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SYDNEY CHILDREN'S HOSPITAL STAGE 1 & CHILDREN'S COMPREHENSIVE CANCER CENTRE SSD 10831778

PRELIMINARY CONSTRUCTION AND OPERATIONAL WASTE MANAGEMENT PLAN

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Sydney Children's Hospital Stage 1 & Children's Comprehensive Cancer Centre
Preliminary Construction and Operational Waste Management Plan

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REV	DATE	DETAILS
A	15/01/2021	Draft Waste Management Plan
B	29/01/2021	Preliminary Construction and Operational Waste Management Plan
C	22/04/2021	Preliminary Construction and Operational Waste Management Plan

	NAME	DATE	SIGNATURE
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1 SUMMARY

The below is a summary of the waste management strategy proposed for the subject site. The complete report must be read in detail prior to implementing the operational waste management plan.

The proposed Sydney Children's Hospital Stage 1 (SCH Stage 1) / Children's Comprehensive Cancer Centre (CCCC) will be provided as part of the broader Randwick Hospital Campus (RHC). The redevelopment will include Australia's first Children's Comprehensive Cancer Centre (CCCC) and will bring together health practitioners, researchers, academics, patients and the community to integrate patient care, research and education.

The project site is located at the corner of High Street and Hospital Road and will consist of a nine storey building with an additional two levels of basement, accessed via Hospital Road.

The Department of Planning, Industry and Environment (DPIE) have issued Secretary's Environmental Assessment Requirements (SEARs) to the applicant under planning application number SSD-10831778. Relevant SEARs (i.e. SEAR 19 (Waste)) have been addressed throughout this report as appropriate (refer Section 3).

WASTE MITIGATION MEASURES

The development will be provided with a waste system that ensures ease of waste separation, thus allowing for maximum diversion from landfill. Waste storage and equipment will be carefully considered and incorporated into ongoing design where appropriate, as to provide a high-functioning waste system once the site is operational.

Waste mitigation initiatives as specified throughout this report include:

- Extended waste stream separation, including streams such as paper / cardboard, pallets, metals and electronics.
- The use of large waste compactors where appropriate, minimising frequency of waste collection.
- Separate waste stores for common and clinical waste volumes, as to minimise risk of inappropriate material handling.
- Separate clinical waste stores for SCH Stage 1 and CCCC, as to provide for ease of individual operations.
- Separate "clean" (incoming deliveries, food, clean linen, etc.) and "dirty" (waste, dirty linen, etc.) loading bays, as to minimise risk of cross contamination.

WASTE COLLECTION STRATEGY

The following waste systems are proposed for the development:

Table 1 Waste Collection Summary

Waste Stream & Classification		Waste Equipment	Collection Frequency	Collection Operator
COMMON	Garbage	1 x 25m^3 Compactor	(Min) Once per week	Private Contractor
	Paper / Cardboard*	1 x 25m^3 Compactor	(Up to) Once per week	Private Contractor
	Commingled Recycling	4 x 660L Bins	(Min) Twice per week	Private Contractor
	Extended Streams	Various (Refer Sections 4.2.3-4.2.4)	As required	Private Contractor
CLINICAL	Soft Biohazard	7 x 660L Bins	(Min) Seven times per week	Private Contractor
	Cytotoxic	4 x 660L Bins	(Min) Seven times per week	Private Contractor
	Additional Streams	Various (Refer Section 5.2.2)	As Required	Private Contractor

** Note: Paper / Cardboard and commingled recycling may potentially be combined as a **fully** commingled waste stream, to be managed within the 25m^3 compactor as specified. A fully commingled waste stream is common practice across certain existing buildings of the RHC.*

Collections will be undertaken directly from the loading zone at basement level 02. Collection vehicles will access the loading zone via the basement access ramp, itself accessed via Hospital Road.

Swept path diagrams prepared by ARUP (dated 04/11/2020, drawing numbers SKT001 & SKT007, Issue A) demonstrate sufficient vehicle access is provided for a 12.5m HRV sized vehicle to enter and exit the site in a forward direction – this will accommodate all vehicle types as listed. WSP have assessed these swept paths and consider them sufficient.

Compactor collections will be undertaken directly from the compactor zone at basement level 02. Minimum height clearances of 5.0m at the point of compactor lift and 4.5m across the vehicle path of travel are provided across the dock, which will provide sufficient clear for compactor collection and vehicle access.

