PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2021/1251

Date: 16 March 2022

Queensland Government

Operational Waste Management Plan

Proposed Commercial Development

At Maroochydore PDA Private Hospital

On behalf of Essence Project Management Pty. Ltd.

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T: (07) 3327 9500
F: (07) 3327 9501
E: ttmbris@ttmgroup.com.au

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Level 8, 369 Ann Street, Brisbane. PO Box 12015 George Street Brisbane QLD 4003

Executive Summary

This document is an Operational Waste Management Plan (OWMP) developed for a proposed Private Hospital development to be located at Lot J1 and Lot J2, Maroochydore City Centre.

The purpose of the OWMP is to provide compliance and design information relating to the handling, storage, and collection of refuse within the proposed development. Compliance relates to alignment with the Prescribed Waste Infrastructure Standards No. 3 2019 (PWIS No. 3). The content of the OWMP is written with the purpose of providing a guide for the Design, Construction and Operational phases of the development and therefore may be amended through these phases to evolve into the waste management documentation used for the building operation.

The current version of this report is preliminary information only and will require review by all major stakeholders prior to formal submission. A key item for review is the integration of hospitals refuse and acceptable disposal of various materials into the AWCS.

Compliance

The OWMP satisfies Sunshine Coast Council's requirements by providing the following information.

- Type and quantity of refuse materials that would be generated during the occupancy of the proposed development.
- Refuse collection, storage, transfer, and disposal arrangements during occupancy of the completed development, taking into account the council's Prescribed Waste Infrastructure Standards No. 3 2019 (PWIS No. 3).
- integration with Councils Automated Waste Collection System (AWCS)
- Recommended operational requirements for the operational phase of the development, and design requirements for the building and refuse management facilities.

This OWMP also acknowledges that there will be some level Private Non-Pneumatic Waste Infrastructure (PNPWI) and therefore conventional refuse bins and storage areas will be required in addition to the Private Pneumatic Waste Infrastructure (PPWI) and its connection to the AWCS. Overall, the OWMP addresses all aspects of waste management including AWCS loading and refuse vehicle access and loading for non-AWCS refuse.

Development Summary

- The development proposal includes 3 levels of podium parking, restaurant & retail at ground floor, consulting suits and hospital floor area.
- Proposed equipment and bin numbers:
  - PPWI (for disposal of AWCS waste and recycling):
    6 x outdoor-type AWCS inlets placed in the ground floor refuse room for disposal of AWCS waste and recycling items
    4 x Overflow 1100L bins, two each for general waste and recycling.
  - PNPWI (for disposal of Non-AWCS waste and recycling):
    Under-sink macerators in all retail and office tenancies for disposal of organic waste
    20 x 1100L bins are available for the following materials – Paper & Cardboard, Glass, Soft Plastics and Packaging, e-Waste, Kimgaurd, Fluorescent Tubes, Imaging Waste, Office Re-Use (toners etc), Sanitary Waste (Use of 240L bins where required)

    12 x 240L Medical Waste 240L Medical Waste
    8 x Confidential Paper Bins

    Bunded Pallet for separate waste cooking oil collection

  Note: Given the smaller size of the development the use of balers and glass crushers would not provide any cost benefit and would be considered and overdesigned based on the total GFA
- Refuse collection:
  - AWCS waste and recycling:
    Collection via AWCS to central facility for further processing. Waste and recycling will be collected up to 4 times per day each.
  - Non-AWCS waste and recycling:
    Non-AWCS refuse to be collected by private contractors using a medium-rigid vehicle body-truck or rear-lift collection vehicles. The truck will use enclosed loading bay. Bin numbers and collection frequencies are based on maximum collection cycles of twice per week for waste and recycling materials . Medical and Sanitary waste will be collected as required by regulations however 2-3 days od storage has been allocated
- Refuse storage:
  - AWCS waste and recycling:
    AWCS waste and recycling will be placed into the AWCS inlets located in the refuse room and stored there until the collection via the AWCS. AWCS inlets are accompanied by 4 x 1100L bins for overflow Waste and Recycling if the inlets are full at any point during business hours.

- Non-AWCS waste and recycling:
  Bulk cardboard and glass will be stored in bins in the enclosed loading bay until collection by a refuse collection vehicle.

- Refuse transfer:

  Staff and cleaners will transfer all waste and recycling from the various tenancy to the refuse room for disposal in the appropriate bins or into the AWCS inlets. Equipment such as refuse trolleys or wheelie bins can be used to assist with the refuse transfer.

- Refuse disposal:
  - Small back-of-house bins or wheelie bins will be located in the tenancies and public areas for disposal of waste and recycling items.
  - Retail kitchens will include under sink macerators for disposal of all organic / food waste from the ground floor tenancies and offices via the sewerage system. Commercial grade macerators (InSinkErators) for the food and beverage tenancies are required.

The provisions as outlined in this report are considered appropriate for this type of development. It is noted that the refuse rooms are suitably sized to accommodate the waste generated and number of bins proposed based on standard storage and collection methods. The refuse rooms indicated will also accommodate all options for alternate equipment and disposal methods.

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1 Introduction

1.1 Background

TTM Consulting has been engaged by Essence Project Management Pty. Ltd. to prepare an Operational Waste Management Plan to support the proposed development located at Lot J1 and Lot J2, Maroochydore City Centre.

1.2 Scope

This report outlines the waste management processes, equipment and construction requirements for the development and includes information to address design and integration with the Sunshine Coast Council's Automated Waste Collection System (AWCS). The **Prescribed Waste Infrastructure Standards No. 3 2019 (PWIS No. 3)** have been referenced to provide compliant design information for the **Private Pneumatic Waste Infrastructure (PPWI)** and the **Private Non-Pneumatic Waste Infrastructure (PNPWI)** in order to accommodate contingency collections for the AWCS waste fraction as well as collections for the non-AWCS waste fraction.

The content of this plan is intended to provide information in reverse order to the typical movement of refuse streams from disposal to collection. The reverse order provides context for refuse collection, storage and transfer. Information about refuse disposal and disposal points is given for each use area within the development.

The items covered within the report are explained in Table 1.1. They address the points outlined in the PWIS No. 3 2019. The key information for Council approval can be found in Section 2.

Table 1.1: Items Covered in this Report.

Item	Explanation
Refuse streams	Identification of refuse streams and anticipated refuse volumes that will be produced within the development
Refuse separation	Recommendations for appropriate segregation methods for each refuse stream considering AWCS and Non-AWCS refuse
Refuse collections	Assessment of collection via AWCS as well as via refuse collection vehicles (RCV) for non-AWCS refuse
Refuse storage	Detailed analysis of refuse storage facilities and design (refuse rooms, AWCS inlets)
Refuse transfer	Assessment of refuse transfer between refuse storage and collections areas if required
Refuse disposal	Recommendations for refuse disposal within the building into AWCS inlets or other refuse management equipment
Refuse management equipment	Explanation of AWCS system and identification of other recommended and optional refuse management systems and equipment
Refuse management operations	Recommendations for operational efficiency and ongoing management, including refuse minimisation, tenant education and safety, referring to AWCS system where required
Building design	Recommendations for design of refuse management facilities

Detailed information including refuse calculations, site plans and drawings, recommended refuse management equipment and system specifications, common refuse signage as well as a list of terms and abbreviations are provided in the appendix.

The recommendations in this report relate to the operational phase of the development. Additional requirements for refuse management during or after demolition or construction phases are not concluded and require a dedicated plan.

1.3 Regulatory Considerations – Sunshine Coast Council's PWIS No. 3

TTM has referred to council requirements as outlined in the PWIS No. 3 2019. In addition, the Sunshine Coast Council's Automated Waste Collection System Education and Communication Plan (AWCS ECP) June 2018 has been taken into consideration.

Table 1.2 below demonstrates the refuse management items addressed to align with Sunshine Coast Council's requirements. Reference is made to individual sections of this report for details.

Table 1.2: Waste Management Plan Compliance Checklist according to Schedule 7.1 PWIS No. 3

Description	Comment	Compliance
(a) A waste management plan in a form specified by the Waste Infrastructure Authority is to be included in the detailed design and specification documentation for the Prescribed Waste Infrastructure.		✓
(b) A waste management plan for Prescribed Waste Infrastructure is to contain information which is to include the following:		✓
(i) the proposed or actual uses of the Serviced Premises including: A. a description of any environmentally relevant activity (as defined by Schedule 1 of the Environmental Protection Regulation 2008); B. the estimated floor area occupied by each defined use specified in Table SC7.1 of the Infrastructure Agreement; C. for a non-residential use, the details of the estimated floor area occupied by each tenancy for each development type and defined use specified in Table SC7.1 of the Infrastructure Agreement;	A. to be discussed B. see Appendix A for floor areas relevant to refuse generation. C. see Appendix B for detailed floor planes. .	✓
(ii) the types of waste likely to be generated in the Serviced Premises;	Refer to Section 1.5 for a summary of refuse generated. Refer to Appendix A for detailed refuse calculations considering all types of refuse generated by the development.	✓
(iii) the estimated quantity of waste likely to be generated in the Serviced Premises for each AWCS Waste Fraction and Non AWCS Waste Fraction;	Refer to Section 1.5 for a summary of refuse generated. Refer to Appendix A for detailed refuse calculations and split into AWCS and non-AWCS waste.	✓
(iv) the methods for the collection and disposal of waste to be generated in the Serviced Premises including the proposed	Refer to Section 2 for refuse storage, collection and disposal methods.	✓

	collection service hours (i.e. between the hours of 7:00am and 7:00pm);	Refer to Section 4 for detailed design recommendations.	
(v)	initiatives that will be implemented to: A. minimise waste by reducing, reusing or recycling waste; and B. segregate and separate waste into each of the AWCS Waste Fractions;	Refer to Section 3 for refuse minimisation options. Refer to Section 4 for AWCS Waste Fractions.	
(vi)	a strategy for the compliant use of the Private Pneumatic Waste Infrastructure incorporating the following: A. communication strategy; B. signage; C. placement of AWCS Collection Points;	Refer to Section 2 for AWCS Collection Points. Refer to Section 3 for signage and communication.	
(vii)	details on how the Non AWCS Waste, other than Organic Waste, will be processed, handled, stored and presented for collection including the proposed location of any associated processing equipment and a description of the type of Non AWCS Waste Receptacles proposed to store the Non AWCS Waste;	Refer to Section 2 for refuse storage, collection and disposal methods. Refer to Section 3 for an equipment summary. Refer to Section 4 for detailed design recommendations.	
(viii)	the methods and processes for transferring Non AWCS Waste, other than Organic Waste, from in the Serviced Premises to the Waste Storage Area;	Refer to Section 2 for refuse disposal from the individual parts of the development.	
(ix)	details of the spaces and infrastructure allocated for processing, handling, storage and collection activities and demonstration that they are adequate to meet the Amenity and Character Criteria;	Refer to Section 2 for refuse storage, collection and disposal methods. Refer to Section 4 for detailed design recommendations.	
(x)	details of the proposed Non AWCS Waste Service Point, including the range of collection vehicles that are to be accommodated;	Refer to Section 2 for RCV access.	
(xi)	details of the proposed access arrangement to the Non AWCS Waste Service Point for collection vehicles to remove the Non AWCS Waste;	Refer to Section 2 for RCV access	
(xii)	details which demonstrate that the proposed service method, processes, and frequency of collection meet the Amenity and Character Criteria;	Refer to Section 2 for refuse storage and collections.	
(xiii)	a description of the design details of the Waste Storage Area, including the method of preventing stormwater contamination;	Refer to Section 2 for refuse storage details.	
(xiv)	the location and details of the Waste Storage Area.	Refer to Section 2 for refuse storage details.	

1.4 Site Location

The subject site is located within Lot J1 and Lot J2, Maroochydore City Centre, as shown in

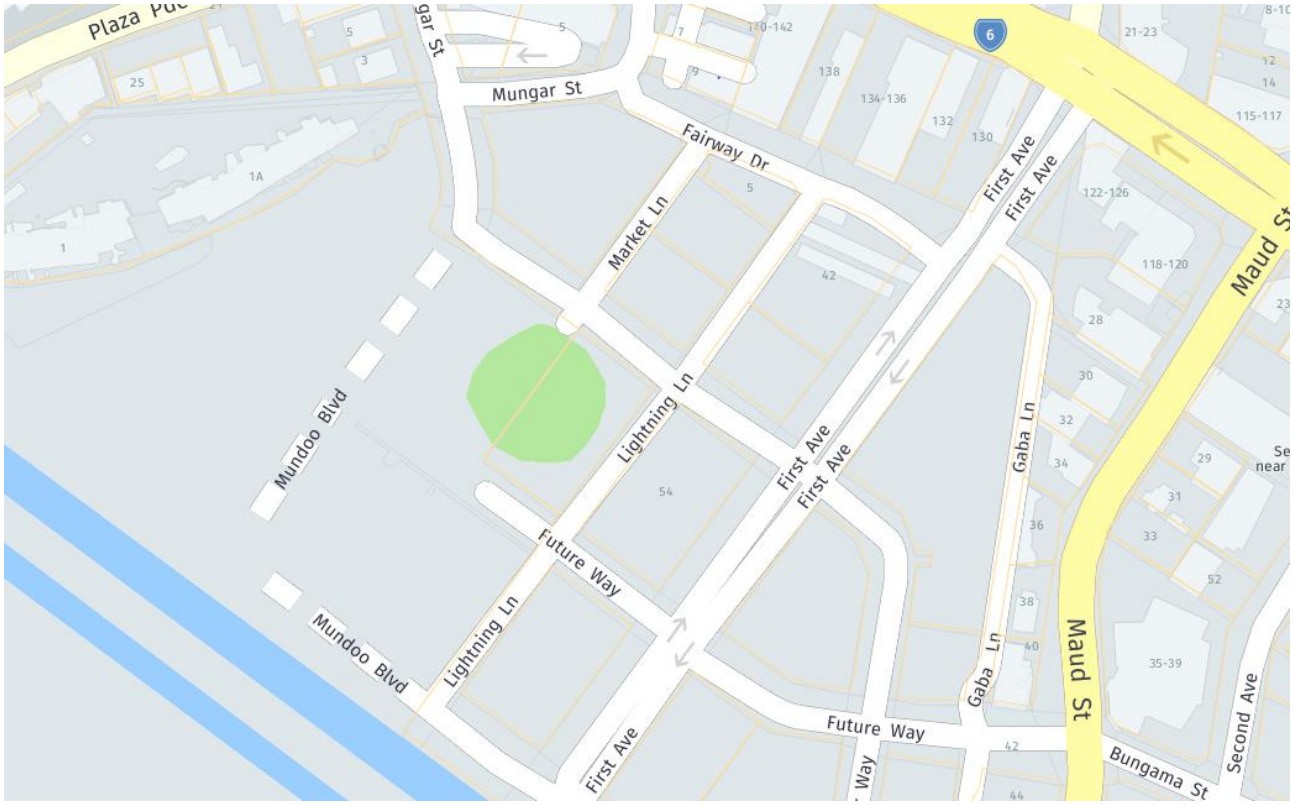


Figure 1.1 and Figure 1.2.

Connection points of the premises to the public AWCS network (for collection of AWCS waste) are towards the South-West. RCV access to the on-site enclosed loading bay (for collection of non-AWSC waste) will be via Mundo Boulevard. Details about RCV access and AWCS connection can be found in Section 2 and Appendix B.

