Cath Lab / Echo	Ward 5C	5	**10**	240 Bottle	Non-Clinical Recycling	Comingled	240	1	240	1	d	365	87600	**240.00**
West Block	Cath Lab / Echo	Ward 5C	5		660 Clinical	Clinical Waste	Clinical	660	1	660	1	d	365	240900	**660.00**
West Block	Cath Lab / Echo	Ward 5C	5		240 Secure	Non-Clinical Waste	Secure Paper	240	1	240	1	fn	26	6240	**17.10**

Appendix D Stage 1 Waste Data Mapping & Forecast

This Page Intentionally Left Blank

STAGE 1 TOWER OPERATIONAL WASTE MAPPIG AND FORECAST

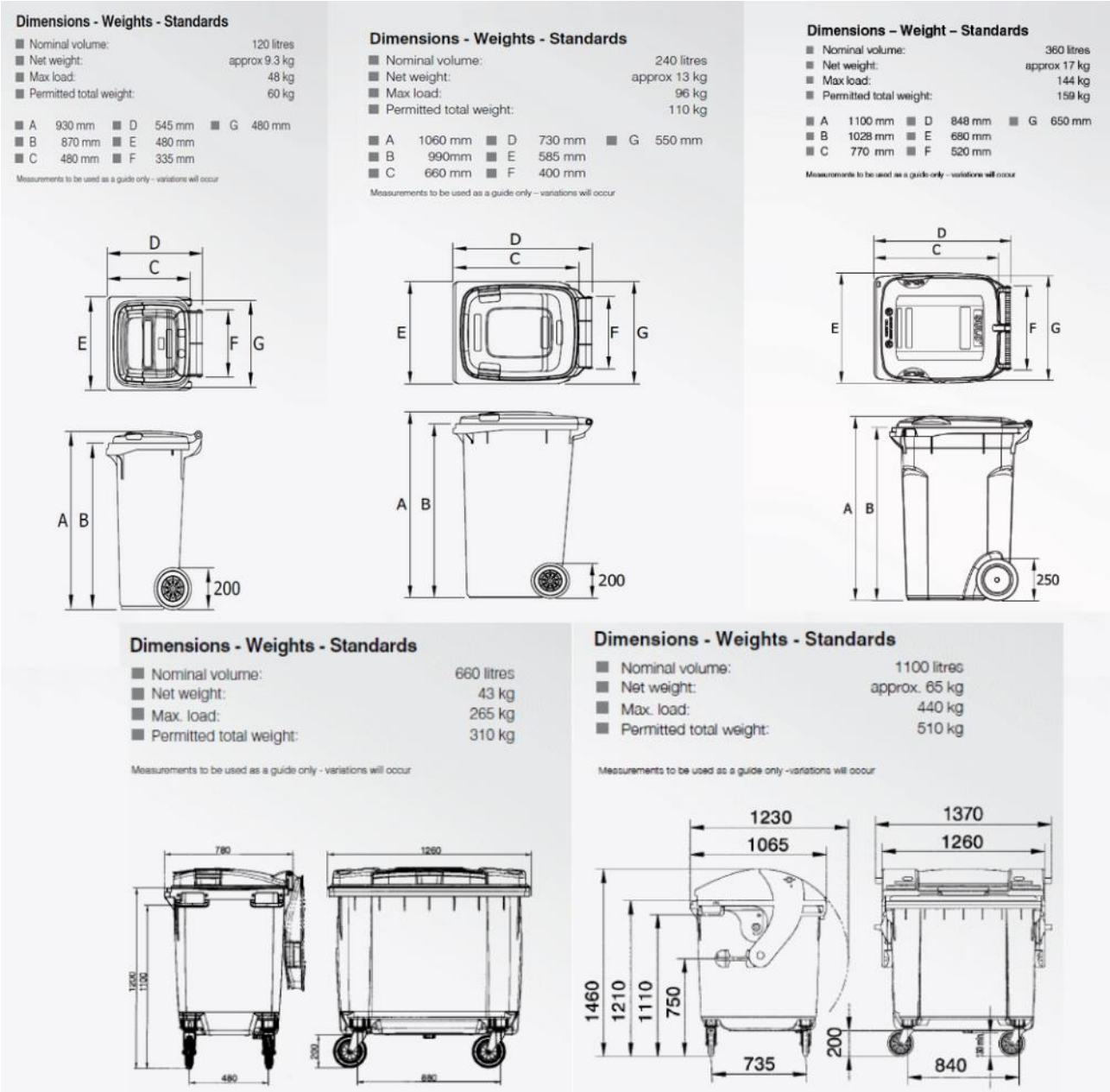
STAGE 1 TOWER DEPARTMENTS AND SERVICES				EXISTING DEPARTMENT COUNTERPART - DAILY											STAGE 1 PROPORTIONAL WASTE GENERATION BY DEPARTMENT - DAILY								STAGE 1 WASTE FORECAST BY LEVEL - DAILY						
Level	Stage 1 Tower - Area	Stage 1 Tower - Service	Bed / Seat Numbers	Existing Building	Existing Service	Existing Function **(Ward)**	Bed / Seat Numbers	General Waste (L)	Clinical Waste (L)	Cytotoxic Waste (L)	Clinical (other/anatomical) Waste (L)	Recycle Stream 1 - commingle (L)	Recycle Stream 2 - paper /cardboar	Recycle Stream 3 - secure (L)	Growth Factor	General Waste (L)	Clinical Waste (L)	Cytotoxic Waste (L)	Clinical (other) Waste (L)	Recycle Stream 1 - commingle (L)	Recycle Stream 2 - paper/cardboard	Recycle Stream 3 - secure (L)	**General Waste (L)**	**Clinical Waste (L)**	**Cytotoxic Waste (L)**	**Clinical (other) Waste (L)**	Recycle Stream 1 - commingle (L)	Recycle Stream 2 - paper/cardboard	Recycle Stream 3 - secure (L)
LV 00	Patient Areas	Emergency Department	95	West Block	Emergency	Emergency	51	1980	840			240	240	209.1	1.0	3688	1565	0	0	447	447	390	3721	1565	0	0	447	480	390
	Staff Areas	NWOW (Clinical Support)	26	N/A	New	N/A	96	120					120		1.0	33	0	0	0	0	33	0							
LV 01	Birthing Areas	Birthing Unit - 14 Baths + OOT	18	North Block	Delivery Suite (Birthing)	Delivery Suite	11	480	480		120	240	240	34.19	1.0	785	785	0	196	393	393	56	3258	2186	0	310	980	753	118
	Birthing Operating Room	Birthing Unit - 14 Baths + OOT	2	North Block	Theatres	Theatres	8	5940	3300		360	720		34.19	1.26	1871	1040	0	113	227	0	11							
	Birthing OR - Recovery	Birthing Unit - 14 Baths + OOT	6	North Block	Recovery	Day Surgery	15	240	240					34.19	1.26	121	121	0	0	0	0	17							
	Womens Acute Assessmer	Birthing Unit - 14 Baths + OOT	20	N/A	New Service	N/A	20	240	240			120	120	34.19	1.0	240	240	0	0	120	120	34							
	Staff Areas	NWOW (Clinical Support)	96	N/A	New	N/A	96	240				240	240		1.0	240	0	0	0	240	240	0							
	Patient Areas	FMU (Consult / Treatment)	2	N/A	New Service	N/A	2	0	0			0	0		1.0	0	0	0	0	0	0	0							
LV 02	Patient Areas	DOSA (Recovery)	14	North Block	Day Surgery	Day Surgery	15	240	240					34.19	1.1	246	246	0	0	0	0	35	3018	1566	0	0	0	0	115
	Procedure Rooms	Endoscopy	5	West Block	Endoscopy	Endoscopy	2	480	480					28.93	1.1	1320	1320	0	0	0	0	80							
	Drs Change Room	Endo & Theatres	2	North Block	Drs Change Room	Change Room	2	1320							1.1	1452	0	0	0	0	0	0							
LV 03	Level 3 - Stage 1 Recovery	Stage 1 Recovery 15	34	East Block	Recovery	Recovery	26	3960	2640					0	1.41	7308	4872	0	0	0	0	0	21279	21171	0	0	0	0	28
	Operating Room Area	Operating Theatres	15	East Block	Theatres	Theatres	6	3960	4620		0			7.89	1.41	13971	16299	0	0	0	0	28							
LV 04	Processing Areas	CSSD	25	North Block	CSSD	CSSD	11	240						7.89	1.41	770	0	0	0	0	0	25	770	0	0	0	0	0	25
LV 05	**Patient Areas 05A**	CCU	12	West Block	Cardiology / CCU / CD	W5B	30	240	240	240		240		0	1.0	96	96	96	0	96	0	0	888	2274	96	0	888	792	56
		ECHO (incl. STRESS)	30	West Block	Stress ECHO	W5C	10	240	660	0		240	240	17.10	1.1														
	Patient Areas 05B	Cath Lab		West Block	Cath Lab	W5C										792	2178	0	0	792	792	56							
		Recovery		West Block	Cath Lab	W5C																							
LV 06	**Patient Area 06A**	NICU (incl. Family overnight)	30	South Block	NICU / SCN (L2)	NICU	39	240	240			240	240	34.19	1.0	185	185	0	0	185	185	26	590	387	0	0	185	590	26
	Patient Area 06B	SCN / HD	27	South Block	SCN (L4)	S4D	16	240	120				240		1.0	405	203	0	0	0	405	0							
LV 07	**Patient Areas 07A**	Cardiology IPU	28	West Block	Cardiology / CCU / CD	W5B	30	240	240	240		240		0	1.0	224	224	224	0	224	0	0	448	448	448	0	224	224	16
	Patient Areas 07B	Oncology / Haema IPU	28	West Block	Oncology / Heamatol	W4C	30	240	240	240			240	17.10	1.0	224	224	224	0	0	224	16							
LV 08	**Patient Areas 08A**	Maternity Unit 1 - 24 bed	24	South Block	Postnatal	S4EP	30	240	240			240		17.10	1.0	192	192	0	0	192	0	14	384	384	192	0	192	192	20
	Patient Areas 08B	Surgery 18, Gynae 6 (New)	24	East Block	Surgery & Anaesthetic	E3H	30	240	240	240		0	240	7.89	1.0	192	192	192	0	0	192	6							
LV 09	**Patient Areas 09A**	Gastro 11, GACC 8, Infect Dis 9	28	North Block West Block	Gastro / GACC Infectious Disease	N2F W5A	29	240	240	120		0	240	8.22	1.0	232	232	116	0	0	232	8	361	490	245	0	0	232	16
	Patient Areas 09B	Antenatal IPU 28 beds	28	South Block	Antenatal	S4EA	26	120	240	120		0		7.89	1.0	129	258	129	0	0	0	8							
LV 10	**Patient Areas 10A**	Generic IPU 28 beds	28	West Block	Geriatric	W3B	24	240	240			120	240	17.10	1.0	280	280	0	0	140	280	20	538	538	0	0	140	538	38
	Patient Areas 10B	Generic IPU 28 beds	28	North Block	Geriatric	N1F	26	240	240			0	240	17.10	1.0	258	258	0	0	0	258	18							
LV 11	**Patient Areas 11A**	Neuro Surgery 16, Surgery 12	28	West Block	Neurosurgery, Surger	W4B	30	240	240	240		240	0	7.89	1.0	224	224	224	0	224	0	7	456	456	340	0	224	232	15
	Patient Areas 11B	Neurology, Storke, Immu, Endo	28	North Block	Neurology & Stroke Rheumatology &	N2F W5A	29	240	240	120		0	240	8.22	1.0	232	232	116	0	0	232	8							
LV 12	**Patient Areas 12A**	Respiratory 22, Thoracic 6	28	West Block	Respiratory / Thoracic	W4A	30	240	240	240		0	240	7.89	1.0	224	224	224	0	0	224	7	448	448	336	0	112	448	23
	Patient Areas 12B	Specilaity IPU 28 beds	28	West Block	TBC	TBC	30	240	240	120		120	240	17.10	1.0	224	224	112	0	112	224	16							