Additional collections (recycling bins, clinical waste bins, extended waste streams) will be undertaken directly from the loading bays at basement level 02 via a standard MRV sized vehicle of 8.8m length or smaller. Collection vehicles will prop within the loading bays, with vehicle operators collecting (and returning) equipment directly from the waste rooms. A platform lift will be provided between the clinical waste stores and loading bay level for ease of transfer.

Waste equipment will not be stored outside the title boundary or presented to kerb for collection at any time. Building management will ensure sufficient access is provided for collection vehicle operators during collection times. Typically, operators are provided with keypad/swipe card access to the service doors.

2 INTRODUCTION

The following Preliminary Construction and Operational Waste Management Plan has been prepared for the proposed Sydney Children's Hospital Stage 1 (SCH Stage 1) & Children's Comprehensive Cancer Centre (CCCC) development within the wider Randwick Hospitals' Campus at High Street, Randwick.

This Waste Management Plan (WMP) and the waste generation rates therein have been prepared in accordance with the *Randwick City Council Development Control Plan 2013* (Part B, Section B6) and current best practice waste management methodology and technologies commonly available in Australia.

2.1 LAND USE

Client:	Health Infrastructure
Development Application No.:	SSD 10831778
Land Use Type:	Hospital
Number of Levels:	9 storeys + 2 basement levels

Table 2 Sydney Children's Hospital Stage 1 / CCCC: Development Summary

Hospital / Clinical	
Use	**Quantity**
Hospital Bed	239 beds
Children's Comprehensive Cancer Centre	
Use	**Net Leasable Area**
Administration, Meeting & Support *(Administration, Education, Data Centre, Dry Labs, etc.)*	2,941m^2
Research *(Wet Labs, Research Neighbourhoods (Wet + Dry), General Labs, etc.)*	6,771m^2
Clinical *(IPU – Oncology, Oncology Centre, Pharmacy, Family Retreat, etc.)*	4,995m^2

Note: Development summary as shown is based on preliminary schedules (last provided to WSP by PwC as *200826_SCH_HLSoA_V22-02*). Values will be refined to reflect any changes undertaken throughout the design process.

2.2 DEFINITIONS

Within the proceeding report, three categories are established to describe waste systems:

Common waste is considered in this report to be waste generated through the ongoing operation of the site which does ***not*** have specific disposal requirements under the *AS3816: 1998 Management of clinical and related wastes*. This waste includes garbage, commingled recycling and paper/cardboard.

Clinical & related wastes (referred to as "clinical waste" throughout) are considered in this report to be waste which is regulated under the *AS3816: 1998 Management of clinical and related wastes*. In the context of this report, this waste includes sharps, pharmaceutical substances and laboratory specimens / cultures.

Construction & demolition waste is considered in this report to be waste generated during the construction and demolition stages prior to occupation. In the context of this report, this waste includes concrete, aggregates, timber and glass (amongst others).

3 ASSESSMENT REQUIREMENTS

The proposal is State Significant Development (SSD) for the purposes of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and Schedule1, Clause 14(a) of the *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP).

The Department of Planning, Industry and Environment (DPIE) have issued Secretary's Environmental Assessment Requirements (SEARs) to the applicant under planning application number SSD-10831778. These SEARs will provide the basis for the preparation of an Environmental Impact Statement (EIS) for the proposed development.

Waste specific SEARs have been addressed throughout this report as detailed in per Table 3 below.

Table 3 SEARs Requirements

SEAR	Waste Management Plan Response
19. Waste	
• *Identify, quantify and classify the likely waste streams to be generated during construction and operation*	Sections 4 and 5 identify the relevant waste streams likely to be generated throughout operation. Sections 6 identifies the relevant waste streams likely to be generated throughout construction.
• *Describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste*	Sections 4.2, 5.2 and 6.1 detail likely waste management operations, inclusive of disposal, handling and disposal methodology.
• *Identify appropriate servicing arrangements (including but not limited to, waste management, loading zones, mechanical plant) for the site.*	Section 4.7 and 5.7 identify servicing arrangements and waste collection methods in accordance with best and safe practices.
• *Provide a hazardous materials survey of existing aboveground buildings that are proposed to be demolished or altered.*	The following report addresses common, clinical and construction waste volumes **only**. Detail of hazardous material handling will be addressed independently of this report.

