

# Griffith Base Hospital Redevelopment

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## Operational Waste Management Plan

For the State Significant Development Application: SSD-9838218

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Rev\_2





waste less, achieve more

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# 1 Introduction

This Operational Waste Management Plan (OWMP) details the management of waste generated during the operational phase of the Griffith Base Hospital redevelopment (GBH). It has been prepared by Encycle Consulting to address those parts of the Secretary's Environment Assessment Requirements (SEARs) for operational waste generation and management associated with the GBH redevelopment project. The relevant part of the SEARs is Section 4.12(8) of the *Environmental Planning and Assessment Act 1979*, Schedule 2 of the Environmental Planning and Assessment Regulation 2000 is:

## 19. Waste

- *Identify, quantify and classify the likely waste streams to be generated during construction and operation*
- *Describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste*
- *Identify appropriate servicing arrangements (including but not limited to, waste management, loading zones, mechanical plant) for the site.*

The scope of the SSDA includes the following:

- Demolition of buildings 1, 2, 6, 15, 16, 17, 19, 20, 22, 25, 28, 29, 31, 35
- Demolition of temporary car park
- Construction of new Clinical Services Building
- Construction of new main car park and new western car park
- Landscaping work

This OWMP:

- Provides a description of the likely waste streams to be generated during operation;
- Describes the measures to be implemented to manage, reuse, recycle and safely dispose of this waste; and
- Identifies appropriate servicing arrangement for the site.
- Note that the construction waste elements of the Griffith Base Hospital redevelopment for the SSDA is covered in a separate Construction Waste Management Plan

Management strategies reflect current best-practice requirements and relevant Sections of the *Protection of the Environment Operations Act 1997* and the NSW Environment Protection Authority *Waste Classification Guidelines, Part 1: Classifying Waste*, NSW Health Policy Directive (Clinical and Related Waste Management for Health Services, 14 August 2017), as well as consideration of industry best practice for this type of development.

In addition, the OWMP is consistent with the aims, objectives and guidance in the NSW Waste Avoidance and Resource Recovery Strategy 2014-2021.

This OWMP addresses the appropriate segregation, containment and disposal of waste required with waste avoidance being the primary focus. To assist management in achieving effective waste and recycling management, this OWMP has two key objectives:

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- i. **To minimise the environmental impacts of the operations of the development on the environment** – this will be achieved by working towards diversion of waste from landfill where possible; correct containerisation and transport of materials; correct segregation of materials into appropriate management streams; awareness among staff, patients and visitors of waste avoidance practices;
- ii. **To minimise the impact of the management of waste within the development on local residents** – this will be achieved by ensuring waste is managed so as to avoid odour and litter and collected during suitable times;

## 2 Description of the redeveloped Griffith Base Hospital

The GBH redevelopment project involves the demolition of existing hospital buildings within the hospital campus, to be replaced by a new, integrated hospital. The buildings that will be demolished are set out in Figure 1.



**Figure 1: Buildings at the existing hospital to be demolished**

The redeveloped hospital will provide the following services:

**Inpatient:**

- Surgical/Medical
- Obstetrics
- Special Care Nursery
- Nursery Cots (Bassinets)
- Paediatrics
- Paediatrics – day only
- Critical Care Unit – (ICU/HDU/CCU)
- Aged Care and Rehabilitation Unit

**Emergency and Ambulatory Services:**

- Emergency resuscitation bays
- Emergency observation/treatment bays
- Emergency Short Stay Unit (EMU or SSU)

**Chair based services:**

- Renal Dialysis
- Chemo/Oncology
- Dental
- HiTH non-admitted
- Outpatient consult & treatment rooms - Onsite
- Outpatient consult & treatment rooms - Onsite
- Outpatient consult & treatment rooms - Offsite
- Ambulatory Care Therapy Rooms/Gymnasium -Outpatient
- Ambulatory Care Therapy Rooms/Gymnasium -Outpatient
- Ambulatory Care Therapy Rooms/Gymnasium -Outpatient
- Ambulatory care procedure/treatment rooms
- Day Medical Only