Appendix E Waste Handling Equipment Specs

This OWMP 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 OWMP, 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 7: Rear-lift mobile bins (120L, 240L, 360L, 660L & 1,100L)*



**Sizes may vary with manufacturer or supplier.*

Figure 8: Existing Waste Transport Tug

CUSHMAN

MODEL: TITAN XD (4 PASSENGER)
TYPE: ELECTRIC 48 VOLT INDUSTRIAL BURDEN CARRIER
MODEL YEAR: 2019
Part No:. 671549

PRODUCT SPECIFICATION

CONFIGURATION HIGHLIGHTS

- Solid state continuously variable AC speed controller for increased efficiency
- Dash mounted multi-function display for SOC, speed, and hour meter
- 15.3 ft² of weather proof cargo deck, easily removable for service
- Fold down rear seat for added cargo or passengers
- Four wheel hydraulic brakes with Intellibrake
- E and EE type rating availalble

Battery Charger:	1000 Watt, 48VDC, 120/240 VAC 60/50 Hz. UL Listed
Motor:	48 Volt AC induction, solid copper windings. Non vented 16.8 hp (12.5 kW) (Peak)
Drive Train:	Direct motor shaft connected to transaxle pinion shaft
Electrical System:	48 Volt DC, eight, 6 volt deep cycle batteries (115 minute minimum @ 75 amps, 225 amp-hour @ 20 hr. discharge rate)
Transaxle:	Differential with helical gears
Brakes:	Front hydraulic disc brakes. Rear wheel hydraulic 160mm self-adjusting drum brakes. Intellibrake automatic parking brake
Cargo Bed:	Weather proof deck board, 75 in x 41 in (191 x 105 cm). Removable for access to powertrain.
Capacity:	Seating for 4 persons, 3000 pound vehicle capacity

PRODUCT OVERVIEW

Dimensions	
Overall Length	114.0 in (290 cm)
Overall Width	44.5 in (113 cm)
Overall Height (Steering Wheel)	47.5 in (120.6 cm)
Overall Height (Optional Cab)	72.0 in (183 cm)
Wheel Base	67 in (170 cm)
Front Wheel Track	38 in (96.5 cm)
Rear Wheel Track	38 in (96.5 cm)
Gnd Clearance @ Differential	4.75 in (12.1 cm)
Cargo Deck Width	41.5 in (105 cm)
Cargo Deck Length	53.5 in (136 cm)
Cargo Deck Load Height	29.0 in (74 cm)
Cargo Deck Material	Weather proof deck board

Vehicle Power	
Power Source	48 Volts DC
Motor Type	AC Induction
Horsepower (kW)	16.8 HP (12.5 kW) Peak
Electrical System	48 Volt
Batteries (Qty, Type)	Eight, 6 Volt Deep Cycle
Key or Pedal Start	Pedal Start
Battery Charger	48V On-Board, 120/240 VAC UL
Speed Controller	450 Amp AC
Drive Train	Motor Shaft Direct Drive
Transaxle	Differential with Helical Gears
Gear Selection	Dash Mounted Forward-Neutral-Reverse
Rear Axle Ratio	17:1

Performance	
Capacity	4 Persons
Dry Weight	1225.0 lb (560 kg) (Without Batteries)
Curb Weight	1720.0 lb (780 kg)
Cargo Deck Load Capacity	2200 lb (998 kg)
Vehicle load capacity	3000 lb (1361 kg)
Outside Clearance Circle	21.25 ft (6.47 m)
Intersecting Aisle Clearance	84.0 in (213 cm)
Speed (Level Ground)	Haul Mode: 14 mph ±.5 (21 kph ± 0.8) Tow Mode: 5 mph ± .5 (8.1 kph ± .8)
Drawbar	211 lb (96 kg) Normal, 1015 lb (460 kg) Max
Towing Capacity*	8000 lb (3628 kg)

Steering & Suspension	
Steering	Rack and Pinion
Front Suspension	Independent, Transverse Leaf Spring, Shocks
Rear Suspension	Leaf Springs & Shock Absorbers
Service Brake	Front hydraulic disc, Rear hydraulic drum
Parking Brake	Intellibrake Automatic Parking Brake
Front Tire	5.70 x 8 (Load Range C)
Rear Tires	5.70 x 8 (Load Range C)

Body & Chassis	
Frame & Body	Welded steel with DuraShield™ powder coat
Body & Finish	Diamond plate ptn. Polyester primer + acrylic
Standard Color	Yellow

Noise & Vibration	
Noise	Sound pressure; continued A-weighted =/< 70 db(A)
Vibration, WBV	Highest RMS value of weighted acceleration is less than 2.5 m/s²
Vibration, HAV	Highest RMS value of weighted acceleration is less than 2.5 m/s²

Measurement methods were applied per the ISO 2631 and ISO 5349 standards under conditons of typical vehicle surfaces.

2013 Titan XD (4 Passenger)
Released: 01/20/2013
Revised: 07/14/2017

Specifications are subject to change without notice
* Field installed accessories may require installation charges

1 of 2

CUSHMAN

OPTIONS & FIELD INSTALLED ACCESSORIES (Installation not included)*

Item	Std	Opt	Fld
TIRES & WHEELS:			
Front & Rear:			
5.70 x 8 (Load Range C)	●		
5.70 x 8 Solid		●	
5.70 x 8 Non-Marking Solid		●	
COLORS:			
Vehicle Color - Safety Yellow	●		
Vehicle Color - Hunter Green		●	
Vehicle Color - Artic White		●	
Vehicle Color - Flame Red		●	
Custom Vehicle Color		●	
WEATHER PROTECTION			
Sun Canopy - Short			●
Sun Canopy - Long			●
Windshield (Requires Long Sun Canopy)			●
Windshield, Fold Down (Requires Short Sun Canopy)			●
Weather Protection Enclosure (Lg Top & Windshld Reqd)			●
Black Cab with Clear Doors			●
CARGO AREA			
Box Sides & Tailgate			●
Cargo Deck (Steel)		●	
GUARDS AND TOWING			
Bumper - Front		●	
Bumper - Rear		●	
Hitch, Pintle (Requires Rear Bumper)		●	
Hitch, Clevis (Requires Rear Bumper)		●	

Item	Std	Opt	Fld
ELECTRICAL:			
Batteries			
T-105 Batteries	●		
T-145 Batteries		●	
Battery Fill System		●	
Battery Chargers			
48V On-Board, 1000 Watt	●		
48V On Board, 1500 Watt		●	
NEMA 5-15P Cord	●		
NEMA 6-15P Cord		●	
Lighting Package:			
LED Brake Lights/Tail Lights	●		
Headlights	●		
LED Headlights		●	
Turn Signals		●	
Miscellaneous:			
Hour Meter	●		
Operator Presence Switch	●		
State of Charge Meter	●		
USB Outlet	●		
Forward Motion Indicator		●	
Type 'E' Classification		●	
Type 'EE' Classification		●	
CE Certification		●	
Deck Lock		●	
Hand Brake		●	

From: "Dru Greig (Nepean Blue Mountains LHD)" <Dru.Greig@health.nsw.gov.au>
Date: 9 October 2020 at 2:24:59 pm AEDT
To: "Leanne Waters (Nepean Blue Mountains LHD)" <Leanne.Waters@health.nsw.gov.au>
Subject: RE: Sustainability meeting action

Hi Leanne,

Manual measurements below.

