



61A-65 Albert Ave, Chatswood NSW
Mixed-Use Development

CONSTRUCTION & DEMOLITION WASTE MANAGEMENT PLAN

16/12/2025
Report No. 707892
Revision D

Client

Mandarin Developments Pty Ltd

Architect

Skidmore, Owings & Merrill Australia

<https://www.som.com/>

SCOPE

A Waste Management Plan (WMP) must be submitted with all development applications for new developments and changes of use that are expected to generate construction, demolition, or operational waste.

This WMP addresses only the **construction** and **demolition** phases of the proposed development. The requirements outlined must be implemented on-site throughout these phases and may be reviewed if there are any design changes. Construction and demolition waste management provisions will also be reviewed as part of the Construction Management Plan.

Waste management for the **operational** phase of the development is outside the scope of this report and must be addressed in a separate Operational Waste Management Plan.

REVISION REFERENCE

Revision	Date	Prepared by	Reviewed by	Description
A	4/12/2025	S. Semaan	M. Cuevas	Draft
B	08/12/2025	M. Cuevas	J. Parker	Amendment
C	10/12/2025	M. Cuevas	J. Parker	Amendment
D	16/12/2025	M. Cuevas	H. Wilkes	Updated Plans

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CONTENTS

1.0	EXECUTIVE SUMMARY	4
2.0	INTRODUCTION	4
3.0	PROJECT BACKGROUND AND HISTORY	6
3.1	The Site	6
4.0	MITIGATION MEASURES	8
5.0	WASTE LEGISLATION AND GUIDANCE.....	9
5.1	Legislation and guidance	9
5.2	Waste diversion targets	9
5.3	Report objectives	9
5.4	Limitations	10
6	GENERAL WASTE MANAGEMENT PROVISIONS.....	10
6.1	Stakeholder Roles and Responsibilities.....	10
6.2	Monitoring and Reporting.....	11
6.3	Opportunities for Reuse and Recycling	12
6.4	Management of Hazardous Waste Materials	13
6.5	Management of Asbestos.....	13
6.6	Management of Excavation Waste.....	14
7	SITE SPECIFIC WASTE MANAGEMENT PROVISIONS	15
7.1	Demolition Waste Volumes and Management	15
7.2	Construction Waste Volumes and Management.....	17
7.3	Recycling Directory	20
7.4	Site-Specific Operational Measures.....	21
7.5	Location and Design of Waste Management Facilities	23
7.6	Site Plans	26
	Proposal.....	27

1.0 EXECUTIVE SUMMARY

This Construction and Demolition Waste Management Plan (C&D WMP) has been prepared by Elephants Foot Consulting to accompany a concurrent Rezoning Request and State Significant Development Application (SSDA) for a mixed-use development at 61A-65 Albert Avenue, Chatswood. The site is legally described as Lot 2 DP1035379. This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARS) issued for the project (SSD-85024458).

2.0 INTRODUCTION

The application seeks consent for the concurrent rezoning of the site, demolition of the existing building and construction of a 32-storey mixed use tower.

Specifically, the SSDA seeks development consent for the following:

- Approval of an LEP amendment: to support the proposed development, a rezoning request is being sought concurrently with the SSDA under the HDA pathway. The rezoning request seeks to amend the Willoughby Local Environmental Plan 2012 (WLEP 2012) by:
 - Amend the Height of Building Map reference in clause 4.3 of the WLEP to specify a maximum building height of RL 192m and RL 205m.
 - Amend the Floor Space Ratio map referenced in clause 4.4 of the WLEP to remove the floor space ratio control, as is consistent with other sites in the Chatswood CBD
 - Amend the Affordable Housing Map referenced in clause 6.8 of the WLEP to specify an affordable housing contribution of 5%.
 - Amend clause 6.24 61A Albert Avenue, Chatswood to:
 - Remove the minimum non-residential floor space ratio restriction that applies to the land.
 - Remove the prohibition of serviced apartments. This is not a redundant subclause as serviced apartments are prohibited use throughout the E2 Commercial Centre zone.
 - Include a notation that permits strata subdivision of land on the site despite clause 4.1A.
 - Include a new subclause that states development for the purpose of advertising structure is permissible on the land with development consent.
 - Insert a new subclause withing clause 6.24, that states despite clause 6.15(2) Sun Access of the WLEP, development consent may be granted to development on the land that results in minor additional overshadowing between 11am – 12pm within Area 2 of Chatswood Oval, providing it results in no more than 5% additional overshadowing.
- State significant development consent for the proposed development , including:
 - Demolition of the existing building known as the Mandarin Centre.
 - Construction of a 32-storey mixed-use tower, including the following elements:
 - Six (6) levels of basement parking
 - Four (4) storey retail podium
 - 28-storey residential tower
 - Augmentation of infrastructure and services.
 - Site landscaping; and
 - Public domain improvements.