**Other Service delivery units (not including imaging and support services):**

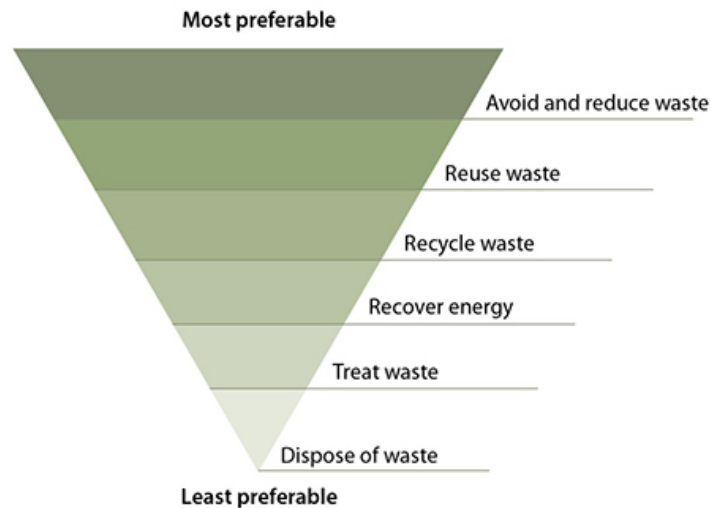
- Operating Theatres
- Procedure Room
- Recovery – Stage 1
- Recovery – Stage 2
- Recovery – Stage 3
- Birthing Room
- Maternity Assessment Room

**Medical Imaging:**

- Digital Orthopantomogram (includes for dental ) – 1
- Ultrasound – 3
- Fluoroscopy – 1
- SPECT – 1
- MRI – as “Warm Shell”

### 3 Waste management principles

The following waste management hierarchy<sup>1</sup> has been used as a guiding principle in the development of this OWMP:



It is recognised within the healthcare sector there are a number of issues that need to be factored into the decision making process in regards to the resultant generation and management of waste. These include:

- Patient treatment regimes
- Infection control
- Workplace health & safety for staff, patients and visitors as well as waste management contractors
- Availability of alternative products
- Costs for products and waste management services

Opportunities and requirements for managing waste will include:

- Staff education programs
- Purchasing materials that will result in less waste, which have minimal packaging, are pre-cut or fabricated
- Not over ordering products and materials
- Identify all waste products that can be reused
- Implementing systems to separate and store reusable items

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<sup>1</sup> <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/warr-strategy/the-waste-hierarchy>



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- Identifying the potential applications for reuse both onsite and offsite and facilitate reuse
- Identifying all recyclable waste products that will be produced on site
- Providing systems for separating and storing recyclables prior to collection
- Provide clear signage to ensure recyclable materials are correctly separated
- Ensure the chosen waste disposal contractor(s) comply with regulatory requirements
- Implement regular collection of bins and compactors

## 4 Operational Waste Management Plan

### 4.1 Waste streams

Based on the Hospital profile (as per Section 2), the following are the main waste streams that are expected to be generated on a daily basis:

- General waste
- Clinical waste
- Anatomical waste
- Cytotoxic waste
- Sharps
- Cardboard recycling
- Commingled recycling
- Confidential documents

### 4.2 Estimated waste generation

Table 1 shows the high-level estimated volume of waste anticipated to be generated from the various components of GBH (based on the profile of the Hospital as per Section 2). Please note that waste from other existing buildings on the campus are excluded from these totals.

These estimates are based on averages for quantity and composition of the waste generated as determined by industry data (i.e. data/information obtained from hospital waste audits in Australia) and in consideration of the waste volumes currently generated at the existing hospital. It is estimated that GBH will generate a total of approximately 6.3 m<sup>3</sup> of waste and recyclables per day – a total of approximately 45 m<sup>3</sup> per week.

**Table 1: Estimated volume (m<sup>3</sup>) of waste and recycling streams (new Clinical Services Building)**

Waste/recycle stream	Estimated volume per day (m <sup>3</sup> )	Estimated volume per week (m <sup>3</sup> )
Clinical waste	1.5	10.7
Sharps	0.1	0.9
Anatomical	0.2	1.5
Cytotoxic	0.03	0.2
General waste	3.5	24.8
Cardboard recycling	0.6	4.2
Commingled recycling	0.4	2.5
Confidential Documents	0.03	0.2
<b>Total (m<sup>3</sup>)</b>	<b>6.3</b>	<b>45</b>

Table 2 summarises the estimated types of equipment/receptacle numbers, storage location and servicing frequency proposed for the various waste/recycling streams.