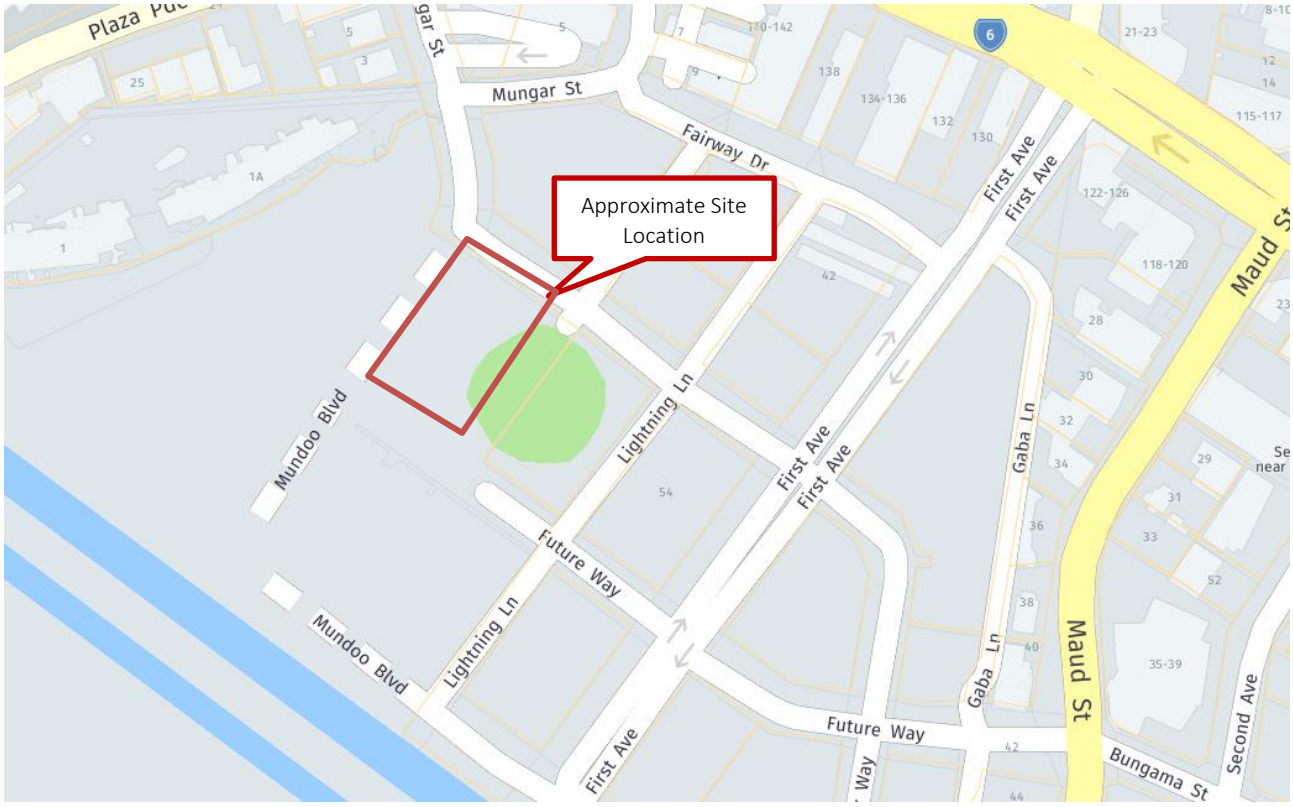


Figure 1.1: Site Location (Nearmap View)

Figure 1.2: Site Location (Satellite View)

1.5 Development Summary

Table 1.3 provides a summary of the development, including the refuse infrastructure areas as context for the volume information provided in Section 1.6. Details of the use of each level can be found in detailed refuse calculations section in Appendix A.

Table 1.3: Development Summary

Description	Measure	Quantity
Tenancy G.01 Coffee Shop	GFA (m^2)	70
Tenancy G.02 Restaurant	GFA (m^2)	310
Tenancy G.03 Pathology	GFA (m^2)	47
Tenancy G.04 General Retail	GFA (m^2)	79
Tenancy G.05 General Retail	GFA (m^2)	74
Tenancy G.06 Imaging	GFA (m^2)	540
Tenancy G.07 General Retail	GFA (m^2)	202
Tenancy 4.01 Unallocated Office	GFA (m^2)	210
Tenancy 4.02 USC Clinical Trails	GFA (m^2)	702
Tenant 4.03 USC Prosthetic and Orthotics	GFA (m^2)	550
Tenant 4.04 USC Cadaver Lab	GFA (m^2)	150
Tenancy 4.05 Unallocated Office	GFA (m^2)	84
Tenancy 5.01 Frank - Health Insurance	GFA (m^2)	350
Tenancy 5.02 Neurosurgery	GFA (m^2)	125
Tenancy 5.03 Sports and Spinal	GFA (m^2)	450
Tenancy 5.04 Medacta - Orthopedic	GFA (m^2)	500
Tenancy 5.05 Unallocated Office	GFA (m^2)	92
Tenancy 5.06 Unallocated Office	GFA (m^2)	87
Tenancy 5.07 Unallocated Office	GFA (m^2)	104
Tenancy 6.01 to 6.11 - Consultant Suites	GFA (m^2)	1677
Tenancy 7.01 - Hospital	GFA (m^2)	2080
Tenancy 8.01 - Hospital	GFA (m^2)	2080
Total		**10563**

* Approximate areas relevant for refuse calculations only.

1.6 Development Refuse Profile

Table 1.4 to Table 1.5 demonstrate the anticipated volumes for each of the commonly separated refuse streams. All calculations and equipment requirements are based on the development schedules and common waste generation rates as outlined in the detailed information in Appendix A.

Tenancy 7.01 and 8.01 are currently excluded from the AWCS volumes due to potential for contamination. All other tenancies are included as a minimum volume for office related refuse streams with the exception of the Cadaver Lab.

Table 1.4: AWCS Refuse Summary

Level	Description	Measure	Quantity	General Waste (L / Day)	Commingled Recycling (L / Day)
Total		NLA (m^2)	10563	2327	395

Non AWCS is currently shown as standard refuse volumes – Equipment and volumes for other hospital waste streams are to be reviewed and included

Table 1.5: Non-AWCS Refuse Summary

Level	Description	Measure	Quantity	Food Waste (L / Day)	Glass (L / Day)	Cardboard (L / Day)
Total		NLA (m^2)	4519	985	135	1205

2 Refuse Management

This section describes the arrangements for the collection, storage, transfer and disposal of refuse within the development. This includes associated bin quantities, storage capacities, equipment details, collection frequencies, integration with the AWCS as well as RCV site access and manoeuvring. Recommended operational and design requirements for the AWCS and the associated the PPWI and PNPWI are given in Sections 3 and 4. All refuse generated by this development is commercial refuse. There is no residential component.

2.1 Refuse Collections

The following subsections provide details about refuse collections for the development. In general, refuse from this building will be collected in two ways:

1. Collection via the AWCS for waste and recycling items that are suitable for disposal via the PPWI (AWCS waste and recycling, refer to Section 2.4).
2. Conventional refuse collections by a private contractor using a 8.8m medium rigid vehicle (MRV) body truck (see Appendix B.3) for refuse that is unsuitable for disposal via the PNPWI (non-AWCS waste and recycling – see items listed in Section 2.4).

2.1.1 AWCS and Non-AWCS Refuse Volumes

As waste volumes may vary according to the development occupants' attitudes to waste disposal and recycling, bin numbers and sizes may need to be altered to suit the building operation. Other Non AWCS Hospital refuse is to be reviewed and included.

Table 2.1 below outlines the AWCS and Non-AWCS volumes. AWCS volumes are indicated as a reference. Bin collections will not be required for waste and recycling items that are disposed via the PPWI and collected via the AWCS. As waste volumes may vary according to the development occupants' attitudes to waste disposal and recycling, bin numbers and sizes may need to be altered to suit the building operation. Other Non AWCS Hospital refuse is to be reviewed and included.

Table 2.1: AWCS and Non-AWCS Refuse Volumes

Component	Refuse Stream	Classification	Volumes
Commercial Collections	General Waste	AWCS Waste	2327L per Day *
	Commingled Recycling	AWCS Recycling	395L per Day *
	Organic / Food Waste	Non-AWCS Waste	985L per Day **
	(Bulky) Cardboard	Non-AWCS Recycling	4302L per Collection (1205L per Day) ***
	Glass		483L per Collection (135 per Day) ***
	Container Refund Scheme		TBD

* Volumes split for four AWCS collections per day.

** Food waste system: commercial grade InSinkErator (or commercial under-sink macerator / food waste grinder) in food and beverage tenancies; household InSinkErator (household-type under-sink macerator) in office tenancies / panties
*** Collection via 8.8m MRV body truck

2.1.2 AWCS and Non-AWCS Refuse Collection Cycles

AWCS Waste and Recycling

AWCS waste and recycling will be collected a maximum of **four times per day each** (two AM collections and two PM collections). Sufficient storage capacity must be provided within the PPWI inlet system (Private Network (PN-) Connection) to store the required amount of waste and recycling. **One (1) commercial-style inlets for waste** and **one (1) for recycling** are proposed as shown in Appendix B.2.

Non-AWCS Waste and Recycling

All non-AWCS waste and recycling (refer to Section 2.4) will be collected by agreed collection providers. The building manager / caretaker will finalise collection arrangements and schedules with all collection contractors to guarantee smooth operations. Non-AWCS collection will not occur outside of the nominated collection service hours (between the hours of 7:00am and 7:00pm) as per Schedule 7.1 of the PWIS No. 3.

- Organics / food waste: All organic / food waste will be collected via the **sewerage system** as specified in the PWIS No. 3 Schedule 6.4 and the AWCS ECP June 2018, section 3.5. The following is recommended:
  - Commercial-grade under-sink food waste macerators for food and beverage outlets; as an example, the "InSinkErator" SS200 or higher is recommended (see Appendix C.2 for details).
  - Household-type under-sink food waste macerators for non-food and beverage tenancies (e.g. office panties); as an example, the "InSinkErator" Model 46 or higher is recommended (see Appendix C.2 for details).
- Cardboard / paper and glass: Non-AWCS recycling items include (bulky) cardboard and glass. Services will be completed **twice weekly** subject to operational volumes. Refuse bin quantities and required storage space have been calculated based on the maximum expected volumes generated by the development.
- Medical and Sanitary Waste may be collected as required according to regulations governing the diposal of these materials – allowance has ben made for 2-3 storage of material
- Containers eligible under the container deposit / refund scheme: Referring to Schedule 7.1 (b) (v) (A) of the PWIS No. 3, containers that are eligible for a refund under the container deposit / refund scheme will need to be collected separate from the AWCS recycling stream. They can be brought off-site by a building manager or the individual tenants **as frequently as required**. Details about the container deposit / refund scheme can be found in Appendix C.4.

2.1.3 RCV Access and Manoeuvring for Non-AWCS Refuse

The RCV access and subsequent collection requirements have been identified for all Non-AWCS materials as detailed in Section 2.4. RCV access is in accordance with Schedule 6.10 of the PWIS No. 3. A redundancy option for the AWCS waste and recycling (e.g. in case of AWCS outages) is not required.

The site will include service vehicle access via the loading bay coming from Mundoo Blvd. On the days of service, the RCV will reverse into the site / loading bay and exit in a forward gear after servicing. The vehicle operator will collect all refuse (bins) directly from the refuse room, load the full bins onto the RCV and replace the full bins with empty ones in refuse room (bin swap-over). Conventional refuse collections by a side-, rear- or front loading RCV are to be avoided as per Schedule 6.10 of the PWIS No. 3 with the exception of cardboard which is being collected by councils rear loading RCV. Every non-AWCS refuse stream will be collected by a separate vehicle, i.e. (bulky) cardboard / paper and glass.

It is noted that the design vehicle is used for the purpose of demonstrating the **maximum sized vehicle** that may be used to enter and exit the site. Refuse collection contractors will complete a full risk assessment prior commencing collection and nominate a compliant vehicle to complete the service. Referring to Schedule 6.10 (a) of the PWIS No. 3, it is recommended that a mirror and light is installed for manoeuvring in and out of the loading bay and while the loading bay is in operation (to be covered by traffic engineers).

Details about RVC site access and manoeuvring including swept paths drawings are provided in Appendix B.3.

2.2 Refuse Storage

All refuse will be stored in the refuse storage room located on the ground level adjacent to the loading bay. Allowance for temporary storage between AWCS collections has been considered. The location and layout of the refuse room and PPWI are indicated in Appendix B.1 and B.3.

The installation of an RFID system for the waste and recycling inlets and a swipe card to the refuse storage area is required. The RFID technology can support the measurement and analysis by fraction and by individual user. The swipe card access to the refuse storage area will not be required to be integrated into the ACWS system.

AWCS Waste and Recycling

The PPWI for refuse disposal will be located in / accessible via the refuse room with trench to house connection equipment to the AWCS (PN Connection). Inlets for commercial use are proposed to be installed in the refuse room for integration with the AWCS.

Based on the expected refuse generated (see Table 2.1 and Appendix A.2) and a maximum of four AWCS collections per day each for waste and recycling, the following storage PN Connection storage capacities are recommended:

- AWCS waste: 4 x 200L
- AWCS recycling: 2 x 200L (2 x Inlets as a minimum Requirement)
- 4 x 1100L wheelie bins (two for each for waste and recycling) are included in the PPWI waste room to account for temporary storage (overflow) if the AWCS inlets are full at any point between collections. The content of the bins will be emptied regularly into the respective AWCS inlets when there is spare capacity in the storage tanks, e.g. during off-peak times. This can be done by staff / cleaners who collect the refuse from the different levels and bring it to the refuse room, or by the building manager.

Non-AWCS Waste and Recycling

Non-AWCS waste (refer to Section 2.4) will be stored in conventional bins 240L to 1100L in size. The refuse area as shown in Appendix B is located within the enclosed loading bay and is accessible for an RCV to do bin swap-overs as specified in Section 2.1.3.

- Organics / food waste: no storage required; disposal via sewage system using under-sink macerators.
- (Bulky) carboard / paper: 6 x 1100L bin.
- Glass: 2x 1100L bins.
- Waste Cooking Oil: A bunded pallet for waste oil containers should be included the refuse storage area though council may allow for waste oil to be disposed via the macerators.
- 12 x 1100L bins are currently available for various other hospital recycling and waste materials that cannot be placed in the AWCS. The total capacity of these bins is 26,400L per week
- Containers eligible under the container deposit / refund scheme: Depending on how the development will be operated, it can be considered to provide storage space for the collection of containers that are eligible for a refund under container deposit / refund scheme. Space can be provided in the individual tenancies with the tenants or their staff / cleaners being responsible for taking the containers to a refund point. Alternatively, the containers may be collected in a common container / bin in the refuse room, or collected in an on-site deposit point if available.

Refer to Appendix C.4 for details for refuse minimisation options and equipment.

2.3 Refuse Transfer

AWCS Waste and Recycling

Refuse disposed via the AWCS will be transferred multiple times per day through vacuum pipes to a central collection point for further processing.

Non-AWCS Waste and Recycling

Non-AWCS waste (refer Section 2.4 below) is stored in conventional bins or equipment until pick-up by the refuse collection contractor(s) (cardboard / paper and glass), or is disposed via the sewage system (organics / food waste). As the refuse are is located next to the loading bay where the RCVs park for refuse collections, bin transfer equipment such as a bin tug is not required.

Containers eligible under the container deposit / refund scheme will need to be transported off-site by the tenants or their staff / cleaners, or by the building manager.

2.4 Refuse Disposal

This section summarises the requirements for the disposal of AWCS and non-AWCS refuse for each area use within the development. ***The tables included in this section will be updated to reflect all refuse streams produced by the hospital and processes for handling those waste and Recycling streams***

AWCS Disposal

Waste and recycling suitable for dispoasl via the AWCS as discribed in Schedule 1 of the PWIS No. 3 will be disposed using inlets located in the refuse room. Bags should be small enough to fit into a commercial inlet opening of approx. 42 x 58cm.

Non-AWCS Disposal (AWCS Exclusion Items)

Refuse is generally disposed by staff or cleaners who bring refuse from the individual tenancies and levels down to the refuse room for disposal into the AWCS using the inlets provided. However, not all types of refuse are appropriate to be disposed into the AWCS system as described in Schedule 1 and 2 of the PWIS No. 3. These items include, but are not limited to

- Bulk cardboard (>300mm in any dimension, of >10kg / week)
- Bulk glass (10% or more total waste weight or volume)
- Other bulk waste (>300mm in any dimension)
- Organic waste (e.g. food scraps, waste cooking oil)
- Regulated waste (e.g. chemicals, hazardous waste)

These materials will be disposed into bins ranging from 60L to 1100L (see Appendix C.1 for examples) located in the refuse room, washed into the sewage system (food waste) or disposed in a different way as listed in the tables below.