The purpose of the project is to deliver high-quality mixed-use development with a predominant residential focus within convenient walking distance of Chatswood Train Station and Commercial Core.

This report has been prepared in response to the requirements contained within the SEARS request dated 23 June 2025. Specifically, this report has been prepared to respond to the SEARS requirement issued below:

Table 1 – SEARs Requirements

Item	Description of Requirement	Section Reference
17	- Provide the measures to be implemented to manage, reuse, recycle and safely dispose of waste in accordance with any council waste management requirements. Refer to Willoughby City Council comments in Appendix A. Willoughby City Council Waste comments below. 10. Vehicle access and waste disposal Willoughby City Council has adopted the Waste Management Technical Guide and Development Controls by North Sydney Regional Organisation of Councils for mixed-use developments. The proposal is expected to comply with the requirements set out in this document concerning waste disposal. The following requires compliance for any proposal: - Council has a legislative responsibility to collect residential waste (NSROC 2018, Section 3.1.1). Private waste collection is not supported by Willoughby City Council. - Waste collection is required on-site and not on the street. - The development is to demonstrate that a Heavy Rigid Vehicle (HRV) can enter and exit the site in a forward direction to collect waste. The HRV should not cross property boundaries to enter and exit the building. - Residential waste collection holding rooms need to be located within 2.0m of the truck parking area. The Council collection team should not be required to collect bins or bulky waste up through a lift. - A loading/unloading area is to be provided on-site in the basement. - The vehicle access and waste disposal arrangements should not disrupt pedestrian safety. Waste management is to comply with the requirements in the Waste Management	Sections 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, includes the management of hazardous waste, asbestos, excavation waste and opportunities of reuse and recycling. Sections 7.1 and 7.2 includes the waste volumes for Construction and Demolition Stages

Item	Description of Requirement	Section Reference
	Technical Guide and Development Controls by the North Sydney Regional Organisation of Councils. Identify appropriately sited waste storage areas, collection access paths / roads, and appropriate servicing arrangements for the site.	Section 7.3 of the C & D WMP outlines the waste recycling directory and recommendations for the location of waste management facilities Section 7.6 provides the demolition plan and provides the indicative bin location during the construction stage.

3.0 PROJECT BACKGROUND AND HISTORY

The site has a long planning history, beginning in 2013 with a Planning Proposal to Willoughby Council to amend the WLEP for mixed-use development, including 70% shop top housing. Despite initial support, the Council rejected the proposal in 2015, leading to a new Planning Proposal in 2016, which was also refused. The Sydney North Planning Panel recognised the proposal's merits in 2019, and the Department of Planning granted Gateway Approval in 2020. The Chatswood CBD Strategy, finalised in 2020, recommended a prohibition on residential uses in the Commercial Core zone, despite market feasibility analyses indicating low demand for new commercial office development.

The proposal was amended to reduce residential floor space to 30%, which was approved but remains commercially unfeasible. Market conditions have worsened, with high office vacancy rates and low demand for new commercial office space in Chatswood CBD. The current proposal seeks a mixed-use development with a predominant residential emphasis, aligning with the original 2014 vision.

3.1 The site

The site is 61A-65 Albert Avenue, Chatswood and is located within the Willoughby local government area (LGA). The site is legally described as Lot 2 in Deposited Plan (DP) 1035379. It is regularly shaped and falls approximately 3m from West to East. The site is within the Chatswood central business district (CBD).

The urban context surrounding the site is characterised by a mix of commercial, retail and residential developments. The surrounding locality is described as:

- Directly north of the site is the Sebel Hotel which is a 28-storey tower. Further north is a variety of commercial, and retail uses which form the Chatswood Westfield Shopping Centre.
- The east of the site is bounded by Victor Street. Development consists of predominately retail continuing the Chatswood Westfield Shopping Centre.
- To the south of the site is a multi-storey car park for the Chatswood Westfield Shopping Centre and high-density residential development. Chatswood Baptist Church adjoins the site on the southern side of Albert Avenue and Chatswood Park is located towards the south-west.
- To the west of the site is the Chatswood interchange which includes Train and Metro services to the Sydney CBD and Sydney's Northern suburbs. These key transport links are located within 160m of the site.

The site currently accommodates the Mandarin Shopping Centre featuring five levels of retail space and three levels of car parking. Retail tenants include Hoyts Cinemas and Strike Bowlin.