4 COMMON WASTE MANAGEMENT PLAN

4.1 WASTE GENERATION

Waste generation rates are shown in Table 4. A waste generation assessment prepared in accordance with these rates is shown in Table 5. Calculations are based on a 7 day per week operation for all uses.

Waste generation rates have been derived through a review of volumes generated throughout the existing Sydney Children's Hospital and University of NSW Biosciences Precinct, the results of which are held by WSP.

Note that waste volumes of the SCH Stage 1 (Hospital / Clinical) facilities represent those generated **in service** of the in-patient hospital beds, inclusive of associated administrative, operative and technical facilities. Waste volumes as shown are **not** limited to those generated solely by the hospital beds (and the associated patients thereof).

WSP note that any common waste volumes generated throughout the 'research' facilities of the CCCC (i.e. the wet labs) will be disposed of as soft biohazard (i.e. clinical) for laboratory control purposes. As such, research facilities are **not** included in the below assessment (refer Section 5.1 for detail of clinical waste generation).

Table 4 Common Waste Generation Rates

Use	Garbage (per week)	Paper / Cardboard (per week)	Commingled Recycling (per week)
Hospital Bed	225 L/bed	90 L/bed	10 L/bed
Administration, Meeting & Support	80 L/100m^2	25 L/100m^2	10 L/100m^2
Clinical	215 L/100m^2	85 L/100m^2	10 L/100m^2

Table 5 Common Waste Generation Assessment

Use	Quantity / Area	Garbage (L/week)	Paper / Card (L/week)	Recycling (L/week)
Hospital Bed	239 beds	53,775	21,510	2,390
SUBTOTAL – HOSPITAL / CLINICAL		**53,775**	**21,510**	**2,390**
Administration, Meeting & Support	2,941m^2	2,353	735	294
Clinical	4,995m^2	10,739	4,246	500
SUBTOTAL - CCCC		**13,092**	**4,981**	**794**
GRAND TOTAL		**66,867**	**26,491**	**3,184**

Throughout the development it will be ensured that it is as easy to dispose of recyclable materials as it is garbage. This will be achieved by ensuring the development is appropriately furnished with bin stations throughout the various tenancies, ancillary spaces and communal areas. The bin stations are to be clearly signed such that waste stream separation is easily identifiable and correct use of the bins is upheld.

Bin stations encourage the separation of recyclable materials. This system incorporates the provision of multiple bins for different waste streams at central locations and common areas for ease of disposal. This system is beneficial, as users are required to make a conscious decision as to which bin they place their items. This typically results in a reduced volume of garbage (landfill). In addition, the use of bin stations minimises the number of locations cleaners are required to service throughout the development.

Figure 1 Example Bin Station Application

Internal Fitout

Public Place Integration

4.2 WASTE SYSTEMS

Common waste shall be sorted on-site by users as appropriate into the following streams:

- Garbage (General Waste)
- Paper / Cardboard
- Commingled Recycling
- Bulky Waste
- Extended Waste Streams, including:
  - Secure Paper
  - Pallets
  - Metals
  - Electronics

4.2.1 GARBAGE, PAPER / CARDBOARD

Each space of the development shall have provision for plastic lined garbage and paper / cardboard bins for the temporary holding of waste, to have minimum cumulative holding capacities as deemed appropriate by SCH Stage 1 / CCCC management.

Staff / cleaners will clear waste from these temporary holding bins into larger 660L bins (typically stored within the common waste store at basement level 02) in accordance with nominated cleaning procedures. Once full, cleaning staff will transfer the 660L bins to the appropriate compactor at basement level 02 for end disposal.

The garbage and paper / cardboard compactors will each be fitted with a bin lifter for ease of disposal. Bin lifter use will be limited to trained staff only.

Garbage is to be disposed of bagged. Paper / cardboard is to be disposed of loosely.

4.2.2 COMMINGLED RECYCLING

Each space of the development shall have provision for plastic lined recycling bins for the temporary holding of waste, to have minimum cumulative holding capacities as deemed appropriate by SCH Stage 1 / CCCC management.

Staff / cleaners will clear waste from these temporary holding bins into larger 660L bins (typically stored within the common waste store at basement level 02) in accordance with nominated cleaning procedures. The full recycling bins will then be held within the common waste store for collection.