Waste Tug & Trailer

Width - 1.7m (1700 mm)
Length - 7.5m (7500 mm)
Turn - 10m (10000 mm)

Thanks,

Dru Greig

Operations Coordinator | **General Services, Nepean Hospital**
Parker Street, Kingswood, NSW 2747
PO Box 63 Penrith NSW 2751
Tel (02) 4734 1074 | Fax (02) 4734 3341 | Mob 0408425345

2013 Titan XD (4 Passenger)
Released: 01/20/2013
Revised: 07/14/2017

Specifications are subject to change without notice
* Field installed accessories may require installation charges

2 of 2

Figure 9: Existing Waste Transport Trailer

SITECRAFT
ABN 36 423 328 526

sitecraft.com.au
Phone 1300 363 152
sales@sitecraft.com.au

Quotation No: SQ-0139773 **Date:**8/1/2020

Prepared By: Simon McMurdo

To: Nepean Hospital - Nepean Blue Mountains LHD
Parker Street
Stores Back Dock
Kingswood NSW 2747 Australia

Phone: 02 4734 2000
Mobile: 0408 425 345
Email: dru.greig@health.nsw.gov.au

Attention: **Dru Greig**
We are pleased to submit our quotation for:

Sitecraft Fully Registered 8 x Bin Trailer
* Single axle Wheelie bin trailer suitable for moving 8 x 240, 4 x 660L or 3 x 1100 litre bins
* With torsion rubber suspensions
* 1500mm rear fully aluminium ramp complete with positive locking, spring assist and ramp lifting handle
* Mudguards with bracing to chassis rail
* 800mm long draw bar with swing out jockey wheel
* 50mm tow ball mounting height – 400mm off ground
* Side rail height – 900mm off deck
* Deck height: 250-280mm off ground
* Aluminium tread plate deck
* LED rear lights, side reflectors and 7 pin trailer plug
* Finished in aluminium color hammer-tone paint

Model:61921011
- Internal Dims: 3150L x 1200W mm
- External Dims: 4150L x 1500W mm
- Loading capacity: 1000kg

Qty 1 **Per Unit Price** AUD $7,900.00 + GST **Line Total:** AUD $7,900.00 + GST

Total Quotation Value: AUD $7,900.00 + GST
Terms: Net 30 Days
Delivery Cost: AUD $690 + GST
Estimated Delivery Time: 15-20 Business Days

Sitecraft's standard terms and conditions of trade (available here) apply to all goods / equipment and/or services referred to in this quotation. The quotation is valid for 30 days from the date of the Quotation. By placing an order for goods / equipment and/or services you agree that you have read, understood and accepted Sitecraft's standard terms and conditions of trade.

Yours faithfully, Sitecraft

Appendix F Typical Floor Waste Hub(s)

This Page Intentionally Left Blank

Dirty Utility

Disposal

Copy Bay

[redacted]

PUBLIC LIFT

PATIENT LIFT

HOT LIFT

WARM SHELL SPACE

AREA ON HOLD

BVN

Telephone +61 2 8297 7200
Facsimile +61 2 8297 7299
www.bvn.com.au

NOTE

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
H	02/10/18	FOR INFORMATION
J	04/10/18	ISSUED FOR SDR
K	05/11/18	ISSUED FOR FINAL SDR EWG
L	19/11/18	ISSUED FOR SDR
M	29/03/19	FOR INFORMATION
N	07/06/19	FOR INFORMATION
P	01/08/19	FOR INFORMATION
Q	03/09/19	DD ISSUE (80%)
R	18/10/19	DRAFT DD ISSUE (80%)
S	08/11/19	DD ISSUE (80%)
T	15/11/19	FOR INFORMATION
U	28/01/20	FOR APPROVAL – CC3
1	17/03/20	FOR CONSTRUCTION
2	17/04/20	FOR CONSTRUCTION
3	25/08/20	FOR CONSTRUCTION
4	15/10/20	FOR CONSTRUCTION

NOTE:
ALL DRAWINGS TO BE READ IN CONJUNCTION WITH THE TRADE PACKAGE COVER SHEET AND NOTES

CLIENT
NSW GOVERNMENT Health Infrastructure

CPB
MANAGING CONTRACTOR

PROJECT MANAGERS
CBRE
TEL 02 9333 3333

ARCHITECT
BVN Architecture
TEL 02 8297 7200

STRUCTURE / CIVIL
BONACCI
TEL 02 8247 8400

FACADE / ESD
SURFACE DESIGN
TEL 02 9249 1400

BCA / DDA
BLACKETT MAGUIRE + GOLDSMITH
TEL 02 9211 7777

FIRE ENGINEERING
ARUP
TEL 02 9320 9320

LANDSCAPE
ARCADIA
TEL 02 8571 2900

MECHANICAL
FREDON AIR
TEL 02 9475 9400

ELECTRICAL / COMMS
STAR ELECTRICAL
TEL 02 9708 7555

HYDRAULIC
AXIS SERVICES GROUP
TEL 02 9708 5666

FIRE SERVICES
EMERGE FIRE
TEL 02 9894 4990

MEDICAL GAS
HOSLAB
TEL 02 9816 3555

PNEUMATIC TUBES
LAMSON GROUP
TEL 02 9743 7322

PROJECT
NEPEAN HOSPITAL

DERBY ST
KINGSWOOD NSW 2747
NEPEAN

BVN PROJECT NUMBER
S1607004.INH

DRAWING KEY

TRUE NORTH

PROJECT NORTH

SCALE
1 : 200 @A0 DO NOT SCALE
0 500 2000 4000
1:100mm

DRAWN BY: Author CHECKED BY: Checker

DESIGNED BY: Designer APPROVED BY: Approver

STATUS
FOR CONSTRUCTION

DRAWING
GENERAL ARRANGEMENT PLAN - LEVEL 00

DRAWING NUMBER
NHR-BVN-DRW-ARC-TB1-11B-0000001

ISSUE
4

C:\REVIT_LOCAL2019\NHR-BVN-MOD-ARC-TB1-00M-0000001 - LEVEL 00_komullane.rvt 16/10/2020 11:20:56 AM

Dirty Utility

Disposal

Copy Bay

PUBLIC LIFT

PATIENT LIFT

HOT LIFT

WARM SHELL SPACE

AREA ON HOLD

BVN

Telephone +61 2 8297 7200
Facsimile +61 2 8297 7299
www.bvn.com.au

NOTE

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
H	23/10/18	FOR INFORMATION
J	09/11/18	ISSUED FOR FINAL SDR EWG
K	19/11/18	ISSUED FOR SDR
L	29/03/19	FOR INFORMATION
M	30/04/19	FOR INFORMATION
N	07/06/19	FOR INFORMATION
P	01/08/19	FOR INFORMATION
Q	04/09/19	FOR INFORMATION
R	18/10/19	DRAFT DD ISSUE (80%)
S	08/11/19	DD ISSUE (80%)
T	28/01/20	FOR APPROVAL – CC3
1	30/03/20	FOR CONSTRUCTION
2	27/08/20	FOR CONSTRUCTION
3	02/09/20	FOR CONSTRUCTION
4	25/11/20	FOR CONSTRUCTION
5	08/12/20	FOR CONSTRUCTION

NOTE:
ALL DRAWINGS TO BE READ IN CONJUNCTION WITH THE TRADE PACKAGE COVER SHEET AND NOTES

CLIENT

NSW GOVERNMENT Health Infrastructure

CPB

MANAGING CONTRACTOR

CPB CONTRACTORS

PROJECT MANAGERS

CBRE
TEL 02 9333 3333

ARCHITECT

BVN Architecture
TEL 02 8297 7200

STRUCTURE / CIVIL

BONACCI
TEL 02 8247 8400

FACADE / ESD

SURFACE DESIGN
TEL 02 9249 1400

BCA / DDA

BLACKETT MAGUIRE + GOLDSMITH
TEL 02 9211 7777

FIRE ENGINEERING

ARUP
TEL 02 9320 9320

LANDSCAPE

ARCADIA
TEL 02 8571 2900

MECHANICAL

FREDON AIR
TEL 02 9475 9400

ELECTRICAL / COMMS

STAR ELECTRICAL
TEL 02 9708 7555

HYDRAULIC

AXIS SERVICES GROUP
TEL 02 9708 5666

FIRE SERVICES

EMERGE FIRE
TEL 02 9894 4990

MEDICAL GAS

HOSLAB
TEL 02 9816 3555

PNEUMATIC TUBES

LAMSON GROUP
TEL 02 9743 7322

PROJECT

NEPEAN HOSPITAL

DERBY ST
KINGSWOOD NSW 2747
NEPEAN

BVN PROJECT NUMBER

S1607004 INH

DRAWING KEY

TRUE NORTH

PROJECT NORTH

SCALE

1 : 200 @A0 DO NOT SCALE

0 500 2000 4000
1:100mm

DRAWN BY: Author CHECKED BY: Checker

DESIGNED BY: Designer APPROVED BY: Approver

STATUS

FOR CONSTRUCTION

DRAWING

GENERAL ARRANGEMENT PLAN - LEVEL 01

DRAWING NUMBER

NHR-BVN-DRW-ARC-TB1-11B-0100001

ISSUE

5

C:\REVIT_LOCAL2019\NHR-BVN-MOD-ARC-TB1-00M-0100001 - LEVEL 01_Alice_Chiculescu.rvt 8/12/2020 5:36:06 PM

Dirty Utility

CleanUp Deboxing

Disposal

Copy Bay

PUBLIC LIFT

PATIENT LIFT

HOT LIFT

WARM SHELL SPACE

AREA ON HOLD

BVN

Telephone +61 2 8297 7200
Facsimile +61 2 8297 7299
www.bvn.com.au

NOTE

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
J	04/10/18	ISSUED FOR SDR
K	05/11/18	ISSUED FOR FINAL SDR EWG
L	19/11/18	ISSUED FOR SDR
M	29/03/19	FOR INFORMATION
N	30/04/19	FOR INFORMATION
P	07/06/19	FOR INFORMATION
Q	01/08/19	FOR INFORMATION
R	04/09/19	FOR INFORMATION
S	13/09/19	FOR INFORMATION
T	20/09/19	FOR INFORMATION
U	18/10/19	DRAFT DD ISSUE (80%)
V	08/11/19	DD ISSUE (80%)
W	28/01/20	FOR APPROVAL – CC3
1	30/03/20	FOR CONSTRUCTION
2	27/08/20	FOR CONSTRUCTION
3	24/11/20	FOR CONSTRUCTION