4.0 MITIGATION MEASURES

Table 2: Mitigation Measures

Mitigation Number/ Name	When is Mitigation Measure to be complied with	Mitigation Measure
Source Separation	Construction and Demolition	Separate waste streams at the point of generation (e.g., bricks, concrete, timber, metal, plasterboard) to maximise reuse and recycling. The Site Manager or Contractor is responsible for foreseeing the waste separation.
Reuse of Materials	Construction & Demolition	Reuse demolition materials such as crushed concrete and bricks onsite as fill or sub-base material. Demolition Contractor is responsible for foreseeing the waste reuse.
Accurate Material Ordering	Construction	Order correct quantities and use prefabricated materials to minimise excess. Project Manager to ensure correct material quantities are ordered.
Staff Training & Induction	Construction and Demolition	Provide all workers with site-specific induction and ongoing training on waste separation, hazardous waste handling, and spill response. Site Manager to regularly conduct training in line with evolving environmental regulations and best practices.
Management of Asbestos	Construction and Demolition	Contaminated material stockpiled on site will be minimised as far as possible and should be stored on HDPE liner, in a bunded location which is protected from inclement weather; Sediment fences should be installed around the base of stockpiles and the stockpiles should be covered. Where excavated material requires validations, samples should be taken for NATA laboratory testing as per the requirements of the contamination assessment prior to restoration works, backfilling exercises and disposal; Any trucks carrying contaminated materials should be securely and completely covered immediately after loading the materials (to prevent windblown emissions and spillage) and must be licensed by the NSW Environmental Protection Authority (EPA); Decontamination of all equipment prior to demobilisation from the site is important so that contaminated materials are not spread off-site.
Management of excavation waste	Construction and Demolition	Wherever practical, excavation material will be reused as part of the development; Excavation material that is not natural (virgin) material will be transported to an approved landfill site or off-site recycling depot; A waste classification assessment of the fill material should be undertaken prior to it being acceptable for waste disposal purposes; Transportation routes for excavation material removed from site will be identified and used.

5.0 WASTE LEGISLATION AND GUIDANCE

5.1 Legislation and guidance

This Waste Management Plan (WMP) draws on a range of guidance materials at the local, state, and federal levels, relevant to construction and demolition waste management. The key references include:

- *Willoughby Development Control Plan 2023*
- *Construction and Demolition Waste Guide – Recycling and Re-use Across the Supply Chain* (Australian Government, Department of Sustainability, Environment, Water, Population and Communities, November 2014)
- *NSW Waste Avoidance and Resource Recovery (WARR) Strategy 2014–2021*
- *NSW Waste and Sustainable Materials Strategy 2041 (WaSM 2041)*
- *NSW Waste Classification Guidelines* (2014)
- *Australia’s National Waste Policy* (2018)

5.2 Waste diversion targets

This WMP supports the sustainable handling of construction and demolition waste in alignment with state policy objectives. Two key strategies guide the targets outlined in this section:

NSW Waste Avoidance and Resource Recovery (WARR) Strategy 2014–2021

- Increase construction and demolition recycling rates to 80%
- Increase total waste diverted from landfill to 75%
- Reduce litter by 40%
- Reduce illegal dumping incidents by 30%

NSW Waste and Sustainable Materials Strategy 2041 (WaSM 2041)

- Achieve an average 80% resource recovery rate across all waste streams by 2030, including construction and demolition waste
- Reduce total waste generated per person by 10% by 2030
- Halve the amount of organic waste sent to landfill by 2030
- Triple the plastics recycling rate by 2030
- Reduce litter by 60% by 2030

5.3 Report objectives

This report aims to promote best-practice waste management throughout the demolition and construction phases of the development, having regard to site conditions, material types, and design constraints. Where practical, the following measures are encouraged:

- Reuse of excavated material on-site, with any surplus directed to an approved facility
- Mulching and reuse of green waste on-site where suitable, or off-site recycling
- On-site reuse or off-site recycling of bricks, tiles, and concrete
- Returning plasterboard waste to suppliers for recycling
- Reuse of framing timber on-site or recycling off-site
- Off-site recycling of windows, doors, and joinery
- Safe disposal of all asbestos, hazardous, or intractable waste in accordance with SafeWork NSW and EPA requirements
- Recycling of plumbing, fixtures, and metal elements off-site
- Accurate ordering of materials and use of prefabricated components to minimise off-cuts and surplus

- Reuse of formwork wherever feasible
- Source separation of off-cuts to enable reuse, resale, or recycling