Commingled recycling is to be disposed of loosely.

4.2.3 BULKY WASTE

A dedicated area will be provided within the loading zone at basement level 02 for the disposal of bulky waste (broken furniture, large appliances, mattresses, etc.). Bulky waste will be transferred between the upper levels and loading zone via the lift(s).

Bulky waste will be collected by a private collection contractor on an as required basis.

4.2.4 EXTENDED WASTE STREAMS

Additional storage provision for extended waste streams will be allowed for within the common waste store at basement level 02, as detailed within Table 6 below.

Due to the requirement for a suitable volume of each waste to be generated prior to collection, additional recyclables will be collected on an as-required basis once the storage area capacity is reached (as opposed to the scheduled basis of the core streams).

The separation of additional extended streams (soft plastics, PVC, textiles, etc.) may be considered, pending hospital preference.

Table 6 Extended Waste Streams – Equipment and Storage

Use	Storage Method	Area / Equipment Provided
Secure Paper	Secure paper bins (typically 240L wheelie bins) stored internally within the office floorplates and brought to the loading zone for collection as required. No permanent storage within the common waste store.	Internal bin fit-out
Pallets (Timber)	Dedicated line-marked storage area and/or cage and/or 660 litre bin within common waste store.	3m^2 line marked area
Metals	Dedicated line-marked storage area and/or cage and/or 660 litre bin within common waste store.	3m^2 line marked area
Electronics	Dedicated line-marked storage area and/or cage and/or 660 litre bin within common waste store.	3m^2 line marked area

4.3 EQUIPMENT QUANTITY, SIZE AND COLLECTION FREQUENCY

Table 7 contains information regarding equipment quantity, size and frequency of collection.

As per industry standard, a compaction ratio of 3:1 has been assumed for both the garbage and paper / cardboard compactors. WSP understands that higher compaction ratios can be achieved under certain conditions.

Table 7 Common Waste Equipment Information and Capacity

Equipment Information and Capacity				
Waste Stream	**Equipment**	**Collections Per Week**	**Weekly Capacity**	**Weekly Volume**
Garbage	1 x 25m^3 Compactor	(Min) 1	75,000L	66,867L
Paper / Cardboard	1 x 25m^3 Compactor	(Up to) 1	75,000L	26,491L
Commingled Recycling	4 x 660L Bins	(Min) 2	5,280L	3,184L

Typical equipment dimensions are provided in Table 8 below. Note that the specifications listed are for reference only and must be confirmed with the nominated supplier prior to any works commencing.

Table 8 Typical Equipment Dimensions

Typical Equipment Dimensions (mm)			
Item	**Width**	**Depth**	**Height**
25m^3 Compactor	7000	2500	2500
Bin Lift	2000	1600	3300
660L Bin	1240	1070	1330

4.4 WASTE STORAGE AREA & LOCATION

Table 9 demonstrates the cumulative area requirements (excluding circulation) and provision of waste areas.

Table 9 Common Waste Storage Area Requirement

Waste Store	Item	Area Required (excl. circulation)	Area Required (incl. circulation)*
Compactor Zone (Basement 02)	2 x Compactors + Bin Lifts *(Garbage, Paper / Card)*	45.00m^2	45.00m^2
Common Waste Store (Basement 02)	6 x 660L Bins *(Garbage – Temporary Holding Bins)*	5.88m^2	11.76m^2
	3 x 660L Bins *(Paper / Card– Temporary Holding Bins)*	2.94m^2	5.88m^2
	4 x 660L Bins *(Recycling Bins)*	3.92m^2	7.84m^2
	Extended Waste Streams *(Pallets, Metals, Electronics)*	9.00m^2	18.00m^2
Loading Dock (Basement 02)	Bulky Waste	10.00m^2	10.00m^2
	TOTAL	**76.74m^2**	**98.48m^2**

* *Area required including circulation does **not** include clear zones for vehicle access.*

4.5 BIN COLOUR AND SUPPLIER

All bins will be provided by private suppliers. The below bin colours are specified by Australian Standard AS4123.7 2006, however these are only recommendations and are not mandatory:

- Garbage (general waste) bins shall have red lids with dark green or black body.
- Recycle bins shall have yellow lids with dark green or black body.
- Paper / Cardboard bins shall have blue body with dark green or black body.

