THE STAR

MODIFICATION 13 PLANNING SUBMISSION

WASTE MANAGEMENT PLAN

PREPARED BY

WSP

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1 EXECUTIVE SUMMARY

SEGL has commenced a five-year redevelopment journey to create a landmark, exemplar integrated resort. This proposed redevelopment will occur through the lodgement of two s75W modification applications to the original Major Project Approval (MP08_0098) with the Department of Planning and Environment (the Department).

Modification 14 (Mod 14) was determined in October 2017 and included approval for a range of upgrades to the existing site. These upgrades included the enclosure of the level 3 terrace to facilitate an expansion in gaming floor area and a new bar and restaurants, expansion of the level 3 pre-function space, changes to the Astral Hotel lobby and retail space, and alterations to internal vertical transportation, services and infrastructure, including the harbour heat rejection system.

Modification 13 (Mod 13) is a modification to the development as approved under MP08_0098, up to and including Mod 14. This forms the basis for technical impact assessments.

1.1 WASTE MANAGEMENT

Demolition, Construction and Operational Waste considerations to support a planning submission have been addressed in this report. A summary management strategy and notional generation rates for demolition and construction waste have been provided in sections 4, 6 and 7 below.

Detailed planning of demolition and construction waste staging provisions should be conducted by the relevant contractors and project team at the appropriate point leading up to those phases.

TABLE 1.1 SUMMARY OF OPERATIONAL WASTE STREAMS, ESTIMATED MAXIMUM DAILY VOLUME AND MASS

Location	General Waste (including food organics) Daily Volume (Mass)	Commingled Recyclables Daily Volume (Mass)	Notes
Subtotal – Ritz Carlton Hotel and Residences Tower	7,460 L (990 kg)	1,740 L (148 kg)	To be handled under new waste facility provisions.
Subtotal – Modification 13 works south of tower	35,120 L (4,600 kg)	11,675 L (1,010 kg)	To be handled under existing site waste provisions.
OVERALL TOTAL	**42,580 L (5,590kg)**	**13,415 L (1,158 kg)**	Estimated total daily waste - all areas included in Modification 13

Operational waste has been assessed for a maximum potential waste case, so that adequate spatial and capacity provisions are identified for peak occupancy and activity. Variations in occupancy and activity on site will result in lower average output from the site compared to the values provided in Table 1.1.

The above projection of recyclables represents a comparable level of diversion from landfill by mass to that for the existing site operations prior to Modification 13, as detailed in 7.3.2 below.

The rate of diversion from landfill is a key metric in demonstrating that Modification 13 has limited environmental impacts due to Operational Waste beyond those already assessed for MP08_0098.

Chutes and smaller bins for receiving and transferring wastes at the source will be utilised, with suggested sizes and quantities identified. The final selection and quantity of source bins is to be determined by The Star's operations team to suit requirements for stewarding, tenancies and frequency of operation.

TABLE 1.2 SUMMARY OF NEW WASTE STORE BIN AND SPATIAL REQUIREMENTS

Waste Stream and Source	Storage Location	Number and Size of MGBs Required at Store	Approximate Minimum Spatial Provision for Bins	Notes
General Waste Residences	Loading Dock Waste Store Level B2	660L x 4	**10 m²**	
Commingled Recyclables Residences		660L x 2		
General Waste Hotel Rooms		660L x 4	**7 m²**	
General Waste All other areas, Ritz Carlton Hotel & Residential Tower		660L x 5	**12 m²**	Uncompacted waste
Commingled Recyclables All other areas, Ritz Carlton Hotel & Residential Tower		660L x 2		Uncompacted waste
Total New Waste Provision	**Loading Dock Waste Store Level B2**	**660L x 17**	**29 m²**	Total minimum waste store footprint

660L Mobile Garbage Bins (MGBs) are proposed as the primary container for bulk transfers from chute termination rooms and waste storage awaiting collection on site for the new Ritz Carlton Hotel and Residential Tower waste provisions. These bins will be used to hold General Waste and Commingled Recyclables at the designated bin store on level B2, and moved daily by stewarding to the loading zone for collection by waste vehicles. Bins will be returned to the store once collection is completed. Table 1.2 provides a summary of the bin and spatial allocations required.

The loading zone proposed to the rear of the Hotel Arrival area on B2 will be the main waste vehicle collection location under this manual waste transfer and collection strategy for the new provisions. Level grade access to the road at the loading zone will enable rear loading of bins onto a collection vehicle.

This collection zone is located on level B2 to the rear of the Hotel Arrival area and obscured from the Porte Cochere driveway and car stacker entry, improving amenity in the location during waste collection operations for residents, guests and visitors.

Vacuum waste transfer is being investigated as an alternative solution due to limited waste storage opportunities at the Ritz Carlton Hotel and Residential Tower location, allowing waste to be automatically transferred and stored at a more appropriate dock location elsewhere on the site. Automated waste transfer can address both the logistical issues of spatial provisions for waste, and operational costs and effort associated with manual bin transfers and scheduling with collections.

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MODIFICATION 13
PROPOSED WORKS

2 MODIFICATION 13 PROPOSED WORKS

Modification 13 includes the following proposed works:

2.1 NEW RITZ CARLTON HOTEL AND RESIDENTIAL TOWER

- Demolition of part of the existing building in the northern portion of the site, including part of the Pirrama Road façade and part of the Jones Bay Road façade.
- Construction of a new Tower, 237.0 metres AHD (approximate, 234 metres from Pirrama Road);
- Residential uses across 35 levels, comprising:
  - A residential vehicular drop off lobby on Level B2
  - A residential lobby on Level 00 to be accessed from Jones Bay Road;
  - Residential communal space on Level 07 to be accessed via Level 08; and
  - 204 residential apartments located from Levels 05 to 06 and from Levels 08 to 38, featuring one-bedroom, two-bedroom and three-bedroom unit types *(Note – no Level 13)*
- Hotel uses across 31 levels, comprising:
  - A hotel arrival lobby on Level B2 to be accessed from the new Ritz-Carlton porte-cochere along Pirrama Road;
  - A hotel Sky Lobby for guest check-in on Level 39 and 40, featuring a restaurant, bar and lounge;
  - 220 hotel rooms located from Level 42 to 58 and from Level 60 to 61
  - A hotel spa and gym on Level 07
  - A VIP link to the Sovereign Room on Level 04 and 04 Mezzanine
  - A Ritz-Carlton Club lounge and terrace on Level 59
  - Hotel staff end-of-trip facilities on Level B3
  - Hotel staff arrival point on Level 00
  - Hotel back-of-house and plant on Level B2, 02, 03, 05, 41and 42
- A Neighbourhood Centre consisting of the following proposed uses including street level cafe, library, learning / innovation hub, multipurpose function centre, practice rooms (functional use to be finalised in conjunction with a neighbourhood panel);
- A new car-parking stacker system below the new porte-cochere of the Ritz-Carlton Hotel, with a total capacity of 221 spaces, to serve the new hotel and apartments;
- Vertical transport associated with the tower and podium; and
- A new drop-off / pick up area (short-term parking) on Jones Bay Road for the proposed apartments.

2.2 LEVEL 07

- A 'Ribbon' at Level 07 connecting the new Hotel and Residential Tower to the existing building along Pirrama Road, comprising:
  - Two pools and associated pool decks (one for the new Hotel, one for The Star); and
  - Two food and beverage premises with associated store rooms and facilities;
- Lift access from the Level 05 Terrace to Level 07;
- Residential communal open space associated with the new residential apartments, comprising pool and landscaped terrace at the base of the Tower adjacent to Jones Bay Road;
- Gym and associated change rooms and facilities for the residents;
- Gym and associated change rooms and facilities for hotel guests; and
- Landscaping treatments.

2.3 LEVEL 05 TERRACE

- Three food and beverage outlets with external areas;
- Completion of the Vertical Transportation drum to connect with Level 05 Sky Terrace;
- Designated event spaces on the Terrace; and
- Landscaping treatment.

2.4 LEVEL 05 ASTRAL HOTEL AND RESIDENCES RECREATIONAL FACILITY UPGRADE

- New pool deck, pool, spa, gym and amenities upgrade for Astral Hotel and Residences.

2.5 TOWER TO SOVEREIGN LINK BY ESCALATOR AND LIFT

- Link from the Tower (across Level 04 and Level 04 Mezzanine) to the Sovereign Resort and MUEF at Level 03, connected via Lift G4, Lift VIP 1 and escalators
- Extension of the lift service to stop at Level 00, 01, and 05 in addition to Level 3, 4 and 4M.

2.6 LEVEL 03 SOVEREIGN COLUMN FAÇADE TREATMENT ALONG PIRRAMA ROAD

- New glazed detail to enclose exposed Level 03 Sovereign columns along the Pirrama Road façade.

2.7 VARIOUS RECONFIGURATION WORKS AROUND VERTICAL DRUM LEVEL 00 TO L5

- Revolving door at L00 main entrance landing Pirrama Road end
- Sliding door at L00 landing at stairs from Light Rail
- Reconfiguring of existing L1 and 2 void edge
- New escalators from L2 to L3 due to revised landing at Level 3
- Infill of L2 atrium void to main entrance at Pirrama Road

2.8 FAÇADE INTEGRATION WORKS

- Upgrades to the Pirrama Road and Jones Bay Road façades to integrate the new Ritz Carlton Hotel and Residential Tower with the existing building.

2.9 INFRASTRUCTURE UPGRADES

- A new plant room located within the podium over Levels 03, 04, 05 and 06 of the proposed Hotel and Residential Tower;
- Relocation of the current Level 03 cooling towers (adjacent to the MUEF) to the Level 09 plant room above the Level 06 plant room adjacent to the Astral Hotel;
- New capstone microturbine units and associated flues in the proposed plant room at Level 03 between the Darling Hotel and the Astral Residence Tower;
- New capstone microturbine units and associated flues in the new Level 03 plant room at the base of the Tower;
- Relocation of the existing main switch-room to the new plant room on Level 02, south of the demolition cut line;
- Relocation of the existing data recovery centre to the new plant room on Level B1 of the Darling Hotel;
- Relocation of diesel generator flues to the side of the new Level 09 plantroom, adjacent to Astral Hotel

2.10 LEVEL B2 TRANSPORT INTERCHANGE

- Upgrades to the Event Centre Loading Dock;
- Entry into Basement car stacker for the Tower apartments and Ritz-Carlton Hotel;
- New commuter bike parking and hire bike system;
- Upgrade of finishes to light rail station surrounds (but not within Light Rail corridor) and removal of existing wall barrier to the Pirrama Road frontage;
- Upgraded taxi-rank arrangements;
- Designated Star coach parking along Service Road in front of Light Rail station; and
- Realignment of kerbs and line-marking.
- *Note – no works to the Light Rail corridor*

2.11 TRANSPORT IMPROVEMENTS- OTHER LOCATIONS

- Reconfiguration of existing median strips on Jones Bay Road and addition of new median strip on Pyrmont Street, with associated line-marking to enable a new right-hand turning lane into the Astral Hotel Porte-Cochere;
- New Pyrmont Street carpark entry and exit, associated line marking, changes to internal circulation, and reconstruction of the pedestrian footpath along Pyrmont Street; and
- Relocation of existing feeder taxi-rank from Jones Bay Road to the Level B2 transport interchange.

2.12 SITE WIDE LANDSCAPE AND PUBLIC DOMAIN UPGRADES

- Upgrades to street frontages along Pirrama Road (for the Hotel Porte Cochere) and Jones Bay Road (for the residential entry);
- Upgrades to street frontage to Pyrmont Street, due to new car parking entry; and
- Upgrade to the entry forecourt of SELS building at the corner of Jones Bay Road and Pyrmont Street. (Note: no works within SELS building is proposed)

2.13 LEVEL 00-RESTAURANT STREET

- Creation of a new destination Restaurant Street by:
  - Incorporating existing Balla & Black Food and Beverage premises on Level 00; and
  - Converting existing retail shops into new Food and Beverage tenancies

2.14 PIRRAMA ROAD AND JONES BAY ROAD FOOD AND BEVERAGE

- A revised food and beverage tenancy at the existing Pizzaperta outlet along Pirrama Road;
- A new food & beverage tenancy at the Marquee street entry; and
- A small café outlet adjacent to the residential lift lobby at Jones Bay Road.
- A new food & beverage tenancy accessed off existing walkway from Jones Bay Road.

2.15 FOOD AND BEVERAGE – OTHER LOCATIONS

- Reconfiguration of Harvest Buffet, including new escalators from Level 00 Food Court to Level 01; and
- Refurbishment of Bistro 88 into the interim Century tenancy. (Note: The Century tenancy post-construction is proposed to be at the Jones Bay end of L00 – Restaurant Street).

2.16 DARLING HOTEL CORNERS

- Upgrade of the corner plaza at the Union/Edward Street property entry to accommodate:
  - A new Food and Beverage premises on Level 01 and 02;
  - A new entry foyer leading to the Food Court;
  - A relocated awning enclosure at street level;
- Upgrade of the corner plaza at the Union/Pyrmont Street property entry to accommodate:
  - A new awning enclosure for the existing café;
  - A new revolving door at entry to Darling Hotel
  - Eight (8) luxury display cases at Darling Hotel car park entry; and
  - Two car display areas at Darling Hotel car park entry.

2.17 SITE-WIDE ACOUSTIC STRATEGY

- A site-wide acoustic monitoring strategy applied to assess impact of potential noise generating sources in Mod13

2.18 SITE-WIDE LIGHTING STRATEGY

- A site-wide lighting strategy integrating and improving the existing lighting across the precinct, with new lighting for the proposed Tower, Podium and Ribbon, including:
  - Internal lighting of Hotel and Residential spaces;
  - Illuminated highlights at the Sky Lobby and Club Lounge levels;
  - Integrated lighting on the eastern and western vertical façade slots and angled roof profile;
  - Podium external illumination from awnings, and under retail and lobby colonnades;
  - Landscape lighting on Level 07 open terraces and pool decks;
  - Feature lighting accentuating the wing-like profile of the Ribbon and vertical element;
  - Internal and external lighting to Food and Beverage outlet at Union/Edward Street corner;
  - Façade LED lighting to the heritage SELS Building

2.19 SPECIAL LIGHTING EVENTS

- Approval for fifty three (53) Special Lighting Event nights per year. for the use of permanent installation of moving projector lights on the rooftop of the Astral Hotel

2.20 SIGNAGE UPGRADES

- Consolidation of existing signage approvals and new signage, including:
  - Approved signs;
  - Wayfinding signs;
  - Business identification (including Food and Beverage outlets); and
  - Signage on the Tower and Podium.

2.21 STORMWATER UPGRADES

- Stormwater upgrade works, including increased pit inlets and pipe capacities at the low points along Pyrmont Street and Edward Street.

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INTRODUCTION

3 INTRODUCTION

3.1 PURPOSE OF THIS REPORT

WSP have been engaged to assess Demolition, Construction and Operational Waste for the proposed Modification 13 works at The Star Sydney.

This report supports planning submission Modification 13, an s75W modification application to the original Major Project Approval (MP08_0098) with the Department of Planning and Environment and incorporating Modification 14.

The requirements of the SEARs regarding waste management are met through addressing the relevant waste provisions in the following Environmental Planning Instruments, Strategies, Plans and Guidelines identified under the SEARs.

These are The Council of the City of Sydney Policy for Waste Minimisation in New Developments 2005 (The Policy), the MP08_0098 Consolidated Conditions of Consent including Mod14 being as amended October 2017 (The Conditions), and the following additional items of planning ordinance:

- Sydney Local Environmental Plan (LEP) 2012
- Sydney Development Control Plan (DCP) 2012
- Applicable legislation and guidelines administered under the NSW Environmental Protection Authority (EPA):
  - Protection of the Environment Operations Act 1997
  - Waste Avoidance and Resource Recovery Act 2001
  - EPA 2014/0796 Waste Classification Guidelines Part 1: Classifying waste
- SEPP 65 Design Quality of Residential Apartment Development (Schedule 1, Principle 4 Sustainability),

These sources have been reviewed for input to the preparation of this Waste Management Plan.

Assessment has been conducted consistent with the approach that would apply to satisfy requirements for a Waste Management Plan, in accordance with section 3.14 of the City of Sydney Development Control Plan 2012 (*DCP*), and the Council of the City of Sydney Policy for Waste Minimisation in New Developments 2005 (*The Policy*).

3.2 REQUIREMENT FOR A WASTE MANAGEMENT PLAN

A Waste Management assessment is required to satisfy various criteria for the planning submission, including clauses from:

- The Conditions as amended by Mod 14,
- the Secretary's Environmental Assessment Requirements, amended 9 May 2016 (*SEARs*), and
- City of Sydney DCP

Part B25 of The Conditions requires that prior to issue of Construction Certificate, a Construction Waste Management Plan be prepared by a suitably qualified person and a copy submitted to the Department and Council. This Waste Management Plan provides a preliminary assessment for Construction Waste Management based on available documentation.