**Table 2: Summary of equipment/receptacle numbers, storage area and servicing frequency**

Waste/ recycling stream	Bin size (L)	Collection frequency	Number of bins and footprint (Dirty)	Number of bins and footprint (Clean)	Proposed space in current design
<b>General waste</b>	240 L bins	Daily – 7 days	15 (7 m <sup>2</sup> )	15 (spares) (7 m <sup>2</sup> )	Dirty bins: Room: 0617 20 m <sup>2</sup> Clean bins: Room: 0619 21 m <sup>2</sup>
<b>Clinical and Related Waste</b>	240 L	Weekly	44 (19 m <sup>2</sup> )	44 (19 m <sup>2</sup> )	Dirty bins: Room: 0614 ~30 m <sup>2</sup>
<b>Sharps</b>	Various sizes	Weekly	Wheeled cabinets 6m <sup>2</sup>	Wheeled cabinets 6m <sup>2</sup>	
<b>Cytotoxic</b>	240 L	Weekly	1 (0.5m <sup>2</sup> )	2 (1m <sup>2</sup> )	
<b>Anatomical</b>	120 L	Weekly	12 (6m <sup>2</sup> )	12 (6m <sup>2</sup> )	Dirty bins: Room: 0615 12 m <sup>2</sup>
<b>Cardboard recycling</b>	Compact- or (19 m <sup>3</sup> ) with bin lifter	Every 1 to 2 months	N/A as cardboard tipped into compactor	N/A – assumes empty bins taken directly back to Disposal Rooms	Compactor: Room 0620 (100 m <sup>2</sup> ) Spare bins: Room 0616 (17m <sup>2</sup> )
<b>Commingled recycling</b>	240 L	Weekly	11 (5m <sup>2</sup> )	11 (5m <sup>2</sup> )	Recycling bins: Room: 0616 17m <sup>2</sup>
<b>Confidential documents</b>	240 L	Monthly	5 (3m <sup>2</sup> )	N/A	

Note that actual types and volumes of the various waste streams will be dependent on the type of patient services as well as treatments delivered, number of inpatients (occupied bed days) and number of outpatients. With healthcare, this can fluctuate according to time of year and changes in treatments and services. The GBH will be equipped to manage and cope with changes in waste types and volumes generated on a day to day basis through more regular collection frequencies.

## 4.3 Waste storage and collection area

### 4.3.1 Location and layout of storage areas

Figure 2 illustrates the current layout and location of the waste rooms within the NCS loading dock area and figure 3 shows the current sizing of the waste rooms and bin provision. Please note that the NCS building is currently under construction.