2.4.1 Food and Beverage Outlets / Restaurants (Ground Floor)

Table 2.2: Food and Beverage Outlets Disposal

Frequently Generated Refuse Streams – Food and Beverage Outlets	
Refuse Stream	**Disposal Details**
WASTE	
AWCS WASTE	
General Waste (AWCS) as per PWIS No. 3 Schedules 1 & 2	**Disposal** AWCS waste from the ground floor food and beverage tenancies will be captured by bins typically ranging in size from 30 L to 60 L that will be placed within the kitchen or back-of-house area to meet the design or layout criteria of the cafe or restaurant operators. All waste bins should be lined with bags and the bags tied before removal. **Transfer** After each service or between peak operating periods, waste will be transferred by staff or cleaners to the refuse room and placed / decanted into the AWCS inlet(s). Carts or trolleys may be used for transfer if required, e.g. to transport multiple bags or types of refuse at the same time.
Non-AWCS Waste	
Organic (Food) Waste	Separating organic or food waste from general waste is required under the PWIS No. 3. **Disposal** Food waste separation can occur under one of the following scenarios: 1. Caddy bins in kitchen or back-of-house areas, transferred and decanted into the under-sink macerator ("InSinkErator"). 2. Scraping of organics / food waste directly onto the under-sink macerator ("InSinkErator") located in a commercial kitchen. **Transfer** 1. Caddy bins may be transferred to a machine on the same level. 2. Organics / food waste will then be transferred off-site via the sewage system, e.g. for treatment and usage in a waste-to-energy plant (see AWCS ECP)
Waste Cooking Oil	Waste oils can be disposed separately from general waste if large quantities are produced. **Disposal** All waste liquids / oils (e.g. from commercial kitchens) should be separated and stored in clearly labelled containers. Bunded areas or bunded plastic pallets should be supplied for the storage of liquid waste / oils and stored in a levelled area. Bunded pallets can be stored indoors or purpose built for outdoors. They should be routinely inspected to ensure maintenance of their integrity. Each pallet should be capable of storing of at least one-third of its contents if there is a leak. **Transfer** Typically, waste oils are removed during delivery of new oils by the supplying contractor.
RECYCLING	
AWCS Recycling	
Comingled Recycling as per PWIS No. 3 Schedules 1 & 2	**Disposal** Recycling from the ground floor food and beverage tenancies will be captured by bins that will be placed within the kitchen or back-of-house area to meet the design or layout criteria of the operators. Smaller bin sizes are preferred as they allow easy decanting of the material into the AWCS inlet. **Transfer** After each service or between peak operating periods, recycling materials will be transferred by staff to the refuse room and placed into the AWCS inlet. Carts or trolleys may be used for transfer if required, e.g. to transport multiple bags or types of refuse at the same time. Items for recycling must not be bagged and disposed in loose form.

Frequently Generated Refuse Streams – Food and Beverage Outlets	
Refuse Stream	**Disposal Details**
Non-AWCS Recycling	
Bulky Cardboard	Bulky cardboard has to be disposed separately from AWCS recycling as it is too large to the AWCS pipe system. **Disposal** Where possible, large cardboard boxes and plastic film or packaging should be removed from the refuse stream prior to going into the building or individual tenancies. This involves decanting at the loading bay and providing trolleys or stackable containers for use in transporting the decanted goods to each level. Where this material does make it into the building or to each a level, a bin, trolley or mobile container should be placed for disposal. Cardboard and packaging should not be placed on floors in refuse the room. (Bulk) bins of 1100L or more are recommended. Carboard baling equipment is optional. **Transfer** When already placed in a bin or trolley, this material is easily transferred to the refuse rooms and decanted into the appropriate bin or baling equipment. For operational efficiency, consideration can be given to placing fixed bins within the building or on each level, and staff / cleaners circulating with a mobile bin or trolley to each level decant the fixed bins before returning to the refuse room to dispose of the material.
Glass	Glass has to be disposed separately from AWCS recycling. **Disposal** Glass (bottles) are usually disposed into mall 60-140L bins due to the weight of glass. As larger quantities of glass are expected, e.g. from the food and beverage outlets, glass crushers should be considered. These reduce the storage volume of glass by more than 75%. A glass crusher should be placed in the refuse room. Space would be required for the crusher itself as well as bins of sufficient size for changeover during operating hours. **Transfer** Cleaners/ staff will be responsible for transfer of glass waste to the refuse room. Due to the weight of the crushed glass, the material should either be transferred as a single small bin or the individual bins can be placed on a larger trolley for transport to the refuse room. Exchange bins have to be included within the configurations for the refuse rooms.

Table 2.3: Food and Beverage Outlets Miscellaneous Disposal

Infrequently Generated Refuse Streams – Food and Beverage Outlets	
Refuse Stream	**Disposal Details**
Non-AWCS Waste	
Green Waste	Green waste is not typically produced from a commercial building of this type other than from surrounding landscaped areas or potted plants. Green waste is usually removed by the designated maintenance contractor. The contractor engaged for this work will be required to send this material to a composting or resource recovery facility rather than to a landfill if locally available.
Bulky Waste	Hard waste may be stored temporarily in the refuse room. Alternatively, collections can be coordinated, and hard waste / bulky goods moved to the loading area or kerbside for removal prior to collection. When storing bulky goods in a loading dock, it is recommended that items are placed on a pallet for easy loading via pallet a jack or forklift onto the collecting vehicle.
Regulated waste (e.g. chemicals, hazardous waste) Electronic Waste	Where applicable, occupants usually make their own arrangements for the disposal of specialised or hazardous waste and electronic waste such as recycling of toner cartridges and batteries. Please refer to local council and state government websites for disposal options. It is an expectation that the building mangers assist with disposal of hazardous, electronic or liquid waste and any paint or chemicals as required and requested. Hazardous waste must be

Infrequently Generated Refuse Streams – Food and Beverage Outlets	
Refuse Stream	**Disposal Details**
	handled with due care, separated and securely stored for collection by a specialist waste contractor. Please refer to local council and state government websites for further information.

2.4.2 Commercial Offices (Levels 1-5)

Table 2.4: Commercial Offices Disposal

Frequently Generated Refuse Streams – Commercial Offices	
Refuse Stream	**Disposal Details**
WASTE	
AWCS WASTE	
General Waste (AWCS) as per PWIS No. 3 Schedules 1 & 2	**Disposal** Office waste typically includes food waste in pantry / kitchen areas, general non-recyclable material from office activities as well as infrequent wastes such as bulky items, hazardous waste (e.g. printer cartridges) and electronic waste (e.g. computers and screens) (see respective sections for disposal of infrequent wastes). Bins are typically placed near or under the workers' desks or work stations. All waste bins should be lined with plastic bags. Bags should be tied before removal. An equivalently sized recycling bin should also be provided. **Transfer** Waste is collected by staff / cleaners who circulate the office using movable bins or trolleys (typically once a day after office hours). The material is then transferred to the refuse room for final disposal into the AWCS inlet(s). **Lifts** If possible, a goods lift or isolated general lift should be used. It is recommended that a removable rubber mat be used in these lifts for easy removal and cleaning. Lifts should be sprayed and cleaned regularly after transferring waste containers or trolleys.
Non-AWCS Waste	
Organic (Food) Waste	Separating organic or food waste from general waste is required under PWIS No. 3. **Under-sink macerators** will be installed, e.g. in office panties where food waste in generated.
RECYCLING	
AWCS Recycling	
Comingled Recycling as per PWIS No. 3 Schedules 1 & 2	**Disposal** Recycling from offices largely consists of clean paper (and cardboard). In addition, commingled recycling may originate from panties and meeting / conference rooms where food is consumed. Recycling items should be captured in smaller size bin that allow easy decanting of the material into the AWCS inlet. **Transfer** Recycling is collected by staff / cleaners and placed in movable bins or trolleys (typically once a day after office hours). The material is then transferred to the refuse room for final disposal into (the AWCS inlet. Items for recycling must not be bagged and disposed in loose form. **Lifts** If possible, a goods lift or isolated general lift should be used. It is recommended that a removable rubber mat be used in these lifts for easy removal and cleaning. Lifts should be sprayed and cleaned regularly after transferring waste containers or trolleys.
Non-AWCS Recycling	

Frequently Generated Refuse Streams – Commercial Offices	
Refuse Stream	**Disposal Details**
Bulky Cardboard	Bulky cardboard has to be disposed separately from AWCS recycling as it is too large to the AWCS pipe system. **Disposal** Where possible, large cardboard boxes and plastic film or packaging should be removed from the refuse stream prior to going into the building or individual tenancies. This involves decanting at the loading bay and providing trolleys or stackable containers for use in transporting the decanted goods to each level. Where this material does make it into the building or to each a level, a bin, trolley or mobile container should be placed for disposal. Cardboard and packaging should not be placed on floors in the refuse room. (Bulk) bins of 1000L or more are recommended. Carboard baling equipment is optional. **Transfer** When already placed in a bin or trolley, this material is easily transferred to the refuse rooms and decanted into the appropriate bin or baling equipment. For operational efficiency, consideration can be given to placing fixed bins within the building or on each level, and staff / cleaners circulating with a mobile bin or trolley to each level decant the fixed bins before returning to the refuse room to dispose of the material.
Glass	Glass has to be disposed separately from AWCS recycling. **Disposal** Glass (bottles) are usually disposed into mall 60-140L bins due to the weight of glass. Large quantities of glass are not expected from offices. However, glass crushers should be considered (see Table 2.2). **Transfer** Cleaners/ staff will be responsible for transfer of glass waste to the refuse room. Due to the weight of the glass, the material should either be transferred as a single small bin or the individual bins can be placed on a larger trolley for transport to the refuse room. Exchange bins have to be included within the configurations for the refuse rooms.

Table 2.5: Commercial Offices Miscellaneous Disposal

See Table 2.3.

3 Recommended Operational Requirements

3.1 Operational Equipment Summary

Equipment required or suitable for use as part of the operational phase of the development is outlined in Table 3.1. Lists of equipment, equipment suppliers and refuse management service providers for use during the operational phase of the development can be found in Appendix C.

Table 3.1: Equipment Schedule

Component	Description	Quantity	Notes
Commercial Refuse	PPWI / AWCS Loading and Inlet Stations (for Waste and Recycling)	6	Capacities: Waste: 4 x 200L and Recycling: 2 x 200L See Appendix B.2
	AWCS Inlet Integration System	1	See Appendix B.2
	Organics / Food Waste Under-Sink Macerators	1+ per Tenancy	Commercial-grade "InSinkErator" for food & beverage outlets' Household "InSinkErator" for office tenancies
	Recycling Bins • (Bulky) Cardboard • Glass	 6 2	 1100L bin 1100L bin
	Glass Crusher	1	Optional based on minimal volumes
	Bunded Pallet	1	½ size – Subject to disposal via macerator
	Cardboard Baler	1	Optional based on volumes
	Medical Waste	12	240L
	Confidential Paper	8	240L
Note	All other refuse materials to be included post review	12	1100L Bins

3.2 On-going Management

Responsibilities have to be assigned for all on-going refuse management operations. This is generally done by a building manager, staff and / or cleaners. The following lists (Table 3.2 to Table 3.8) are designed to help managing responsibilities and monitor the refuse operations in order to maintain efficient services and a safe environment.

Table 3.2: General Refuse Management Checklist

Objectives	Checked	Remarks
Organising and monitoring daily AWCS operations.		
Organising of weekly pick-ups for all non-AWCS refuse streams.		Liaise with private contractors and Council as required.
Managing daily bin transfers between refuse storage / collection areas if required.		
Check bin fill levels and rotate / swap bins as required, e.g. under chutes.		

3.2.1 Safety

The PPWI and PNPWI have to be safe for according to Schedules 10.6 and 11.4 of the PWIS No. 3. Transferring refuse bins and using refuse management equipment including the AWCS are considered hazardous tasks. Therefore, contractors must ensure that a full risk assessment of equipment, surfaces and related gradients is complete. The contractor must provide procedural documentation to appropriate personnel prior to delivery of equipment and occupancy of the development.

Table 3.3: General Safety Checklist

Objectives	Checked	Remarks
Abiding by all relevant occupational health and safety legislation, regulations and guidelines to ensure site safety for residents, visitors, staff and contractors.		
Assessment of any manual handling risks and preparation of a manual handling control plan for waste and bin transfers.		
Provision of equipment manuals, training, health and safety procedures, risk assessments and personal protective equipment to staff / contractors in order to control hazards associated with all waste management activities.		

3.2.2 Signage

All receptacles, bins and other refuse management equipment will have adequate signage. Signage will be provided in and around waste collection and storage areas as per AWCS ECP, section 6 as well as **Schedules 10.5 and 11.3 of the PWIS No. 3**. Example signage can be found in Appendix D.

Table 3.4: General Signage Checklist

Objectives	Checked	Remarks
Ensuring compliance of signage with government local council regulations.		Use signage provided by Council's if available, e.g. in accordance with AWCS ECP, section 6 (signage for commercial users).
Ensuring that labelling on bins, refuse room etc. is appropriate and clear and easy to read and updated if required.		

3.2.3 Cleaning and Maintenance

Cleaning and maintenance need to be in accordance with the guidelines for the AWCS as specified in **Schedules 12 to 15 of the PWIS No. 3**, and should be carried out by qualified staff or contractors. Regular cleaning and maintenance of all refuse management facilities is important to maintain a safe and hygienic environment for residents, visitors, staff and contractors.

Table 3.5: General Cleaning and Maintenance Checklist

Objectives	Checked	Remarks
Cleaning and maintenance of PPWI as per specifications.		Frequency depends on refuse generation and building operation.
General cleaning of all refuse holding and transfer areas including • Refuse rooms and storage areas • Refuse bins • Refuse transfer areas including lifts and staircases • Any other refuse management equipment		Frequency depends on refuse generation and building operation.
Coordination of specialised cleaning contractors as required.		
Maintenance and servicing of refuse management equipment as per schedule.		Frequency depends on equipment and building operation.
Coordination of specialised equipment contractors as required.		

3.2.4 Refuse Minimisation

Refuse minimisation is an important part of any site operation. At a minimum, the following should be implemented. Additional refuse minimisation options can be found in Appendix C.

Refuse minimisation requires regular reviewing to ensure operational sustainability of refuse volumes, equipment and economic feasibility. It is recommended that refuse weights and movements are noted and reviewed. An external review is usually conducted 12 to 18 months after the implementation of the plan.

Table 3.6: General Refuse Minimisation Checklist

Objectives	Checked	Remarks
Regular review of material quantities to avoid over-ordering.		
Consideration of secondary and recycled materials where possible.		
Encouraging refuse minimisation through education and signage (see below).		
Reduce refuse through continuous monitoring and review (see below).		

3.2.5 Education and Communication

According to **Schedules 10.7 and 11.5 of the PWIS No. 3**, education material of how to use the PPWI and PNPWI is to be given to the users of the AWCS. On-going education is important to ensure people continue to use the facilities as originally intended. All leasing contracts should contain clauses pertaining to waste management arrangements and use of any associated equipment. Reference should be made to the current version of the AWCS ECP.

Table 3.7: General Education and Communication Checklist

Objectives	Checked	Remarks
Education of tenants about how to use the AWCS in accordance with the current version of the AWCS ECP.		E.g. separation of waste streams, AWCS vs. non-AWCS waste
Communication of specific refuse management arrangements as required to all residents, staff and contractors.		
Consideration of promotional opportunities for any successes e.g. awards programs.		

3.2.6 Monitoring and Review

Regular monitoring and inspections of waste and related equipment and facilities from the development should be conducted by building management or designated staff for maintenance and sustainability.

Table 3.8: General Monitoring and Review Checklist

Objectives	Checked	Remarks
Continual monitoring of equipment uses and scheduling to ensure best operational outcomes.		
Regular review of refuse management equipment and facilities such as bin volumes, refuse storage capacities and stormwater management arrangements.		

4 Recommended Design Requirements

This section lists recommended design requirements for the building including AWCS and Non-AWCS refuse management facilities. They should be considered for optimal refuse management within the development, and to comply with relevant regulations and Council requirements.

The following recommendations reflect the provision of preliminary design information as required under Schedule 3 of the Sunshine Coast Council's Prescribed Waste Infrastructure Standards No. 3 2019. **The report can be amended during the detailed design coordination stage to include relevant information and outcomes as required.**

4.1 AWCS System and Integration

4.1.1 Private Pneumatic Waste Infrastructure

Figure 4.1 contains an overview of the layout of the refuse room including the 2 proposed AWCS inlets (two for waste and one for recycling).