The SEARs include reference to relevant Environmental Planning Instruments, Strategies, Plans and Guidelines explicitly mentioning Waste Management considerations, including:

- Sydney Local Environmental Plan (LEP) 2012
- Sydney Development Control Plan (DCP) 2012
- Applicable legislation and guidelines administered under the NSW Environmental Protection Authority (EPA):
- SEPP 65 Design Quality of Residential Apartment Development (Schedule 1, Principle 4 Sustainability),

The above references have been reviewed in the preparation of this Waste Management Plan.

City of Sydney DCP clause 3.14.1 requires that a Waste Management Plan, consistent with The Policy, be used to assess and monitor the waste management process within a development.

3.3 SOURCES OF INFORMATION

TABLE 3.3 DOCUMENTATION REFERENCES FOR CONSTRUCTION AND OPERATIONAL WASTE ASSESSMENT

Drawing No.	Revision	Title/Drawing Reference	Author/Drawn	Date
SM13 AF0000–AF7000	DA01	Modification 13 80 Pyrmont St Pyrmont	FJMT	01/09/17
AUSYD160165 AS0000 – AS9055		The Star Modification 13 balance of site	DWP	01/09/2017
	C	Modification 13 Planning Submission Construction Management Plan	WSP	27/09/2017
	6	Modification 13 Loading Dock Management Plan	Change Logic	21/09/2017
	G	The Star Mod 14 Construction Pedestrian and Traffic Management Plan (CTMP)	Mott Macdonald	02/03/2017
	F	The Star Mod14 Loading Dock Management Plan	Mott Macdonald	02/03/2017
	For Information	Hotel and Ribbon Plan Set February 2017	FJMT	22/02/2017
	For Information	Hotel and Ribbon Plan Set November 2016 Competition Submission FJMT-TSEG 2.1 – 2.39	FJMT	Nov 2016
		The Star Design Review Panel presentation	FJMT	16/03/2017
-	-	The Star Year to Date Waste Management Summary 2016-2017	SEGL	March 2017
-	-	The Star Year to Date Waste Management Summary 2015-2016	SEGL	8/12/2015
-	-	The Star Year to Date Waste Management Summary 2014-2015	SEGL	8/12/2015
		Amended Secretary's Environmental Assessment Requirements (SEARs)	Dept. Planning	09/05/2016
		Council of the City of Sydney Policy for Waste Minimisation in New Developments (*The Policy*)	City of Sydney	2005
		City of Sydney Development Control Plan 2012	City of Sydney	2012

		Sydney Local Environmental Plan 2012	City of Sydney	2012
	1.1	Green Star Design and As Built Submissions Guidelines v1.1	GBCA	1/7/2015
-	-	Better Practice Guide for Waste Management in Multi-Unit Dwellings (*The Better Practice Guide*)	Department of Environment & Climate Change NSW	June 2008
-	-	Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial facilities	NSW EPA	Dec 2012
		Waste Less, Recycle More: A five-year $465.7 million Waste and Resource Recovery Initiative	NSW Government / NSW EPA	2013
AS4123.7		Mobile waste containers Part 7: Colours, markings, and designation requirements	Standards Australia	2006
		The Star Modification 13 Vacuum Waste System	FJMT	22/5/17
		STREAM Automated Waste Collection System (AWCS)	Project Advisory Group	

3.4 WASTE STRATEGY AND SYSTEM

3.4.1 Existing Waste Provisions

Waste collection presently occurs at the Darling loading dock accessed via Edward Street, with bins and compactors for recycling, glass and paper stored in and collected from the dock. Site stewarding staff currently rotate full for empty source waste bins at the various points of use, transferring them to the dock storage receptacles from which collection occurs.

This assessment identifies works under Modification 13 that will generate waste to be handled under The Star's existing bin, transfer, waste store and collection arrangements at the Edward St dock.

For these works, estimated volumes of waste and indicative quantities of bins required are noted, to inform The Star's operations regarding waste arising from this aspect of the works.

The Star's operations team may then take appropriate action, outside of the recommendations of this assessment, to adjust the existing waste management provisions to accommodate these works if required.

The existing site waste strategy and provisions are to be reviewed against the provisions in this waste management plan, and adjusted as appropriate to align The Star's operations across the site.

3.4.2 Proposed Works

Space uses and areas forming part of the Modification 13 proposed works indicated on architectural plans by DWP and FJMT are addressed by this waste management plan. All other areas are assumed to be addressed under The Star's existing waste management strategy and provisions.

The areas explicitly assessed under this waste management plan are as follows:

- North tower Ritz Carlton residential including dwellings, residential gym and lobby/pool facilities
- North tower Ritz Carlton Hotel rooms, Sky lobby facilities, Club Lounge, Spa and Treatment rooms and Gym
- Level B3 staff end-of-trip (EOT) facilities
- Level B2 Food & Beverage
- Level 00 new Food & Beverage works - food court and Pirrama Rd
- Sky Lobby Offices
- New Level 01 and 02 Retail, Food & Beverage including Gastro Pub, Café extension corner of Union & Pyrmont St
- Changes of use in existing Level 01 and 02
- Level 5 Sky Terrace restaurants

The proposed Ritz Carlton Hotel and Residential Tower at the north end of the site is identified as the primary source of new operational waste volumes to be generated, and is the focus of strategy recommendations and management provisions in this report.

Operational waste for proposed Modification 13 works south of the tower is to be accommodated by the existing Darling dock waste storage and collection provisions.

Transfer of waste from these areas south of the tower is to be handled under existing arrangements, including manual transfers by stewarding staff and use of the Back of House service corridors and service lifts in place.

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DEVELOPMENT PHASES

4 DEVELOPMENT PHASES

4.1 DEMOLITION

Demolition of the existing podium structure to the north end of the site will occur from the notional cut line indicated on the architectural plans, southeast of the existing goods lift.

Demolition will occur while maintaining operations on the adjacent areas of the site. The dismantling and removal of the existing structure, including de-fit, will generate waste with a large component considered to be recoverable resource.

A minimum 90% recovery target for waste produced during demolition is recommended, in line with best practice targets under a Green Star rating.

Advisory Note AN2 of The Conditions states that, prior to commencement of any waste removal from the site, the RMS Traffic Management Centre is to be notified of truck route(s) to be followed by vehicles transporting waste material from site.

4.2 CONSTRUCTION

Construction of the proposed development will generate a variety of waste materials from stages including site establishment, concrete slab and walls construction, services, partitioning and fit-out, landscaping and pavement.

Most materials to be employed in construction are readily recycled or reused, and include structural steel, steel framing, cladding and roof sheeting, plasterboard linings, timber framing, decorative aluminium and other metal trims, glazing, asphalt pavement and concrete.

A minimum 90% recovery and recycling target is recommended for all waste from construction materials produced during construction. Improving on the 76% Aggressive Recovery Scenario 2014 target set in The Policy, this represents the equivalent of a best practice target for construction waste recovery under a Green Star rating and should be achievable with sufficient planning and coordination of site trades and specifications.

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 opportunity for construction waste to be generated in the first instance.

It is expected that the main items of waste to be generated will be trimmings and off cuts, and materials damaged during construction.

Specific collection zones and receptacles for different construction waste streams are to be allocated within a construction zone adjacent to Pirrama Rd and the Ritz Carlton Hotel and Residential Tower location.

Education of subcontractor and trades personnel regarding requirements for recovery of construction wastes is to form part of site induction measures.

Maximising the recovery of resources from construction waste will minimise costs and environmental impacts associated with landfill disposal.

Estimated volumes of waste to be generated during construction are provided in the relevant section under Waste Streams and Waste Volumes below.

As for Demolition above, Advisory Note AN2 of The Conditions states that, prior to commencement of any waste removal from the site, the RMS Traffic Management Centre is to be notified of truck route(s) to be followed by vehicles transporting waste material from site.

4.3 OPERATION

Operational waste is generated once the site is fully constructed, with the commencement of occupancy and operation.

Different space uses have varying profiles for types and quantities of waste that will be generated.

Waste generated during operation is affected by the mix of uses and amount of activity that occurs on a weekly basis.

This plan identifies the breakdown of space uses so that the various waste producing activities are adequately accounted for in spatial and capacity provisions.

The aim of this Operational Waste Management Plan is to establish a strategy that:

- Maximises resource recovery from waste generated, and minimises diversion of waste to landfill;
- Provides a coordinated system for storing and collecting waste from the site; and
- Manages operational waste on site to be healthy and efficient, minimises disruption to amenity, and is conducive to minimising the absolute quantities of waste generated.

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INPUTS, ASSUMPTIONS, REFERENCE DATA

5 INPUTS, ASSUMPTIONS, REFERENCE DATA

5.1 WASTE GENERATION VOLUMES

Waste generation factors for various types of functional use, as stated in Appendix A of The Better Practice Guide for Waste Management in Multi-Unit Dwellings and Appendix B of The Policy, have been applied for the calculation of predicted volumes of waste to be generated during operation.

The factors listed in Table 5.1 have been applied as a reasonable estimation of functional area and activity occurring, and considering comparative levels of occupancy in the space where certain functional uses are not quantified in the references or available in operational data from The Star.

TABLE 5.1 WASTE GENERATION VOLUMES

Functional Area	Waste Generation Rate Applied	Notes
Residences	• 80L / week for General Waste • 40L / week for Commingled Recyclables	This is the 'rule of thumb' allowance stated in the Better Practice Guide for typical multi-unit dwellings. Residences are assumed fully occupied 7 days / week for conservative estimate.
Spa Treatment Rooms	• 20L / 100m² / day for General Waste • 10L / 100m² / day for Commingled Recyclables	Estimated values for complementary health services as applied to other projects.
Back of House	Nil	BOH areas except clearly designated offices are considered ancillary to primary use spaces and are excluded from the calculation of generated volumes.
Sky Lobby Bar and Lounge areas	• 50L / 100m² / day for General Waste • 50L / 100m² / day for Commingled Recyclables	Equivalent average rates for licensed club premises.
Sky Lobby Restaurant, Club Lounge Dining, Sky Terrace Café/Bar, Century Restaurant, Black / Balla restaurants	• 660L / 100m² / day for General Waste • 130L / 100m² / day for Commingled Recyclables	Restaurant areas from The Better Practice Guide, where a high proportion of food organics is allowed for due to preparation using fresh produce.
Level 00 food court / Pirrama Rd Food & Beverages tenancies other than restaurants	• 190L / 100m² / day for General Waste • 190L / 100m² / day for Commingled Recyclables	Average volumes of waste for restaurants from Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities, to represent smaller / premade / limited menu vendors.
Gymnasiums EOT Facilities	• 5L / 100m² / day for General Waste • 5L /100m² / day for Commingled Recyclables	Low rate of waste generation estimated, primarily for amenities - paper towel waste with drink and food containers / packaging.
Hotel Rooms	• No separated Commingled Recyclables • 12L / room / day for General Waste	Hotel rooms are assumed fully occupied 7 days / week for conservative estimate.

5.2 VOLUME TO MASS CONVERSION

The conversion factors for waste volume to weight employed in calculation of waste masses where applicable in this report are derived from the following sources:

- Green Star Design and As Built v1.1 Submission Guidelines Table 22.1;
- Waste Authority Western Australia, Guidance Note 6 Converting Volumes to Tonnes; and
- Appendix A of The Better Practice Guide.

Approximate densities thus derived for the main waste streams are:

- Commingled Recyclables (containers/paper/card): 0.086 tonne / m^3
- General Waste, uncompacted: 0.131 tonne / m^3.

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FUNCTIONAL AREAS AND TYPES OF WASTE

6 FUNCTIONAL AREAS AND TYPES OF WASTE

The following tables provide a breakdown of waste sources by stage and/or functional use of each area and for each phase of the project, from Demolition through to occupancy and Operation.

6.1 DEMOLITION WASTE

TABLE 6.1 SOURCES AND TYPES OF WASTE PREDICTED FROM DEMOLITION

Source	Waste Type(s)	Notes
Structural	Steel Structural and Reinforcing	Primary structure is concrete/masonry and steel.
	Precast Concrete	
	Post tensioned concrete poured in-situ	
	Blockwork	
De-fit	Aluminium and other Mixed Metals	Trims, façade features, cladding. Stud framing.
	Wiring	Electrical and data cabling.
	Glass	Broken Glazing.
	Gypsum Plasterboard	Wall and ceiling linings.
	PVC	PVC waste from conduits and drainage.

6.2 CONSTRUCTION WASTE

TABLE 6.2 SOURCES AND TYPES OF WASTE ESTIMATED TO BE GENERATED DURING CONSTRUCTION

Construction	Waste Type(s)	Notes
Excavation	Contaminated spoil	To be treated in accordance with CMP / EMP.
Structural	Reinforcing Steel	Stockpiles and stores to be located at suitable places within the construction zone as indicated for Modification 14 works in the CTMP. Storage skips and racks to hold materials as construction progresses to be regularly collected by recycling contractors, and relocated adjacent to active works as construction progresses.
	Structural Steel	
	Precast Concrete	
	PT Concrete poured in-situ	
	Blockwork	
Fitout	Mixed metals	Trims, façade features, cladding.
	Wiring	Electrical and data cabling off cuts.
	Timber	Cabinetry and shop fitting Timber partitioning where employed.
	Gypsum Plasterboard	Wall and ceiling linings.
	PVC	PVC waste from drainage installation, offcuts and occasional damaged pipe lengths.
	Other plastics	Packaging waste (should be minimised through procurement where possible).
	Bulk cardboard / paper waste	Equipment packaging. In the first instance, arrangements made with suppliers to limit packaging or take back bulk packaging post-delivery will minimise the need to recycle this waste on site.
Trades	Domestic General Waste	Trades on-site operational activities, site office and lunch rooms waste.
	Domestic Commingled Recyclables	

6.3 OPERATIONAL WASTE

TABLE 6.3 SOURCES AND TYPES OF WASTE ESTIMATED TO BE GENERATED DURING OPERATION

Functional Area / Use	Waste Type(s)	Notes
Residential – Serviced Apartments	General Waste Commingled Recyclables Cardboard and Paper separated waste Bulky hard waste items	Typical municipal domestic waste composition.
Hotel Rooms and Sky Villas	General Waste	Separation of recyclables from room waste requires provision of separate co-located receptacles in rooms.
Hotel Restaurant, Club Lounge, Kitchens	General Waste Food Organics Liquid Oil Waste Separated Glass containers Separated Plastic Containers Separated Cardboard & paper waste	Highest proportion of food organics of all functional areas.
Offices	General Waste Commingled Recyclable Containers Cardboard & Paper separated waste	
Community Space	General Waste Commingled Recyclables	
Retail	General Waste Commingled Recyclables	Retail spaces are assumed non-food sales.

THE STAR

WASTE STREAMS AND WASTE VOLUMES

7 WASTE STREAMS AND WASTE VOLUMES

7.1 DEMOLITIONWASTE

Demolition of part of the existing podium building is to occur along a notional cut line as indicated by the approximate structural section to be removed shown in Figure 7.1 below.

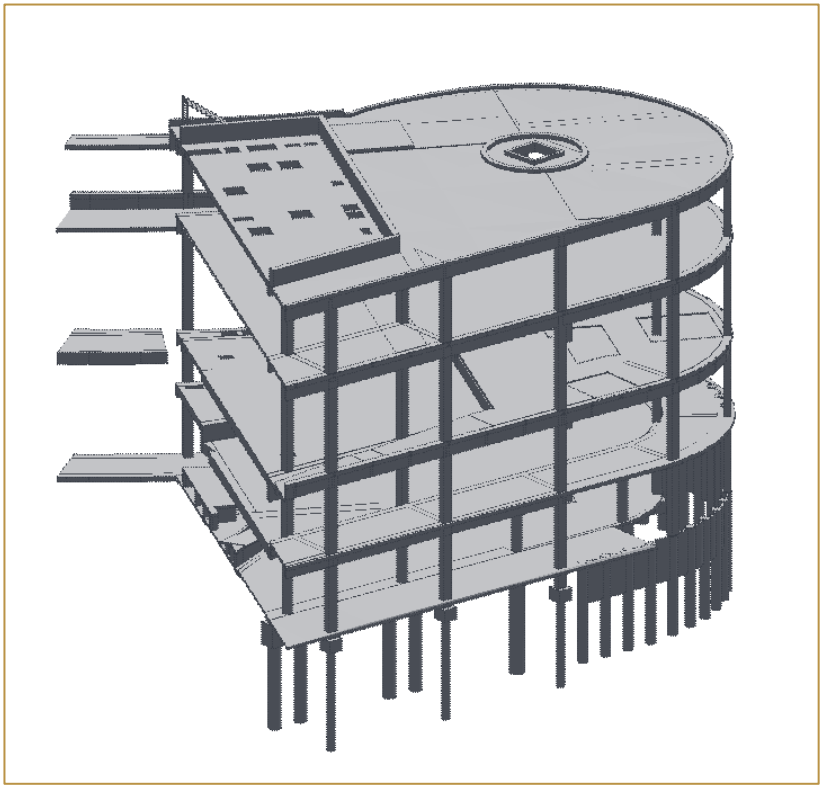


FIGURE 7.1 INDICATIVE SECTION OF PART-PODIUM BUILDING STRUCTURE TO BE DEMOLISHED - PROPOSED MODIFICATION 13 WORKS

The primary component of demolition waste will be the structural concrete from foundations, floor slabs, columns, walls and stairs. A mix of high strength solid concrete as post tensioned and in-situ reinforced slabs and panels and concrete blockwork make up the total volume of concrete to be extracted during demolition.