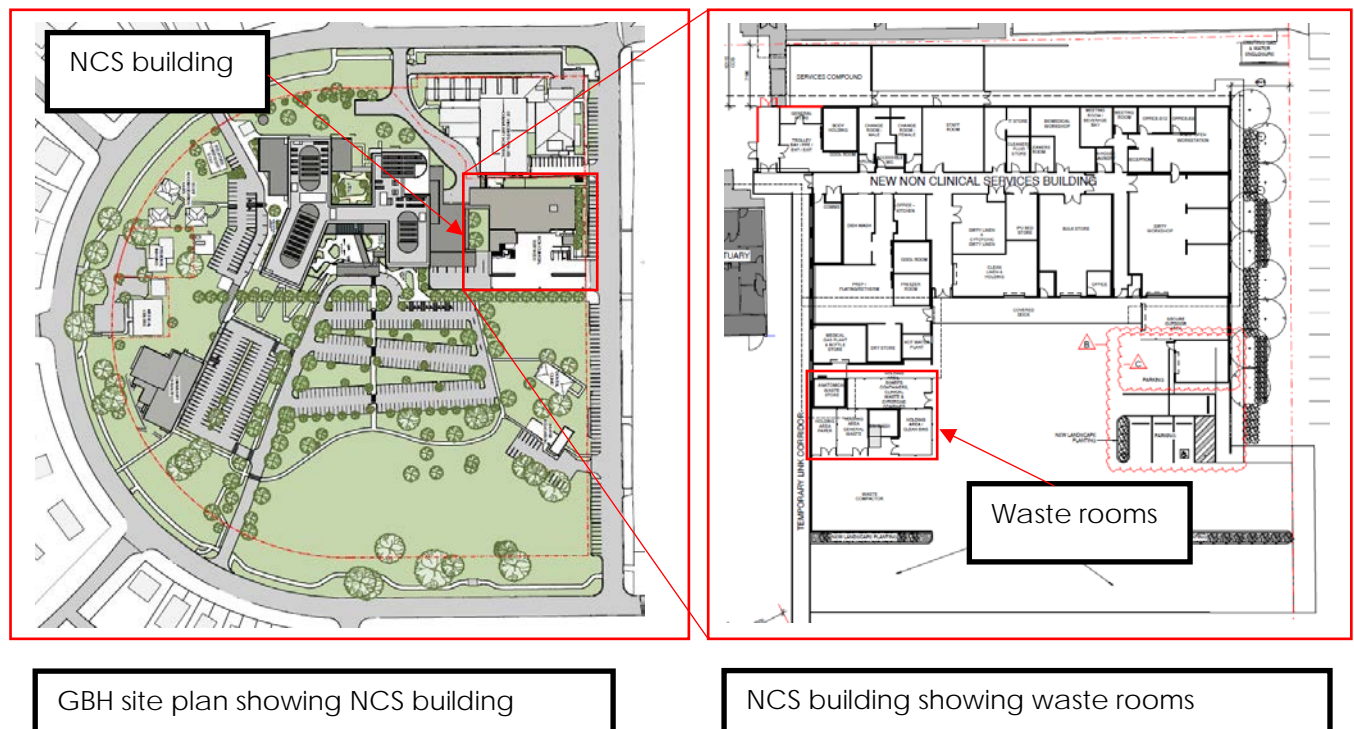


Figure 2: Site plan showing location of Non-Clinical Support (NCS) building and the location of the waste storage rooms and loading dock area within the NCS building