Private collection contractors often provide their own bins for collection.

4.6 SIGNAGE

Waste storage areas and bins will be clearly marked and signed with the industry standard signage approved by NSW EPA (such as that illustrated in Figure 2 below) or equivalent.

Users will be instructed by building management to adhere to these requirements.

Figure 2 Common Waste Management Signage

4.7 WASTE COLLECTION METHODOLOGY

Common Waste will be collected by a private collection contractor as outlined in Table 10.

Table 10 Common Waste Collection Summary

Waste Stream	Waste Equipment	Collection Frequency	Vehicle Type	Collection Operator
Garbage	1 x 25m^3 Compactor	(Min) Once per week	Hooklift	Private Contractor
Paper / Cardboard	1 x 25m^3 Compactor	(Up to) Once per week	Hooklift	Private Contractor
Commingled Recycling	4 x 660L Bins	(Min) Twice per week	Rear Lift	Private Contractor
Extended Streams	Various (Refer Section 4.2.3+4.2.4)	As required	Flatbed	Private Contractor

Collections will be undertaken directly from the loading zone at basement level 02. Collection vehicles will access the loading zone via the basement access ramp, itself accessed via Hospital Road

Swept path diagrams prepared by ARUP (dated 04/11/2020, drawing numbers SKT001 & SKT007, Issue A) demonstrate sufficient vehicle access is provided for a 12.5m HRV sized vehicle to enter and exit the site in a forward direction – this will accommodate all vehicle types as listed. WSP have assessed these swept paths and consider them sufficient.

Compactor collections will be undertaken directly from the compactor zone at basement level 02. Minimum height clearances of 5.0m at the point of compactor lift and 4.5m across the vehicle path of travel are provided across the dock, which will provide sufficient clear for compactor collection and vehicle access.

Additional collections (recycling bins, extended waste streams) will be undertaken directly from the loading bays at basement level 02 via a standard MRV sized vehicle of 8.8m length or smaller. Collection vehicles will prop within the loading bays, with vehicle operators collecting (and returning) equipment directly from the common waste room. A platform lift will be provided between the clinical waste stores and loading bay level for ease of transfer.

Waste equipment will not be stored outside the title boundary or presented to kerb for collection at any time. Building management will ensure sufficient access is provided for collection vehicle operators during collection times. Typically, operators are provided with keypad/swipe card access to the service doors.

4.7.1 CLEAN / DIRTY MATERIAL SEPARATION

As per standard hospital operations, the separation of “clean” incoming materials (clean linen, food and beverage, medicine / hospital equipment, etc.) and “dirty” outgoing materials (waste volumes, soiled linen, etc.) will be allowed for throughout design, as to minimise risk of cross-contamination. This will be achieved through separate lifts, corridor connections, storerooms and loading bays where appropriate.

Four separate loading bays will be provided at basement level 02 – two “clean” bays (2 x 8.8m MRV bays) and two “dirty” bays (1 x 12.5m HRV bay, 1 x 8.8m MRV bay). Waste collection will be limited to the “dirty” bays only, per hospital operations and nominated schedule. Waste collections should **not** be undertaken from the “clean” bays under any circumstance.

5 CLINICAL WASTE MANAGEMENT PLAN

5.1 WASTE GENERATION

Waste generation rates are shown in Table 11. A waste generation assessment prepared in accordance with these rates is shown in Table 12. Calculations are based on a 7 day per week operation for all uses.

Waste generation rates have been derived through a review of volumes generated throughout the existing Sydney Children's Hospital and Children's Cancer Institute (CCI), the results of which are held by WSP.

Note that for ease of reference, the waste stream typically referred to as 'Clinical Waste' throughout existing Sydney Children's Hospital operations is instead referred to as 'Soft Biohazard' throughout this document. 'Clinical Waste' has been used as an umbrella term for a series of different streams throughout this report (refer Section 5.2).