A large quantity of structural steel is also anticipated in the demolition stream, which by weight accounts for a much smaller component of the total waste stream than the concrete.

TABLE 7.1 DEMOLITION PRIMARY WASTE STREAMS AND ESTIMATED VOLUMES / WEIGHTS

Waste Stream	Volume / Quantity of Waste*	Weight	Notes
Concrete	>90% of total	Approximately 3,600 tonnes	According to original structural BIM data - TTW.
Steel	<5% of total by weight	Approximately 400 tonnes	90% recovery of these demolition components to be achieved through recovery and recycling waste contractors.
Aluminium and other Mixed Metals			
Wiring	<1% of total		
Glass	<1% of total		
Gypsum Plasterboard	<1% of total		
Total		**Approximately 4,000 tonnes**	

It is anticipated that a long reach boom crane to be installed on site for the demolition and construction works will be utilised for craning of demolition waste off the works locations to collection zones where necessary.

7.2 CONSTRUCTION WASTE

TABLE 7.2 CONSTRUCTION WASTE STREAMS AND ESTIMATED VOLUMES / WEIGHTS

Waste Stream	Volume / Quantity of Waste*	Notes
Steel	~2% of total by weight	90% recovery of these mixed waste streams to be achieved through collection by reuse and recycling waste contractors.
Mixed Metals		
Wiring	<1% of total	
Concrete		
Timber	<1% of total	
Gypsum Plasterboard	<1% of total	
Domestic General Waste		Conventional municipal waste streams arising from contracting personnel on site.
Domestic Commingled Recyclables		
Bulk cardboard / paper waste		Equipment packaging. In the first instance, arrangements made with suppliers to limit packaging or take back bulk packaging post-delivery will minimise the need to recycle this waste on site.

* percentage composition and total of recyclable construction waste is an indicative estimate. Quantities and percentage breakdown to be reviewed at tender/construction stage.

As for demolition, it is anticipated that a long reach boom crane to be installed on site for the demolition and construction works will be utilised for craning of construction waste off the works locations to collection zones where necessary.

7.3 OPERATIONAL WASTE

Daily waste collections are recommended, so that available storage capacity and holding space is not exceeded, and hygiene and odour control are maintained.

All analysis following assumes daily quantities of waste.

Operational waste volume is calculated in accordance with established factors, per number of dwellings/rooms, m² of GFA, or other applicable metrics for specialised wastes and spaces where appropriate.

The role of staff contributions to waste rates in non-residential space types are assumed accounted for within the calculation factors that are applied.

Back of House (BOH) provisions for staff, such as amenities and change rooms, are not included in the areas used for calculations, as these are considered ancillary to the primary space types the BOH areas serve.

7.3.1 Waste Streams

The assessment considers maximum quantities of waste to be generated, including full occupancy and the upper provision for general waste due to food organics from restaurants. Assessing for maximum rates means that spatial requirements and bin provisions are unlikely to be exceeded during peak events.

Using applicable factors from The Better Practice Guide and those stated in Waste Generation Volumes above, waste quantities have been calculated as two primary streams, General Waste and Commingled Recyclables. These primary streams identify the overall quantity of waste that is recoverable as recyclables and that which would typically be sent to landfill.

Depending on source, the General Waste stream can contain significant quantities of food organics, able to be processed separately where provisions are made. The Commingled Recyclables stream can also be further separated where the source generates a high percentage of one type of recyclable such as glass or paper/cardboard.

7.3.2 Historical Waste Separation and Diversion from Landfill

Historical waste management summaries for the Star identify glass, organics, cardboard recycling and secure document destruction as distinct sub-streams of recyclables diverted from landfill.

When combined these account for approximately 44% diversion by mass from landfill, with food organics accounting for approximately 25% of total waste. The remaining recyclable sub-streams make up the equivalent of the Commingled Recyclables waste stream used in this report, and account for approximately 19% of the total waste by mass.

The opportunity for sub-stream separation and treatment is to be analysed in further detail during design development, considering targets for resource recovery and provisions for cost, spatial and future unification of the existing and new waste facilities. This approach would be unlikely to have any material impact on the design of the development or result in any potential environmental impacts.

7.3.3 Colour Coding Conventions

In accordance with generally adopted conventions, the colourings indicated in Table 7.3 should be selected for distinguishing waste bins and transfer locations, and for marking relevant areas of storage rooms. The colours are also adopted for indicating the main waste stream parameters in the following tables.

TABLE 7.3 WASTE STREAM COLOUR CODING CONVENTIONS

Colour	Waste Stream	Notes
RED	General Waste to landfill	All sources addressed in this plan
YELLOW	Commingled Recyclables (paper / cardboard / glass, steel and plastic containers)	All sources addressed in this plan
BLUE	Separated paper and cardboard waste	Managed for existing provisions on site
LIME GREEN	Green organics waste	Optional inclusion
BURGUNDY	Separated food organics for treatment	Optional inclusion, reduces overall waste to landfill especially from restaurants and F&B spaces preparing fresh produce.

7.3.4 Waste Quantities - Modification 13 Works

The estimated quantities of General Waste and Commingled Recyclables for the Modification 13 works are summarised in Table 7.4 below, and broken down by areas to be served by new waste facilities and those to be served by existing.

TABLE 7.4 SUMMARY OF OPERATIONAL WASTE STREAMS, ESTIMATED DAILY VOLUME AND MASS

Location	General Waste (including food organics) Daily Volume (Mass)	Commingled Recyclables Daily Volume (Mass)	Notes
Residences Ritz Carlton Hotel and Residences Tower	**2,340 L (310 kg)**	**1,175L (100 kg)**	
Hotel Rooms Ritz Carlton Hotel and Residences Tower	**2,640 L (350 kg)**	**-**	Combined landfill - separated recycling not collected.
Food & Beverage Ritz Carlton Hotel and Residences Tower	**1,780 L (235 kg)**	**540 L (46 kg)**	Includes Sky Lobby, Club Lounge.
Other spaces Ritz Carlton Hotel and Residences	**702 L (92 kg)**	**24 L (2 kg)**	Includes Community, Spa and Treatment Rooms, EOT.
Subtotal – Ritz Carlton Hotel and Residences Tower	**7,460 L (990 kg)**	**1,740 L (148 kg)**	**Subtotal of waste quantities to be handled under new waste facility provisions.**
Other spaces Ribbon	**6,910 L (905 kg)**	**1,935 L (167 kg)**	Includes Sky Terrace and Hotel Gym, Level 00 Century Restaurant.
Food & Beverage, Retail Modification 13 Spaces other than Tower / Ribbon	**28,210 L (3,695 kg)**	**9,740 L (840 kg)**	Includes B2 and L0 Restaurants, Food Court, Gastro Pub, Retail.
Subtotal – Modification 13 works south of tower	**35,120 L (4,600 kg)**	**11,675 L (1,010 kg)**	**Subtotal of waste quantities to be handled under existing site waste provisions.**
OVERALL TOTAL	**42,580 L (5,590kg)**	**13,415 L (1,158 kg)**	Overall maximum anticipated waste to be generated by all areas under the Modification 13 scope of works

The projected quantity of recyclables represents a similar percentage of landfill diversion by mass to that for the existing site operations. The overall total in Table 7.2 above represents approximately 17% diversion by mass from landfill, compared to 19% diversion indicated by recent historical data for the existing site.

A significant component of the General Waste stream, between 25% and 50% by mass, could be made up of food organics arising from the range of food & beverage operations encompassed by the Modification 13 works. Where provision is made to capture and separately process organic waste from the food and beverage operations, this represents between 42% and 67% potential diversion from landfill.

In responding to the requirements of the SEARs, the rate of diversion from landfill is a key metric in demonstrating that Mod 13 has limited environmental impacts due to Operational Waste beyond those already assessed for MP08_0098.

The Modification 13 works, by meeting or exceeding the rates of diversion from landfill for operational waste when compared to the existing site baseline, demonstrate limited environmental impacts due to waste sent to landfill.

THE STAR

MANAGEMENT OF OPERATIONAL WASTE

8 MANAGEMENT OF OPERATIONAL WASTE

8.1 WASTE STREAM SOURCE SEPARATION

A key step in mitigating the environmental impacts of waste from a development is to address the waste at its point of generation.

Separation of waste streams at the source is essential to effectively maximising recycling and recovery of resources and minimising the amount of waste diverted to landfill.

General Waste attracts higher disposal costs than Recyclables, reflecting the cost for landfill provisions, and therefore cost savings may be realised by initiatives that help to move Recyclables out of the General Waste stream.

- Separate, co-located receptacles for General Waste and Recyclable materials should be placed at each source bin position in residences, retail, food & beverage and public realm locations.
- Provision for separate food organics receptacles at those food & beverage outlets generating high fractions of organic waste will allow for separate processing of such wastes.
- Colour coding, signage and marking will provide clear indication of the type of waste to be deposited in the receptacles.
- Making source separation of waste as easy as possible for staff, patrons, residents and visitors on the site will support reductions in waste sent to landfill and associated collection and disposal costs.

An additional initiative, to include a separate co-located receptacle for recycling in each hotel room, could further reduce the amount of General Waste created, and unify the hotel operations to the waste diversion and minimisation strategy for the site.

8.2 BINS AND STORAGE LOCATIONS

660L Mobile Garbage Bins (MGBs) are proposed as the primary container for waste storage awaiting collection on site for the new Ritz Carlton Hotel and Residential Tower waste provisions. These bins will be used to hold General Waste and Commingled Recyclables at the designated bin store on level B2, and moved daily by stewarding to the loading zone for collection by waste vehicles. Bins will be returned to the store once collection is completed.

The remaining proposed Ribbon facilities, Food & Beverage and Retail works will be serviced by the existing waste management provisions on site. These comprise a mixture of 660L, 240L and 120L MGBs for servicing the various locations, in conjunction with the existing Edward St loading dock holding bins and compactors.

The guidelines and recommendations for specification of bin stores and associated facilities provided in Appendix A are to be followed in the provision of best practice waste facilities under this plan.

8.2.1 New Waste Provisions - Ritz Carlton Hotel and Residential Tower

New provisions for waste transfer, storage and collection are required for the areas encompassed by the proposed Ritz Carlton Hotel and Residential Tower, including the hotel rooms, residences, lounges and food & beverage and associated facilities.

Provisions include source bins, holding and transfer facilities and storage space for collection and removal of waste from the site.

Generally, separated locations for residential and non-residential waste storage bins in the Level B2 Waste Store is recommended, to avoid contention between residents and other tenants for bin use, and to improve management and administration of the waste system.

A compacting carousel arrangement at chute terminations for General Waste bins can reduce the overall volume of waste and number of bins stored. A compaction factor of 1.5 is typically applicable for General Waste.

The concept provisions involve the termination of chutes at Level 41 plant room for the hotel rooms and at a location above the Level 00 lobby for the residences, with manual handling transfer of bins to the loading dock Waste Store on level B2 from where collection occurs.

In total, minimum 17no. 660 litre Mobile Garbage Bins will be required for daily holding requirements of General Waste and Commingled Recyclables in the level B2 waste store. The allocation of these holding bins as well as for smaller 120L and 240L source bins is described in Table 8.1 below.

TABLE 8.1 HOTEL AND RESIDENTIAL TOWER - SUMMARY OF WASTE TRANSFER METHODS AND HOLDING LOCATIONS

Location / Stream	Bin Type and Count	Transfer Method	Storage Location and Collection Zone	Notes
Residences L5/6, L8-38 Separated General Waste	**660L MGB x 5** • 4 holding bins at level B2 waste store • 1 bin for swapping out at residential chute termination.	Single chute Terminating L01 BOH area, adjacent to existing goods lift	Bins rotated out from L01 chute termination will transfer via goods lift to B2 loading dock residential waste store	Manual handling transfer of bins by stewarding via lift from L01 to B2.
Residences L5/6, L8-38 Commingled Recyclables	**660L MGB x 2** • holding bins at level B2 waste store. **120L MGB x 32** • 1 per residential floor • 1 extra minimum for swapping out (more if multiple floors to be cleared simultaneously)	On-floor holding bins for recyclables. Bins stored adjacent to General Waste chute access room.	Bins will transfer via goods lift to B2 loading dock residential waste store.	Stewarding manual handling small bin transfer via lift, from all residential floors to B2. Bin lifter may be required at B2 waste store for emptying 120L MGBs.
Hotel Rooms L43-L58 Combined Landfill Waste	**660L MGB x 5** • 4 holding bins at level B2 waste store • 1 bin for swapping out at L41 chute termination	Single chute Terminating L41 plant space.	Bins rotated out from L41 chute termination will transfer via goods lift to B2 loading dock hotel waste store.	Manual handling transfer of bins by stewarding via lift from L41 to B2.
Hotel Food & Beverage and Other areas Sky Lobby, Club Lounge, Spa/Treatment Rooms, offices and Community Separated General Waste	**660L MGB x 5** • Holding bins at level B2 waste store **240L MGB x 13** • 7 source bins for Sky Lobby bar / lounge, mezzanine restaurant, offices • 3 source bins for Club Lounge dining and bar • 3 source bins for Community areas **120L MGB x 1** • Source bin for Spa/Treatment Rooms	Source bins swapped and transferred to L41 storage bins, or directly to B2 loading dock waste store.	Large storage bins from L41 plant space will transfer via goods lift to B2 loading dock hotel waste store.	Manual handling transfer of bins by stewarding via lift from each level to B2. Small (40L) bins to serve Sky Lobby offices and B03 EOT facilities, and emptied to 120L source bins for transfer.
Hotel Food & Beverage and Other areas Sky Lobby, Club Lounge, Spa/Treatment Rooms, offices and Community B03 EOT facility Commingled Recyclables	**660L MGB x 2** • Holding bins at level B2 waste store **240L MGB x 3** • source bins for Sky Lobby bar / lounge, mezzanine restaurant, offices **120L MGB x 3** • 1 source bin for Club Lounge dining and bar • 1 source bin for Spa/Treatment Rooms			

Alternative movement and storage options of residential waste bins, for consideration during design development, may include the following. These options are unlikely to materially impact the design or result in environmental impacts:

- Creation of a chute termination waste room for residential waste on Level 01 above the lobby area, with manual handling transfer via service lift.
- Installation of a second chute or automated dual stream function for single chute, to accommodate commingled recyclables and remove the need for manual handling of recyclable bins on each residential floor.

8.2.2 Existing Waste Provisions - Ribbon and other Modification 13 Works

The remaining proposed Modification 13 works that include the Ribbon hotel facilities, food & beverage and retail works including those in the Food Court and along Pirrama Rd will be serviced by the existing waste management provisions on site.

These works represent a change in the mix of existing operations on site rather than a net new quantum of development, and present no additional environmental impacts compared to the baseline for the Mod 13 assessment.

Suggested source bin combinations for collecting waste at each location and transferring to the Edward St loading dock are summarised in Table 8.2.

TABLE 8.2 RIBBON, FOOD COURT, PIRRAMA RD AND GASTRO PUB - SUMMARY OF WASTE TRANSFER METHODS AND HOLDING LOCATIONS

Location / Stream	Bin Type and Count	Transfer Method	Storage Location and Collection Zone	Notes
Ribbon Hotel Gym, L05 Sky Terrace Cafés / Bars, F&B Separated General Waste	**120L MGB x 1** • Gym source bin for transfer to dock **660L MGB x 11** • Sky Terrace source bins, either total provided or number of daily exchanges	Transfer and source bin exchange by stewarding	Edward St loading dock waste store, under existing collection arrangements	Manual handling transfer of bins by stewarding to Edward St dock. Bin lifter may be required at Edward St dock waste store
Ribbon Hotel Gym, L05 Sky Terrace Cafés / Bars, F&B Commingled Recyclables	**120L MGB x 1** • Gym source bin for transfer to dock **660L MGB x 3** • Sky Terrace source bins, either total provided or number of daily exchanges			
Food & Beverage, Restaurants Black / Balla, Century, Pirrama Rd F&B, Pirrama Rd Restaurants, Food Court F&B Separated General Waste	**660L MGB x 27** • source bins, either total provided or number of daily exchanges - OR - **240L MGB x 72** • source bins, either total provided or number of daily exchanges - OR - **120L MGB x 143** • source bins, either total provided or number of daily exchanges			
Food & Beverage, Restaurants Black/Balla, Century, Pirrama Rd F&B, Pirrama Rd Restaurants, Food Court F&B Commingled Recyclables	**660L MGB x 12** • source bins, either total provided or number of daily exchanges - OR - **240L MGB x 30** • source bins, either total provided or number of daily exchanges - OR - **120L MGB x 58** • source bins, either total provided or number of daily exchanges			

8.2.3 Waste Store Indicative Spatial Requirements

Bin quantities and gross spatial allowances for bin storage are provided in Table 8.3 below Note that for free standing bins, a circulation factor of 1.5 times the bin footprints is included to allow for adequate manual handling provisions and rearrangement of bins in the store space.