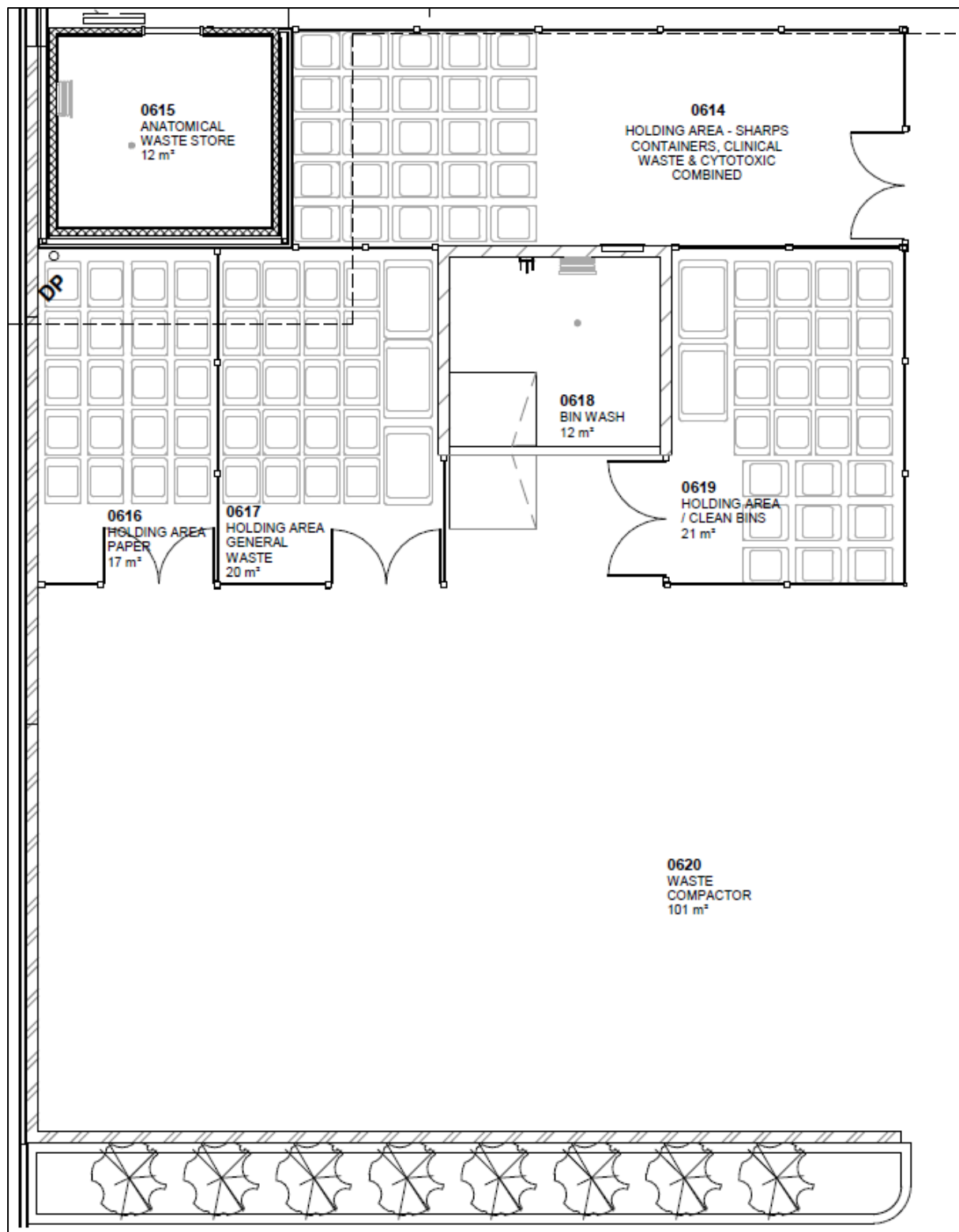


Figure 3: Current bin provision in waste rooms at NCS building

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There is provision for a bin washing area in the NCS building (this will drain to sewer as per Water Authority requirements). Each waste stream will be located in a designated area in the NCS building. This will assist in easy identification of correct bins by cleaners.

In keeping with best practice sustainability programs, all waste areas and waste and recycling bins/equipment will be clearly differentiated through appropriate signage and colour coding to Australian Standards (AS/NZS 4123:2006) to reflect the materials contained.

The waste areas will be accessed by Hospital staff only. The waste rooms will be locked so as to prevent unauthorised access and the incorrect disposal of waste materials.

Signage will be a crucial element of the waste management system. The waste contractor should provide all signage for bins and walls in waste storage rooms. Below are examples<sup>2</sup> of the types of signage that can be used at GBH.



<sup>2</sup> <https://www2.health.vic.gov.au/hospitals-and-health-services/planning-infrastructure/sustainability/waste/waste-and-recycling-signage>

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#### 4.4 Internal waste transfer

Guidance for determining “best practice” waste management for the GBH has been obtained from the Australian Standard (AS3816:2018 Management of clinical and related wastes, Waste Management Association of Australia, Biohazardous Waste Industry Group, Manual for the Management of Biohazardous Waste, 7<sup>th</sup> edition, 2014<sup>3</sup>, NSW Health Policy Directive (Clinical and Related Waste Management for Health Services, 14 August 2017), and NSW EPA.

Waste and recycling bins will be located in dirty utility rooms and disposal rooms at ward/department level, office spaces, cleaner’s rooms and patient areas as required for the activities conducted in each specific department/area. As part of the hospital’s continual improvement program, reviews of the location, type and size of waste/recycling containers will be undertaken on a regular basis. Similarly, waste and recycling bins will be provided for the retail premises and managed by Hospital staff.

The following summarises the waste and recycling systems that will be implemented for GBH.

All waste and recyclables will be deposited into the dedicated containers that will be located in dirty utility rooms within the various wards/departments of GBH.

Waste will be transferred from the dirty utility rooms and disposed of in the appropriate bins located in the disposal room on each floor. The bins in the disposal rooms will include those relevant to the waste streams generated on each floor and will include some or all of the following (receptacle size will vary floor to floor):

- General waste bin 240/660 litre MGB (green)
- Clinical waste bin 120/240 litre MGB (yellow)
- Anatomical waste 120 litre MGB (yellow)
- Cytotoxic waste in appropriate bags/pails/sharps units (purple)
- Sharps – various sizes (yellow)
- Commingled recycling bin 240/1100 litre MGB (blue)
- Cardboard recycling 240/1100 litre MGB (blue)
- Confidential documents 240 litre MGB (blue)

In summary the following will apply to the transport of wastes and recyclables from the disposal rooms on each level to the waste storage rooms in the NCS via dedicated service lifts (refer red box in diagram below):

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<sup>3</sup> This publication is referred to by a number of Government agencies as representing “best practice” for the management of biohazardous waste generated within healthcare facilities.