Table 11 Clinical Waste Generation Rates

Use	Soft Biohazard (per week)	Cytotoxic (per week)
Hospital Bed	70 L/bed	10 L/bed
Research	65 L/100m^2	65 L/100m^2
Clinical	70 L/100m^2	10 L/100m^2

Table 12 Clinical Waste Generation Assessment

Use	Quantity / Area	Soft Biohazard (L/week)	Cytotoxic (L/week)
Hospital Bed	239 beds	16,730	2,390
SUBTOTAL – HOSPITAL / CLINICAL		**16,730**	**2,390**
Research	6,771m^2	4,401	4,401
Clinical	4,995m^2	3,497	500
SUBTOTAL - CCCC		**7,898**	**4,901**
GRAND TOTAL		**24,628**	**7,291**

5.2 WASTE SYSTEMS

Clinical waste shall be sorted on-site by users as appropriate into the following streams:

- Soft Biohazard
- Cytotoxic
- Additional Streams, which ***may*** include:
  - Sharps (Needles)
  - Metal Instruments
  - Anatomical
  - Pharmaceutical
  - Laparoscopic Waste

5.2.1 SOFT BIOHAZARD, CYOTOXIC

Each space of the development shall have provision for plastic lined recycling bins for the temporary holding of waste, to have minimum cumulative holding capacities as deemed appropriate by SCH Stage 1 / CCCC management.

Staff / cleaners will clear waste from these temporary holding bins into larger 660L bins (typically stored within the clinical waste stores at basement level 02) in accordance with nominated cleaning procedures. The full clinical waste bins will then be held within the clinical waste stores for collection.

5.2.2 ADDITIONAL STREAMS

Further storage provision for additional clinical streams will be allowed for within each clinical waste store. Additional clinical streams may include:

- Sharps (needles)
- Metal Instruments
- Anatomical Waste
- Pharmaceutical Waste
- Laparoscopic Waste

Additional clinical streams as listed above are often managed through smaller pails / closed containers which may be stacked upon shelving for ease of storage.

The extent of additional clinical waste stream separation will be subject to SCH Stage 1 and CCCC operations.

5.3 EQUIPMENT QUANTITY, SIZE AND COLLECTION FREQUENCY

Table 13 and Table 14 contain information regarding equipment quantity, size and frequency of collection.

For ease of operations and material tracking, the SCH Stage 1 and CCCC facilities will maintain separate clinical waste stores at basement level 02 (total two (2) clinical waste stores). Clinical waste storage will not be shared between uses in any capacity (final solution subject to further design development).

Table 13 Soft Biohazard Waste: Equipment Information and Capacity

Soft Biohazard Waste				
Waste Source	**No. Bins**	**Collections Per Week**	**Weekly Capacity**	**Weekly Volume**
Hospital / Clinical	5 x 660L	(Min) 7	23,100L	16,730L
CCCC	2 x 660L	(Min) 7	9,240L	7,898L
TOTAL	**7 x 660L**	**(Min) 7**	**32,340L**	**24,628L**

Table 14 Cytotoxic Waste: Equipment Information and Capacity

Cytotoxic Waste				
Waste Stream	**No. Bins**	**Collections Per Week**	**Weekly Capacity**	**Weekly Volume**
Hospital / Clinical	2 x 660L	(Min) 7	9,240L	2,390L
CCCC	2 x 660L	(Min) 7	9,240L	4,901L
TOTAL	**4 x 660L**	**(Min) 7**	**18,480L**	**7,291L**

Typical equipment dimensions are provided in Table 15 below. Note that the specifications listed are for reference only and must be confirmed with the nominated supplier prior to any works commencing.

Table 15 Typical Equipment Dimensions

Typical Equipment Dimensions (mm)			
Item	**Width**	**Depth**	**Height**
660L Bin	1240	1070	1330

5.4 WASTE STORAGE AREA & LOCATION

Table 16 demonstrates the cumulative area requirements (excluding circulation) and provision of waste areas.

Table 16 Clinical Waste Storage Area Requirement

Waste Store	Item	Area Required (excl. circulation)	Area Required (incl. circulation)
SCH Stage 1 Clinical Waste Store (Basement 02)	7 x 660L Bins *(Soft Biohazard, Cytotoxic)*	6.86m^2	13.72m^2
	Additional Stream Storage *(Sharps, Anatomical, Pharmaceutical)*	5.00m^2	10.00m^2
CCCC Clinical Waste Store (Basement 02)	4 x 660L Bins *(Soft Biohazard, Cytotoxic)*	3.92m^2	7.84m^2
	Additional Stream Storage *(Sharps, Anatomical, Pharmaceutical)*	2.00m^2	4.00m^2
	TOTAL	**17.78m^2**	**35.56m^2**

5.5 BIN COLOUR AND SUPPLIER

All bins will be provided by private suppliers. The below bin colours are specified by Australian Standard AS3816-1998, however these are only recommendations and are not mandatory:

- Soft Biohazard (clinical) bins shall have yellow lids with yellow body and with the black biological hazard symbol (refer Section 5.6).
- Cytotoxic bins shall have purple lids with purple body and with the white telophase symbol (refer Section 5.6).