TABLE 8.3 SUMMARY OF BIN QUANTITIES AND GROSS SPATIAL ALLOWANCES FOR STORAGE

Waste Stream and Source	Storage Location	Number and Size of MGBs Required at Store	Approximate Spatial Provision for Bins	Notes
General Waste Residences	Chute Termination Room Location TBC	**660L x 4**	**7 m²**	Requires ~11m² additional area for compacting carousel if installed
Commingled Recyclables Residences	On-Floor holding bin cupboard	**120L x 1**	**1 m²**	Adjacent to chute access.
General Waste Hotel Rooms	Chute Termination Room Level 41	**660L x 4**	**7 m²**	Requires ~11m² additional area for compacting carousel if installed
General Waste Residences	Loading Dock Waste Store Level B2	**660L x 4**	**10 m²**	
Commingled Recyclables Residences		**660L x 2**		
General Waste Hotel Rooms	Loading Dock Waste Store Level B2	**660L x 4**	**7 m²**	
General Waste All other areas, Ritz Carlton Hotel & Residential Tower	Loading Dock Waste Store Level B2	**660L x 5**	**12 m²**	Uncompacted waste
All other areas, Ritz Carlton Hotel & Residential Tower		**660L x 2**		Uncompacted waste
Total New Waste Provision	**Loading Dock Waste Store Level B2**	**660L x 17**	**29 m²**	**Total minimum waste store footprint**

8.2.4 Excess Waste Capacity

Provision of adequate capacity within the waste system to accommodate a degree of variability without overflow or increased frequency of collections further mitigates the potential for environmental impacts arising from the Mod 13 works.

To maintain suitable capacity, active monitoring and review of the waste streams and storage provisions will avoid the undesirable environmental impacts of dumping overloaded streams into landfill to avoid amenity impacts, or increased collection vehicle movements to and from the site to deal with excess capacity.

Spatial limitation at the proposed dock and waste chute terminations constrains the opportunity for spare bins and spatial capacity to be reserved for changes in operations that may increase the predicted rates of waste generation.

Regular monitoring of bins servicing each of the waste streams is recommended, to identify if waste is being disposed of correctly and to take corrective action through notification and education.

Vacuum waste transfer will be investigated during design development as a possible alternative due to limited waste storage opportunities at the Ritz Carlton Hotel and Residential Tower location. This option will allow waste to be automatically transferred and stored at a more appropriate dock location elsewhere on the site. Further detail on the concept for vacuum waste transfer is discussed in section 8.5 below. This initiative would be unlikely to have any material impact on the design of the development or result in potential environmental impacts.

8.2.5 General Waste

Where recyclable material is found to be entering the General Waste stream, this should be addressed so that available General Waste storage capacity is not taken up by the lower density Commingled Recyclables. This will free up General Waste capacity while at the same time reducing the cost of disposal attributed to the misdirected recyclable content.

8.2.6 Commingled Recyclables

Similarly, contamination of the Commingled Recyclables stream with general waste should be addressed, to maximise the opportunity for recovery of recyclable material, avoid charges for landfill disposal of contaminated loads and ensure full utilisation of the provided recyclable capacity in the waste system.

8.3 TRANSFER OF WASTE

8.3.1 General Waste and Recyclables

Waste from hotel rooms and residential apartments will be transferred by cleaning staff and residents respectively to the chute access room on each floor.

Chutes in the hotel section will terminate at the Level 41 plant room, with an optional compactor and/or carousel facility, from where bins will be manually handled via the service elevator to the B2 waste store and loading zone for collection.

Chutes in the residential section will terminate at the L01 Residential Waste Chute service room, with bin to be transferred manually via the service lift to the B2 loading zone for collection.

It is recommended that the hotel waste chute terminating at level 41 for waste transfer also be made available to the Sky Lobby and Sky Lobby Mezzanine levels. The mix of space uses on the sky lobby level is suited to use of the chute for disposal of general waste. This will reduce the number of smaller 240L MGB source bins required for manual transfer via the goods lift to level 41.

The kitchen on the Sky Lobby Mezzanine level will receive incoming fresh produce and move prepared food to the lower level servery via the service elevator, therefore it is proposed that waste from the kitchen be transferred via the chutes to avoid unnecessary crossover of the waste and food streams in the service elevator.

General Waste and Recyclable bins will be transferred via the service elevator from the Hotel Club Lounge and Sky Terrace kitchen and amenities by stewarding. These bins can be stored in an interim bin rotation and storage room on the level 41 plant level and then moved to level B2 loading dock waste store. Waste in bins that are manually transferred via the service elevator by stewarding will not be compacted, and therefore increases the overall spatial requirement for bins as noted in Bins and Storage Locations above.

Refer to Appendix B below for visualisation of typical transfer paths from the various sources of waste.

8.3.2 Food Organics

Under the provisions of this plan, food organics are included with the General Waste stream which will be collected daily. There is no provision to separately recover or process food organics in the new waste provisions.

OPTIONAL INITIATIVES

The following initiatives can be investigated during design development or at a future stage of enhancement in response to pressures on waste system capacity, regulatory requirements and resource reuse opportunities that arise.

Food organics can account for a high percentage of the General Waste stream, with very high proportions to be generated in the food & beverage and restaurant waste streams and smaller amounts making up the general waste from residences and hotel rooms.

Management of future capacity demands on waste provisions on site can potentially be addressed through the provision of on-site food organics pre-processing and separated collection.

Depending on the approach taken, at least three potential benefits are available from separating food organics from the General Waste stream:

- Reducing the volume of the food organics through dehydration, pulping and/or pre-composting processes releases capacity in the provisions for handling General Waste
- On-site composting can produce a value-added resource for use in landscaping on the site or in the immediate environs, while reducing waste collection costs by removing the need for off-site disposal.
- Removing food organics from the landfill waste stream greatly reduces its greenhouse gas emissions profile, by preventing the formation of methane gas from anaerobic decomposition that occurs in landfill.

8.3.3 Liquid Wastes – Oil, Etc.

Specific trade wastes related to kitchen activities are to be collected by direct arrangement between respective tenants and specialist private waste collection contractors. The primary liquid waste identified of this nature is bulk oil from cooking, and is expected to be handled in drums on trolleys via back of house transfer paths.

Treatment and management of trade waste water is to be addressed through the hydraulic specifications and Environmental Management Plan as appropriate.

8.3.4 Fresh Produce

Incoming deliveries of fresh produce to food & beverage locations within the Ritz Carlton Hotel and Residential Tower, and movements of prepared food to servery areas, will occur via the service elevator.

Transfer of waste bins may also be necessary via the service elevator. Where practical, use of the waste chutes in the tower for waste from these locations will minimise the cross flow between the waste and food streams in the service elevator.

Where use of the chutes is not practical for bin transfers, scheduling of bin movements is to be managed through stewarding such that waste movements occur outside of peak delivery and serving times.

8.3.5 Bulky Items

Due to the premium on space available for additional waste provisions, bulky hard waste items such as whitegoods and furniture to be disposed of from residential apartments should be held on the premises and collected directly by arrangement made through the Owners' Corporation.

8.3.6 Specialist Waste

Secure paper waste for document destruction will be generated and collected on an intermittent and ad-hoc schedule.

Collection of such waste by specialist collection contractors is anticipated to occur at the Jones Bay Rd dock due to its proximity to the Gaming Admin and Back of House areas on Level 00.

8.4 COLLECTION AND RECOVERY

Private contractor collection of all operational waste from The Star site is recommended, due to the scale and integration of the development and the quantities and mix of waste streams to be generated, as well as limitations on scope for municipal waste collection.

Municipal collection provisions by City of Sydney only extend to residential waste collections, requiring that private collection arrangements be made for non-residential waste.

The use of private waste collection contractors will allow for efficiencies to be built into the waste collection strategy and mitigates the potential for increased numbers of waste vehicle movements on the site, by eliminating any need to keep the residential and non-residential waste separated from each other.

Waste collections through private contractors is recommended, allowing coordination of optimal vehicle sizes and movements to maximise potential for amenity within the Star site and on the surrounding neighbourhood due to vehicle noise and movements.

8.4.1 Hotel and Residences

Daily collection of General Waste and Commingled Recyclables will require two vehicle arrivals and departures each day, one for each stream.

The collection time for the estimated number of bins servicing the Ritz Carlton Hotel and Residential Tower requirements is expected to be approximately 5 minutes for each of General Waste and Commingled Recyclable bin collection.

These two daily vehicle transits, with very short standing times, are expected to have a low impact on overall activity at the B2 loading zone.

Bins for collection will be transferred from the B2 loading dock waste store to the collection zone by stewarding staff at the scheduled collection times, and returned promptly once collection is completed.

8.4.2 Loading Zone, B2 Service Road Behind Hotel Arrival Area

A loading zone is proposed on Level B2, north of the car stacker lifts and adjacent to the light rail zone.

Provision of level grade access to the road at the northern end of this loading zone can enable rear loading of MGBs onto a collection vehicle daily.

This location is to the rear of the Hotel Arrival area, and obscured from the Porte Cochere driveway and car stacker entry, improving amenity in the location during waste collection operations for residents, guests and visitors.

8.4.3 The Star Loading Dock, Jones Bay Road

The Jones Bay Road loading dock is being investigated for the alternative vacuum transfer system. Collection vehicles are expected to enter the dock in a forwards direction, turn fully within the enclosed loading dock area and perform a short reversing manoeuvre to the proposed waste dock location in bay 1 opposite the bottom end of the dock entry ramp. A second location opposite bay 6 at the opposite corner of the dock would require a similar manoeuvre.

Collection is expected to occur daily, with General Waste collected separately to Commingled Recyclables.

FIGURE 8.1 VIEW INTO JONES BAY RD DOCK FROM STREET ENTRY, WITH NOMINATED VEHICLE ENTRY, PICKUP FROM LOCATION 1 AND EGRESS PATHS INDICATED BY GREEN ARROW MARKINGS

Rear loading vehicles for collection of waste in bins sizes up to 660L MGB are recommended, due to the lower clearance height available at this dock. These vehicles have an approximately 25m turning circle, and will need to execute a 3-point turn within the loading dock so that they can collect from the dock area at the rear of the vehicle and proceed to exit the dock also in forwards direction.

For use of a compactor with exchangeable containers, minimum 5.6m clearance for operation should be provided at the collection zone, and minimum 4.3m clearance for travel into and out of the dock. These clearances are typical for hook-arm / roll-on-roll-off (RoRo) collection trucks that would perform such operations with a compactor container.

Modifications to the waste collection bay at Jones Bay Road dock, to allow greater clearances above the compactor / bin storage space may be required for the installation of terminal equipment for vacuum waste transfer technology.

Use of the Jones Bay Rd dock with vacuum extraction and compaction equipment, as a viable solution to the spatial and operational impacts of increased waste generation and storage requirements on site, will be the subject of ongoing investigation by the project and design team.

8.4.4 Edward Street (Darling) Dock

The Edward Street dock presently functions as the primary location for waste collection operations on the site. It contains waste compactors and paper/cardboard store for recycling. The dock also serves multiple deliveries of goods for The Star each day, as well as providing access to the container lift providing load-in and load-out access for The Lyric theatre.

The Edward St dock is located at the diametrically opposite side of the site to the Ritz Carlton Hotel and Residential Tower.

It is currently proposed as the primary waste collection site for the Modification 13 projects, except for the residential and Ritz Carlton Hotel Tower and ribbon waste provisions.

8.5 VACUUM WASTE TRANSFER

For spatial and operational efficiency and future capacity, vacuum waste transfer technology is a potential solution for consideration, for moving General Waste and Commingled Recyclables from the Ritz Carlton Hotel and Residential Tower facilities to a collection zone in the Jones Bay Rd dock. Further analysis is to be conducted during the design development

phase of the project. This approach would be unlikely to have any material impact on the design of the development or result in potential environmental impacts.

8.5.1 Overview

Designated General Waste and Commingled Recycling chutes are located within the tower, fed from both the residential and hotel sources. Waste is measured to allow quantifying of the separated streams, and feeds into holding hoppers at the base of the tower.

Waste is subsequently distributed into horizontal ducts or runs as needed, transferring it to the waste stream receivers and compactors for collection. Associated plant and service space is located at the top and base of the tower with additional plant located at or adjacent to the collection zone.

A single duct can handle multiple waste streams, as the system is automated end to end so that only one type of waste travels along the duct at any point in time.

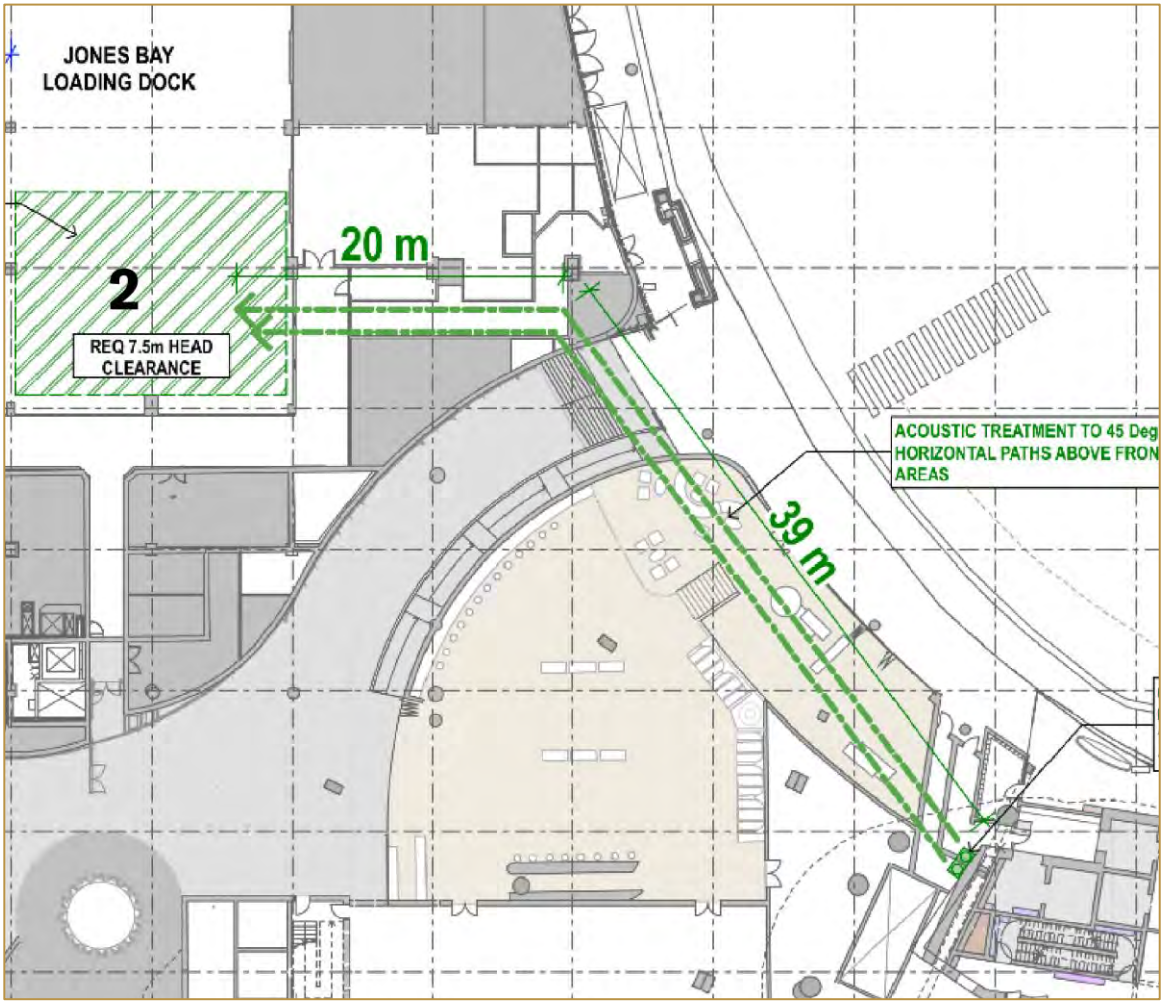


FIGURE 8.2 POTENTIAL ROUTING OF VACUUM WASTE TRANSFER DUCT BEING INVESTIGATED

The existing Jones Bay Road and Darling (Edward Street) docks were each inspected during a site visit conducted on February 28, 2017 and found to have potential for homing the vacuum waste terminal equipment.