- #### 4.4.1 Clinical waste transfer

Due to the risks involved with the generation and handling of clinical and related wastes, extreme care must be maintained when handling, packaging, transporting and disposing of these materials. Consequently, there are strict requirements for all generators, transporters and disposal site operators to ensure that there is protection to the community and the environment.

- Handled by staff with knowledge and access to appropriate Personal Protective Equipment

- Packaged so that there is no risk of waste escaping
- Transported and disposed of in accordance with NSW EPA legislation and guidelines and relevant Codes of Practice
- The following principles will apply to the management of clinical waste:
  - Sharps containers should be placed within "arms reach" of where the sharp is generated
  - The full containers are located in dirty utility rooms awaiting collection by healthcare facility staff and/or contractors. These containers will range from 1 litre sharps containers through to 40 litre clinical waste pails. All containers must meet the required Australian Standard in terms of construction and colour coding etc. The actual number and size of containers to be utilised will depend on the patients' conditions and discussions with the appointed clinical waste contractor
  - It is intended that as per normal practice for these types of facilities, that GBH hospital staff will service the sharps containers/bins from their place of use within the facility and replace them at the same time with empty containers/bins

Clinical waste must be stored in uniquely identified receptacles located in separate rooms from all other wastes and recyclables, and disposed of according to designated Clinical and Hazardous Waste Procedures.

#### 4.5 Collection and vehicle access

Table 3 summarises the servicing frequency for the various waste/recycling streams.

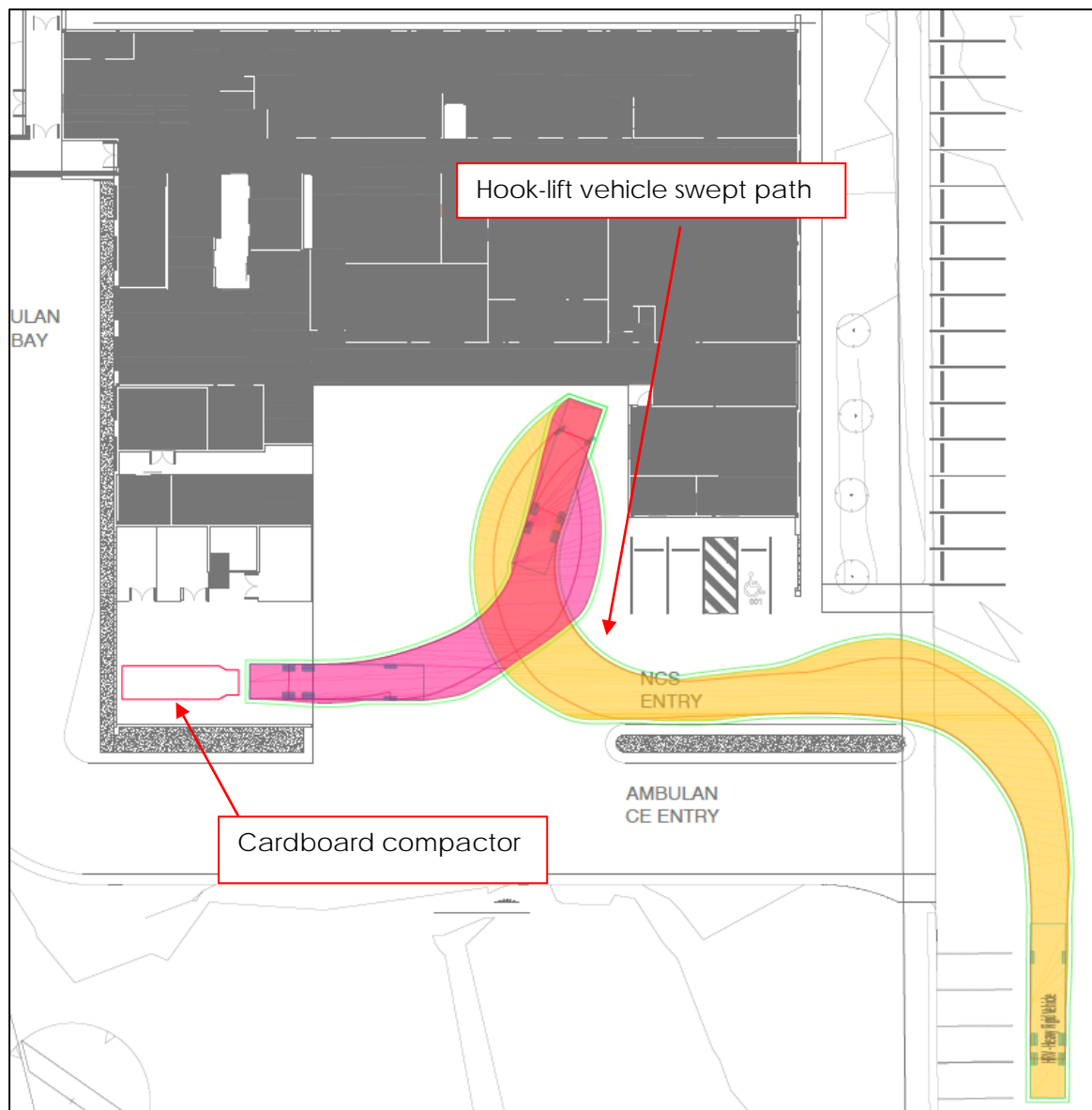
**Table 3: Summary of servicing frequency for each waste/recycling stream**