NOTE:
ALL DRAWINGS TO BE READ IN CONJUNCTION WITH THE TRADE PACKAGE COVER SHEET AND NOTES

CLIENT

NSW GOVERNMENT Health Infrastructure

CPB
MANAGING CONTRACTOR

CPB CONTRACTORS

PROJECT MANAGERS

CBRE
TEL 02 9333 3333
ARCHITECT

BVN Architecture
TEL 02 8297 7200
STRUCTURE / CIVIL

BONACCI
TEL 02 8247 8400
FACADE / ESD

SURFACE DESIGN
TEL 02 9249 1400
BCA / DDA

BLACKETT MAGUIRE + GOLDSMITH
TEL 02 9211 7777
FIRE ENGINEERING

ARUP
TEL 02 9320 9320
LANDSCAPE

ARCADIA
TEL 02 8571 2900
MECHANICAL

FREDON AIR
TEL 02 9475 9400
ELECTRICAL / COMMS

STAR ELECTRICAL
TEL 02 9708 7555
HYDRAULIC

AXIS SERVICES GROUP
TEL 02 9708 5666
FIRE SERVICES

EMERGE FIRE
TEL 02 9894 4990
MEDICAL GAS

HOSLAB
TEL 02 9816 3555
PNEUMATIC TUBES

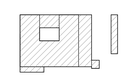
LAMSON GROUP
TEL 02 9743 7322
PROJECT

NEPEAN HOSPITAL

DERBY ST
KINGSWOOD NSW 2747
NEPEAN

BVN PROJECT NUMBER
S1607004.INH

DRAWING KEY



TRUE NORTH

PROJECT NORTH

SCALE
1 : 200 @A0 DO NOT SCALE
0 500 2000 4000
1:100mm

DRAWN BY: Author CHECKED BY: Checker

DESIGNED BY: Designer APPROVED BY: Approver

STATUS
FOR CONSTRUCTION

DRAWING

GENERAL ARRANGEMENT PLAN - LEVEL 03

DRAWING NUMBER	ISSUE
NHR-BVN-DRW-ARC-TB1-11B-0300001	3

Dirty Utility

Disposal

Copy Bay

[redacted]

PUBLIC LIFT

PATIENT LIFT

HOT LIFT

WARM SHELL SPACE

AREA ON HOLD

BVN

Telephone +61 2 8297 7200
Facsimile +61 2 8297 7299
www.bvn.com.au

NOTE

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
E	01/06/18	ISSUED FOR SDR
F	12/06/18	SDR ADDENDUM
G	26/09/18	FOR INFORMATION
H	02/10/18	FOR INFORMATION
J	04/10/18	ISSUED FOR SDR
K	19/11/18	ISSUED FOR SDR
L	29/03/19	FOR INFORMATION
M	07/06/19	FOR INFORMATION
N	01/08/19	FOR INFORMATION
P	04/09/19	FOR INFORMATION
Q	18/10/19	DRAFT DD ISSUE (80%)
R	01/11/19	FOR INFORMATION
S	08/11/19	DD ISSUE (85%)
T	28/01/20	FOR APPROVAL – CC3
U	28/08/20	FOR INFORMATION
1	29/09/20	FOR CONSTRUCTION