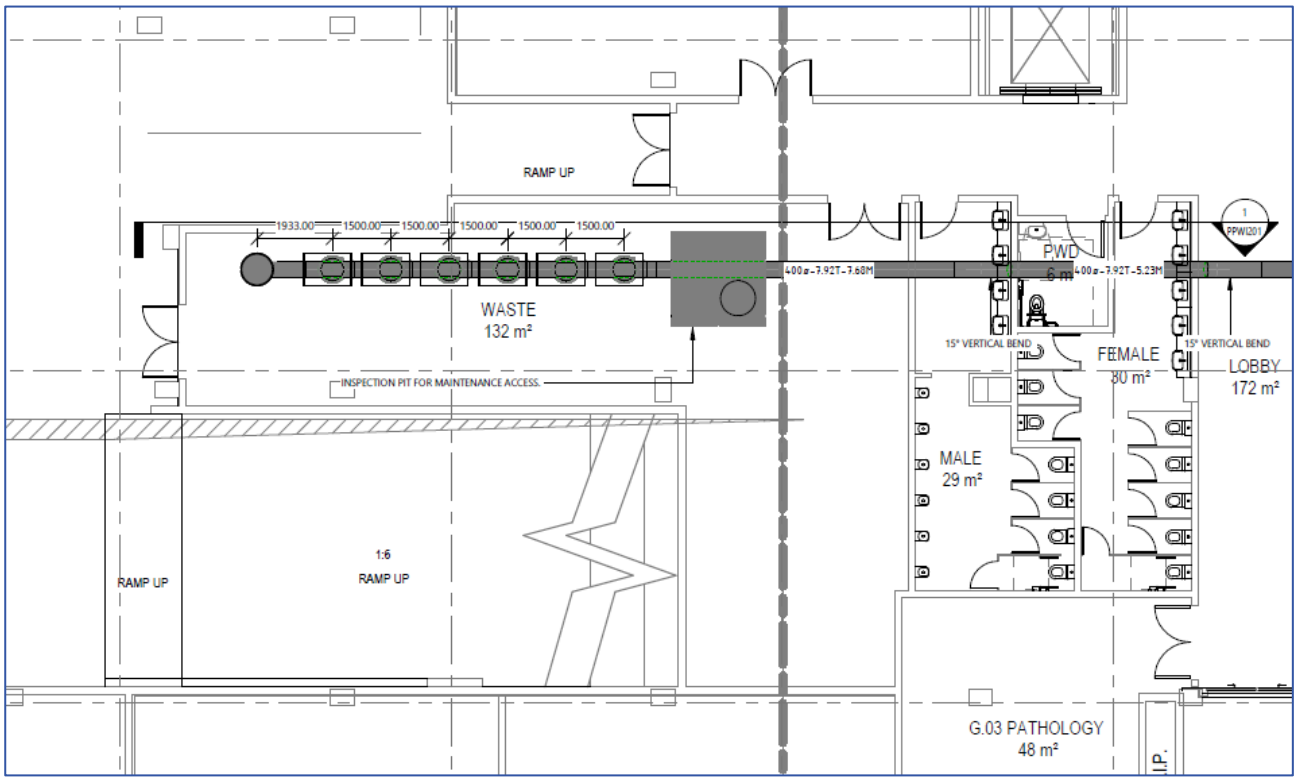


Figure 4.1: AWCS Inlets

Source: Lucid Consulting – Drawing Number LCE21375-PPWI100_P2

Detailed design requirements for the PPWI and AWCS connection can be found in Appendix B.2 and B.3. The following detailed drawings are provided:

TBC – Architectural	Appendix B.2
TBC – Architectural	Appendix B.2
TBC – Architectural	Appendix B.2
TBC – Architectural	Appendix B.2
TBC – Architectural	Appendix B.2
TBC – Architectural	Appendix B.2
TBC – Architectural	Appendix B.2
Private Pneumatic Waste Infrastructure Specification	
TTM: Waste Room Configuration – Typical Layout	Appendix B.3
TTM: Waste Room Configuration Spatial Plan – Dimensioned Typical Waste Room Layout	Appendix B.3
TTM: Site Access – 8.8m MRV Design Vehicle	Appendix B.3
TTM: Waste Room Configuration Spatial Plan – Bin Wash Area	Appendix B.3

4.1.2 Extremal Connection to AWCS

The proposed site will be connected to the AWCS on to the South- West of the site, which is shown in Appendix B.2 and B.3. All relevant integration items will be addressed during the detailed design coordination for the PPWI as described in Section 4.1.1, including the summary of items as shown below:

- (Refuse) storage sections
- Discharge Valves
- PN-Connections
- Air Inlet Valves
- Electrical and Control Systems
- Below ground pits and inspection / maintenance requirements
- Connection pipe angle relative to negative pressure of the AWCS

TTM have been provided with inlet pipe details is shown in Appendix B.2, which will connect to the external connection point.

4.2 Non-AWCS Waste and Recycling

According to **Schedule 6.4 of the PWIS No. 3**, the PNPWI is to comprise the following:

- A waste storage area where non-AWCS waste is to be handled and stored, if the serviced premises is used for a purpose other than a residential use;
- Glass processing equipment, such as a glass crusher, which is to be provided where bulk glass waste will be generated;
- Cardboard processing equipment, such as a baler or compactor, which is to be provided where bulk cardboard waste will be generated;
- An under-sink macerator which is to be provided where organic waste will be generated.

4.2.1 Waste Storage Area (Refuse Room)

According to **Schedule 6.5 of the PWIS No. 3**, a waste storage area which is to be provided in the serviced premises is to be designed to comply with the following minimum requirements:

- The storage of Non AWCS waste is to be functional, environmentally acceptable and minimises any adverse impacts to the amenity of the Maroochydore City Centre;
- The potential for environmental harm and environmental nuisance under the Environmental Protection Act 1994 is to be minimised;
- The waste storage area is to provide access to the Non AWCS waste receptacles;
- The waste storage area is to be situated within the Serviced Premises and designed to minimise the visual impact to surrounding areas;
- The waste storage area is to allow access to the Non AWCS waste service point and the access is to be in a separate location to the main entrance to the building;
- The waste storage area is not to be located within or adjacent to any habitable room, living area or place used in connection with food preparation;
- The waste storage area is to be of sufficient size to fully contain the number of non-AWCS waste receptacles required to manage the generation of non-AWCS waste;
- The waste storage area is to function as the non-AWCS waste service point or is otherwise to be located within 40 metres of the non-AWCS waste service point;
- Unobstructed access is to be provided for the removal of non-AWCS waste receptacles to the non-AWCS waste service point, where the waste storage area and the Non non-AWCS waste service point are in different locations;
- Where the non-AWCS waste service point is located within a building or structure its design is to ensure that the following:

  - The height clearance is sufficient to allow the lifting of non-AWCS waste receptacles and safe movement of a service vehicle for example by a truck mounted lifting gear such as a forklift within the building or structure;
  - The grade of access / egress ramps is not to exceed 1:8;
- The walls, doors and roof of the waste storage area are lined with non-combustible and impervious material with a smooth finish and a fire resistance rating of one hour;
- The junctions of the walls with the floors of the waste storage area are lined to prevent damage to walls by non-AWCS waste receptacles;
- The door frames of the waste storage area are rebated with a lock capable of being activated from within without a key at all times;
- A hose cock and an adequate length of hand hose of a minimum internal diameter of 12mm is provided immediately outside of the waste storage area;
- Unless refrigerated to below 4 degrees Celsius, the waste storage area is to have an approved mechanical exhaust system for ventilation or permanent, unobstructed natural ventilation openings which are direct to the external air not less than one-twentieth ($1/20^{th}$) of the floor area with one half of such openings situated at or near the floor level and one half at or near the ceiling level;
- The waste storage area is to have an automatic or other system for the control of fire which meets the applicable Australian Standards for sprinkler installation;
- The waste storage area is to be fly and vermin proof;
- The floor of the waste storage area is to be graded to fall to a drain located outside and adjacent to the waste storage area which is as close as practicable to the doorway;
- The drainage of the waste storage area is to be by means of a trapped gully connected to the sewer with gullies positioned to avoid the track of waste receptacle wheels;
- Rainfall and other surface water are not to drain into the waste storage area;
- Artificial lighting is to be provided within the waste storage area;
- All equipment in a fixed position is to be located clear of walls and floors and is supported on suitable plinths or impervious legs;
- Any container storage and drainage rack is to be made of galvanised metal or other durable, impervious materials;
- The waste storage area is to be well ventilated and is to have "no smoking" signs installed;
- The waste storage area is to include a bunded area for the storage and cleaning of waste oil containers if waste oil is to be generated by the Serviced Premises;

- The waste storage area is to include a waste wash down area for the regular cleaning of the non-AWCS waste receptacles, which:
  - Is located such that the non-AWCS waste receptacles can be easily moved to the waste wash down area and is not located adjacent to or underneath dining or living areas of any building;
  - Has a floor graded to fall to a drainage point located within the waste wash down area;
  - Provide for drainage by means of a trapped gully connected to the sewer and is to be designed such that rainfall and other surface water cannot flow into the waste wash down area; and
  - Includes a hose cock located in the vicinity of the wash down area.

  Note: An indicative drawing has been provides within Appendix B.3 demonstrating positioning of a hose cock and wash down area for 240L bins. All other bins are used to complete exchange services, and bins will be washed off-site when emptied by the servicing contractor.

4.2.2 Cardboard and Glass Processing Equipment

According to **Schedule 6.6 and 6.7 of the PWIS No. 3**, the cardboard and glass processing equipment are to:

- Be suitable for the types of cardboard waste or glass waste generated;
- Comply with the noise regulations in accordance with the Environmental Protection Act 1994; and
- Be provided within an adequate area for the housing, satisfactory functioning, storage and servicing of the cardboard processing equipment and the handling of bulk cardboard waste or bulk glass waste for the serviced premises which are intended to be serviced by the equipment.

4.2.3 Under-Sink Macerators

According to **Schedule 6.8 of the PWIS No. 3**, the under-sink macerator is to:

- Be provided in Serviced Premises where the Organic Waste is generated;
- Be suitable for the types of organic waste generated; and
- Comply with the provisions of the Plumbing and Drainage Act 2002.

4.2.4 Non-AWCS Waste Receptacles (Refuse Bins)

According to **Schedule 6.9 of the PWIS No. 3**, a non-AWCS waste receptacle is:

- To provide for the segregation of the non-AWCS waste fractions;
- To be provided in numbers sufficient to manage the volume of non-AWCS waste which is generated by the serviced premises;
- To be appropriately coloured in accordance with *AS 4123.7: Mobile waste containers – colours, markings and designation requirements*;

- To be appropriately signed and labelled for the non-AWCS waste types;
- To be made of non-combustible materials; and
- Not to be placed:
  - Where it may impede the safe use of any exit, exit corridor, doorway or stairway;
  - Under stairways; or
  - Near any existing or potential heat source.

4.2.5 Refuse Collection Vehicle Access

According to Schedule 6.10 of the PWIS No. 3, the PNPWI is to be designed to facilitate and allow for adequate access for collection vehicles to service the waste storage area and is to comply with the following minimum requirements:

- The layout and internal trafficable area of the serviced premises is designed to facilitate the direct servicing of the non-AWCS waste receptacle by a collection vehicle in a safe, unobstructed and efficient manner;
- The entry and exit from the non-AWCS waste service point is carried out in a forward gear unless accessed from laneways and service laneways identified within Map 7 – Road Hierarchy Plan of the development scheme.
- The non-AWCS Waste service point is designed to minimise the potential noise and odour nuisances;
- The turning path for a collection vehicle is designed in accordance with Austroads Design Vehicles and Turning Path Template Guide for a design service (8.8 metres);
- The collection of non-AWCS waste at the non-AWCS waste service point by a collection vehicle is
  - Not to be performed using front lift, side lift or rear lift tipping means unless this is demonstrated to the satisfaction of the Waste infrastructure Authority as being suitable for the amenity of the Serviced Premises;
  - To be undertaken by way of any of the following:
    - A waste receptacle swap;
    - The loading of baled or compacted waste;
    - Another servicing method acceptable to the Waste Infrastructure Authority
  - To be carried out within the serviced premises such as a load dock, designated loading bay or basement and not within an area external to the serviced premises such as a road reserve; and
  - To allow a collection vehicle to move in a forward direction at all times unless accessed from laneways and service laneways identified within Map 7 – Road Hierarchy Plan of the development scheme or to be able to enter and exit from the non-AWCS waste service point in a forward direction

or to include a turning bowl or a "T" or "Y" shaped manoeuvring area which allows the collection vehicle to make a turn within 3 manoeuvres.

Appendix A Detailed Refuse Calculations

A.1 Refuse Generation Rates

The generation rates used for the calculation of refuse produced uses rates recommended by SunCentral.

Use Type	Measure	General Waste	Recycling
Café	L / 100m^2 / Day	330	200
Restaurant	L / 100m^2 / Day	660	200
Pathology	L / 100m^2 / Day	5	10
General Retail < 100m^2	L / 100m^2 / Day	50	25
General Retail < 100m^2	L / 100m^2 / Day	50	25
Office	L / 100m^2 / Day	10	20
Clinical Trials	L / 100m^2 / Day	70	30
Custom - Existing P&0	L / 100m^2 / Day	90	50
Hospital - Custom Existing	L / 100m^2 / Day	43	17

* Assumption: General waste and food waste have been split depending upon use type

A.2 Commercial Refuse Calculations

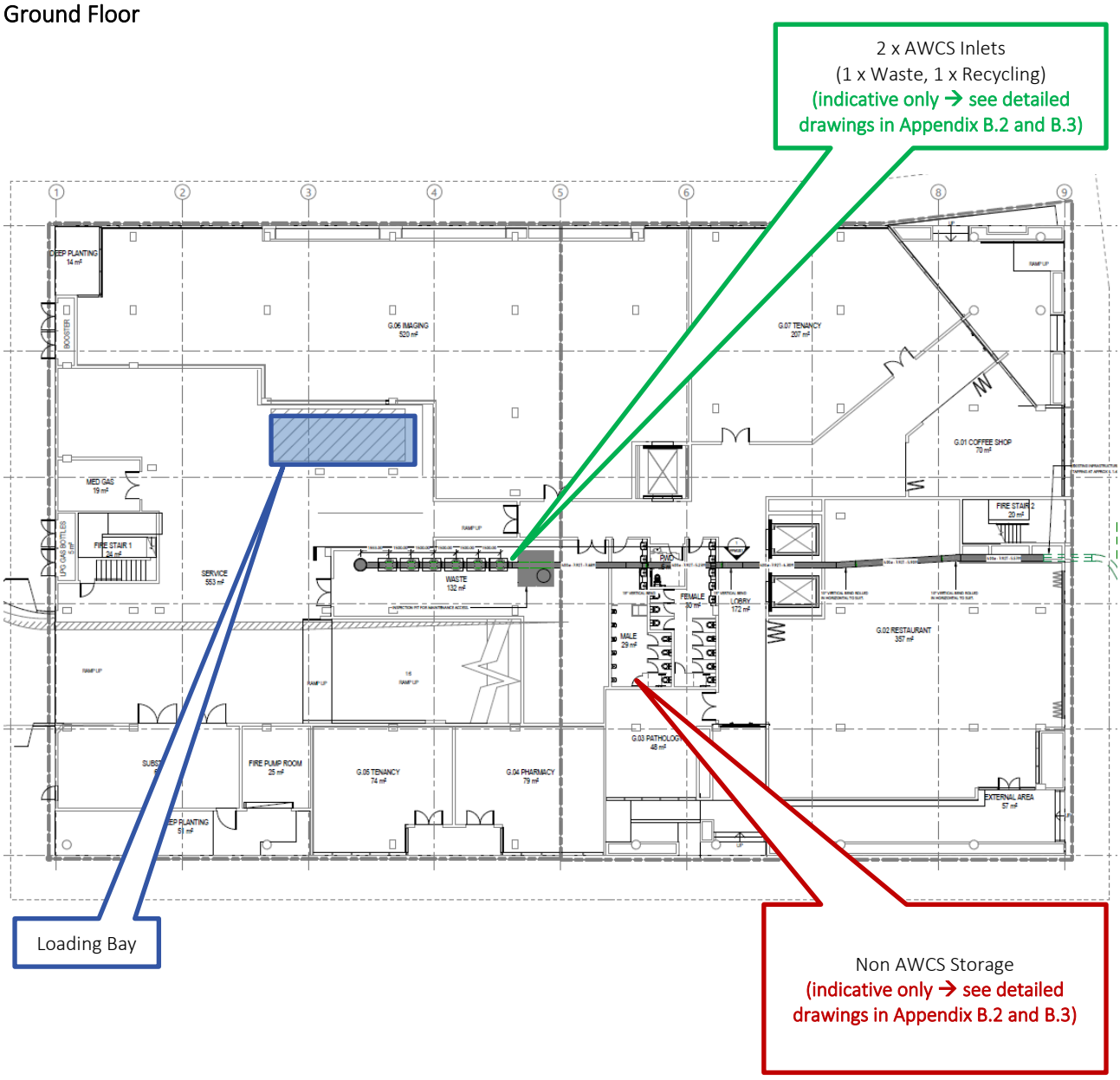
Calculations are too large for placement on this page and will be reviewed directly with Sunshine Coast Council and summarised for the next submission