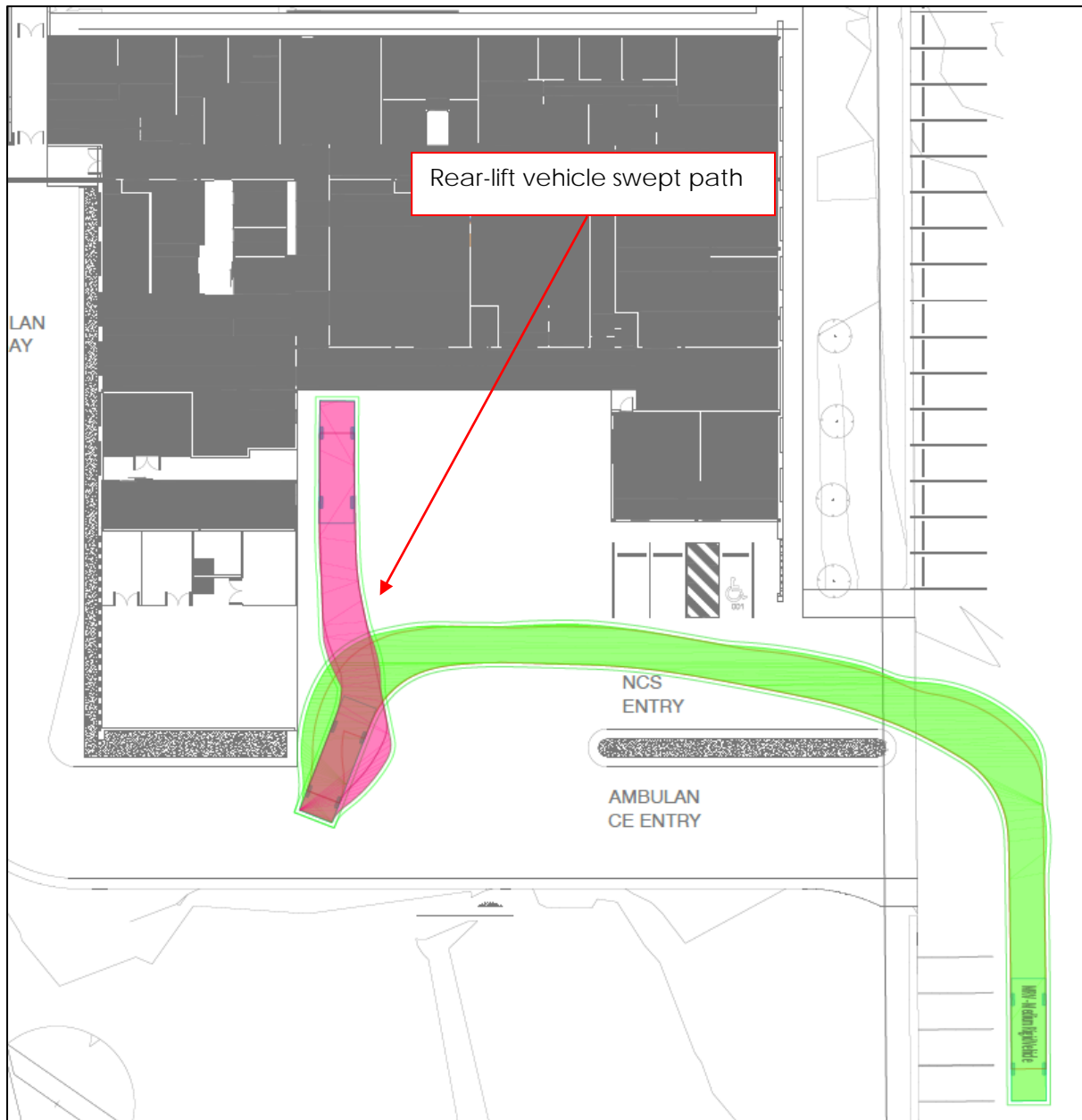
Stream	Container for disposal	Servicing frequency
Clinical waste	240 litre MGB	Weekly
Sharps	Various sizes	Weekly
Anatomical	120 litre MGB	Weekly
Cytotoxic	240 litre MGB/Pails	Weekly
General waste	240 litre MGB	Daily
Cardboard	19 m <sup>3</sup> compactor	Every 1 to 2 months
Commingled	240 litre MGB	Weekly
Confidential Documents	240 litre MGB	Monthly