NOTE:
ALL DRAWINGS TO BE READ IN CONJUNCTION WITH THE TRADE PACKAGE COVER SHEET AND NOTES

CLIENT

NSW GOVERNMENT Health Infrastructure

CPB

MANAGING CONTRACTOR

CPB CONTRACTORS

PROJECT MANAGERS

CBRE
TEL 02 9333 3333

ARCHITECT

BVN Architecture
TEL 02 8297 7200

STRUCTURE / CIVIL

BONACCI
TEL 02 8247 8400

FACADE / ESD

SURFACE DESIGN
TEL 02 9249 1400

BCA / DDA

BLACKETT MAGUIRE + GOLDSMITH
TEL 02 9211 7777

FIRE ENGINEERING

ARUP
TEL 02 9320 9320

LANDSCAPE

ARCADIA
TEL 02 8571 2900

MECHANICAL

FREDON AIR
TEL 02 9475 9400

ELECTRICAL / COMMS

STAR ELECTRICAL
TEL 02 9708 7555

HYDRAULIC

AXIS SERVICES GROUP
TEL 02 9708 5666

FIRE SERVICES

EMERGE FIRE
TEL 02 9894 4990

MEDICAL GAS

HOSLAB
TEL 02 9816 3555

PNEUMATIC TUBES

LAMSON GROUP
TEL 02 9743 7322

PROJECT

NEPEAN HOSPITAL

DERBY ST
KINGSWOOD NSW 2747
NEPEAN

BVN PROJECT NUMBER

S1607004.INH

DRAWING KEY

TRUE NORTH

PROJECT NORTH

SCALE

1 : 200 @A0 DO NOT SCALE

0 500 2000 4000
1:100mm

DRAWN BY: BVN CHECKED BY: KO

DESIGNED BY: Designer APPROVED BY: Approver

STATUS

FOR CONSTRUCTION

DRAWING

GENERAL ARRANGEMENT PLAN - LEVEL 09

DRAWING NUMBER	ISSUE
NHR-BVN-DRW-ARC-TB1-11B-0900001	1

Appendix G Stage 1 Bin Mix & Quantities

This Page Intentionally Left Blank

Bin Provisions - Integrated Nepean Hospital Stage 1

211 53,000

Levels	HPU(s) (Name)	Functional Group (Name)	Room Number:	Room Name	Item Number	Name	Litre	Stream	Adjust. Qty	Adj. Litres
LV 00	Emergency Department	Entry / Reception	01.01.016	Reception/ Clerical	FQCW-034	BIN: waste, secure, 120L	120	SecPaper	1	120
LV 00	Emergency Department	Resuscitation/ High Acuity	01.03.007	Dirty Utility - Sub	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 00	Emergency Department	Resuscitation/ High Acuity	01.03.007	Dirty Utility - Sub	FQCW-015	BIN: waste, general, 120L	120	General	1	120
LV 00	Emergency Department	Resuscitation/ High Acuity	01.03.007	Dirty Utility - Sub	FQCW-504	BIN: waste, recycling, co-mingled, 1	120	Comingle	1	120
LV 00	Emergency Department	Resuscitation/ High Acuity	01.03.010	Patient Bay - Resuscitation	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 00	Emergency Department	Resuscitation/ High Acuity	01.03.011	Patient Bay - Resuscitation	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 00	Emergency Department	Resuscitation/ High Acuity	01.03.012	Patient Bay - Resuscitation	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 00	Emergency Department	Resuscitation/ High Acuity	01.03.013	Patient Bay - Resuscitation	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 00	Emergency Department	Resuscitation/ High Acuity	01.03.033	Patient Room - Resuscitation	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 00	Emergency Department	WARM SHELL - Resuscitation /	01.03.036	Patient Bay - Resuscitation	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 00	Emergency Department	Acute Treatment Area	01.04.028	Bay - Pathology	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 00	Emergency Department	Acute Treatment Area	01.04.048	Dirty Utility - Sub	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 00	Emergency Department	Acute Treatment Area	01.04.048	Dirty Utility - Sub	FQCW-015	BIN: waste, general, 120L	120	General	1	120
LV 00	Emergency Department	Acute Treatment Area	01.04.048	Dirty Utility - Sub	FQCW-504	BIN: waste, recycling, co-mingled, 1	120	Comingle	1	120
LV 00	Emergency Department	Paediatric Zone	01.05.028	Dirty Utility - Sub	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 00	Emergency Department	Paediatric Zone	01.05.028	Dirty Utility - Sub	FQCW-015	BIN: waste, general, 120L	120	General	1	120
LV 00	Emergency Department	Paediatric Zone	01.05.028	Dirty Utility - Sub	FQCW-504	BIN: waste, recycling, co-mingled, 1	120	Comingle	1	120
LV 00	Emergency Department	Ambulatory Zone	01.06.035	Plaster Room	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 00	Emergency Department	Ambulatory Zone	01.06.038	Dirty Utility - Sub	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 00	Emergency Department	Ambulatory Zone	01.06.038	Dirty Utility - Sub	FQCW-015	BIN: waste, general, 120L	120	General	1	120
LV 00	Emergency Department	Ambulatory Zone	01.06.038	Dirty Utility - Sub	FQCW-504	BIN: waste, recycling, co-mingled, 1	120	Comingle	1	120
LV 00	Emergency Department	ED Short Stay Unit	01.07.012	Dirty Utility - Sub	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 00	Emergency Department	ED Short Stay Unit	01.07.012	Dirty Utility - Sub	FQCW-015	BIN: waste, general, 120L	120	General	1	120
LV 00	Emergency Department	ED Short Stay Unit	01.07.012	Dirty Utility - Sub	FQCW-504	BIN: waste, recycling, co-mingled, 1	120	Comingle	1	120
LV 00	Emergency Department	ED Medical Imaging Satellite	01.09.005	Dirty Utility - Sub	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 00	Emergency Department	ED Medical Imaging Satellite	01.09.005	Dirty Utility - Sub	FQCW-015	BIN: waste, general, 120L	120	General	1	120
LV 00	Emergency Department	ED Medical Imaging Satellite	01.09.005	Dirty Utility - Sub	FQCW-504	BIN: waste, recycling, co-mingled, 1	120	Comingle	1	120
LV 00	Emergency Department	ED Medical Imaging Satellite	01.09.010	Workroom - Digital Radiography	FQCW-034	BIN: waste, secure, 120L	120	SecPaper	1	120
LV 00	Emergency Department	ED Medical Imaging Satellite	01.09.005	Dirty Utility - Sub	FQCW-504	BIN: waste, recycling, co-mingled, 1	120	Comingle	1	120
LV 00	Emergency Department	ED Medical Imaging Satellite	01.09.010	Workroom - Digital Radiography	FQCW-034	BIN: waste, secure, 120L	120	SecPaper	1	120
LV 00	Emergency Department	ED Medical Imaging Satellite	01.09.014	CT Scanning - Procedure Room	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 00	Emergency Department	ED Medical Imaging Satellite	01.09.014	CT Scanning - Procedure Room	FQCW-015	BIN: waste, general, 120L	120	General	1	120
LV 00	Emergency Department	Support Areas	01.10.012	Disposal Room	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 00	Emergency Department	Support Areas	01.10.012	Disposal Room	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	0	0
LV 00	Emergency Department	Support Areas	01.10.012	Disposal Room	FQCW-022	BIN: waste, general, 660L	660	General	1	660
LV 00	Emergency Department	Support Areas	01.10.012	Disposal Room	FQCW-017	BIN: waste, general, 240L	240	General	0	0
LV 00	Emergency Department	Support Areas	01.10.012	Disposal Room	FQCW-032	BIN: waste, recycling, paper, 660L	660	Paper/CB	1	660
LV 00	Emergency Department	Support Areas	01.10.012	Disposal Room	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	0	0
LV 00	Emergency Department	Staff Areas	01.11.010	Store - Photocopy/ Stationery	FQCW-027	BIN: waste, recycling, paper, 120L	120	Paper/CB	1	120
LV 00	Emergency Department	Staff Areas	01.11.010	Store - Photocopy/ Stationery	FQCW-038	BIN: waste, secure, 240L	240	SecPaper	1	240
LV 00	Emergency Department	Staff Areas	01.11.012	Store - Photocopy/ Stationery	FQCW-034	BIN: waste, secure, 120L	120	SecPaper	1	120
LV 00	Emergency Department	Behavioural Assessment Unit	03.03.002	Dirty Utility - Sub	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 00	Emergency Department	Behavioural Assessment Unit	03.03.002	Dirty Utility - Sub	FQCW-015	BIN: waste, general, 120L	120	General	1	120
LV 00	Emergency Department	Behavioural Assessment Unit	03.03.002	Dirty Utility - Sub	FQCW-504	BIN: waste, recycling, co-mingled, 1	120	Comingle	1	120
LV 00	Emergency Department	NWOW	17.07.006	Bay - Printng	FQCW-034	BIN: waste, secure, 120L	120	SecPaper	1	120
LV 01	Birthing Unit	Entry / Reception	12.01.009	Store - Photocopy/ Stationery	FQCW-038	BIN: waste, secure, 240L	240	SecPaper	1	240
LV 01	Birthing Unit	Womens Acute Assessment Ar	12.02.001	Dirty Utility	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 01	Birthing Unit	Womens Acute Assessment Ar	12.02.001	Dirty Utility	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 01	Birthing Unit	Birthing Unit	12.03.001	Disposal Room	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 01	Birthing Unit	Birthing Unit	12.03.001	Disposal Room	FQCW-009	BIN: waste, clinical, 660L	660	Clinical	2	1,320
LV 01	Birthing Unit	Birthing Unit	12.03.001	Disposal Room	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	0	0
LV 01	Birthing Unit	Birthing Unit	12.03.001	Disposal Room	FQCW-017	BIN: waste, general, 240L	240	General	2	480
LV 01	Birthing Unit	Birthing Unit	12.03.001	Disposal Room	FQCW-022	BIN: waste, general, 660L	660	General	1	660
LV 01	Birthing Unit	Birthing Unit	12.03.001	Disposal Room	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 01	Birthing Unit	Birthing Unit	12.03.001	Disposal Room	FQCW-036	BIN: waste, recycling, co-mingled, 6	660	Comingle	1	660
LV 01	Birthing Unit	Birthing Unit	12.03.001	Disposal Room	FQCW-032	BIN: waste, recycling, paper, 660L	660	Paper/CB	1	660
LV 01	Birthing Unit	Birthing Unit	12.03.001	Disposal Room	FQCW-025	BIN: waste, anatomical, 240L	240	Anatomical	1	240
LV 01	Birthing Unit	Birthing Unit	12.03.002	Dirty Utility	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	2	480
LV 01	Birthing Unit	Birthing Unit	12.03.002	Dirty Utility	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 01	Birthing Unit	Birthing Unit	12.03.002	Dirty Utility	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 02	DOSA	Admission/ Reception	05.01.009	Store - Photocopy/ Stationery	FQCW-038	BIN: waste, secure, 240L	240	SecPaper	1	240
LV 02	DOSA	Post-op Area	05.03.013	Dirty Utility - Sub	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	3	360
LV 02	DOSA	Post-op Area	05.03.088	Dirty Utility - Sub	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	2	480
LV 02	DOSA	Support	05.05.008	Disposal Room	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	2	480
LV 02	DOSA	Support	05.05.008	Disposal Room	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	0	0
LV 02	DOSA	Support	05.05.008	Disposal Room	FQCW-017	BIN: waste, general, 240L	240	General	0	0
LV 02	DOSA	Support	05.05.008	Disposal Room	FQCW-022	BIN: waste, general, 660L	660	General	1	660
LV 02	DOSA	Support	05.05.008	Disposal Room	FQCW-029	BIN: waste, recycling, paper, 240L	240	Paper/CB	1	240
LV 02	DOSA	Support	05.05.008	Disposal Room	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 02	Endoscopy	Procedure Rooms	06.01.003	Clean-Up Room	FQCW-017	BIN: waste, general, 240L	240	General	2	480
LV 02	Endoscopy	Procedure Rooms	06.01.003	Clean-Up Room	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 02	Endoscopy	Offices	06.03.005	Store - Photocopy/ Stationery	FQCW-038	BIN: waste, secure, 240L	240	SecPaper	1	240
LV 03	Operating Theatres	Operating Room Area	07.01.039	Clean-Up Room - Shared	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 03	Operating Theatres	Operating Room Area	07.01.039	Clean-Up Room - Shared	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	0	0
LV 03	Operating Theatres	Operating Room Area	07.01.039	Clean-Up Room - Shared	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 03	Operating Theatres	Operating Room Area	07.01.040	Clean-Up Room - Shared	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 03	Operating Theatres	Operating Room Area	07.01.040	Clean-Up Room - Shared	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	0	0
LV 03	Operating Theatres	Operating Room Area	07.01.040	Clean-Up Room - Shared	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 03	Operating Theatres	Operating Room Area	07.01.042	Clean-Up Room - Shared	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 03	Operating Theatres	Operating Room Area	07.01.042	Clean-Up Room - Shared	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	0	0
LV 03	Operating Theatres	Operating Room Area	07.01.042	Clean-Up Room - Shared	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 03	Operating Theatres	Operating Room Area	07.01.044	Clean-Up Room - Shared	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 03	Operating Theatres	Operating Room Area	07.01.044	Clean-Up Room - Shared	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	0	0
LV 03	Operating Theatres	Operating Room Area	07.01.044	Clean-Up Room - Shared	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 03	Operating Theatres	Clinical Support Area	07.02.013	Store - Non-Sterile / Deboxing	FQCW-032	BIN: waste, recycling, paper, 660L	660	Paper/CB	2	1,320
LV 03	Operating Theatres	Clinical Support Area	07.02.013	Store - Non-Sterile / Deboxing	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 03	Operating Theatres	Operating Room Area	07.02.013	Store - Non-Sterile / Deboxing	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 03	Operating Theatres	Clinical Support Area	07.02.031	Disposal Room	FQCW-009	BIN: waste, clinical, 660L	660	Clinical	2	1,320
LV 03	Operating Theatres	Clinical Support Area	07.02.031	Disposal Room	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	0	0
LV 03	Operating Theatres	Clinical Support Area	07.02.031	Disposal Room	FQCW-022	BIN: waste, general, 660L	660	General	2	1,320
LV 03	Operating Theatres	Clinical Support Area	07.02.031	Disposal Room	FQCW-038	BIN: waste, secure, 240L	240	SecPaper	1	240
LV 03	Operating Theatres	Clinical Support Area	07.02.031	Disposal Room	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 03	Operating Theatres	Clinical Support Area	07.02.031	Disposal Room	FQCW-029	BIN: waste, recycling, paper, 240L	240	Paper/CB	0	0
LV 03	Operating Theatres	Clinical Support Area	07.02.031	Disposal Room	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	0	0
LV 03	Operating Theatres	Clinical Support Area	07.02.101	Disposal Room	FQCW-009	BIN: waste, clinical, 660L	660	Clinical	4	2,640