Issues around access and coordination of space will be considered further during design development and in consultation with systems suppliers around bend angles, permissible rates of rise in the duct and other performance factors.

Sheer proximity and reduced potential for interruption to ongoing operations makes the Jones Bay Rd dock the more likely choice of the two locations. A further site visit conducted on May 22, 2017 considered access and duct routing options for bringing vacuum extracted waste from the Ritz Carlton Hotel and Residential Tower waste sources to the Jones Bay Rd dock, and two potential locations for the terminal plant to be installed within the dock.

Figure 8.2 above displays the possible duct path that might be followed from the chute termination.

Depending on compactor capacity and configuration, clearance from floor of between 7.5m and 10m is required in the dock to allow vertical space for the compactor, vacuum duct bifurcation with diverter and gravity feed above it. There is potential in the vacuum system design to accommodate the limited roof height of the Jones Bay Rd dock, by locating the diverter and gravity feed at a level above the dock prior to reaching the compactor equipment. The plant that includes control, vacuum fans and air filtration at the termination of the vacuum runs can also be placed separately to the compactor equipment, allowing further flexibility in configuration.

End-to-end automation of the vacuum system enables staging of General and Recyclable waste releases into the duct at the chute end of the system, and transfer into the appropriate waste storage receptacle through a bifurcated diverter at the dock end of the system. This provides a continuously operating waste transfer system requiring minimal manual intervention.

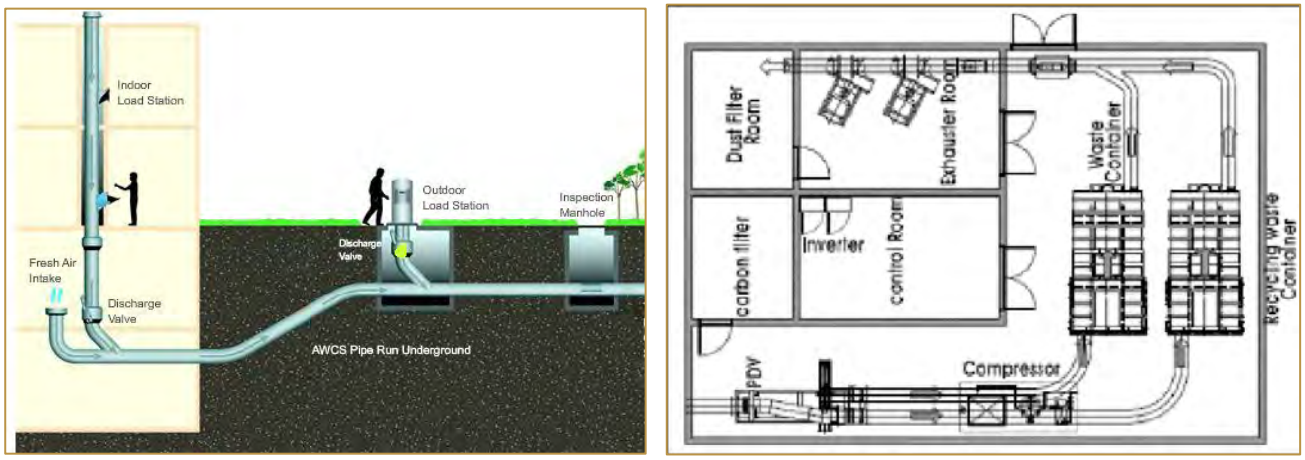


FIGURE 8.3 TYPICAL CONFIGURATION DIAGRAMS FOR VACUUM WASTE SYSTEM LAYOUT AND TERMINATION
(SOURCES: STREAM www.stream-environment.com, ENVAC www.envac.com.au)

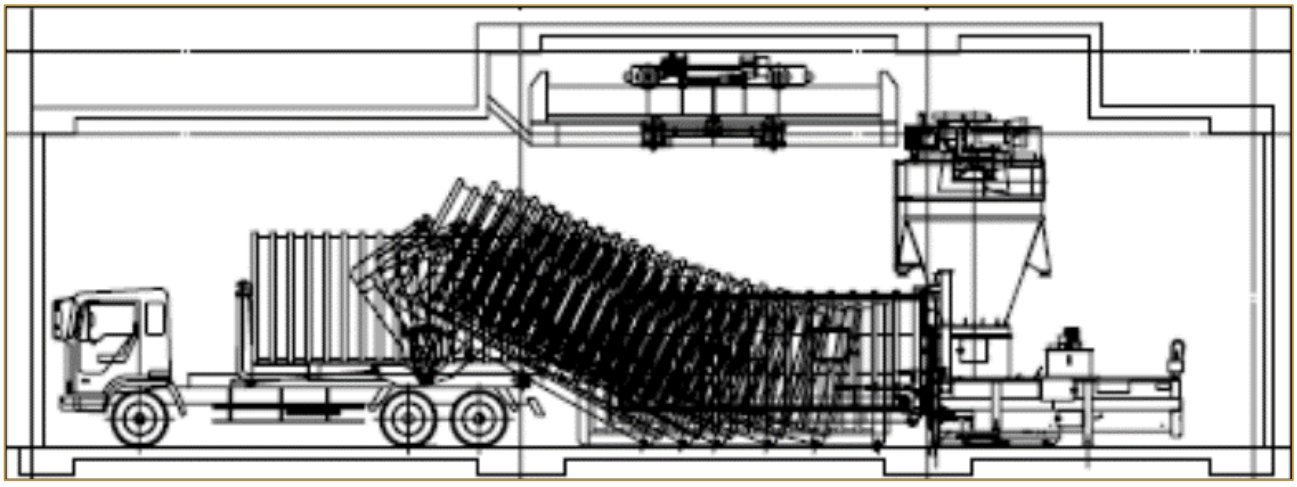


FIGURE 8.4 SCHEMATIC OF TYPICAL COLLECTION TERMINAL FOR VACUUM WASTE WITH RORO CONTAINER VEHICLE COLLECTION
(SOURCE: ENVAC www.envac.com.au)

The vacuum transfer system is recommended for achieving beneficial outcomes for The Star that include:

- Reduced holding bin quantities and storage room area requirements at the Ritz Carlton Hotel and Residential Tower basement chute termination;
- Elimination of manual bin transfers and rotations at the chute termination rooms as bins are filled;
- Elimination of manual bin transfers via the goods lift to the B2 Loading Zone area for collection;
- Elimination of waste collections from the B2 Loading Zone behind the Hotel entrance / Porte Cochere and associated waste vehicle movements at that location, improving amenity;
- Potential for greater utilisation of the Jones Bay Rd dock for waste servicing;

- Redundancy in dock provisions to handle waste between the Edward St (Darling) and Jones Bay Rd (The Star) docks; and
- Future waste handling capacity built-in, through opportunity for other waste generating locations to 'tap-in' to the vacuum duct line.

The specific configuration and selection of duct runs and dock installation location will be considered in greater detail during ongoing design development.

8.6 DISPOSAL OF WASTE STREAMS

- General waste should be collected by an accredited private waste contractor with disposal off site to an approved and registered land fill facility.
- Food organics waste should be collected by an accredited private waste contractor, with disposal off site to an approved and registered organics processing facility, to avoid food organics ending up in landfill.
- Commingled recyclables should be collected by an accredited private waste contractor with disposal off site to an approved recycling and resource recovery facility.
- Collection of baled paper and cardboard packaging is to be performed by a dedicated paper recycling contractor.
- Separated glass containers are to be collected by a dedicated glass recycling contractor, and processed at an approved glass recovery and recycling facility.

Records of disposal should be provided in a summary report to The Star on a minimum quarterly basis as a contract condition for all private waste contractors engaged.

Disposal records should include weight, type of stream, collection and disposal date and disposal destination as a minimum, sufficient for purposes of auditing. Requiring these records will provide assurance that correct disposal and resource recovery is taking place, and allow for ongoing monitoring and feedback on how the waste system is performing.

These disposal measures support the Modification 13 work in achieving limited environmental impacts due to waste when compared with the baseline site condition.

9 CONCLUSION

This report supports planning submission Modification 13, an s75W modification application to the original Major Project Approval (MP08_0098) with the Department of Planning and Environment, and incorporating Modification 14.

The requirements of the SEARs regarding waste management are met through addressing the relevant waste provisions in Environmental Planning Instruments, Strategies, Plans and Guidelines identified under the SEARs.

These are The Council of the City of Sydney Policy for Waste Minimisation in New Developments 2005 (The Policy), the MP08_0098 Consolidated Conditions of Consent including Mod14 being as amended October 2017 (The Conditions), and the following additional items of planning ordinance:

- Sydney Local Environmental Plan (LEP) 2012
- Sydney Development Control Plan (DCP) 2012
- Applicable legislation and guidelines administered under the NSW Environmental Protection Authority (EPA):
  - Protection of the Environment Operations Act 1997
  - Waste Avoidance and Resource Recovery Act 2001
  - EPA 2014/0796 Waste Classification Guidelines Part 1: Classifying waste
- SEPP 65 Design Quality of Residential Apartment Development (Schedule 1, Principle 4 Sustainability),

These references have been reviewed for input to the preparation of this Waste Management Plan.

City of Sydney DCP clause 3.14.1 requires that a Waste Management Plan, consistent with The Policy, be used to assess and monitor the waste management process within a development.

Adopting a site-wide Waste Management Strategy aligned to the recommendations of this assessment will satisfy the requirements for quantification, storage, management and monitoring of waste in accordance with the requirements of the City of Sydney DCP for a Waste Management Plan.

In satisfying these requirements, the recommendations of this report also represent a best practice response to the environmental, amenity and operational impacts that may arise from the Modification 13 works.

The proposed Modification 13 works have potential to generate significant daily volumes of waste and require appropriate storage, transfer and collection provisions, to prevent potential environmental and amenity impacts associated with inadequate waste management.

Demolition, Construction and Operational Waste considerations to support the planning submission have been addressed in this report. A summary management strategy, and notional generation rates for demolition and construction waste have been provided in sections 4, 6 and 7 above.

New operational waste management provisions are required for the Modification 13 works associated with the Ritz Carlton Hotel and Residential Tower. Operational waste for this location has been assessed for a maximum potential waste case, so that adequate spatial and capacity provisions are identified for peak occupancy and activity.

Waste generated for Modification 13 works elsewhere on the site has been quantified and is to be handled through the existing waste management provisions.

Both new and existing waste provisions have been addressed in accordance with best practice guidelines, which aim to minimise the environmental impacts associated with waste generating activities.

Key mitigation measures identified in this report are incorporated into the proposed design or to be investigated further during design development are as follows:

- separation of waste streams at their source, to maximise opportunity for diversion from landfill and overall reduction in waste generated
- the waste management strategy is determined based on peak operational capacity requirements and measures to allow for variability in operation, incorporating flexibility within spatial and management provisions to continue operations under unusual scenarios

- coordinated engagement of private waste contractors to optimise the frequency and type of waste vehicle movements on site for minimised disruption to amenity

TABLE 9.1 SUMMARY OF OPERATIONAL WASTE STREAMS, ESTIMATED MAXIMUM DAILY VOLUME AND MASS

Location	General Waste Daily Volume (Mass)	Commingled Recyclables Daily Volume (Mass)	Notes
Subtotal – Ritz Carlton Hotel and Residences Tower	7,460 L (990 kg)	1,740 L (148 kg)	To be handled under new waste facility provisions.
Subtotal – Modification 13 works south of tower	35,120 L (4,600 kg)	11,675 L (1,010 kg)	To be handled under existing site waste provisions.
OVERALL TOTAL	**42,580 L (5,590kg)**	**13,415 L (1,158 kg)**	Estimated total daily waste - all areas included in Modification 13

TABLE 9.2 SUMMARY OF NEW WASTE STORE BIN AND SPATIAL REQUIREMENTS

Waste Stream and Source	Storage Location	Number and Size of MGBs Required at Store	Approximate Minimum Spatial Provision for Bins	Notes
General Waste Residences	Loading Dock Waste Store Level B2	660L x 4	**10 m²**	
Commingled Recyclables Residences		660L x 2		
General Waste Hotel Rooms		660L x 4	**7 m²**	
General Waste All other areas, Ritz Carlton Hotel & Residential Tower		660L x 5	**12 m²**	Uncompacted waste
Commingled Recyclables All other areas, Ritz Carlton Hotel & Residential Tower		660L x 2		Uncompacted waste
Total New Waste Provision	**Loading Dock Waste Store Level B2**	**660L x 17**	**29 m²**	Total minimum waste store footprint

Table 9.1 and Table 9.2 summarise the waste quantities to be generated and handled by the new and existing waste facilities, and storage provisions for the new waste management facilities.

The proposed new waste store and intermediate holding locations identified in the assessment provide sufficient capacity to manage the maximum daily quantities of waste to be generated.

The above projection of recyclables represents a comparable level of landfill diversion by mass to that for the existing site operations prior to Modification 13.

The rate of diversion from landfill is a key metric in demonstrating that Modification 13 as amended by Mod 14 has limited environmental impacts due to Operational Waste beyond those already assessed for MP08_0098.

Further factors demonstrating limited environmental impacts arising from Modification 13 include:

- maximised construction waste recovery, setting a target for 90% recovery of waste during construction which improves on the 76% aggressive recovery target set in The Policy
- separation of General Waste from Commingled Recyclables, and sub-stream separation of commingled recyclables to capture individual streams such as glass, cardboard, food organics and documentation for secure recycling, to improve diversion from landfill of waste from areas that generate high quantities of particular recyclable materials.
- incorporation of efficient waste management design features and technology to optimise storage and transfer facilities, improving site amenity, operational effectiveness and traffic considerations.

The requirements of the SEARs, The Conditions and The Policy concerning waste management incorporate the appropriate standards and guidelines applicable for waste management during demolition, construction and operational phases of the development, and represent a best practice approach to waste management in Australia.

Where the recommendations and guidance of this Waste Management Plan are applied for the proposed scope of Modification 13 works, the requirements will be satisfied.

THE STAR

APPENDICES

Appendix A WASTE STORE GUIDELINES AND RELEVANT CITY OF SYDNEY WASTE POLICY CLAUSES

A1. GUIDELINES: BIN STORAGE, SIGNAGE, MONITORING

A 1 . 1 BIN STORE AND BINS

1. The waste management facilities must comply with the relevant sections of the Building Code of Australia, Building Regulations and applicable Australian Standards.
2. The design and the operation of the waste facilities should minimise the potential for odour and noise.
3. Waste containers are to have a permanent, tight fitting lid with smooth, washable internal surface.
4. Floor of the bin store must be smooth and even, and coved with the intersection to walls and plinths or other upstands. It is to be graded and drained to a Sydney Water approved fitting within the room.
5. Walls are to be suitably constructed and cement rendered and ceiling are to be constructed and finished with an impervious material suitable for easy cleaning.
6. All finishes in the room to be light coloured.
7. Hot and cold water supply with a centralised mixing valve and hose cock is to be available in the bin store room for wash-down of the room.
8. A close fitting and self-closing door openable from within the room must be fitted; under special circumstances an approved roller shutter door may be used. When a roller shutter door is permitted a conspicuous sign must be erected instructing that the roller shutter is to be closed when the bin store is not in use.
9. The bin store and access must be constructed in such a manner as to prevent the entry of vermin.
10. Electric lighting controlled by switches both inside and outside the room must be provided; switches inside the room are to be suitably waterproofing rated.

A1.2 SIGNAGE

1. Clear and easy to read sign(s) designating the storage of RECYCLABLES must be fixed to the internal wall(s) or floor to indicate the location for the bins receiving non-landfill waste. This aids in avoiding contamination of recyclable waste.
2. Clear and easy to read “NO STANDING” signs and “DANGER” warning signs for children must be fixed to the external face of each waste and recycling room where appropriate.

A1.3 MANAGEMENT AND MONITORING

1. Compactors and other mechanical devices for transfer and storage of waste must be rendered child proof.
2. Responsibility for cleaning of the waste store room and other bin holding areas is to be the responsibility of the contracted building cleaner as a condition of their contract.
3.
    a. Standard signage on how to use the waste management system and what materials are acceptable in the recycling must be posted in all waste collection and storage areas.
    b. Adequate signage identifying waste and recycling storage areas, as well as waste and recycling service compartments must be prominently displayed.
4. All waste and recycling receptacles must be clearly and correctly labelled to identify which materials are to be placed in which bin.

A2. STANDARD CLAUSES

The following extracts are taken directly from the City of Sydney Policy for Waste Minimisation in New Developments, as stipulated by City of Sydney DCP 2012, and must be satisfied as part of the provisions for waste management in the proposed development.