Appendix B Site Plans and Drawings

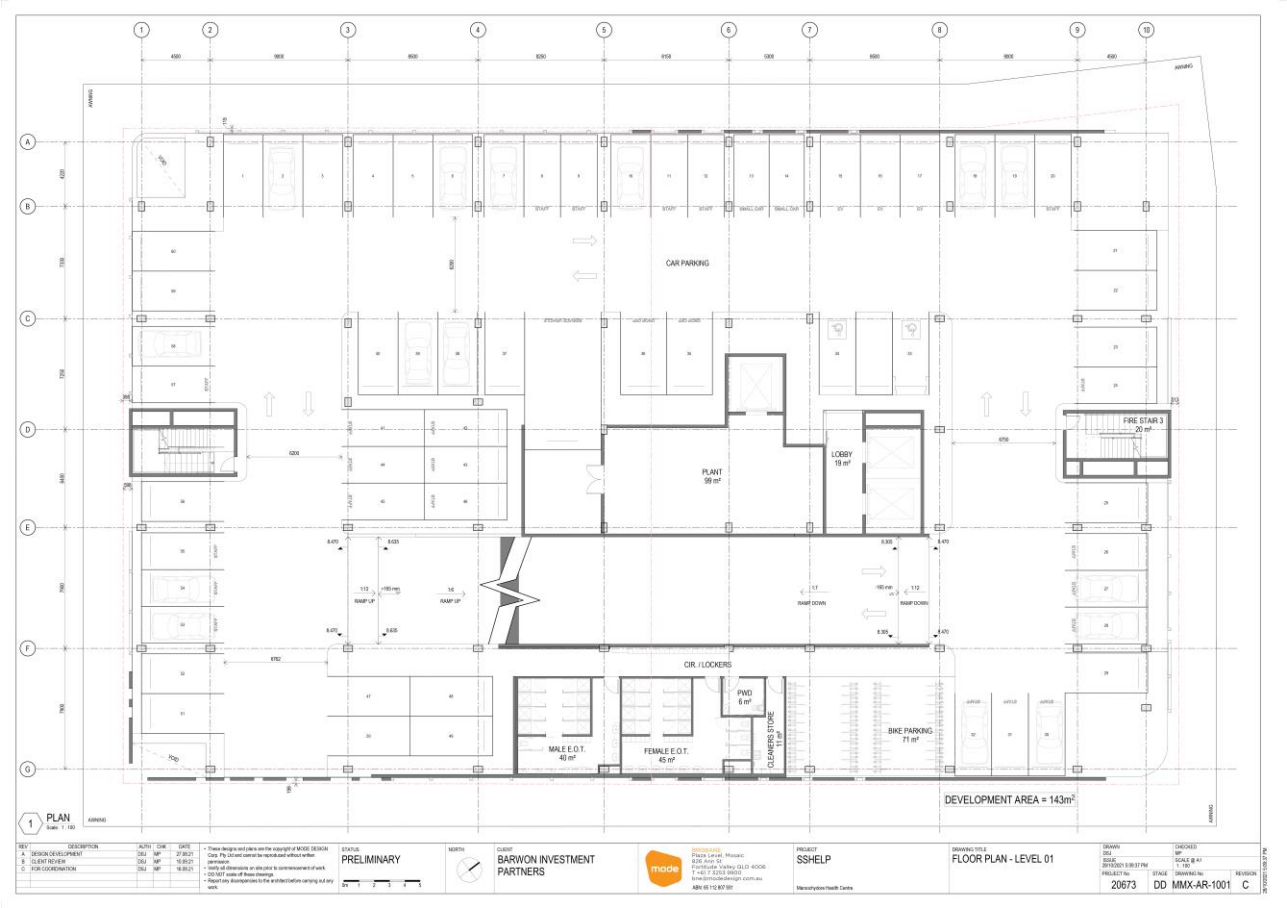
B.1 Architectural Plans / Drawings

Key floor plans are provided below. For the overall architectural drawings of all floors, refer to document attached.

Ground Floor



Level 01



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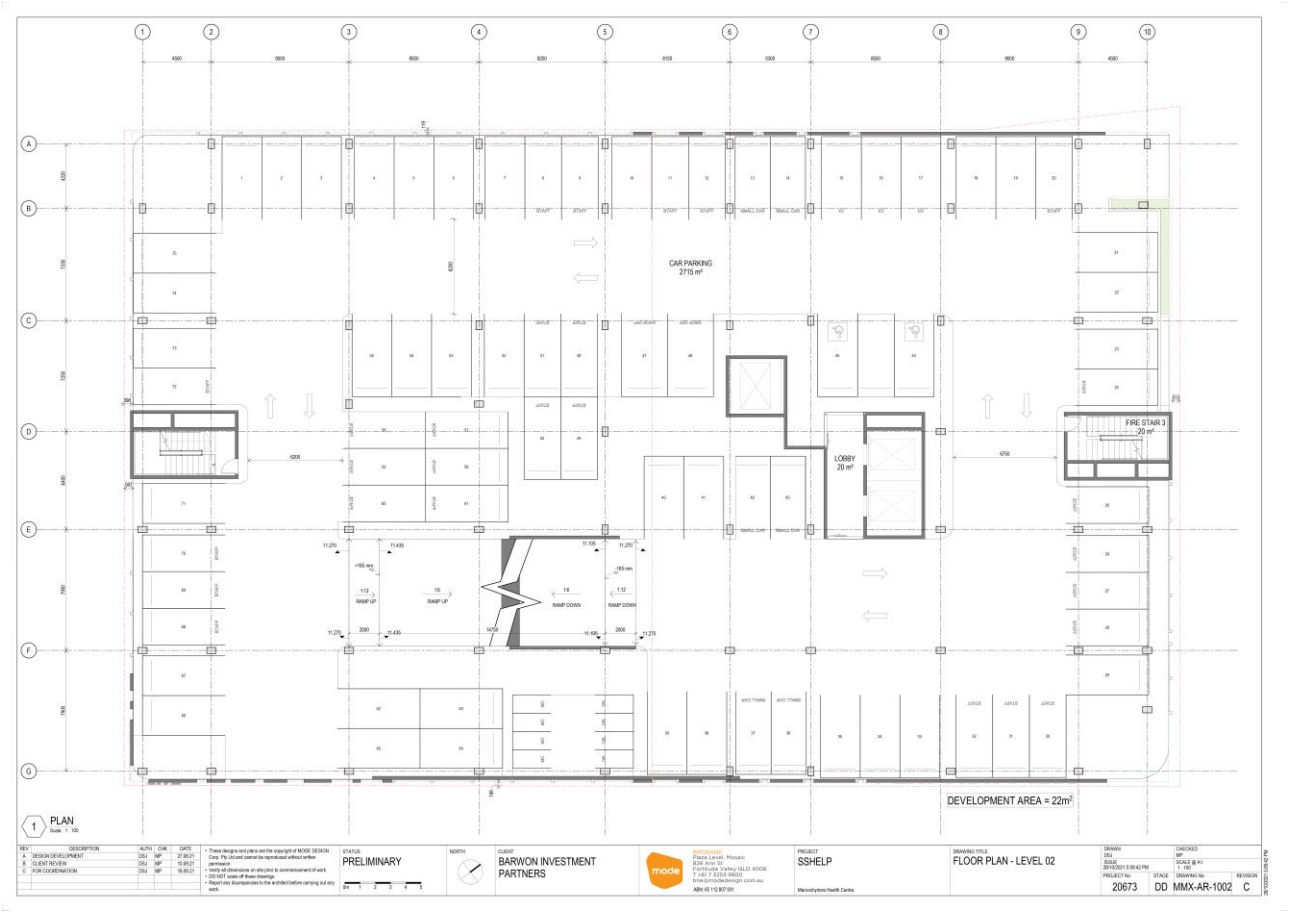
Level 02



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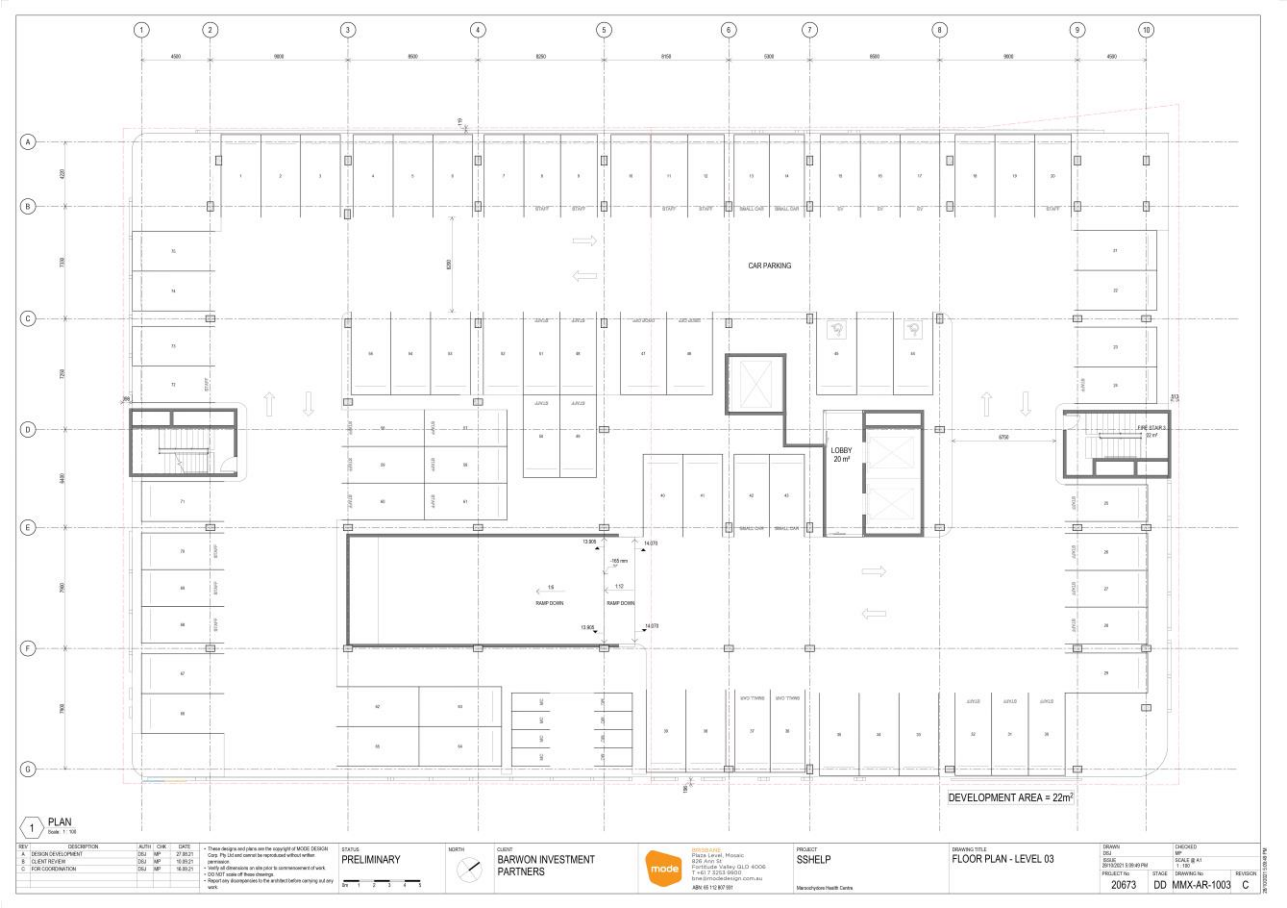
Level 03



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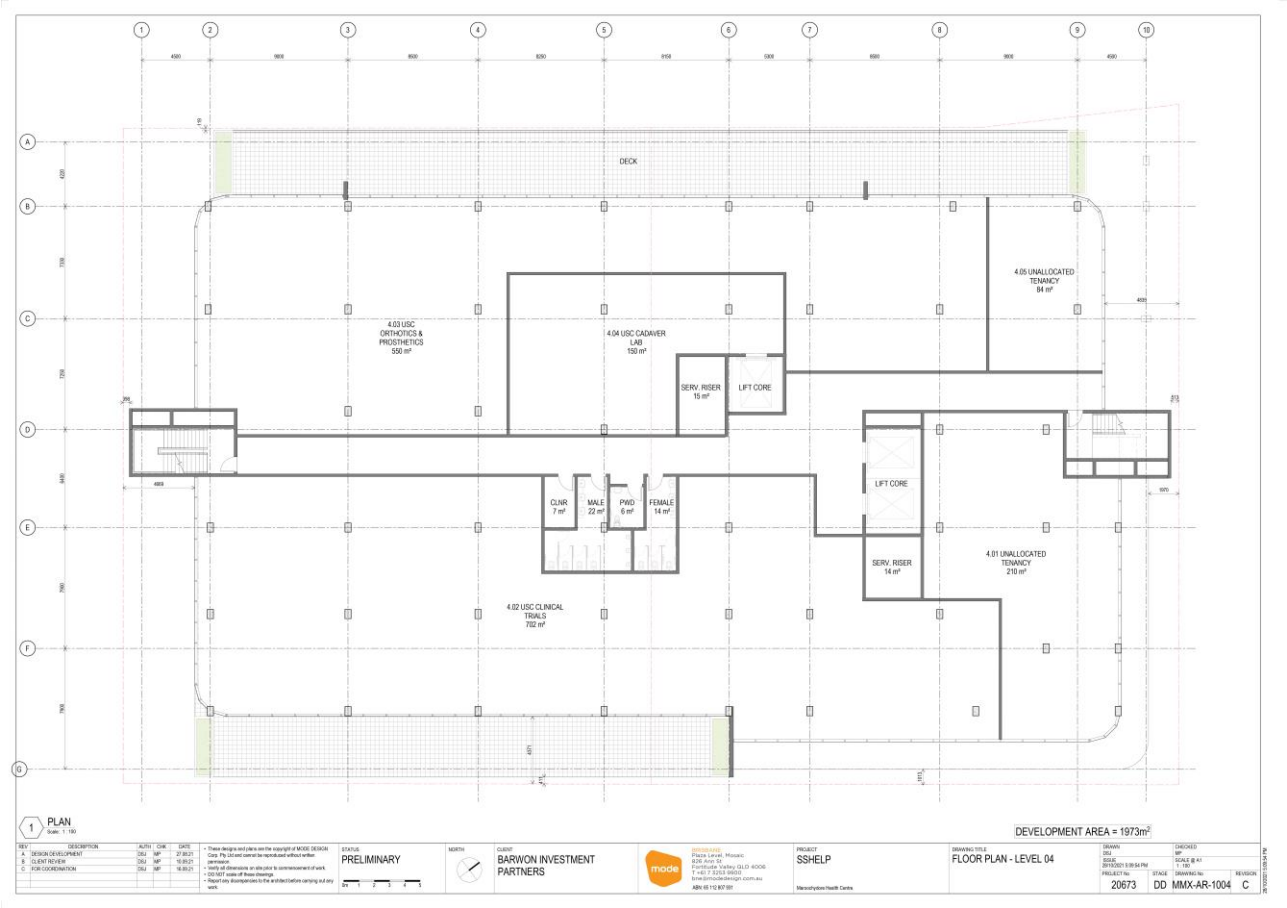
Level 04