Note that these schedules may change as the GBH becomes operational and with changes in the volume of waste or recyclables generated.

There is sufficient storage space for all volumes of the various streams generated as well as the capability to increase collection frequencies.

The following two diagrams illustrate the location of the cardboard compactor and the swept paths of the hook-lift vehicle for servicing the compactor and swept path for rear-lift vehicles servicing bins:





#### 4.6 Waste management education

All waste management strategies (particularly resource management programs) rely on all staff to participate and co-operate in order to ensure that objectives are met. Staff therefore must receive appropriate training/education in order to understand their waste management responsibilities.

All staff and contractors shall attend a waste management training session. This is to be conducted during all induction programs in the first instance.

For those staff and contractors currently employed on-site, they will be required to attend a training session so that they are fully aware of their roles and responsibilities in respect to waste management.

An internal Waste Management Committee (apart from ensuring staff education programs are developed and implemented), should also address other methodologies in order to ensure that staff receive information on waste reduction programs (e.g., signage, information sheets and flow charts).

All staff will receive information regarding the waste collection systems including how to use the system, which items are appropriate for each stream and collection times. Appropriate signage and updated information will also be provided, as well as receiving feedback on issues such as contamination of the recycling stream or leakage of the recyclables into the general waste. Facilities management will have the responsibility for these tasks.

All waste receptacles will be appropriately signed and additional room signage is usually provided from most waste contractors during implementation of the waste services contract.

It is recommended that all signs should:

- Clearly identify the waste/recycling stream;
- Use correct waste/recycling stream colour coding;
- Identify what can and cannot be disposed of in the receptacle; and
- Include highly visual elements to accommodate for individuals with inadequate English literacy
- As part of the staff induction and welcoming process, a waste and recycling toolkit will be provided. This toolkit will include the details of each of the systems in place; acceptance criteria for each stream and how each stream is managed.

An active waste monitoring program will be employed. The waste and cleaning contracts will ensure that contractors actively participate in the waste reduction program for the site and meet regularly to identify performance and new opportunities for diversion and avoidance.

## 4.7 Ongoing management

Having suitable systems in place is only one element of an effective waste management system. Compliance by all stakeholders is essential.

### Cleaners:

Cleaners should be required to provide feedback to management about any non-compliance issues they observe during their cleaning activities, such as contamination, non-participation, or missing or damaged bins. This allows issues to be dealt with promptly by management.

### Waste Contractors:

The waste/recycling contractor will be required to report actual quantities collected by stream so that management can monitor performance and feed this back to staff. Specific Key Performance Indicators for performance should be included in waste and recycling contracts.

The waste contractor should also be required to participate in ongoing reviews and provide updates on new opportunities that may allow the Hospital to further increase their diversion from landfill.