Levels	HPU(s) (Name)	Functional Group (Name)	Room Number:	Room Name	Item Number	Name	Litre	Stream	Adjust. Qty	Adj. Litres
LV 03	Operating Theatres	Clinical Support Area	07.02.101	Disposal Room	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	0	0
LV 03	Operating Theatres	Clinical Support Area	07.02.101	Disposal Room	FQCW-022	BIN: waste, general, 660L	660	General	3	1,980
LV 03	Operating Theatres	Clinical Support Area	07.02.101	Disposal Room	FQCW-029	BIN: waste, recycling, paper, 240L	240	Paper/CB	0	0
LV 03	Operating Theatres	Clinical Support Area	07.02.101	Disposal Room	FQCW-036	BIN: waste, recycling, co-mingled, 6	660	Comingle	1	660
LV 03	Operating Theatres	Clinical Support Area	07.02.101	Disposal Room	FQCW-527	BIN: waste, anatomical, 60L	60	Anatomical	0	0
LV 03	Operating Theatres	Clinical Support Area	07.02.101	Disposal Room	FQCW-026	BIN: waste, anatomical, 80L	80	Anatomical	1	80
LV 03	Stage 1 Recovery 15	Level 3 - Stage 1 Recovery	08.01.049	Dirty Utility	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 03	Stage 1 Recovery 15	Level 3 - Stage 1 Recovery	08.01.049	Dirty Utility	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 03	Stage 1 Recovery 15	Level 3 - Stage 1 Recovery	08.01.049	Dirty Utility	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 04	Sterilising Services	Entry	09.01.002	Store - Photocopy/ Stationery	FQCW-038	BIN: waste, secure, 240L	240	SecPaper	1	240
LV 04	Sterilising Services	Processing Areas	09.02.008	Receiving Area - Used Items	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 04	Sterilising Services	Processing Areas	09.02.008	Receiving Area - Used Items	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	0	0
LV 04	Sterilising Services	Support Areas	09.03.002	Disposal Room	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	0	0
LV 04	Sterilising Services	Support Areas	09.03.002	Disposal Room	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	0	0
LV 04	Sterilising Services	Support Areas	09.03.002	Disposal Room	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 04	Sterilising Services	Support Areas	09.03.002	Disposal Room	FQCW-029	BIN: waste, recycling, paper, 240L	240	Paper/CB	1	240
LV 04	Sterilising Services	Support Areas	09.03.002	Disposal Room	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 05	Cardiac Care Unit	Support Areas 05A	26.02.002	Dirty Utility	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 05	Cardiac Care Unit	Support Areas 05A	26.02.002	Dirty Utility	FQCW-015	BIN: waste, general, 120L	120	General	1	120
LV 05	Cardiac Care Unit	Support Areas 05A	26.02.002	Dirty Utility	FQCW-504	BIN: waste, recycling, co-mingled, 1	120	Comingle	1	120
LV 05	Cardiac Cather Lab	Support Areas 05B	24.04.048	Dirty Utility - Sub	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 05	Cardiac Cather Lab	Support Areas 05B	24.04.048	Dirty Utility - Sub	FQCW-015	BIN: waste, general, 120L	120	General	1	120
LV 05	Cardiac Cather Lab	Support Areas 05B	24.04.048	Dirty Utility - Sub	FQCW-504	BIN: waste, recycling, co-mingled, 1	120	Comingle	0	0
LV 05	Echocardiographic	Support Areas 05A	25.02.010	Dirty Utility - Sub	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 05	Echocardiographic	Support Areas 05A	25.02.010	Dirty Utility - Sub	FQCW-015	BIN: waste, general, 120L	120	General	0	0
LV 05	Echocardiographic	Support Areas 05A	25.02.010	Dirty Utility - Sub	FQCW-504	BIN: waste, recycling, co-mingled, 1	120	Comingle	0	0
LV 05	Cardiac Cather Lab	Shared Areas - Level 05	24.05.047	Disposal Room	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	0	0
LV 05	Cardiac Cather Lab	Shared Areas - Level 05	24.05.047	Disposal Room	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 05	Cardiac Cather Lab	Shared Areas - Level 05	24.05.047	Disposal Room	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	2	480
LV 05	Cardiac Cather Lab	Shared Areas - Level 05	24.05.047	Disposal Room	FQCW-029	BIN: waste, recycling, paper, 240L	240	Paper/CB	2	480
LV 05	Cardiac Cather Lab	Shared Areas - Level 05	24.05.047	Disposal Room	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	2	480
LV 05	Cardiac Cather Lab	Shared Areas - Level 05	24.05.047	Disposal Room	FQCW-029	BIN: waste, recycling, paper, 240L	240	Paper/CB	2	480
LV 05	Cardiac Cather Lab	Shared Areas - Level 05	24.05.047	Disposal Room	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	1	240
LV 05	Cardiac Cather Lab	Shared Areas - Level 05	24.01.098	Store - Photocopy/ Stationery	FQCW-038	BIN: waste, secure, 240L	240	SecPaper	1	240
LV 05	Cardiac Cather Lab	Shared Areas - Level 05	24.01.098	Store - Photocopy/ Stationery	FQCW-029	BIN: waste, recycling, paper, 240L	240	Paper/CB	1	240
LV 05	Cardiac Cather Lab	Shared Areas - Level 05	27.01.011	Store - Photocopy/ Stationery	FQCW-038	BIN: waste, secure, 240L	240	SecPaper	1	240
LV 05	Cardiac Cather Lab	Lab Area	24.02.041	Clean-Up Room - Shared	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 05	Cardiac Cather Lab	Lab Area	24.02.041	Clean-Up Room - Shared	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 05	Cardiac Cather Lab	Lab Area	24.02.042	Clean-Up Room - Shared	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 05	Cardiac Cather Lab	Lab Area	24.02.043	Clean-Up Room - Shared	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 06	Neonatal Intensive Care	Clinical Support	11.03.025	Disposal Room	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 06	Neonatal Intensive Care	Clinical Support	11.03.025	Disposal Room	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	0	0
LV 06	Neonatal Intensive Care	Clinical Support	11.03.025	Disposal Room	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 06	Neonatal Intensive Care	Clinical Support	11.03.025	Disposal Room	FQCW-029	BIN: waste, recycling, paper, 240L	240	Paper/CB	2	480
LV 06	Neonatal Intensive Care	Clinical Support	11.03.025	Disposal Room	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	2	480
LV 06	Neonatal Intensive Care	Clinical Support	11.03.029	Dirty Utility	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 06	Neonatal Intensive Care	Clinical Support	11.03.029	Dirty Utility	FQCW-015	BIN: waste, general, 120L	120	General	1	120
LV 06	Neonatal Intensive Care	Clinical Support	11.03.029	Dirty Utility	FQCW-504	BIN: waste, recycling, co-mingled, 1	120	Comingle	1	120
LV 06	Neonatal Intensive Care	Clinical Support	11.03.036	Dirty Utility	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 06	Neonatal Intensive Care	Clinical Support	11.03.036	Dirty Utility	FQCW-015	BIN: waste, general, 120L	120	General	1	120
LV 06	Neonatal Intensive Care	Clinical Support	11.03.036	Dirty Utility	FQCW-504	BIN: waste, recycling, co-mingled, 1	120	Comingle	1	120
LV 06	Neonatal Intensive Care	Entry / Reception	11.01.004	Store - Photocopy/ Stationery	FQCW-038	BIN: waste, secure, 240L	240	SecPaper	1	240
LV 07	Cardiology IPU - 28 bed	Support Areas 07A	22.02.018	Dirty Utility	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 07	Cardiology IPU - 28 bed	Support Areas 07A	22.02.018	Dirty Utility	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 07	Cardiology IPU - 28 bed	Support Areas 07A	22.02.018	Dirty Utility	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 07	Cardiology IPU - 28 bed	Support Areas 07A	22.02.018	Dirty Utility	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	1	240
LV 07	Oncology / Haematology -	Support Areas 07B	22.06.018	Dirty Utility	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 07	Oncology / Haematology -	Support Areas 07B	22.06.018	Dirty Utility	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 07	Oncology / Haematology -	Support Areas 07B	22.06.018	Dirty Utility	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 07	Oncology / Haematology -	Support Areas 07B	22.06.018	Dirty Utility	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	1	240
LV 07	IPU 28 bed - Lv 07	Shared Areas - Level 07	22.04.001	Disposal Room	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	0	0
LV 07	IPU 28 bed - Lv 07	Shared Areas - Level 07	22.04.001	Disposal Room	FQCW-017	BIN: waste, general, 240L	240	General	0	0
LV 07	IPU 28 bed - Lv 07	Shared Areas - Level 07	22.04.001	Disposal Room	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 07	IPU 28 bed - Lv 07	Shared Areas - Level 07	22.04.001	Disposal Room	FQCW-029	BIN: waste, recycling, paper, 240L	240	Paper/CB	2	480
LV 07	IPU 28 bed - Lv 07	Shared Areas - Level 07	22.04.001	Disposal Room	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	0	0
LV 07	IPU 28 bed - Lv 07	Shared Areas - Level 07	22.02.020	Store - Photocopy/ Stationery	FQCW-038	BIN: waste, secure, 240L	240	SecPaper	1	240
LV 08	Maternity Unit 1 - 24 bed	Clinical Support - Postnatal 1	13.06.016	Dirty Utility	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 08	Maternity Unit 1 - 24 bed	Clinical Support - Postnatal 1	13.06.016	Dirty Utility	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 08	Maternity Unit 1 - 24 bed	Clinical Support - Postnatal 1	13.06.016	Dirty Utility	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 08	Maternity Unit 1 - 24 bed	Clinical Support - Postnatal 1	13.06.020	Disposal Room	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	0	0
LV 08	Maternity Unit 1 - 24 bed	Clinical Support - Postnatal 1	13.06.020	Disposal Room	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	1	240
LV 08	Maternity Unit 1 - 24 bed	Clinical Support - Postnatal 1	13.06.020	Disposal Room	FQCW-017	BIN: waste, general, 240L	240	General	0	0
LV 08	Maternity Unit 1 - 24 bed	Clinical Support - Postnatal 1	13.06.020	Disposal Room	FQCW-029	BIN: waste, recycling, paper, 240L	240	Paper/CB	2	480
LV 08	Maternity Unit 1 - 24 bed	Clinical Support - Postnatal 1	13.06.020	Disposal Room	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 08	Maternity Unit 2 - 24 bed	Clinical Support - Postnatal 2	14.06.019	Dirty Utility	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 08	Maternity Unit 2 - 24 bed	Clinical Support - Postnatal 2	14.06.019	Dirty Utility	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 08	Maternity Unit 2 - 24 bed	Clinical Support - Postnatal 2	14.06.019	Dirty Utility	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 08	Maternity Unit 2 - 24 bed	Staff Areas & Amenities	14.07.004	Store - Photocopy/ Stationery	FQCW-038	BIN: waste, secure, 240L	240	SecPaper	1	240
LV 08	Maternity Unit 2 - 24 bed	Staff Areas & Amenities	14.07.013	Office - Workstation, Open Plan	FQCW-038	BIN: waste, secure, 240L	240	SecPaper	1	240
LV 09	IPU 28 beds - Lv 09	Support Areas 09A	19.02.019	Dirty Utility	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 09	IPU 28 beds - Lv 09	Support Areas 09A	19.02.019	Dirty Utility	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 09	IPU 28 beds - Lv 09	Support Areas 09A	19.02.019	Dirty Utility	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 09	IPU 28 beds - Lv 09	Support Areas 09A	19.02.019	Dirty Utility	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	1	240
LV 09	IPU 28 beds - Lv 09	Shared Areas - Level 09	19.02.020	Disposal Room	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	0	0
LV 09	IPU 28 beds - Lv 09	Shared Areas - Level 09	19.02.020	Disposal Room	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	0	0
LV 09	IPU 28 beds - Lv 09	Shared Areas - Level 09	19.02.020	Disposal Room	FQCW-017	BIN: waste, general, 240L	240	General	0	0
LV 09	IPU 28 beds - Lv 09	Shared Areas - Level 09	19.02.020	Disposal Room	FQCW-029	BIN: waste, recycling, paper, 240L	240	Paper/CB	2	480
LV 09	IPU 28 beds - Lv 09	Shared Areas - Level 09	19.02.020	Disposal Room	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 09	IPU 28 beds - Lv 09	Support Areas 09A	19.02.022	Store - Photocopy/ Stationery	FQCW-038	BIN: waste, secure, 240L	240	SecPaper	1	240
LV 09	IPU 28 beds - Lv 09	Support Areas 09B	19.06.018	Dirty Utility	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 09	IPU 28 beds - Lv 09	Support Areas 09B	19.06.018	Dirty Utility	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 09	IPU 28 beds - Lv 09	Support Areas 09B	19.06.018	Dirty Utility	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 10	IPU 28 beds - Lv 10	Support Areas 10B	15.02.013	Treatment Room	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 10	IPU 28 beds - Lv 10	Support Areas 10A	15.02.019	Dirty Utility	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 10	IPU 28 beds - Lv 10	Support Areas 10A	15.02.019	Dirty Utility	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 10	IPU 28 beds - Lv 10	Support Areas 10A	15.02.019	Dirty Utility	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 10	IPU 28 beds - Lv 10	Shared Areas - Level 10	15.02.020	Disposal Room	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	0	0