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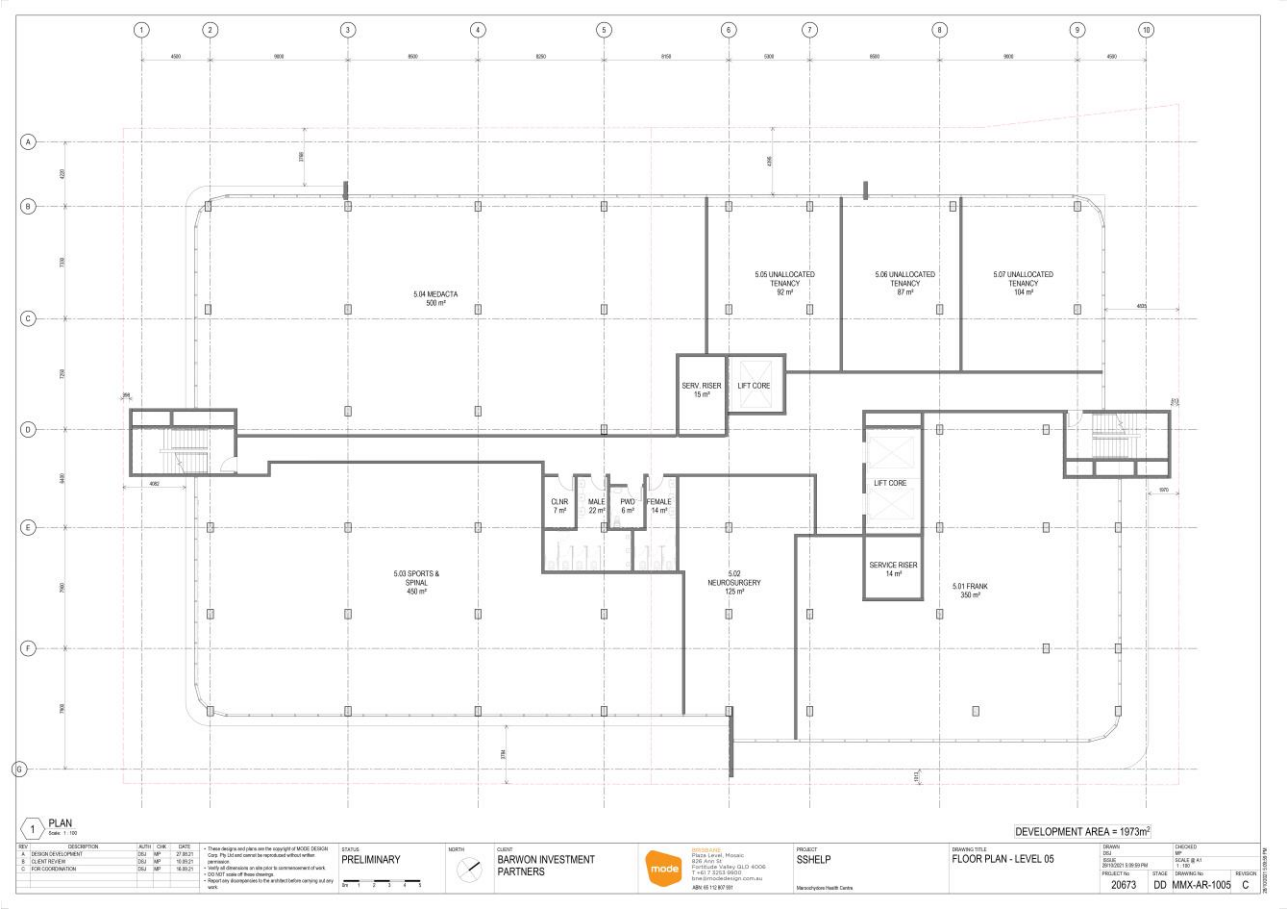
Level 05



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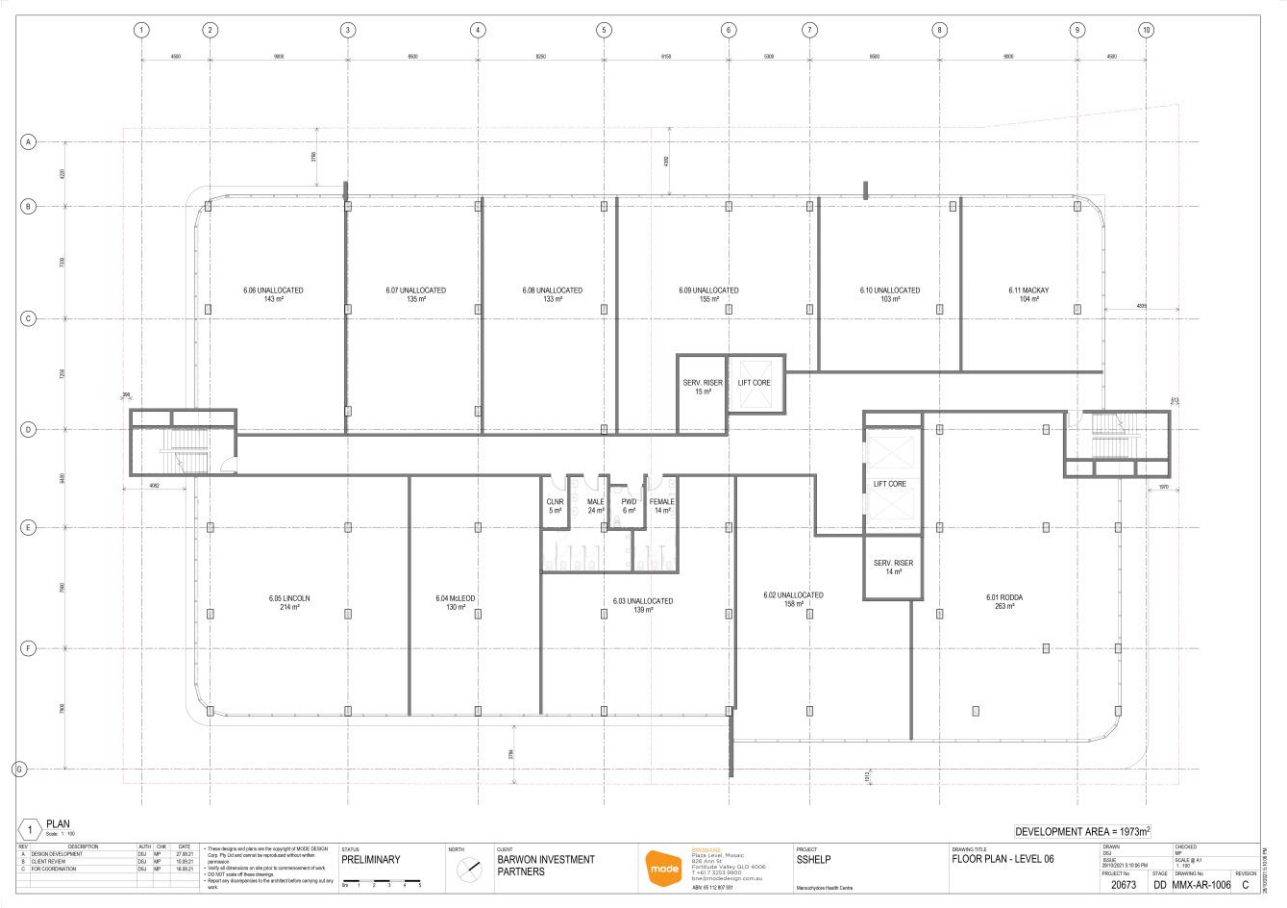
Level 06



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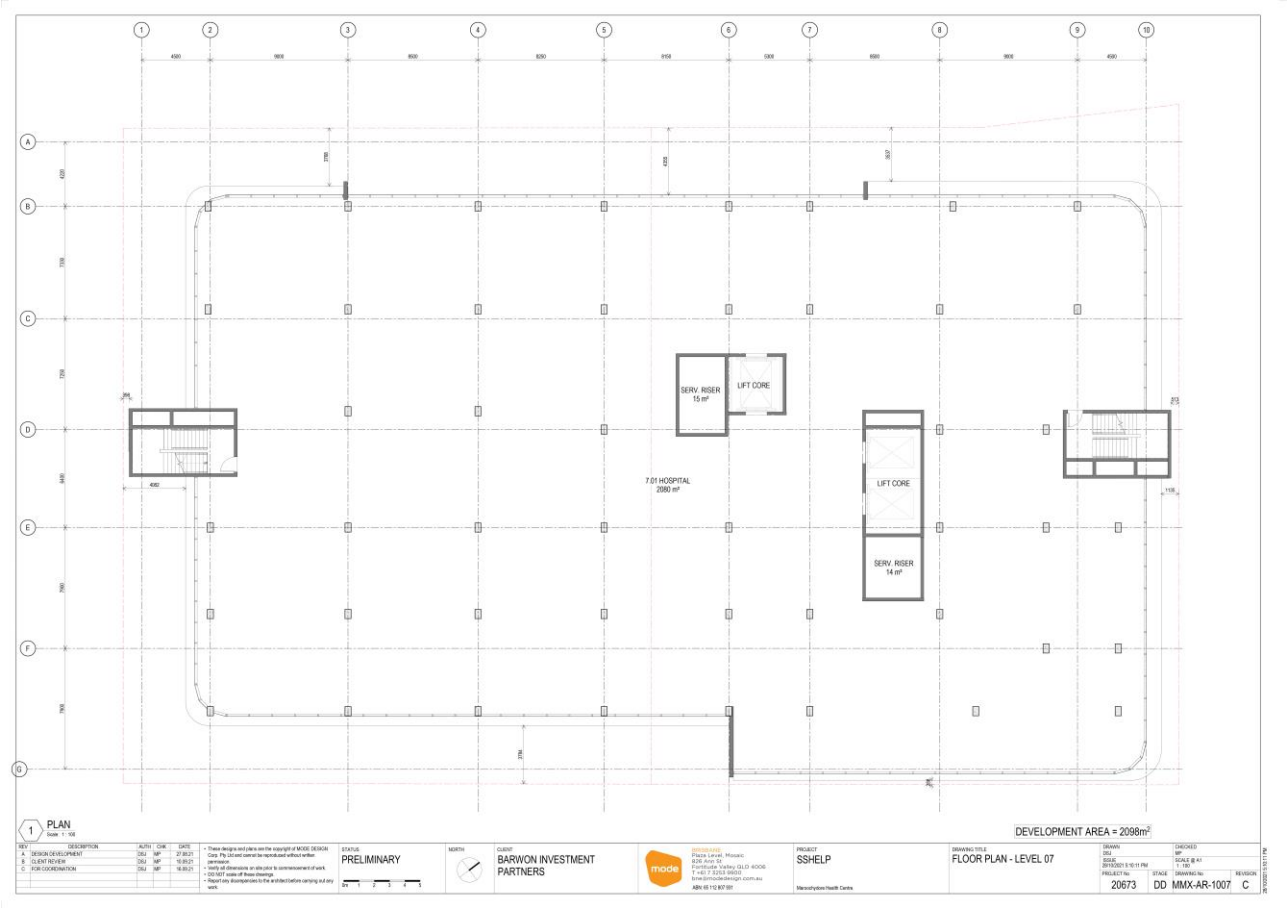
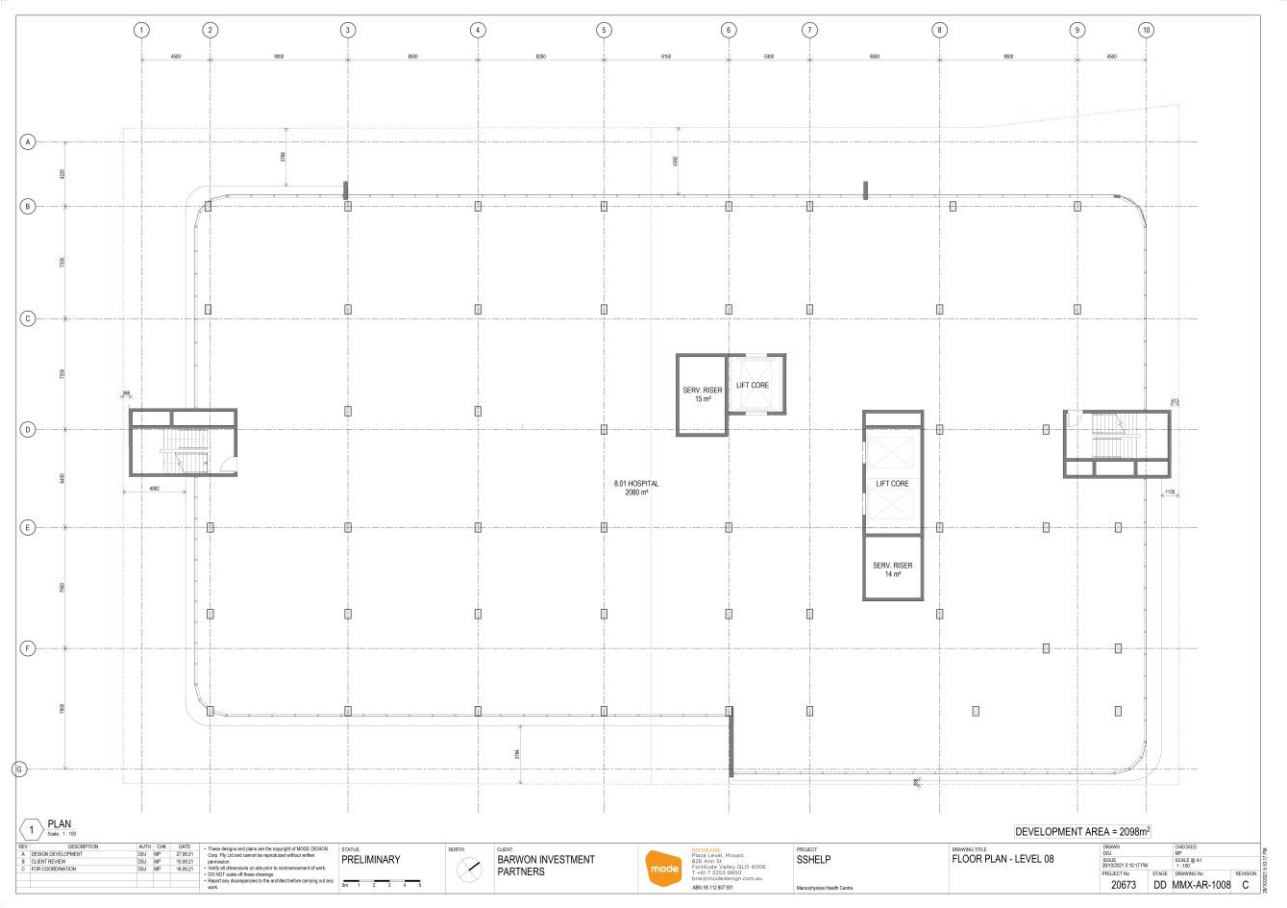
Level 07