These clauses repeat the above guidance in several places, and are repeated here for completeness of the DCP provisions.

A2.1 POLICY CLAUSES APPLICABLE TO ALL DEVELOPMENTS

A10	Sufficient space must be provided for equipment to handle or manage all waste and recycling likely to be generated on the premises between collections.
A11	Space must be provided within the premises in close proximity to the vehicle entrance and no lower than one level below street level for the storage of waste and recycling. The space allocated must be sufficient to store, in separate containers, the volume of waste and recycling likely to be generated during the period between collections.
A12	The room/s for storing waste and recycling must be located in a position that is convenient for both users and waste collection staff.
A13	Collection vehicles must be able to service the development efficiently and effectively, with limited need to reverse. If a vehicle turntable is used it must have a 30 tonne capacity.
A14	Residential development requires a minimum vertical clearance 4 metres. For all other development, if clearance proposed is less than 3.8 metres, then vehicle specification will be required from the waste provider that conforms with the proposed development.
A15	A suitable refuse collection point must be nominated where waste loading operations can occur on a level surface away from gradients and vehicle ramps.
A16	The path for wheeling bins between a central waste storage point and the collection vehicle must be level and free of steps or kerbs. The maximum travel distance between the storage point and the collection point for bins is: ♦ 10 Metres – for bins including 240 litre, 660 litre & 1,000 litre mobile garbage bins (MGBs) ♦ 3 metres – for both 1,500L and 2,000 litre bulk bins (also known as skips) ♦ Any proposed variations require further assessment and discussion with relevant Council officers.
A17	Where collection vehicles are required to drive into a building to collect waste or recycling, adequate vehicle clearance is required. … Access to an approved collection point within a building must enable all collection vehicles to both enter and exit the premises in a forward direction.
A19	For multi-unit residential buildings and multi-storey commercial buildings, it is preferable for the collection point to be inside the building, for example in an underground carpark, as this reduces noise impact on surrounding residents.
A21	The floors of waste rooms and recycling rooms must be constructed of concrete at least 75mm thick or other approved material graded and drained to a Sydney Water Corporation approved drainage fitting located in the room(s). The floor must be finished to a smooth even surface coved at the intersection with walls and plinths and provided with a ramp to the doorway where necessary.
A22	The walls of the waste room(s), recycling room(s) and serviced compartment(s) must be constructed of approved solid impervious material and shall be cement rendered internally to a smooth even surface coved at all intersections.

A23	The ceilings of waste room(s), recycling room(s) and service compartment(s) must be finished with a rigid smooth faced non-absorbent material capable of being easily cleaned.
A24	The walls, floors and ceilings of the waste room(s), recycling room(s) and service compartment(s) must be finished with a light colour.
A25	The waste and recycling room(s) must be provided with an adequate supply of hot and cold water mixed through a centralised mixing valve with hose cock. This does not include waste and recycling service compartments located on residential floors of multi-occupancy dwellings.
A26	A close fitting and self-closing door openable from within the room must be fitted to all waste and recycling rooms.
A27	An approved roller shutter door may be permitted under special circumstances. When permitted a sign must be erected in a conspicuous position drawing attention to the fact the door must be kept closed at all times when not in use.
A28	Waste rooms and recycling room(s) must be constructed in such a manner as to prevent the entry of vermin.
A29	Waste and recycling rooms must be ventilated by either: ♦ Permanent, unobstructed natural ventilation openings direct to the external air, not less than one-twentieth i.e. 5% of the floor area; or ♦ A mechanical exhaust ventilation system exhausting at a rate of 5L/s.m2 floor area, with a minimum rate of 100L/s min.
A30	Waste and recycling rooms must be provided with artificial light controlled by switches located both outside and inside the room.
A31	In some instances, Council may require that waste storage be refrigerated. This is likely if large quantities of food waste are generated on site and waste removal from this site is difficult due to location or long trading hours. Where a waste room is refrigerated the temperature must be maintained at or below 5°C with all refrigeration equipment installed with sufficient space for cleaning.
A32	The floor, walls and ceiling of the refrigerated waste room must be constructed of a smooth impervious material and coved at all intersections.
A33	The floor of the refrigerated waste room must be graded to the doorway and a floor waste must be located outside the room as close as practicable to the doorway.
A34	An adequate supply of hot and cold water must be provided through a centralised mixing valve with hose cock located as close as practicable to the doorway.
A35	The refrigerated waste room must comply with Section G.1 of the Building Code of Australia as well as being provided with artificial light controllable from within the room.
A36	Noise from the use of the refrigeration equipment associated with the waste room must not give rise to “offensive noise” as defined under the Protection of the Environment Operations Act 1997.
A37	Clear and easy to read “NO STANDING” signs and “DANGER” warning signs for children must be fixed to the external face of each waste and recycling room where appropriate.
A38	Clear and easy to read sign(s) designating the storage of RECYCLABLES must be fixed to the internal wall(s) or on any racks provided.
A39	Any compactors or mechanical devices for the storage of waste must be child proofed.
A40	Vermin must be prevented from entering waste areas and containers.

A41	Equipment must be protected from theft and vandalism.
A42	Any facet of the waste management system that is visible from outside the building must blend in with the development.

A2.2 POLICY CLAUSES APPLICABLE TO COMMERCIAL DEVELOPMENTS

C1	All businesses must have written evidence, held on site, of a valid and current contract with a licensed collector for waste and recycling collection and disposal. All businesses are encouraged to include in their waste contracts provisions that allow for the collection and recycling of high grade and low grade office paper, batteries, equipment containing printed circuit boards, computers, televisions, fluorescent tubes, smoke detectors and other recyclable resources from the waste stream.
C2	All commercial premises must have a dedicated and enclosed waste and recycling storage area which has adequate storage area to meet their generation rates.
C3	Sufficient space must also be allocated for the separate storage of recyclable electronic goods such as batteries, equipment containing printed circuit boards, computers, televisions, fluorescent tubes and smoke detectors.
C4	Sufficient space must be allocated to store reusable items such as crates, pallets, kegs and other reusable items so that storage in a public place is avoided.
C5	Space must be allocated for separate storage of liquid wastes (oils etc.). These liquid waste storage areas must be bunded, and drained to a grease trap, in accordance with the requirements of Sydney Water.
C6	Liquid waste from grease traps must only be removed by licensed waste contractors approved by Sydney Water and the NSW Department of Environment and Conservation.
C7	If clearance is less than 3.8m, then vehicle specifications will be required from the waste provider that conforms with the proposed development.
C8	For Premises: ♦ Whose waste generated contains 20% by weight or volume of fish, poultry or meat; or ♦ Which generate 50 litres of seafood, poultry, or meat waste in total per day. Waste must be collected daily or refrigerated whilst stored awaiting collection.
C9	Contracts with cleaners, building managers and tenants must clearly outline the waste management and collection system, and must clearly allocate responsibilities.
C10	Businesses must have written evidence, held on site, of a valid and current contract with a licensed collector for waste and recycling collection and disposal.
C11	A waste service compartment (waste and recycling area) must be provided on each storey of the building. The waste service compartment or waste and recyclables holding area on each floor must have the capacity to store at least one (1) days volume of waste and recycling likely to be generated on that floor. In particular, provisions must be made for the separation of cardboard for recycling on each storey and in the centralised waste storage area.
C12	Waste and recyclables from the waste service compartment or waste and recycling holding area on each floor must be transferred to the centralised waste and recycling room or holding area daily or more frequently, as required.
C13	If more than 10m³ (10 cubic metres) of uncompacted waste and recycling is likely to be generated per day, then the central waste and recycling room must be separate from the goods receival dock, and waste must be collected in a compaction unit.

C14	Where collection takes place inside a building, appropriate clearances need to be allowed for the collection vehicle to enter the premises, clear the waste container and exit the premises. It must be noted that some systems require the waste container to be lifted above the collection vehicle to be emptied (front lift-bulk bin) or loaded (waste compactor).
C15	If clearance proposed is less than 3.8m, then vehicle specifications will be required from the waste provider that conform with the proposed development.
C16	For Premises: ♦ Whose waste generated contains 20% by weight or volume of fish, poultry or meat; or ♦ Which generate 50 litres of seafood, poultry, or meat waste in total per day. Waste must be collected daily or refrigerated whilst stored awaiting collection.
C17	Storage of paper and cardboard must be in a dry, vermin-proof area. Paper and cardboard must not be stored for more than 2 weeks to prevent breeding of pests in the stored material.
C18	Contracts with cleaners, building managers and tenants must clearly outline the waste management and collection system, and must allocate responsibilities. All businesses are encouraged to include in their waste contracts provisions that allow for the collection and recycling of high grade and low grade office paper, batteries, equipment containing printed circuit boards, computers, televisions, fluorescent tubes, smoke detectors and other recyclable resources from the waste stream.
C19	Businesses must have written evidence, held on site, of a valid and current contract with a licensed collector for waste and recycling collection and disposal.
C20	Provision must be made on each floor, and in the central waste and recycling room or holding area, for the separation and storage of all recyclable cardboard, paper and paper products likely to arise on the premises.
C21	Where collection takes place inside a building, appropriate clearances need to be allowed for the collection vehicle to enter the premises, clear the waste container and exit the premises. It must be noted that some systems require the waste container to be lifted above the collection vehicle to be emptied (front lift-bulk bin) or loaded (waste compactor). See Appendices C and E for more information.
C22	If clearance proposed is less than 3.8m, then vehicle specifications will be required from the waste provider that conforms with the proposed development.
C23	Storage of paper and cardboard must be in a dry, vermin-proof area. Paper and cardboard must not be stored for more than two (2) weeks to prevent breeding of pests in the stored material.
C24	Contracts with cleaners, building managers and tenants must clearly outline the waste management and collection system, and must allocate responsibilities.

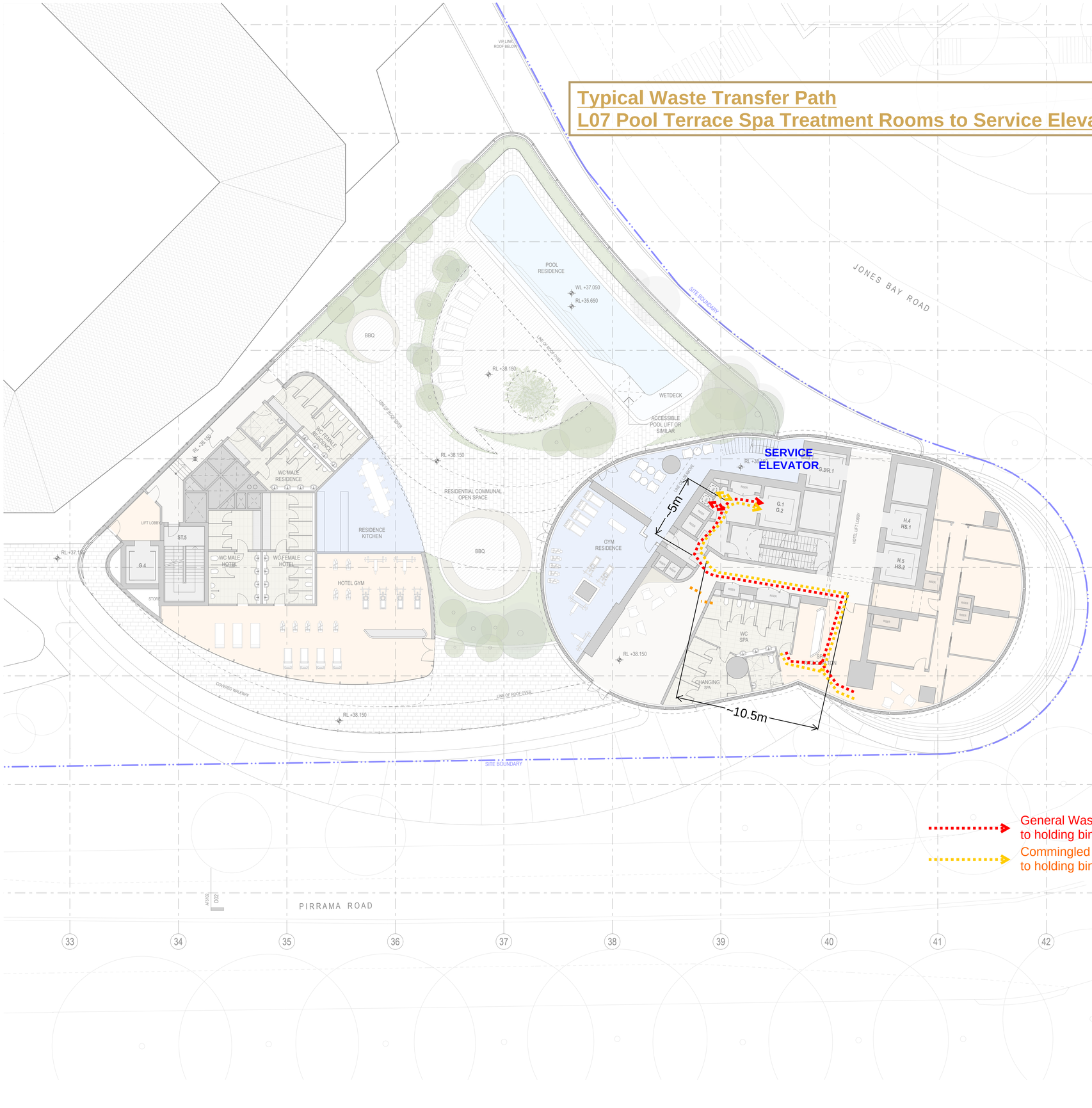
A2.3 POLICY CLAUSES APPLICABLE TO MIXED USE DEVELOPMENTS

D1	a. Where a residential development and commercial development occupy the same site, the waste handling, storage and collection system from residential waste (from the residential area) and commercial waste (from the commercial area) are to be completely separate and self-contained. They must have separate keys and locking systems. **b.** There are to be at least two, separate centralised waste and recycling areas, one for residential waste and one for commercial. The waste management plan must identify the collection points and management systems for both residential and commercial waste streams.
D2	The waste handling and management system for each component of the mixed development must comply with the relevant section of this Policy (e.g. separate residential and commercial collection areas).

D3	Sufficient space must be allocated in each waste and recycling storage room to store the amount of waste likely to be generated in each respective part of the development.
D4	Sufficient space must also be allocated for the separate storage of recyclable electronic goods such as batteries, equipment containing printed circuit boards, computers, televisions, fluorescent tubes and smoke detectors.
D5	Space for composting and worm farming, being an unpaved earth surface, must be available for all residents in a communal facility or in small private court yards.
D6	Sufficient space must be allocated to store reusable items such as crates, pallets, kegs and other reusable items so that storage in a public place is avoided.
D7	Each central waste and recycling storage area must be easily accessible from the nominated collection point.
D8	Measures must be taken to ensure that noise and odour from the commercial waste facility does not impact on residents. See also provision B22 which describes suitable locations for waste facilities.
(B22)	*The waste management plan must describe how the waste management system is to be managed and who is responsible for each stage of the process.*
D9	Commercial tenants in a mixed development must be actively discouraged from using residential waste facilities through the provision of a separate storage area.
D10	Businesses must have written evidence of a valid and current Contract (held on site) with a licensed collector for waste (garbage) and recycling collection and disposal.

Appendix B BIN TRANSFER PATHS

Typical Waste Transfer Path
L07 Pool Terrace Spa Treatment Rooms to Service Elevator



General Waste transfer by stewarding
to holding bins / service elevator

Commingled Recyclables transfer by stewarding
to holding bins / service elevator

GENERAL NOTES

- ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH THE WORK
- ALL LEVELS RELATIVE TO 'AUSTRALIAN HEIGHT DATUM'
- DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS ONLY

legend

BUILDING USE

- HOTEL
- HOTEL FACILITIES
- LOADING, PLANT
- LIFTS, FIRE STAIRS, SERVICES
- CIRCULATION
- NEIGHBOURHOOD CENTRE
- RETAIL
- FOOD & BEVERAGE
- RESIDENTIAL
- RESIDENTIAL FACILITIES

SITE BOUNDARY

EXISTING BUILT FORM

EXISTING BUILT FORM

EXTENT OF CAR STACKER BELOW

EXTEND OF MODIFICATION 13 WORK AS SHOWN ON FJMT DOCUMENT. RIFER TO DWP DRAWING FOR FULL EXTEND & DEMARCATION OF MODIFICATION 13 WORK.