Levels	HPU(s) (Name)	Functional Group (Name)	Room Number:	Room Name	Item Number	Name	Litre	Stream	Adjust. Qty	Adj. Litres
LV 10	IPU 28 beds - Lv 10	Shared Areas - Level 10	15.02.020	Disposal Room	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 10	IPU 28 beds - Lv 10	Shared Areas - Level 10	15.02.020	Disposal Room	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	0	0
LV 10	IPU 28 beds - Lv 10	Shared Areas - Level 10	15.02.020	Disposal Room	FQCW-017	BIN: waste, general, 240L	240	General	0	0
LV 10	IPU 28 beds - Lv 10	Shared Areas - Level 10	15.02.020	Disposal Room	FQCW-029	BIN: waste, recycling, paper, 240L	240	Paper/CB	3	720
LV 10	IPU 28 beds - Lv 10	Shared Areas - Level 10	15.02.020	Disposal Room	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 10	IPU 28 beds - Lv 10	Support Areas 10A	15.02.022	Store - Photocopy/ Stationery	FQCW-038	BIN: waste, secure, 240L	240	SecPaper	1	240
LV 10	IPU 28 beds - Lv 10	Support Areas 10B	15.06.018	Dirty Utility	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 10	IPU 28 beds - Lv 10	Support Areas 10B	15.06.018	Dirty Utility	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 11	IPU 28 beds - Lv 11	Support Areas 11A	20.06.012	Treatment Room	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 11	IPU 28 beds - Lv 11	Support Areas 11A	20.02.019	Dirty Utility	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 11	IPU 28 beds - Lv 11	Support Areas 11A	20.02.019	Dirty Utility	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 11	IPU 28 beds - Lv 11	Support Areas 11A	20.02.019	Dirty Utility	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 11	IPU 28 beds - Lv 11	Shared Areas - Level 11	20.02.020	Disposal Room	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	0	0
LV 11	IPU 28 beds - Lv 11	Shared Areas - Level 11	20.02.020	Disposal Room	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	1	240
LV 11	IPU 28 beds - Lv 11	Shared Areas - Level 11	20.02.020	Disposal Room	FQCW-017	BIN: waste, general, 240L	240	General	0	0
LV 11	IPU 28 beds - Lv 11	Shared Areas - Level 11	20.02.020	Disposal Room	FQCW-029	BIN: waste, recycling, paper, 240L	240	Paper/CB	2	480
LV 11	IPU 28 beds - Lv 11	Shared Areas - Level 11	20.02.020	Disposal Room	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 11	IPU 28 beds - Lv 11	Support Areas 11A	20.02.022	Store - Photocopy/ Stationery	FQCW-038	BIN: waste, secure, 240L	240	SecPaper	1	240
LV 11	IPU 28 beds - Lv 11	Support Areas 11B	20.06.036	Dirty Utility	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 11	IPU 28 beds - Lv 11	Support Areas 11B	20.06.036	Dirty Utility	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 11	IPU 28 beds - Lv 11	Support Areas 11B	20.06.036	Dirty Utility	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 12	IPU 28 beds - Lv 12	Support Areas 12A	21.02.012	Treatment Room	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 12	IPU 28 beds - Lv 12	Support Areas 12A	21.02.018	Dirty Utility	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 12	IPU 28 beds - Lv 12	Support Areas 12A	21.02.018	Dirty Utility	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 12	IPU 28 beds - Lv 12	Support Areas 12A	21.02.018	Dirty Utility	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 12	IPU 28 beds - Lv 12	Support Areas 12A	21.02.020	Store - Photocopy/ Stationery	FQCW-038	BIN: waste, secure, 240L	240	SecPaper	1	240
LV 12	IPU 28 beds - Lv 12	Shared Areas - Level 12	21.04.001	Disposal Room	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	0	0
LV 12	IPU 28 beds - Lv 12	Shared Areas - Level 12	21.04.001	Disposal Room	FQCW-013	BIN: waste, cytotoxic, 240L	240	Cytotoxic	1	240
LV 12	IPU 28 beds - Lv 12	Shared Areas - Level 12	21.04.001	Disposal Room	FQCW-017	BIN: waste, general, 240L	240	General	0	0
LV 12	IPU 28 beds - Lv 12	Shared Areas - Level 12	21.04.001	Disposal Room	FQCW-029	BIN: waste, recycling, paper, 240L	240	Paper/CB	2	480
LV 12	IPU 28 beds - Lv 12	Shared Areas - Level 12	21.04.001	Disposal Room	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240
LV 12	IPU 28 beds - Lv 12	Support Areas 12B	21.06.012	Treatment Room	FQCW-004	BIN: waste, clinical, 120L	120	Clinical	1	120
LV 12	IPU 28 beds - Lv 12	Support Areas 12B	21.06.018	Dirty Utility	FQCW-006	BIN: waste, clinical, 240L	240	Clinical	1	240
LV 12	IPU 28 beds - Lv 12	Support Areas 12B	21.06.018	Dirty Utility	FQCW-017	BIN: waste, general, 240L	240	General	1	240
LV 12	IPU 28 beds - Lv 12	Support Areas 12B	21.06.018	Dirty Utility	FQCW-505	BIN: waste, recycling, co-mingled, 2	240	Comingle	1	240

Appendix H 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 10: 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 11: Example and layout of safety signage

(d) Horizontal

FIGURE D5 TYPICAL ARRANGEMENTS OF DANGER SIGNS

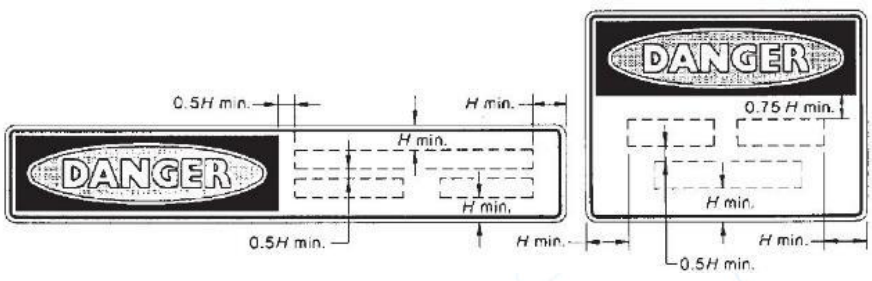


Figure 12: Example of additional recycling information signage for common and staff areas

Source: Planet Ark.

Appendix I Cleaning Equipment Specifications

This Page Intentionally Left Blank

Polished results and perfect cleanliness – day in, day out

Scrubmaster B30 and B45

Scrubmaster B30 and B45 – for high area coverage and low operating costs

With an area coverage of up to 2,900 m^2/h, the Scrubmaster B30 and B45 are ideal for the thorough scrubbing and vacuuming of small and medium-sized areas – e.g. retail trade, administrative buildings, hotels and catering or service centres. The flexibility of their deployment ensures that they can provide perfect solutions for your specific needs. Select, for example, between two tank sizes, four brush heads with various working widths, plate or cylindrical brush technology and different battery systems and additional equipment. As is always the case with Hako, maximum efficiency of the cleaning task is the focus of attention. As a result, the heavy duty construction, with die cast aluminium brush heads and squeegees, increases reliability while minimizing repair costs and downtimes. Their excellent ergonomics and the intuitive operation also contribute to increased productivity as do the various solutions for reducing water and cleaning agent consumption, which not only help save costs but also reduce environmental pollution.

Tailor-made solutions for high demands

Scrubmaster B30 / CL

Scrubmaster B45 CLH

Scrubmaster B45 CL

Scrubmaster B45 CL WB

Technical Data Scrubmaster	B30	B45	B30 CL	B45 CL*	B45 CL WB
Working width, scrubbing	43 cm	43/51 cm	43 cm	43/51/65 cm	50 cm
Squeegee width	76 cm	76/86 cm	76 cm	76/86/95 cm	86 cm
Theoretical area coverage	1,700 m^2	1,700/2.000 m^2	1,900 m^2	1,900/2,300/2,900 m^2	2,200 m^2
Brush system	1 plate	1 plate	1 plate	1/1/2 plate	2 cylindrical
Brush diameter	43 cm	43/51 cm	43 cm	43/51/33 cm	10 cm
Drive	24 V battery PowerFlow	24 V battery PowerFlow	24 V battery Wheel drive	24 V battery Wheel drive	24 V battery Wheel drive
Battery capacity	80 Ah	80 or 105 Ah	80 Ah	105 Ah/75 Ah DTC	105 Ah
Working speed to	4 km/h	4 km/h	4.5 km/h	4.5 km/h	4.5 km/h
Total output	1.13 kW	1.13 kW	1.31 kW	1.31 kW	1.31 kW
Volumes clean/ dirty water tank	30/30 l	42/42 l	30/30 l	42/42 l	42/42 l
Operating time (max.)	110 min	155 min	100 min	140 min	140 min
Width without/ with squeegee	50/76 cm	50/76/56/86 cm	50/76 cm	50/76/56/86/ 67/86 cm	60/86 cm
Length with squeegee	127 cm	127/135 cm	127 cm	127/135/137 cm	124 cm
Height above handlebar	110 cm	112 cm	110 cm	112 cm	112 cm
Noise at ear of operator	64 dB(A)	64 dB(A)	64/61 dB(A)	64/63/66/63** dB(A)	68/65 dB(A)

* Also as B45 CL DTC with DaytimeCleaning (working width 51 cm), and as hospital versions B45 CLH (working width 51 cm)
** B45 CL TB 65 = 66/63 dB(A) / B45 CLH = 64/61 dB(A) / B45 DTC = 64/63 dB(A)

We reserve the right to make technical improvements to machines with regard to shape, colour and design without notice. Illustrations could contain optional equipment.