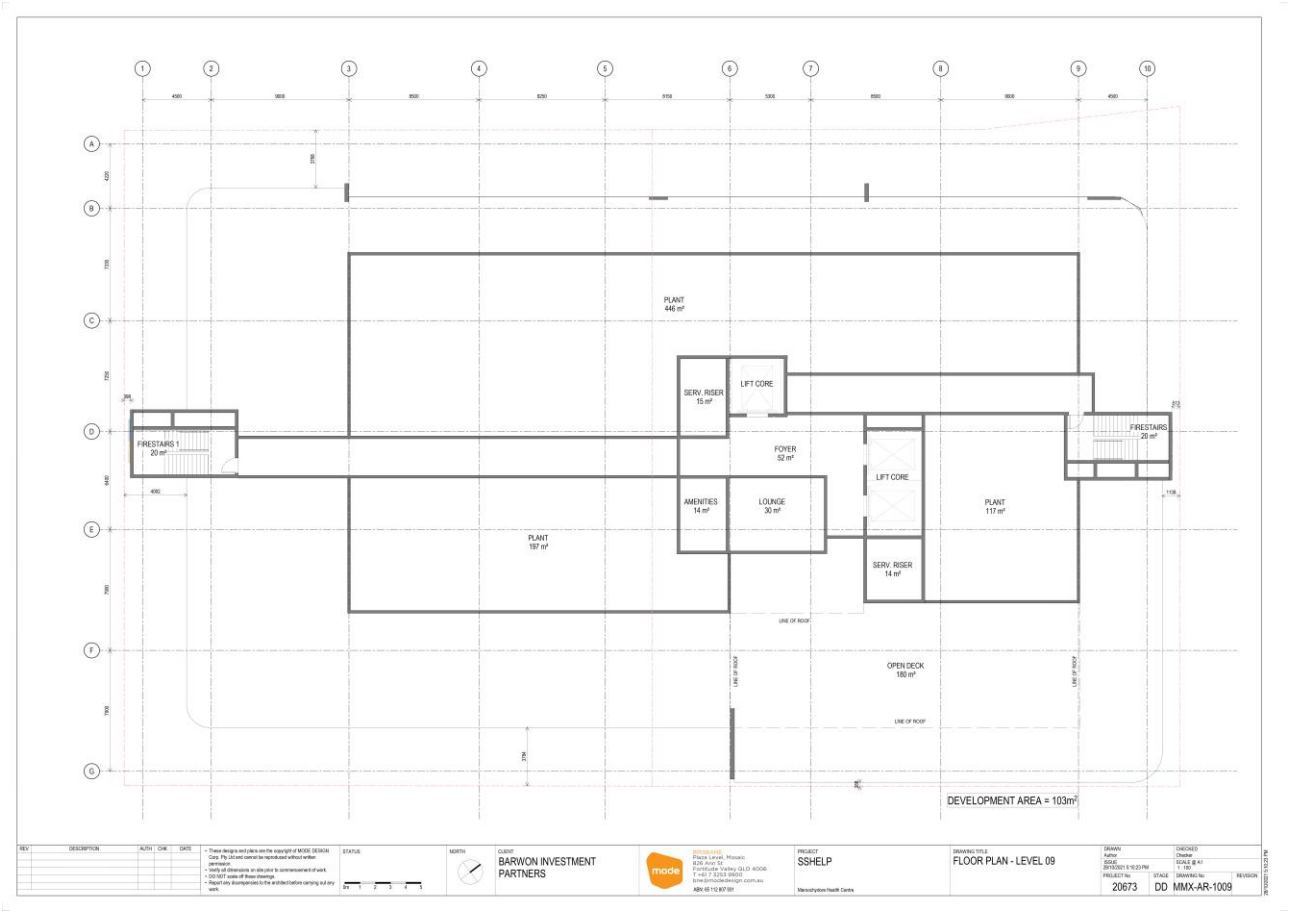
Source: mode, Project No. 20673, Drawing No. MMX-AR-1007, Rev. C, 28/10/21 – Level 07

Level 08



Source: mode, Project No. 20673, Drawing No. MMX-AR-1008, Rev. C, 28/10/21 – Level 08

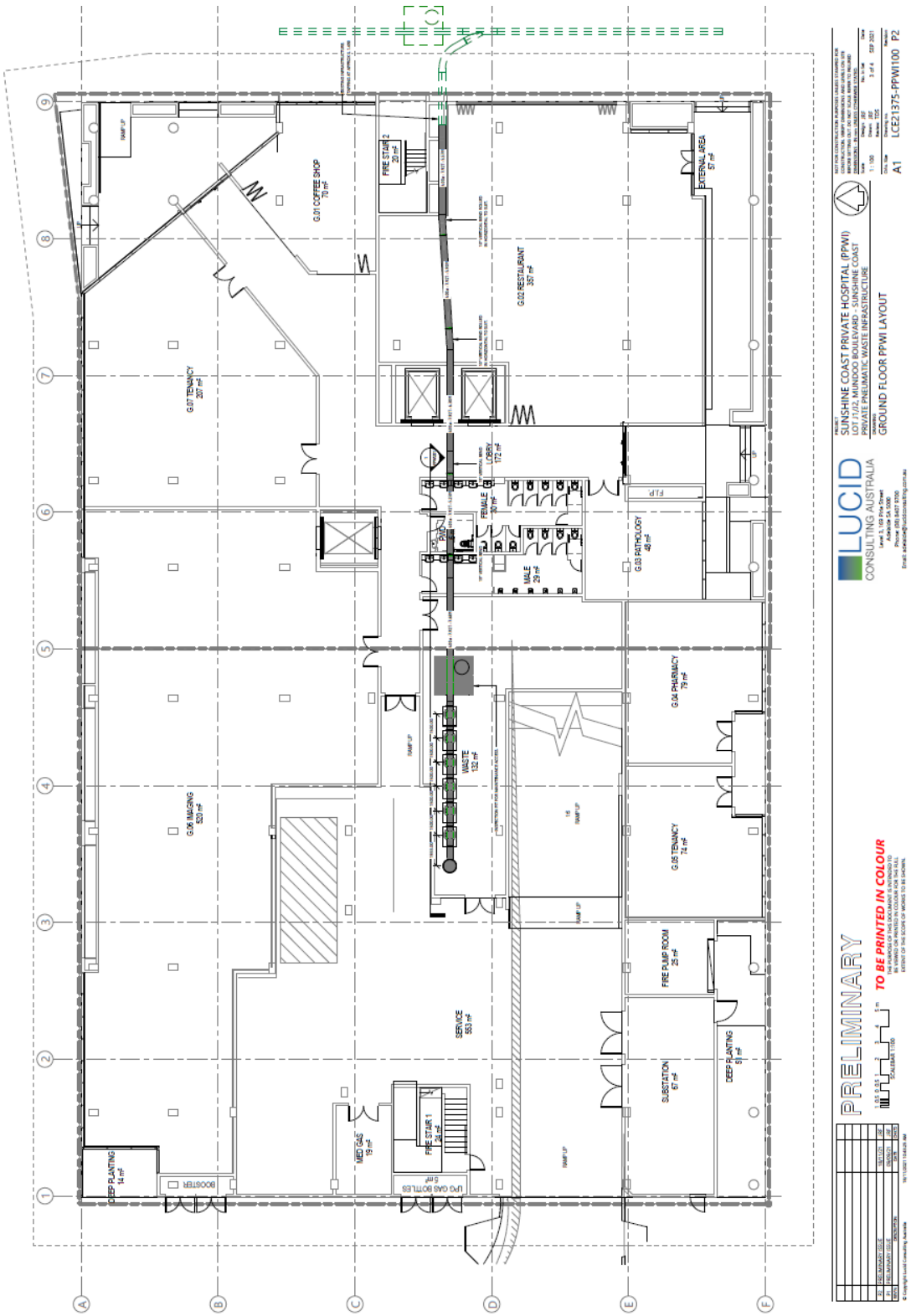
Level 09

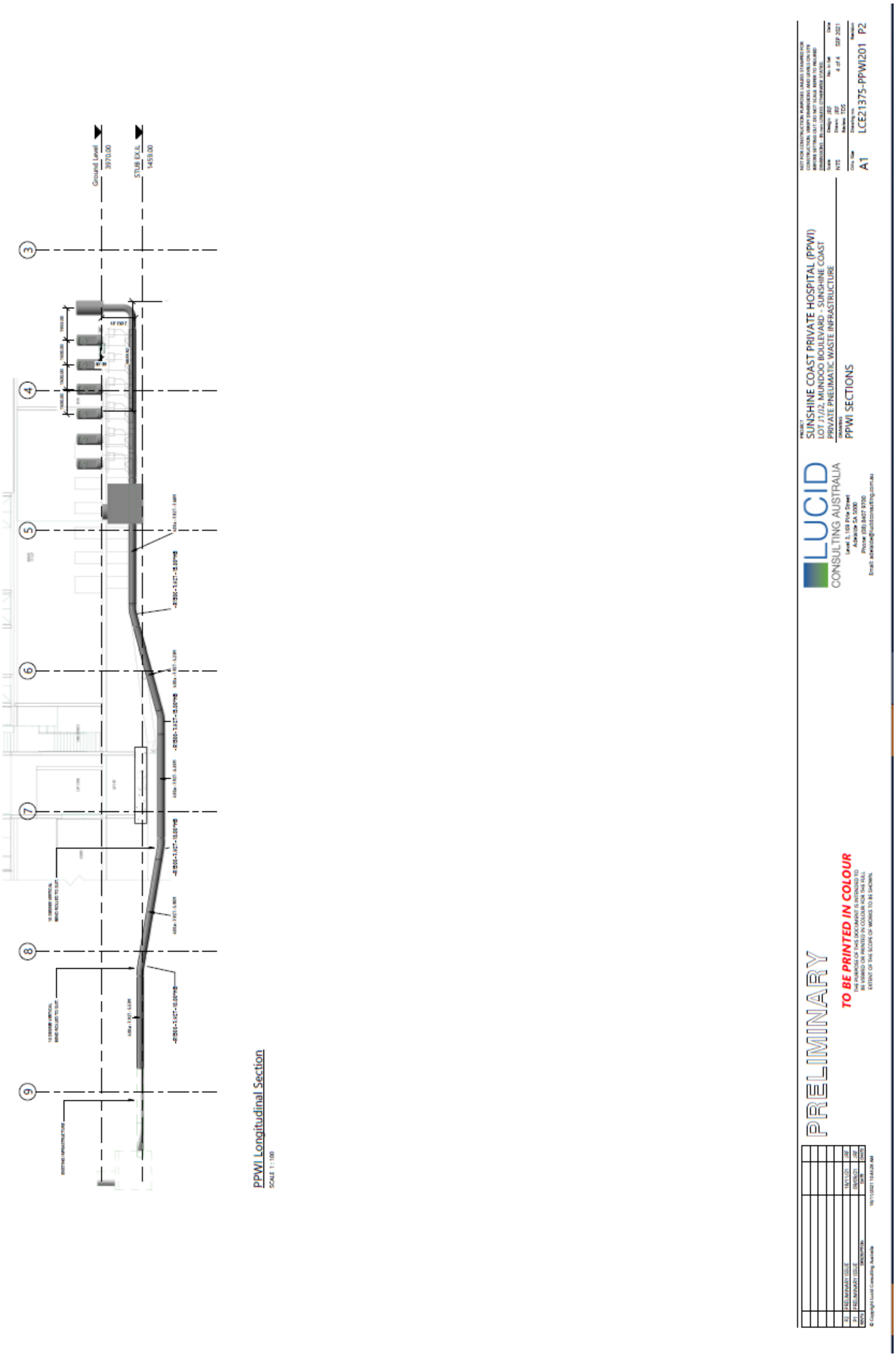


Source: mode, Project No. 20673, Drawing No. MMX-AR-1009, Rev. C, 28/10/21 – Level 09

B.2 Detailed AWCS System Design

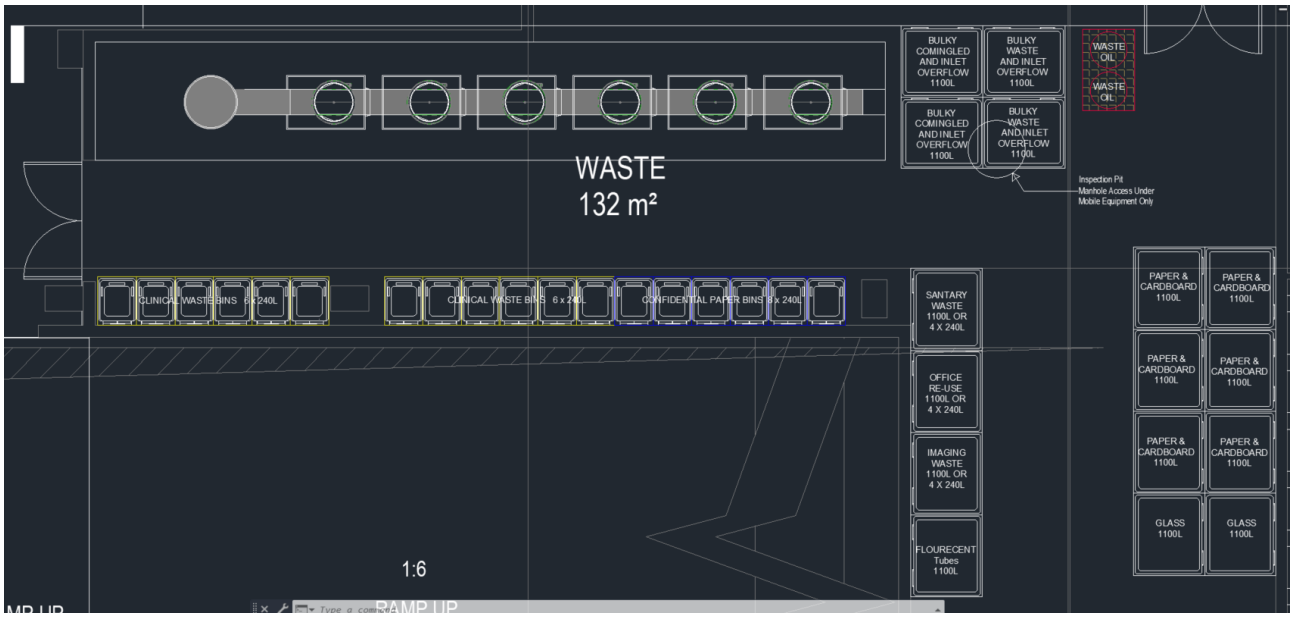
Full size drawings to be included in final submission




Ground Level
3970.00
STUB EX.IL
1459.00
PPWI Longitudinal Section
SCALE 1:100
PRELIMINARY
TO BE PRINTED IN COLOUR
LUCID
CONSULTING AUSTRALIA
SUNSHINE COAST PRIVATE HOSPITAL (PPWI)
LOT J1/J2, MUNDOO BOULEVARD - SUNSHINE COAST
PRIVATE PNEUMATIC WASTE INFRASTRUCTURE
PPWI SECTIONS
A1
LCE21375-PPWI201
P2

B.3 AWCS and Non-AWCS Refuse Collections and Storage

Drawings to be updated and completed for final report



Appendix C Systems and Specifications

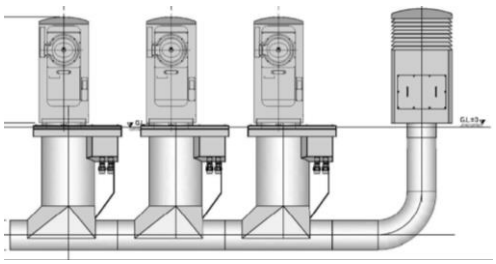
C.1 Typical Refuse Bins

Bin Types	Waste Streams	Examples	Information
Back-of-house bins	General waste, recycling, food waste, paper / cardboard		Various options and sizes available. Tenant to supply depending on preference and space available. Example: 60L metro bins Dimensions approx. 559 x 279 x 635 mm (L x W x H) Examples: https://www.spacepac.com.au
Caddy bins	Food Waste		Example: https://pulpmaster.com.au/pulpmaster-caddy-system
60-80L bins	Glass		Dimensions approx. 500 x 440 x 640 mm (L x W x H) (60L) 500 x 440 x 840 mm (L x W x H) (80L) Example: http://wheeliebinsonline.com.au/product/80-litre-wheelie-bin
140L bins	Food waste, Uncrushed Glass		Dimensions approx. 480 x 550 x 925 mm (L x W x H) or less (dimensions may depend on contractor) Examples: http://wheeliebinsonline.com.au, https://ksenvironmental.com.au
1100L bin	General waste, recycling, paper / cardboard		Dimensions approx.. 1360 x 1280 x 1465 mm (L x W x H) (dimensions depend on contractor) Examples: http://www.justwheeliebins.com.au, https://www.australianwastemanagement.com.au
Cigarette butt bins / ashtrays	Cigarette butts		Various options and sizes available. Free-standing, wall / bin-mounted or integrated. Examples: https://www.spacepac.com.au, http://www.nobutts.com.au

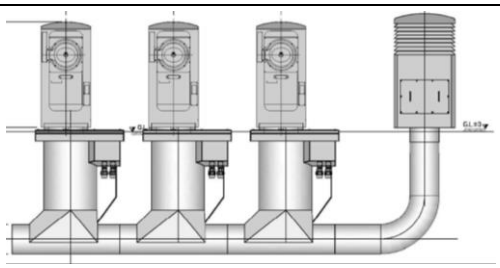
C.2 Typical Refuse Management Equipment

Systems	Waste Streams	Examples	Information
Food Waste Processing and Disposal	Food waste / organics		Volume reduction and organics / food waste recycling through food waste separation and macerating Examples: https://www.insinkerator.com.au (household type macerators) https://insinkerator.emerson.com (commercial-grade macerators)
Cooking oil storage and recycling	Used cooking oil		Cooking oil recycling Example: https://www.cookers.com.au Cooking oil delivery, used oil collection and provision of required equipment