NOTE: SPATIAL PROVISION INCLUDED TO ACCOMMODATE AS1428.1, UPDATES AS REQUIRED AT DETAILED DESIGN

rev	date	name	by	chk
DA01	1/9/17	DEVELOPMENT APPLICATION	NY	SMP

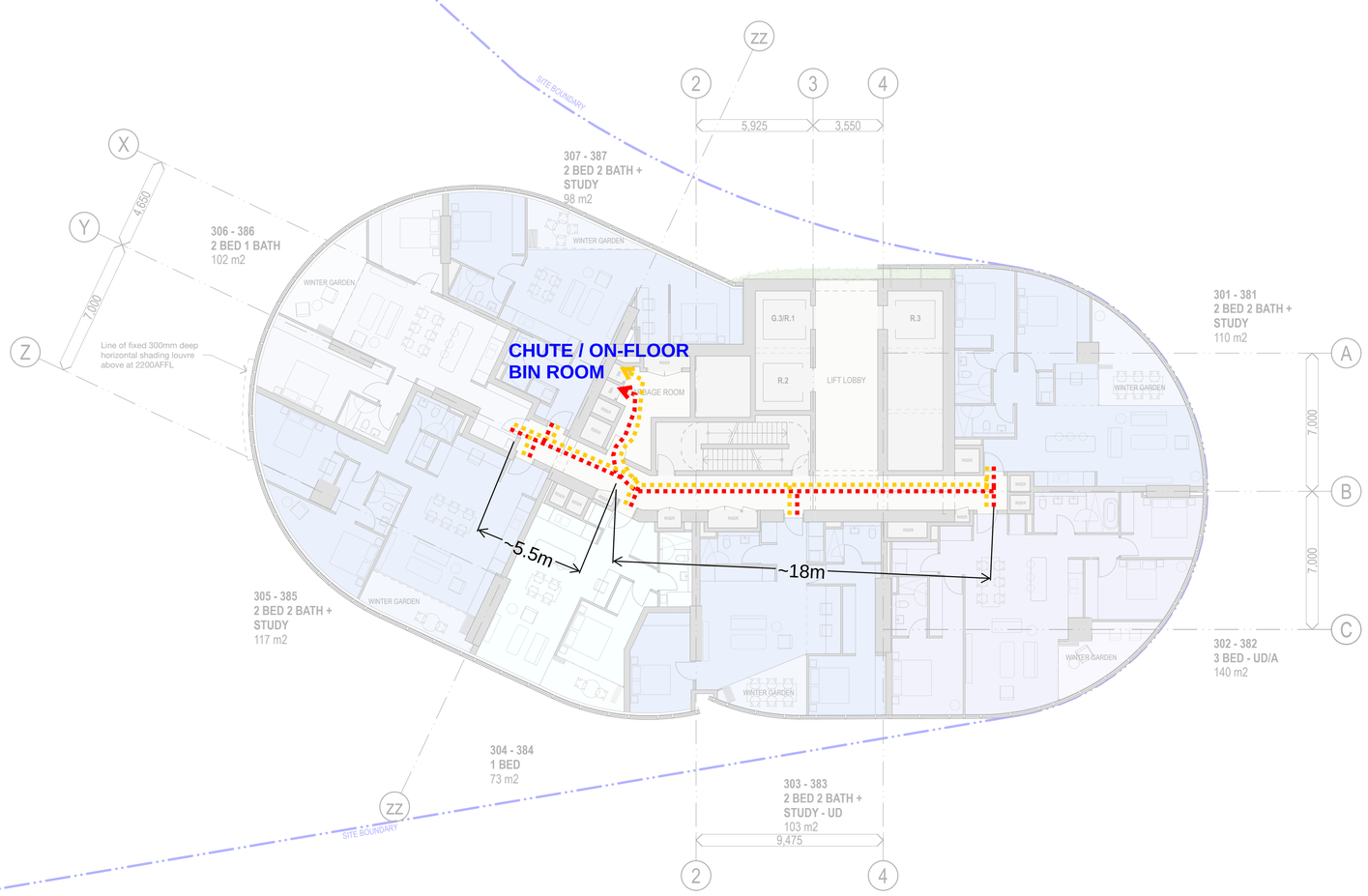
fjmt studio architecture interiors landscape urban community
sydney melbourne uk
Level 5, 70 King Street t +61 2 9251 7077 w fjmtstudio.com

project
Modification 13
80 PYRMONT STREET
PYRMONT NSW 2009

title
General Arrangement Plans
Level 07 Floor Plan

scale	first issued	
1:150 @ A1	1/9/17	
project code	**sheet no.**	**revision**
SM13	**AF2007**	**DA01**

Typical Waste Transfer Path
Residences to Chute / On-floor Recyclables room



General Waste transfer to chute

Comimngled Recyclables transfer to recyclables room / chute

GENERAL NOTES

- ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH THE WORK
- ALL LEVELS RELATIVE TO 'AUSTRALIAN HEIGHT DATUM'
- DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS ONLY

legend

- RESIDENTIAL FACILITIES
- SITE BOUNDARY
- EXISTING BUILT FORM
- EXISTING BUILT FORM
- A — ADAPTABLE APARTMENT / HOTEL ROOM
- UD — UNIVERSAL DESIGN

APARTMENT TYPE & NSA

- 3 BED 2 BATH
- 2 BED 2 BATH + STUDY
- 2 BED 2 BATH
- 2B 1 BATH
- 1 BED + STUDY
- 1 BED

NOTE: SPATIAL PROVISION INCLUDED TO ACCOMMODATE AS1428.1, UPDATES AS REQUIRED AT DETAILED DESIGN

rev	date	name	by	chk
DA01	1/9/17	DEVELOPMENT APPLICATION	NY	SMP

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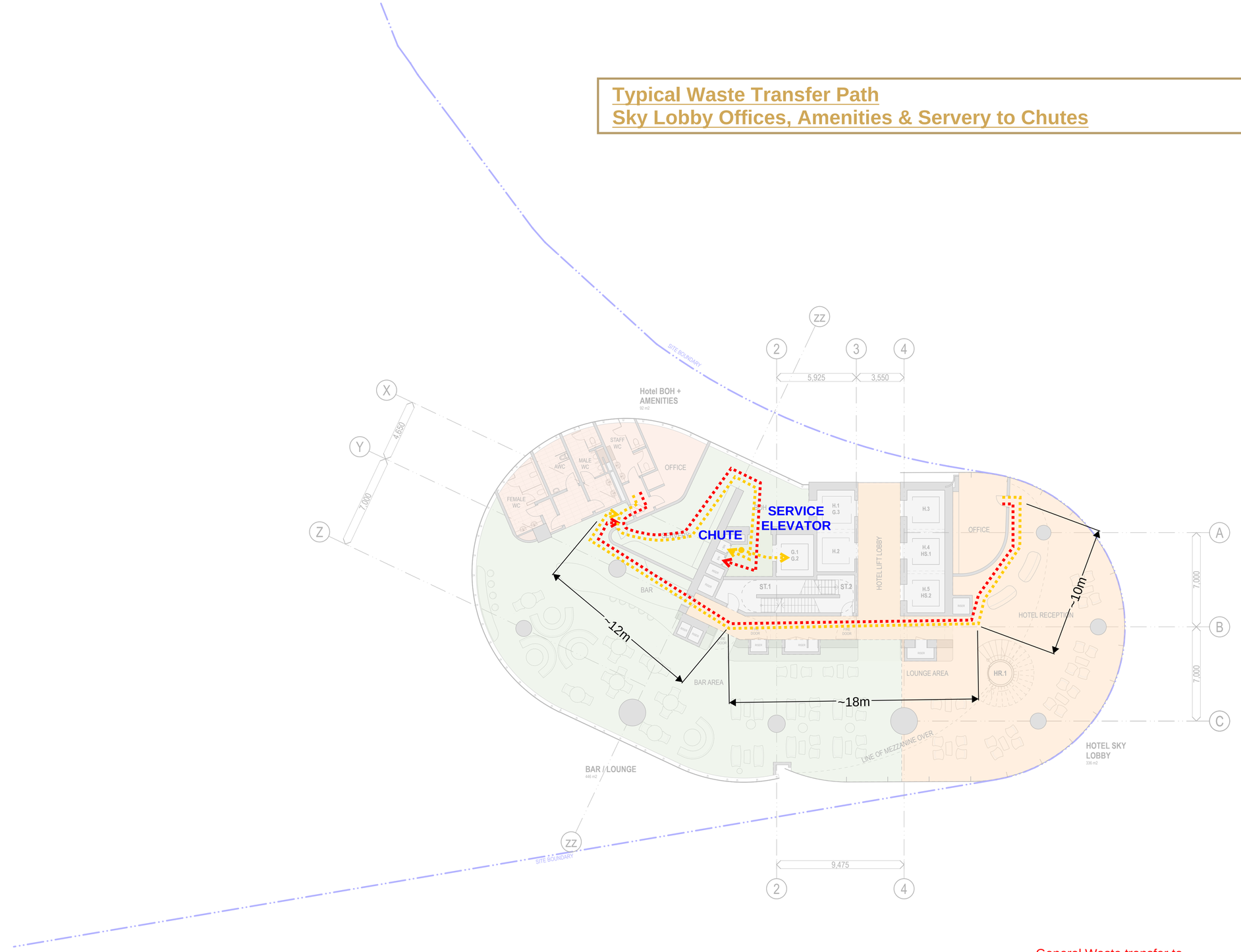
project
Modification 13
80 PYRMONT STREET
PYRMONT NSW 2009

title
General Arrangement Plans
Level 30 - 38 Floor Plan

scale	first issued
1:150 @ A1	1/9/17

project code	sheet no	revision
SM13	AF2030	DA01

Typical Waste Transfer Path
Sky Lobby Offices, Amenities & Servery to Chutes



General Waste transfer to chute

Commingled Recyclables transfer to chute

GENERAL NOTES

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legend

BUILDING USE

- HOTEL
- HOTEL FACILITIES
- LOADING, PLANT
- LIFTS, FIRE STAIRS, SERVICES
- ANCILLARY, BOH
- CIRCULATION
- NEIGHBOURHOOD CENTRE
- RETAIL
- FOOD & BEVERAGE
- RESIDENTIAL
- RESIDENTIAL FACILITIES

SITE BOUNDARY

EXISTING BUILT FORM

EXISTING BUILT FORM

EXTENT OF CAR STACKER BELOW

A ADAPTABLE APARTMENT / HOTEL ROOM

UD UNIVERSAL DESIGN

HOTEL TYPES

- DOUBLE QUEEN
- KING
- CORNER EXECUTIVE
- SUITE
- 2 LEVEL SUITE
- PRESIDENTIAL SUITE
- RITZ-CARLTON SUITE

NOTE: SPATIAL PROVISION INCLUDED TO ACCOMMODATE AS1428.1, UPDATES AS REQUIRED AT DETAILED DESIGN

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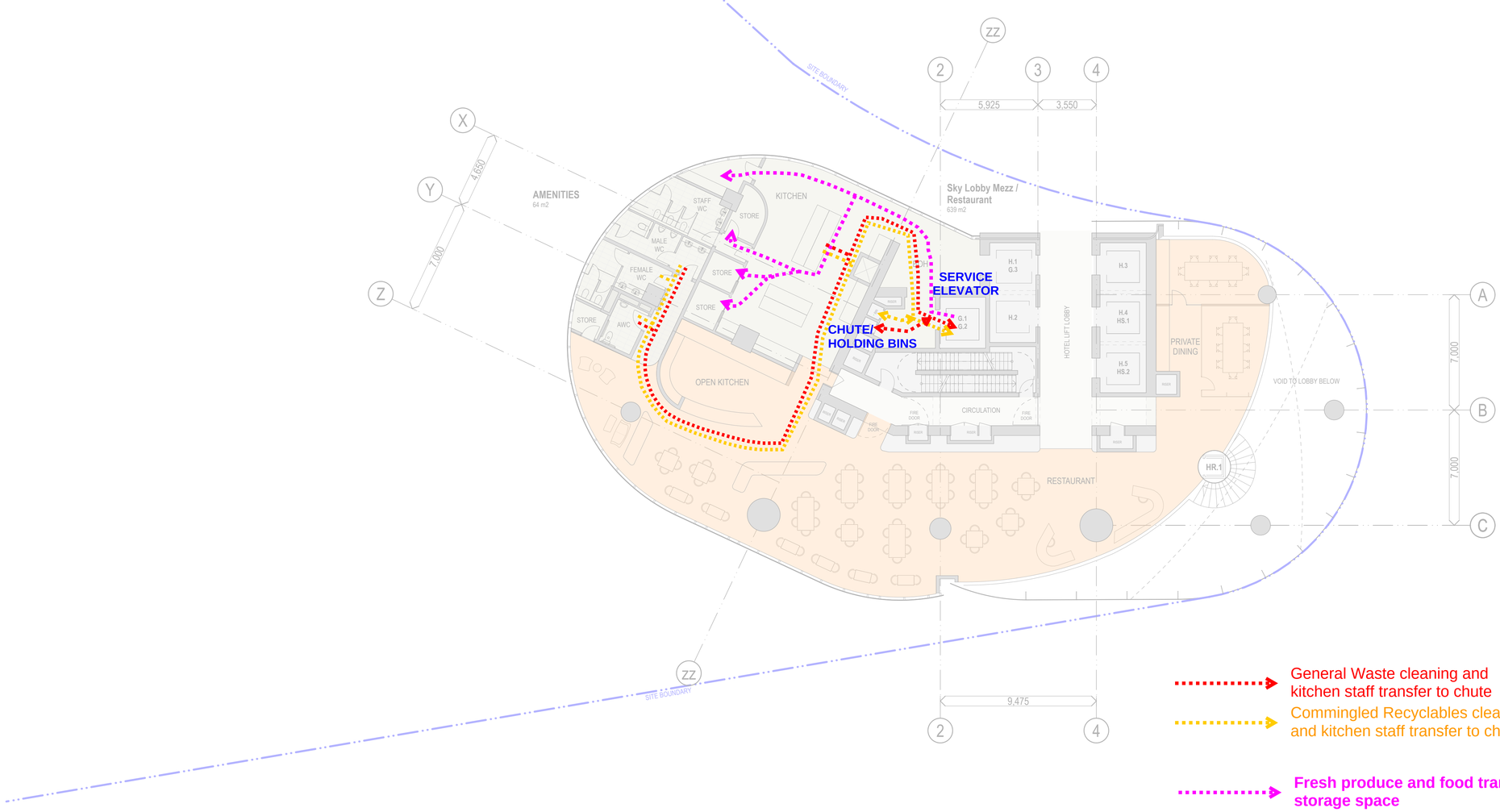
project
Modification 13
80 PYRMONT STREET
PYRMONT NSW 2009

title
General Arrangement Plans
Level 39 Hotel Sky Lobby Floor Plan

scale	first issued	
1:150 @ A1	1/9/17	
project code	sheet no.	revision
SM13	AF2039	DA01

Typical Waste Transfer Path
Sky Lobby Mezzanine Kitchen & Amenities to Chutes / Incoming Fresh Produce from Service Lift



General Waste cleaning and kitchen staff transfer to chute

Commingled Recyclables cleaning and kitchen staff transfer to chute

Fresh produce and food transfer to storage space

GENERAL NOTES

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legend

BUILDING USE

- HOTEL
- HOTEL FACILITIES
- LOADING, PLANT
- LIFTS, FIRE STAIRS, SERVICES
- ANCILLARY, BOH
- CIRCULATION
- NEIGHBOURHOOD CENTRE
- RETAIL
- FOOD & BEVERAGE
- RESIDENTIAL
- RESIDENTIAL FACILITIES

SITE BOUNDARY

EXISTING BUILT FORM

EXISTING BUILT FORM

EXTENT OF CAR STACKER BELOW

A ADAPTABLE APARTMENT / HOTEL ROOM

UD UNIVERSAL DESIGN

HOTEL TYPES

- DOUBLE QUEEN
- KING
- CORNER EXECUTIVE
- SUITE
- 2 LEVEL SUITE
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- RITZ-CARLTON SUITE