Model 6100 Specifications

BATTERY POWER SWEEPER

Feature		
Sweeping System		
Productivity (With single side brush) Theoretical Maximum Estimated Actual	 56,000 ft^2 per hour 30,000 ft^2 per hour	 5202 m^2 per hour 2787 m^2 per hour
Cleaning path One side brush Two side brushes	 30 in 38 in	 760 mm 970 mm
Main brush Main brush length (tubular) Main brush lift Main brush drive Side brush Side brush diameter	 22 in Mechanical lever Belt 16 in	 560 mm Mechanical lever Belt 410 mm
Debris hopper Volume capacity Weight capacity Access clearance	 3 ft^3 200 lb 3 in	 85 L 91 kg 76 mm
Dust Control System		
Filter system (dual stage, to 3 microns) Stage 1 Stage 2	 Perma-Filter™ 33.7 ft^2 panel filter	 Perma-Filter™ 3.1 m^2 panel filter
Vacuum fan Speed	0.75 hp 4,375 rpm	0.56 kW 4,375 rpm
Vacuum diameter	9 in	230 mm
Propelling System		
Propel speed forward (variable to)	5.0 mph	8.0 km/h
Propel speed reverse (variable to)	3.0 mph	4.8 km/h
Battery options Battery-standard capacity batteries (36 V) Fully automatic “smart” battery charger	 220 Ah 20 amp	 220 Ah 20 amp
Gradeability Full hopper Empty hopper	 8.0 deg/14.1% 10.0 deg/17.6%	 8.0 deg/14.1% 10 deg/17.6%
Machine Dimensions		
Length	59.9 in	1,520 mm
Width	31.75 in	810 mm
Height	46.38 in	1,180 mm
Weight Net With 220 AH battery package	 620 lb 1,110 lb	 281 kg 503 kg
Minimum aisle turn	72 in	1,830 mm
Warranty	Please refer to your local Tennant representative for information.	

ec H2O NanoClean

CREATING A CLEANER, SAFER, HEALTHIER WORLD.

TENNANT

T7 Specifications | Micro Rider Floor Scrubber

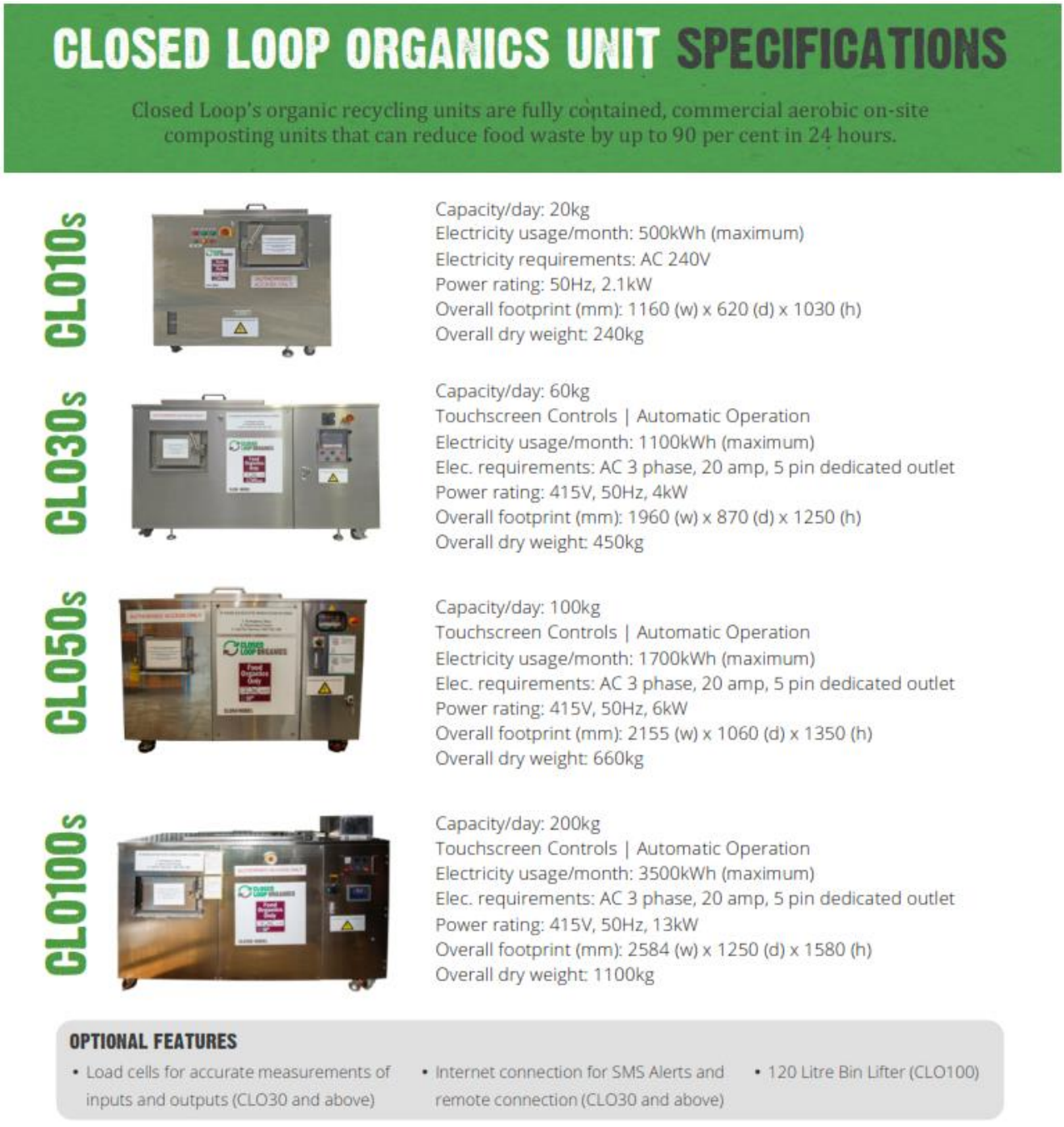
Scrubbing System				
	Disk		**Cylindrical**	
Cleaning path (2 paths available)	**26- inch / 650 mm**	**32- inch / 800 mm**	**28- inch / 700 mm**	**32- inch / 800 mm**
Hygienic™ Solution tank capacity	29 gallon / 110 liter			
Productivity (per hour)				
Theoretical Max	45,760 ft^2 / 4,250 m^2	56,320 ft^2 / 5,230 m^2	49,280 ft^2 / 4,578 m^2	56,320 ft^2 / 5,230 m^2
Estimated Actual* (Conventional)	23,760 ft^2 / 2,210 m^2	29,700 ft^2 / 2,760 m^2	25,740 ft^2 / 2,391 m^2	29,700 ft^2 / 2,760 m^2
Estimated Actual* (FaST®)	31,680 ft^2 / 2,950 m^2	39,600 ft^2 / 3,680 m^2	30,030 ft^2 / 2,790 m^2	34,650 ft^2 / 3,219 m^2
Estimated Actual* (ec-H2O NanoClean™ technology)	31,680 ft^2 / 2,950 m^2	39,600 ft^2 / 3,680 m^2	30,030 ft^2 / 2,790 m^2	34,650 ft^2 / 3,219 m^2
Scrub Motors	(2) 0.75 hp / 0.5 kW			
Brush speed	225 rpm		1500 rpm	
Brush down pressure (variable to)	80, 120, & 160 lb / 35, 55, & 75 kg		40, 80, 120 lb / 18, 36, 54 kg	
Brush / quantity & size	(2) 13 in / 330 mm	(2) 16 in / 410 mm	(2) 28 x 6 in / 700 mm x 150 mm	(2) 32 x 6 in / 800 mm x 150 mm
Recovery System				
Hygienic™ Recovery tank capacity	29 gallon / 110 liter			
Vacuum fan Motor Stages Water lift	0.6 hp / 0.45 kW 3-stage 70 in / 1,780 mm			
Propelling & Power System				
Propel speed(variable to) Transport Scrubbing	4.0 mph / 6.4 km/h 3.6 mph / 5.8 km/h			
Gradeability (Ramp climb) Scrubbing / Transporting (full) Trailer ramps (empty)	4.0º (7%) / 6.0º (10.5%) 11º (19.25%)			
Dimensions / Weight / Sound level				
Length	60 in / 1520 mm			
Width Scrub head Squeegee	31.5 in / 800 mm	36 in / 910 mm	32.5 in / 830 mm	36.5 in / 930 mm
	33.25 in / 850 mm	39.25 in / 1000 mm	33.25 in / 850 mm	39.25 in / 1000 mm
Height	50 in / 1270 mm			
Net weight Less batteries	585 lbs / 265 kg	585 lbs / 265 kg	632 lb / 287 kg	653 lb / 296 kg
With batteries (4) 6V	850 lbs / 386 kg	850 lbs / 386 kg	897 lb / 407 kg	918 lbs / 416 kg
Minimum aisle turn:	68.5 in / 1730 mm	72.5 in / 1840 mm	68.5 in / 1730 mm	72.5 in / 1840 mm
Sound level*** (operator's ear)	67 dBa		69 dBa	
Warranty	Please refer to your local Tennant representative for information.			

*Estimated coverage rates use the practical speed and empty/fill time standards from the 2004 ISSA Cleaning Times handbook.
** Run times are based on Continuous Scrubbing Run Times.
*** Sound levels per ISO 11201 as recommended by the American Association of Cleaning Equipment Manufacturers & OSHA

701 N. Lilac Drive | P.O. Box 1452 | Minneapolis MN 55440-1452 | 800.553.8033 | www.tennantco.com

Appendix J Example Organics Processing Infrastructure

Figure 13: Example of equipment for on-site organics processing



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

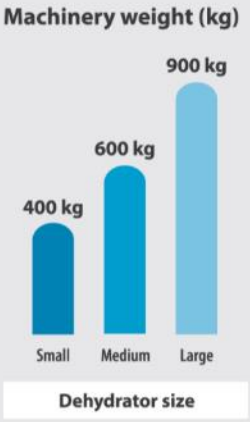
Specifications

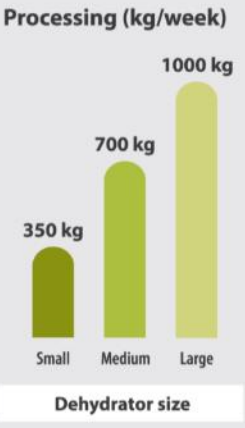
- **Loading:** Manual, Semi-Automatic (pump/hopper)
- **Unloading:** Manual
- **Consumables:** N/A
- **Working Life:** 10-20 Years
- **Power:** 415V
- Sewage/waste water hookup may be required to operate a dehydrator. This may require additional Council approval.
- Lateral and Overhead clearances need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





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.

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