Systems	Waste Streams	Examples	Information
Bunded pallets	Liquid waste		Spill containment, e.g. for waste cooking oil containers Example: https://www.tradeenviro.com.au/bunded-pallets https://www.materialshandling.com.au/products/bunded-pallet
Balers	Paper / cardboard, plastics		Volume reduction of paper, cardboard, plastics by compaction (baling) Examples: https://www.miltek.com.au/balers-and-compactors
Glass bottle crushing	Glass (bottles)	 	Volume reduction of glass bottles by crushing Example: http://www.bottlecycler.com
Trolleys	General waste, recycling, food waste, paper / cardboard		Assisted manual transfer of refuse Examples: https://rubbermaidcommercial.com.au/products/waste-management/mega-brute https://www.materialshandling.com.au/products/deluxe-compact-cleaning-carts

Systems	Waste Streams	Examples	Information
Automated waste collection systems	General waste, recycling, food waste, paper / cardboard		Automated (pneumatic) refuse transfer through (underground) pipes, including refuse sorting and collection, e.g. for precinct and larger areas. Inlets to the pipe network (PPWI) are available for refuse disposal Examples: Envac, Preliminary AWCS Guideline for Private Development (Rev. 4) http://www.envacgroup.com/products

C.3 Refuse Transfer and Disposal Methods

Method	Examples	Description
Manual transfer / disposal	   	**Manual transfer** is simply the process of physically carrying waste bags, food waste receptacles or recycling boxes and crates without assistance. From a safety perspective, this is acceptable for small quantities and initial disposal into refuse chutes, refuse compartments or, in the case of ground level activities, directly into the refuse storage room. • **Waste** material should be bagged prior to any transfer from apartments, suites, offices, back-of-house areas etc. to waste storage compartments or rooms. • **Food waste** should be placed in receptacles such as a caddy style bin or bucket which will not allow leakage during transfer. • **Recycling** material should be placed in boxes or crates prior to transfer. • **Cardboard and paper** items can be placed within another cardboard box for transfer. Examples: https://www.alamy.com
Assisted manual transfer		**Assisted manual transfer** includes the use of any wheeled container, wheelie bin or trolley with a capacity to carry refuse items with a combined weight of 20kg and above. The equipment bares the weight of the material, but it still requires physical force and or balance to move the bin or trolley. From a safety perspective, this type of equipment should be a minimum requirement for transfer of material greater than 20kg and when transferring between individual levels to the refuse storage room or loading areas. Use of enclosed or caged equipment will also eliminate 'litter or leakage trails' which can occur when using open or unsealed equipment. Examples: http://www.justwheeliebins.com.au, https://rubbermaidcommercial.com.au, https://www.materialshandling.com.au
Sealed transfer		**Sealed transfer** typically relates to the use of automated front end (pump) or back end (vacuum) equipment moving material through service pipes to a central tank or bulk storage or compaction equipment. When considering this method and the separation of food waste, the option to include a fully automated waste transfer system is greatly diminished as food waste makes up 40% to 60% of the total waste volume. In addition, bulk recycling such as cardboard and plastics cannot go into the system and therefore require transfer via one of the afore mentioned methods which could easily include other recyclable products at a lower operating cost.

Method	Examples	Description
		Use of systems directly related to food waste processing and transfer are a cost-effective alternative and provide significantly less invasive requirements to build into final design and intrastate. Examples: http://www.envacgroup.com

C.4 Refuse Minimisation Options

Waste

Systems	Description
Food rescue	OzHarvest and Second Bite are food rescue organisations working throughout Australia. The organisation collects surplus foods from businesses (including Woolworths, Coles, Goodman Fielder and other smaller companies) and redistributes the foods to welfare agencies. They provide regular scheduled collections or ad-hoc / on call collections, and they have refrigerated vehicles. Other accepted items include fresh fruit and vegetables, tinned goods, cold meats and deli items, and readymade meals (which will only be accepted frozen). Where food rescue organisations are available, consideration may be given to suitable space for the temporary storage of food stuffs, including dry storage and the placement of a small fridge if cold room space is not available. There is no associated collections cost. Hence, it can be considered a zero-cost option for disposal of what would otherwise be food waste, and it supports the community at the same time.   Sources: www.ozharvest.org, www.secondbite.org
Charity donations	A good way of minimising waste is to reuse items that are still good to use. Several charity organisations exist that accept items such clothing, shoes, bedding, books, toys, furniture, kitchenware and other household items. The donated items must not be torn, damaged or broken. Electrical appliances such as white goods are usually not accepted. Common organisations operating in Australia include Saint Vincent de Paul Society (Vinnies) and Lifeline (see images below). Items can be placed into the organisations' charity / donation bins located in various public spaces such as near community or shopping areas. Alternatively, they can be dropped off at the organisations' shops during opening hours. Refer to https://www.lifeline.org.au or https://www.vinnies.org.au for further information. For larger developments and precincts where large amounts of donation items can be expected, the placement of charity bins within the development should be taken into consideration. 

Systems	Description
	  Sources: https://www.vinnies.org.au, https://lifelinesouthcoast.org.au

Recycling

Systems	Description
Container deposit schemes	Container deposit / refund schemes are currently in place in several states in Australia. Various models exist including bottle return facilities and (automated) reverse vending machines. Residents, tenants, staff and cleaners should be encouraged to separate containers that qualify for the schemes from the waste or recycling streams, and return them to one of the return points. Storage space or dedicated bins within tenancies, apartments or communal areas should be provided. For larger developments or precincts where large amounts of empty containers are expected, consideration may be given to an on-site return point. The return points should be located near recycling bins so that cardboard boxes or plastic bags that have been used to transfer the empty containers to the return point can be disposed appropriately. This can prevent cluttering of the area around the return point. The images below show a typical return point and containers that commonly qualify for a deposit refund.    Sources: https://returnandearn.org.au, https://envirobank.com.au/bottle-and-can-recycling-queensland, https://www.containersforchange.com.au/how-it-works
Glass crushing	Bottle crushers can reduce back-of-house and refuse room storage volumes by up to 80%. The machines are quiet and efficient. The inclusion of a glass crusher may either be designed into bar or kitchen areas, placed in back-of-house areas, or a machine may take the place of an existing recycling bin within a refuse storage

Systems	Description
	room. Scanners are also being developed for these machines for scanning of bottles prior to crushing to align with government bottle return schemes. The images below show a typical setting of a glass crusher in a bar.    Sources: http://www.insideenterprises.com.au/bottlecycler/index.html, http://www.bottlecycler.com
Baling	Balers should be a consideration for use in reducing refuse volumes and creating safe environments by removing cardboard and plastic film which tends to overflow bins and clog up refuse room floors and doorways. The images below show a typical small baler that will produce a 60kg bale, easily removable by a trolley, as well as an option for multi chamber baler for baling multiple products.  Source: https://www.miltek.com.au/balers-and-compactors

C.5 Refuse Management Equipment Suppliers

Waste Management Equipment	Balers	Compactors	Glass Crushers	Automated Waste Collection	Chutes	Trolleys / Manual Handling Equipment	Bin Lifters / Tippers	Weighing Systems	Spill Containment, Spill Response, Absorbents, Drain Protection	Food Waste Management / Macerating	Waste Cooking Oil Systems	Smoking Management	Bins (General), Bin Stands	Bin Cleaning Equipment
Elephants Foot Recycling Solutions http://www.elephantsfoot.com.au	✓	✓	✓		✓		✓	✓						
Waste Initiatives https://wasteinitiatives.com.au	✓	✓	✓											
Wastech http://wastech.com.au	✓	✓			✓									
Pakmor http://pakmor.com.au	✓	✓					✓	✓						
Miltek http://www.miltek.com.au	✓	✓												
BottleCycler http://www.bottlecycler.com			✓											
Envac http://www.envac.com.au				✓										
Materials Handling https://www.materialshandling.com.au						✓	✓		✓				✓	✓
Spacepac http://ev.spacepac.com.au						✓								
Spacepac Solutions http://www.spacepac.com.au						✓						✓	✓	
Electrodrive / Lift Master http://www.electrodrive.com.au							✓							

Waste Management Equipment	Balers	Compactors	Glass Crushers	Automated Waste Collection	Chutes	Trolleys / Manual Handling Equipment	Bin Lifters / Tippers	Weighing Systems	Spill Containment, Spill Response, Absorbents, Drain Protection	Food Waste Management / Macerating	Waste Cooking Oil Systems	Smoking Management	Bins (General), Bin Stands	Bin Cleaning Equipment
Absorbenviro http://www.absorbenviro.com.au									✓					
Trade Environmental http://www.tradeenviro.com.au									✓					
Spillstationaustralia www.spillstation.com.au									✓					
InSinkErator https://www.insinkerator.com.au https://insinkerator.emerson.com/en-us										✓				
Cookers https://www.cookers.com.au											✓			
Rubbermaid https://rubbermaidcommercial.com.au/products/waste-management						✓			✓			✓	✓	
Sulo http://www.sulo.com.au						✓							✓	
Australian Waste Management https://www.australianwastemanagement.com.au/products							✓						✓	

C.6 Refuse Management Service Providers

Specialist Waste Services	Food Waste	Waste Cooking Oil	Hazardous Waste	Liquid Waste	Electronic Waste	Secure Document Destruction
Cleanaway * https://www.cleanaway.com.au		✓	✓			
JJ Richards * https://www.jjrichards.com.au		✓	✓	✓		
Veolia * https://www.veolia.com/anz			✓	✓	✓	✓
Suez * https://www.suez.com.au				✓	✓	
SecondBite https://www.secondbite.org	✓					
OZ Harvest https://www.ozharvest.org	✓					
Cookers https://www.cookers.com.au		✓				
ToxFree https://www.toxfree.com.au			✓		✓	
AceWaste https://www.acewaste.com.au			✓			

Appendix D Refuse Signage

D.1 Refuse Signage

Waste signage guideline are provided by the Queensland government: https://www.qld.gov.au/environment/pollution/management/waste/recovery/recycling/signage.

Also refer to the Sunshine Coast Council's Automated Waste Collection System **Education and Communication Plan** (AWCS ECP) June 2018 for additional signage specifications.

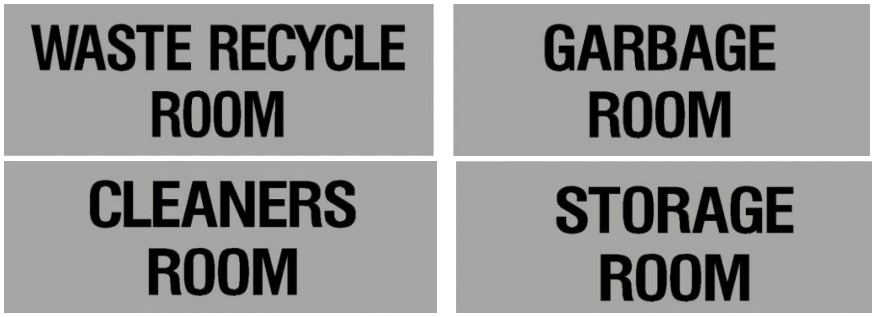
General Refuse Signage

Other Refuse Signage

D.2 Other Refuse, Facility and Safety Signage

Various signage including refuse area, safety and facility signage should be arranged through certified signage providers. Example signs can be found at http://www.signblitz.com.au, https://www.wayout.com.au or https://www.smartsign.com.

Example Refuse Room Signage



Example Facility Signage

Example Safety Signage

Appendix E Terms and Abbreviations

Please refer to the PWIS No. 3, Section 1.5.1 for relevant definitions of terms. In addition, the following terms and abbreviations may be relevant in the context of this report:

TERM	ABBREVIATION	DEFINITION
Equipment		
Automated Waste Collection System	AWCS	An Automated vacuum Waste Collection System, also known as pneumatic refuse collection, or automated vacuum collection, transports waste and recycling material at high speed through underground pneumatic tubes to a central collection station where it is compacted and sealed in containers.
Bin		A Bin is a plastic or steel container for disposal and temporary storage of waste or recycling items. Various types and sizes exist for different items and purposes. Examples include residential unit bins, Bulk Bins, Mobile Garbage Bin, Steely Bins and specialised for medical waste or cigarette butts.
Bulk Mobile Garbage Bin	Bulk MGB	A Bulk Mobile Garbage Bin is a plastic (polypropylene) receptacle that is greater than 360 litres in capacity generally ranging from 660 litres to 1100 litres used for the storage of refuse.
Collection Point		The Collection Point is an identified position where refuse bins are stored for collection and emptying. The collection point can also be the bin storage area.
Crusher		A (glass) Crusher is a machine that allows volume reduction by crushing them into small pieces. A glass Crusher can reduce the volume of glass bottle by about 75%.
Under-Sink Macerator		An Under-Sink Macerator shredders organic / food waste. It is installed under sinks for direct disposal of food waste via the sewerage system. Household-type and commercial grade macerators exist.
Green Waste		All vegetated organic material such as small branches, leaves and grass clippings, tree and shrub pruning, plants and flowers.
Mobile Garbage Bin	MGB	A Mobile Garbage Bin is a plastic (polypropylene) bin or bins used for the temporary storage of refuse that is up to 360 litres in capacity and may be used in kerbside refuse collection or on-site collection.
Organic Waste		Organic Waste is defined in Schedule 2 of the PWIS No. 3.
Private Non-Pneumatic Waste Infrastructure	PNPWI	Private Non-Pneumatic Waste Infrastructure in defined as waste infrastructure for collection of waste that is classified as not suitable for collection via an Automated Waste Collection System.
Private Pneumatic Waste Infrastructure	PPWI	Private Pneumatic Waste Infrastructure is defined as waste infrastructure for the Automated Waste Collection System for connecting a serviced premises to the Public Pneumatic Waste Infrastructure.
Recyclable Waste		Recyclable Waste is defined in Schedule 1 of the PWIS No. 3.
Refuse		Refuse is material generated and discarded from residential and commercial buildings including general waste, recyclables, green waste and bulky items.
Refuse Bin		A refuse bin is a receptacle used for the storage of refuse, e.g. Mobile Garbage Bins ('wheelie bins'), bulk Mobile Garbage Bins or Bulk Bins.
Refuse Collection Vehicle	RCV	A Refuse Collection Vehicle is a vehicle that is specifically designed for collecting and emptying refuse bins and refuse compactors.
Refuse Storage Room		A Refuse Storage Room is an area identified for storing on-site Mobile Garbage Bins or Bulk Bins within the property.
Refuse Tolley		A Refuse Trolley is a cart on wheels that can be used to collect smaller quantities of refuse from different areas or rooms of a building or site, and wheel the collected refuse to a (Bulk) Bin storage area where it is disposed. Refuse Trolley are commonly used in hotels.
Regulated Waste		Regulated Waste is defined in Schedule 2 of the PWIS No. 3.

TERM	ABBREVIATION	DEFINITION
Radio Frequency Identification	RFID	Radio Frequency Identification uses electromagnetic fields to automatically identify and track tags attached to objects. It can support waste measurement and analysis by waste fraction and by individual user.
Transfer (Manual Transfer)		Manual Transfer means physical transfer of refuse material and associated Bulk Bins or trolleys without assistance.
General Waste		Waste is defined in **Schedule 1 of the PWIS No. 3.**
Wheelie Bin		A Wheelie Bin is referred to as a Mobile Garbage Bin of up to 360 L, usually with 2 wheels for easy transfer. A common type is a 240L Wheelie Bin used for kerbside collection in many residential areas.
Measures		
Ground Floor Area	GFA	The Ground Floor Area of all storeys of a building is measured from the outside of the external walls or the centre of a common wall. It is commonly measured in square metres.
Kilogram	kg	Kilogram(s) related to refuse weight.
Litre	L	Litre(s) related to refuse volumes.
Net Lettable Area	NLA	The Net Lettable Area of a building is the sum of its whole floor lettable areas. taking measurements from the internal finished surfaces of permanent internal walls and the internal finished surfaces of dominant portions of the permanent outer build walls. It is commonly measured in square metres.
Square Metre	m^2	Square Metre(s) related to refuse areas.
Collection Vehicles		
Body Truck		A Body Truck is a conventional heavy vehicle with a covered loading area. It is generally not specifically designed for emptying the content of bins into the truck during refuse collections, but can be used to carry entire (full) bins for servicing by bin swap-over.
Medium Rigid Vehicle		A Medium Rigid Vehicle is a vehicle (truck) with no more than 2 axles and up to 8 tonnes gross vehicle mass.