NOTE: SPATIAL PROVISION INCLUDED TO ACCOMMODATE AS1428.1, UPDATES AS REQUIRED AT DETAILED DESIGN

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project
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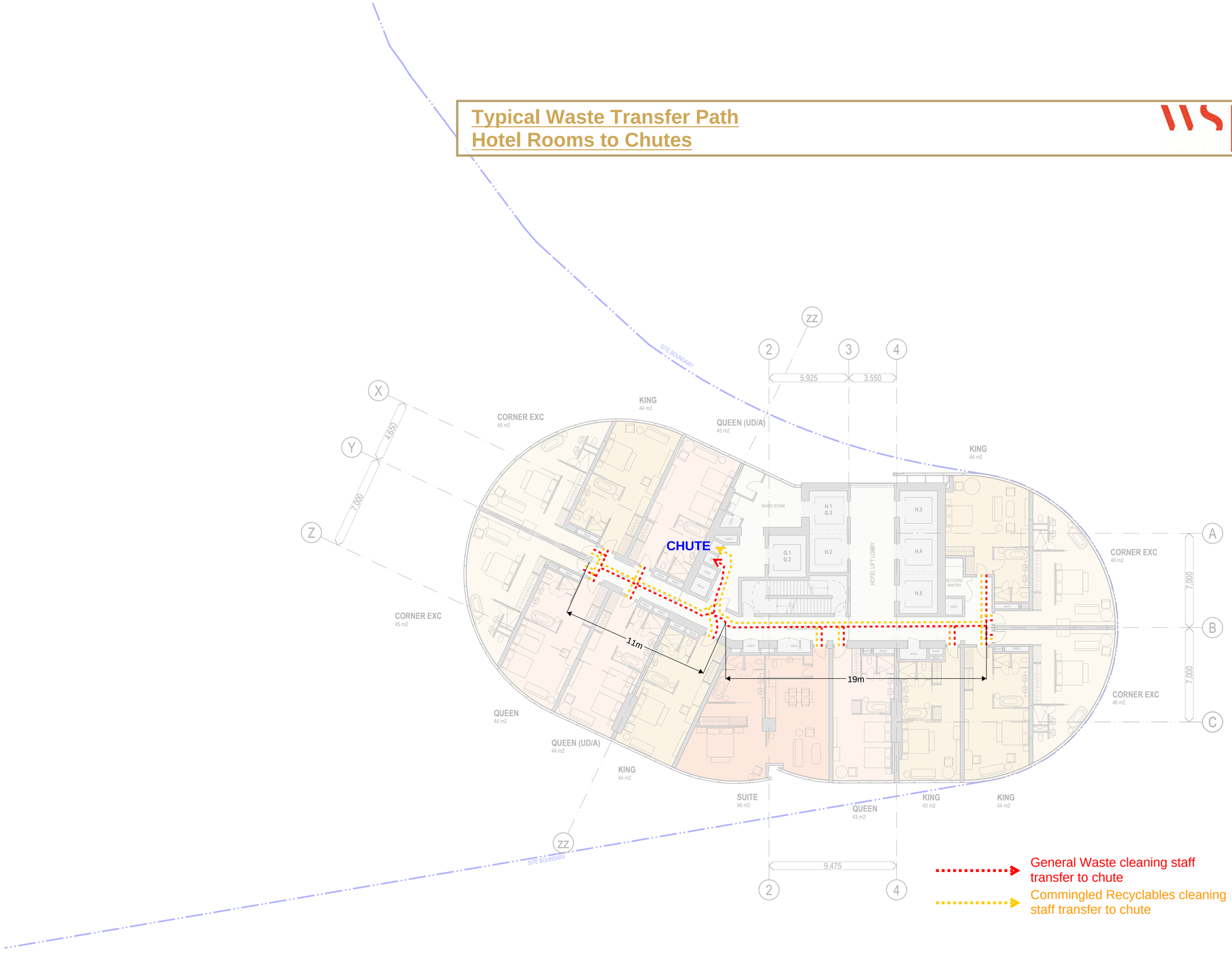
80 PYRMONT STREET
PYRMONT NSW 2009

title
General Arrangement Plans
Level 40 Hotel Sky Lobby Mezzanine Floor Plan

scale	first issued	
1:150 @ A1	1/9/17	
project code	**sheet no.**	**revision**
SM13	**AF2040**	**DA01**

Typical Waste Transfer Path
Hotel Rooms to Chutes



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BUILDING USE

- HOTEL
- HOTEL FACILITIES
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- NEIGHBOURHOOD CENTRE
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- RESIDENTIAL FACILITIES

SITE BOUNDARY

EXISTING BUILT FORM

EXISTING BUILT FORM

EXTENT OF CAR STACKER BELOW

A ADAPTABLE APARTMENT / HOTEL ROOM

UD UNIVERSAL DESIGN

HOTEL TYPES

- DOUBLE QUEEN
- KING
- CORNER EXECUTIVE
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- 2 LEVEL SUITE
- PRESIDENTIAL SUITE
- RITZ-CARLTON SUITE

NOTE: SPATIAL PROVISION INCLUDED TO ACCOMMODATE AS1428.1, UPDATES AS REQUIRED AT DETAILED DESIGN

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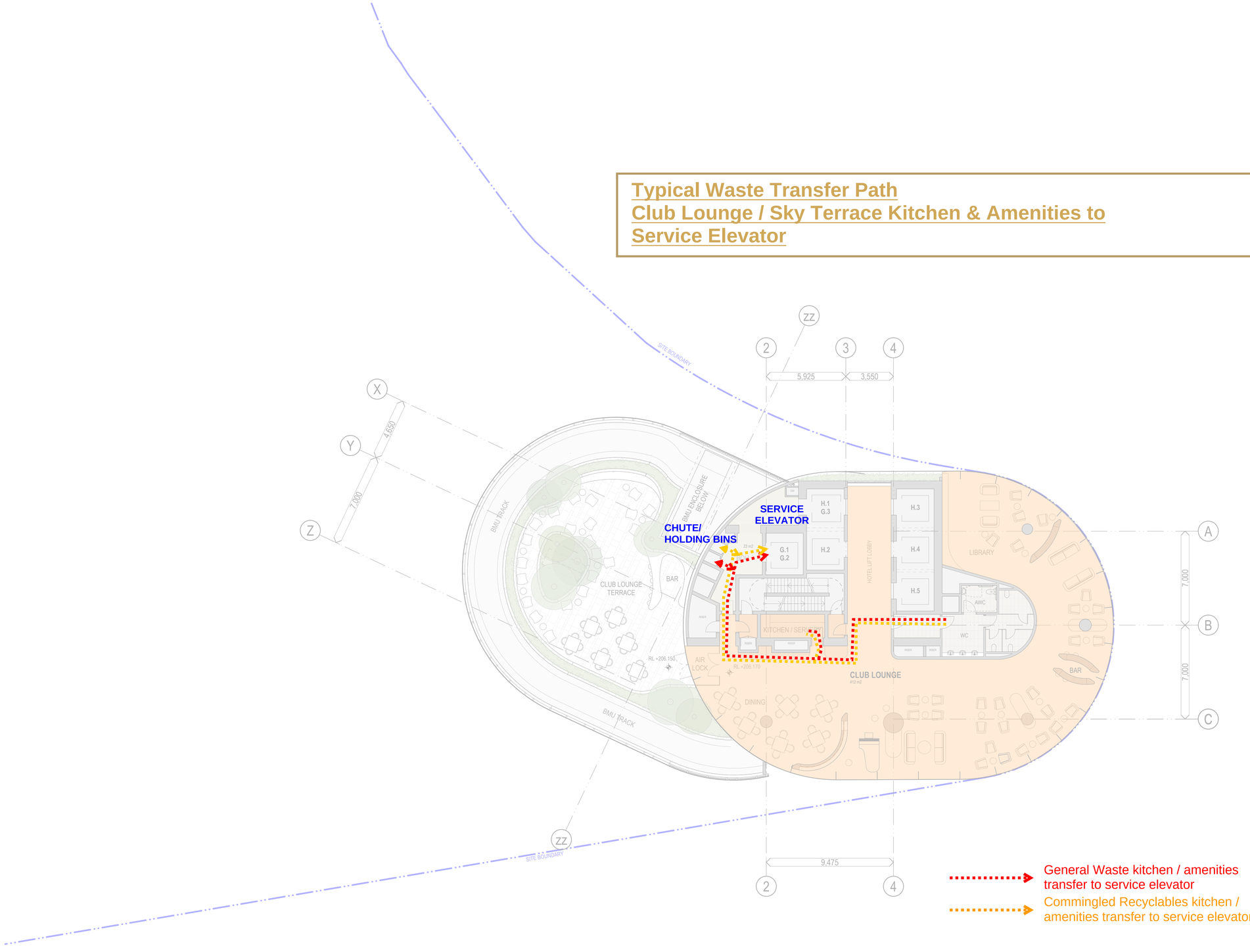
project
Modification 13
80 PYRMONT STREET
PYRMONT NSW 2009

title
General Arrangement Plans
Level 43 - 45 Typical Hotel Floor Plan

scale	first issued	project code	sheet no.	revision
1:150 @ A1	1/9/17	SM13	AF2043	DA01

Typical Waste Transfer Path
Club Lounge / Sky Terrace Kitchen & Amenities to Service Elevator



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legend

BUILDING USE

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- HOTEL FACILITIES
- LOADING, PLANT
- LIFTS, FIRE STAIRS, SERVICES
- ANCILLARY, BOH
- CIRCULATION
- NEIGHBOURHOOD CENTRE
- RETAIL
- FOOD & BEVERAGE
- RESIDENTIAL
- RESIDENTIAL FACILITIES

SITE BOUNDARY

EXISTING BUILT FORM

EXISTING BUILT FORM

EXTENT OF CAR STACKER BELOW

A ADAPTABLE APARTMENT / HOTEL ROOM

UD UNIVERSAL DESIGN

HOTEL TYPES

- DOUBLE QUEEN
- KING
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NOTE: SPATIAL PROVISION INCLUDED TO ACCOMMODATE AS1428.1, UPDATES AS REQUIRED AT DETAILED DESIGN

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project
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title
General Arrangement Plans
Level 59 Club Lounge + Terrace Floor Plan

scale	first issued	project code	sheet no	revision
1:150 @ A1	1/9/17	SM13	AF2059	DA01

Appendix C BIN AND WASTE STORES

Alternate bin storage locations and provisions for consideration are located at:

- Level 41 Plant;
- Chute Termination Above Level 00 for residential waste streams
- The Star (Jones Bay Rd) Loading Dock; and
- Darling (Edward St) Loading Dock.

Level B2 Dock North Tower - New Waste Store provisions

660L General Waste MGB

660L Commingled Recyclables MGB

EXISTING BUILT FORM

EXTENT OF CAR STACKER BELOW

EXTEND OF MODIFICATION 13 WORK AS SHOWN ON FJMT DOCUMENT. RIFER TO DWP DRAWING FOR FULL EXTEND & DEMARCATION OF MODIFICATION 13 WORK.

NOTE: SPATIAL PROVISION INCLUDED TO ACCOMMODATE AS1428.1, UPDATES AS REQUIRED AT DETAILED DESIGN

MAIN WASTE STORE

6.2m

3.0m

2m

2.4m

GOODS LIFT

UPGRADE TO WALL FINISHED SHOWN DASHED

NORTHBOUND LIGHT-RAIL PLATFORM PROPOSED FLOOR FINISH UPGRADE

EXISTING LIGHT-RAIL TRACKS

SOUTHBOUND LIGHT-RAIL PLATFORM PROPOSED FLOOR FINISH UPGRADE

SERVICE ROAD THROUGH TO PIRRAMA ROAD

LINE OF EXISTING KERB

LRV

DOCK MANAGER

STORE

MRV

SRV

LOADING

WAITING BAYS

SERVICE ROAD

TAXI DROP-OFF

TAXI PICK UP

TAXI QUEUING SYSTEM

CARSTACKER TRANSFER CABIN

CARSTACKER TRANSFER CABIN

CARSTACKER TRANSFER CABIN (ACCESSIBLE)

LINEN STORE

WASTE STORE

EXISTING GOODS LIFT

RESIDENCE / VALET CORRIDOR

FOOD & BEVERAGE

RL +2.800

LINE OF EXISTING BUILDING OVER

NEW TENANCY EXTERNAL SEATING

BUILDING OVER

EXTENT OF AWNING OVER

PORTE COCHERE

RITZ-CARLTON SIGNAGE

SITE BOUNDARY

HOTEL ARRIVAL

HOTEL LIFT LOBBY

BOH

HOTEL BOH

HOTEL OFFICE

HOTEL OFFICE

LUGGAGE

RIGHT TURN ACROSS BB LINE INTO HOTEL PORT COCHERE AS PERMITTED BY SECTION 134(3) OF THE NSW ROAD RULES 2014

EXISTING CbS BUS STOP

PIRRAMA ROAD

EXISINTG BUS PARKING ZONE

28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43

J L M N P Q R S T U V

DA01 1/9/17 DEVELOPMENT APPLICATION NY SMP

rev dd/m/y name by chk

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Modification 13
80 PYRMONT STREET
PYRMONT NSW 2009

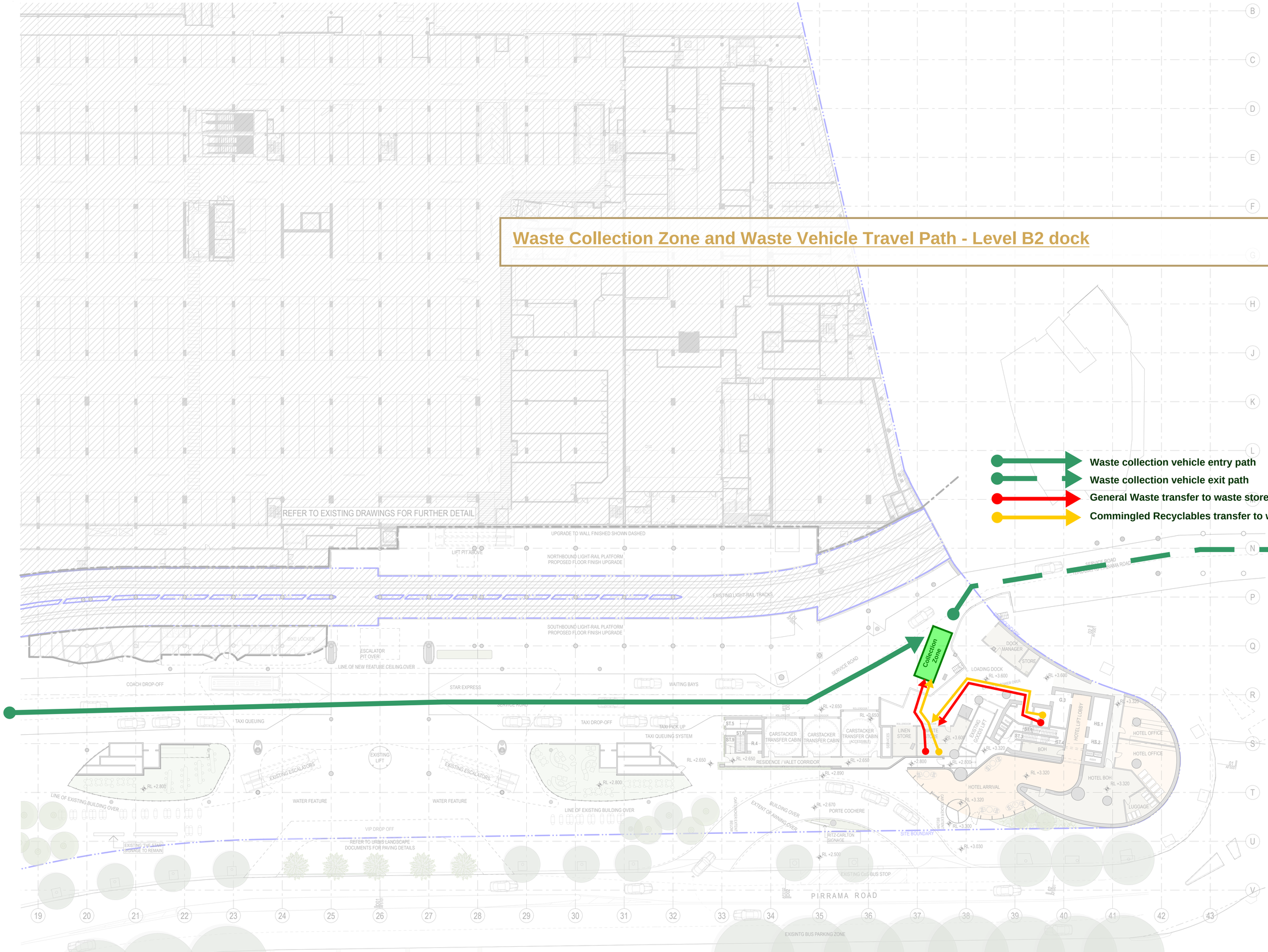
General Arrangement Plans
B2 Hotel Entry Ground Floor Plan

scale 1:300 @ A1 first issued 1/9/17

project code SM13 | sheet no. AF102 | revision DA01

Appendix D COLLECTION ZONES, COLLECTION VEHICLE PATHS

Waste Collection Zone and Waste Vehicle Travel Path - Level B2 dock



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legend

BUILDING USE

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- LIFTS, FIRE STAIRS, SERVICES
- ANCILLARY, BOH
- CIRCULATION
- NEIGHBOURHOOD CENTRE
- RETAIL

SITE BOUNDARY

EXISTING BUILT FORM

EXISTING BUILT FORM

EXTENT OF CAR STACKER BELOW

EXTEND OF MODIFICATION 13 WORK AS SHOWN ON FJMT DOCUMENT. RIFER TO DWP DRAWING FOR FULL EXTEND & DEMARCATION OF MODIFICATION 13 WORK.

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project

Modification 13
80 PYRMONT STREET
PYRMONT NSW 2009

title

General Arrangement Plans
B2 Hotel Entry Ground Floor Plan

scale	first issued	
1:300 @ A1	1/9/17	

project code	sheet no	revision
SM13	AF102	DA01