Private collection contractors often provide their own bins for collection.

5.6 SIGNAGE

Waste storage areas and bins be clearly marked and signed with the industry standard signage (and corresponding symbols) such as that illustrated in Figure 3 below.

Users will be instructed by building management to adhere to these requirements.

Figure 3 Clinical Waste Signage

5.7 WASTE COLLECTION METHODOLOGY

Clinical waste will be collected by a private collection contractor as outlined in Table 17.

Table 17 Clinical Waste Collection Summary

Waste Stream	Equipment	Collection Frequency	Collection Operator
Soft Biohazard	7 x 660L Bins	(Min) Seven times per week	Private Contractor
Cytotoxic	4 x 660L Bins	(Min) Seven times per week	Private Contractor
Additional Streams	Various (Refer Section 5.2.2)	As Required	Private Contractor

Collections will be undertaken directly from the loading zone at basement level 02. Collection vehicles access the loading zone in a via the basement access ramp, itself accessed via Hospital Road.

Swept path diagrams prepared by ARUP (dated 04/11/2020, drawing numbers SKT001 & SKT007, Issue A) demonstrate sufficient vehicle access is provided for a 12.5m HRV sized vehicle to enter and exit the site in a forward direction – this will accommodate all vehicle types as listed. WSP have assessed these swept paths and consider them sufficient.

Collections will be undertaken directly from the loading bays at basement level 02 via a standard MRV sized vehicle of 8.8m length or smaller. Collection vehicles will prop within the loading bays, with vehicle operators collecting (and returning) equipment directly from the clinical waste rooms. A platform lift will be provided between the clinical waste stores and loading bay level for ease of transfer.

Waste equipment will not be stored outside the title boundary or presented to kerb for collection at any time. Building management will ensure sufficient access is provided for collection vehicle operators during collection times. Typically, operators are provided with keypad/swipe card access to the service doors.

6 CONSTRUCTION AND DEMOLITION WASTE

A detailed Construction and Demolition (C&D) waste strategy will be incorporated into the site's Construction Management Plan (CMP), to be prepared (and submitted to Council) as a separate document by the principal construction contractor prior to the commencement of construction works. As per Randwick Council - Development Control Plan (Part B, Section B6) requirements, the CMP will include detail of:

- The type and estimated volume of waste to be generated during demolition and construction and respective recycling, reuse and disposal methods;
- Location and space allocated for the storage of demolition and construction waste or materials;
- Waste collection point(s) for the site; and
- Path of access for collection vehicles.

Maximised diversion of C&D waste from landfill should be targeted for this development, to be achieved through appropriate material separation practices. The specific re-use, removal or treatment of C&D waste will be undertaken by a third party as appropriate.

The following is provided as a high-level summary of C&D requirements for ease of reference. Information as shown is not intended to form the basis of any construction and/or demolition works, and will be superseded in full by the C&D strategy as nominated in the CMP.

Note that no demolition works are proposed under the subject application, with the subject land parcel having been previously cleared under a separate development application. No demolition waste will be generated by the subject development, and as such the following assessment addresses the construction phase only.

6.1 CONSTRUCTION PHASE

Construction works will generally generate waste through the erection and finishing of the development (i.e. construction waste). A CMP (to be prepared by others) should include a detailed C&D waste strategy in line with the head contractor's program and trades scheduling.

Most waste products generated throughout construction works can be readily recycled or reused, and include steel framing, damaged glazing, cladding and roof sheeting, plasterboard linings, timber features and framing, metals, concrete and rubble. Metal and plastic piping and conduits, cabling and floor finishes such as carpet and tiling should also be recovered.

Accurate materials estimation and ordering, offsite prefabrication of framing modules and fitout components, and monitoring and review of specifications and onsite construction and fitout operations will minimise the potential volume of construction waste to be generated in the first instance.

Wherever possible, construction waste will be stored and sorted on-site, including on-site collection zones for each waste stream. Any waste skips be stored in public places will be done so in accordance with Council policy.

Subcontractors and other site personnel should be educated regarding requirements for recovery of waste. This will assist in maximising recovery of resources from C&D waste on-site, and minimise the cost and environmental impacts of waste being disposed to landfill.

6.1.1 WASTE STREAMS

A detailed waste strategy should form part of the CMP to be provided by the principal construction contractor prior to commencement. As per standard industry practice, a minimum 80% diversion rate from landfill for waste generated from construction activities should be targeted across the subject site.

Aspirational waste stream separation and landfill diversion targets are shown in Table 18 below. Information as shown is provided for discussion only, and should not be used as the basis of any construction works or waste reporting.

Table 18 Construction Waste – Aspirational Stream Separation

Waste Stream	Expected Composition	Typical Receptacle	Note
Bricks	≈ 5% of total volume	Skips	Minimum 80% recovery of these mixed waste streams should be targeted, to be achieved through collection by reuse and recycling waste contractors. This recovery rate should be demonstrated through provision of disposal dockets and periodic summaries from the waste contractor.
Concrete	≈ 65% of total volume		
Tiles	≈ 5% of total volume		
Timber	≈ 5% of total volume		
Plasterboard	≈ 15% of total volume		
Glass	≈ 1% of total volume (breakage only)		
Metal	≈ 5% of total volume		
Carpet	≈ 1% of total volume		
Domestic General Waste	Typical domestic waste generated from trades on site.	Bins	Regular municipal waste streams generated through activities of trades staff on site. Collection provisions through council or approved and licensed private contractor.
Domestic Commingles			
Bulk cardboard/paper waste (equipment packaging)			Store in dedicated bins and collect by paper/card recycling contractor.

A high-level estimate of waste volumes generated throughout proposed construction works is provided in Table 19 below.

Estimates as shown are based on a review of existing site structures and the material cost plan prepared by Atlus Group (nominated Quantity Surveyor), and calculated in accordance with the WALGA document *Construction Waste Management Plan Guidelines* (2014).

Values as shown are provided as estimates only and should not be used as the basis of any C&D works or waste reporting. Detailed material estimates and strategies for on-site material reuse should be provided as part of the CMP.

Table 19 C&D Waste – Generation Estimate

Waste Stream	C&D Waste Generation Estimate*	
	Tonnes (total)	Cubic metres (total)
Demolition Waste	n/a	n/a
Construction Waste	2,238	3,326

** Waste estimates as shown exclude domestic waste (garbage, commingles, cardboard) and excavation waste (soils, green waste).*

7 ADDITIONAL INFORMATION

7.1 STANDARDS & COMPLIANCE

7.1.1 VENTILATION

Ventilation will be provided in accordance with Australian Standard AS1668.

7.1.2 WASHING AND VERMIN PROTECTION

An appropriately drained wash down area will be provided within the loading zone in which each bin is to be washed regularly by building management. Bin washing areas or bin wash bays must discharge to a grease trap.

Alternatively, a third party bin washing service can be engaged to perform this service. Bin washing suppliers must retain all waste water to within their washing apparatus and not impact on the drainage provisions of the site.

7.1.3 NOISE REDUCTION

All waste areas shall meet BCA and AS2107 acoustic requirements as appropriate with operational hours and collection times assigned to minimise acoustic impact on surrounding premises.

7.2 HIGH LEVEL EQUIPMENT SCHEDULE

Table 20 lists the waste equipment required for the development under the conditions proposed within this report.

Table 20 Equipment Supply Schedule

Item	Supplier	Typical Services Requirement(s)**	Quantity / Notes
25m^3 Compactor	Private Supplier	***Power***: 3-Phase, 415V 20A Power per unit	1 No. Garbage 1 No. Paper / Cardboard
Bin Lifters	Private Supplier	***Power***: 240V 10A Power per unit	2 No. Units Fitted to each compactor
660L Bins (Common Waste)	Private Supplier*	nil	6 No. Garbage 4 No. Recycling 3 No. Cardboard
660L Bins (Clinical Waste)	Private Supplier*	nil	6 No. Soft Biohazard 4 No. Cytotoxic
**Private waste collection contractors often supply their own bins for collection.* ***Services requirements are indicative only and must be confirmed with the manufacturer prior to commencement of construction*