5.4 Limitations

This report has been prepared by Elephants Foot Consulting (EFC) solely for the purpose of providing a Construction and Demolition Waste Management Plan (C&D WMP) in support of a development application. It is subject to the following limitations:

- This report is intended solely for use by Mandarin Developments Pty Ltd (including its officers, employees, and advisers) and must not be relied upon by any other party without the prior written consent of EFC.
- Drawings, estimates, and information within this report are based on plans and documentation provided by the client or nominated third parties. Any assumptions made using that information are outside EFC's control.
- All waste calculations presented are indicative estimates only. Actual waste volumes may vary depending on site management practices, including staff training, education, and operational behaviours.
- The site manager is responsible for adjusting waste storage capacity and collection frequencies as required, based on actual waste volumes observed during construction and demolition.
- While this report has been prepared with due care, no representation or warranty is made that the WMP will reflect actual project outcomes. EFC accepts no liability for outcomes that may be unsuitable or inaccurate due to reliance on third-party information or unforeseen factors.
- Unless explicitly stated, EFC makes no warranty or representation regarding the accuracy or reliability of the information contained herein.
- Equipment examples referenced in this report are for illustrative purposes only. Selection and supply must be confirmed with the appropriate supplier. Reference to any third-party business or product does not imply endorsement by EFC.

6 GENERAL WASTE MANAGEMENT PROVISIONS

6.1 Stakeholder Roles and Responsibilities

All stakeholders are responsible for managing their environmental performance and complying with all relevant legislation.

The Construction Contractor will have primary responsibility for implementing this WMP. However, all site personnel must ensure they comply with the plan and associated environmental requirements at all times.

Where feasible, an Environmental Management Representative (EMR) should be appointed to support implementation and monitor compliance.

The following table outlines the key roles and responsibilities of each stakeholder:

Table 3: Stakeholder Roles and Responsibilities

Roles	Responsibilities
Site Management	• Organise waste collections as required • Arrange replacement or maintenance of bins • Investigate and ensure prompt clean-up of illegally dumped waste materials • Notify the Principal Certifying Authority (Council) of the appointment of waste removal, transport or disposal contractors for waste tracking purposes • Ensure waste-related equipment is well maintained • Accurately calculate material requirements to avoid over-ordering • Ensure segregation of materials to maximise reuse and recycling • Routinely check waste sorting and storage areas for cleanliness, hygiene, contamination, and WHS issues • Ensure monitoring and audit results are documented and carried out as specified in the WMP • Provide effective signage, communication, and education to site staff and contractors • Provide staff/contractors with equipment manuals, training, WHS procedures, risk assessments, and PPE for waste management activities • Assess manual handling risks and prepare a control plan for waste and bin transfers
Site Staff/Contractors	• Separate and dispose of waste streams in compliance with the WMP • Abide by all relevant WHS legislation, regulations, and guidelines • Attend training and inductions as required • Clean and transport bins as required • Carry out daily visual inspections of waste storage areas • Organise, maintain, and clean waste storage areas
Environmental Management Representative (EMR)	• Establish local commercial reuse of materials where on-site reuse is not practical • Provide separate skips and recycling bins for effective waste segregation • Ensure staff and contractors are aware of site requirements • Deliver training on WMP requirements and waste management strategies adopted for the development • Manage contaminated waste, approve off-site waste transport and disposal locations, and check licensing requirements • Arrange assessment of potentially contaminated, hazardous, or liquid waste materials • Monitor, inspect, and report as required
Waste Collection Contractors	• Provide a reliable and appropriate waste collection service • Give feedback to site management regarding contamination of waste streams • Work with site management to customise waste systems where possible

6.2 Monitoring and Reporting

The following measures are recommended to improve demolition and construction waste management and to provide more reliable waste generation figures:

- Compare projected waste quantities with actual waste produced
- Conduct waste audits of current projects (where feasible)
- Record waste generated and disposal methods
- Review past waste disposal receipts
- Maintain records to inform future waste management plans

Records of waste volumes recycled, reused, or removed by contractors must be kept. Dockets/receipts verifying recycling and disposal in accordance with the WMP are to be retained and made available to Council or the EPA upon request.

Daily visual inspections of waste storage areas will be undertaken by site personnel, with checklists/logs submitted to the Site Manager weekly or as required. These inspections will assist in identifying and rectifying any resource or waste management issues.

Waste audits are to be carried out by the Building Contractor to assess the effectiveness of waste segregation and recycling/reuse initiatives. Where audits indicate procedures are ineffective, additional staff training should be provided and site signage reviewed.

All environmental incidents must be managed promptly to minimise potential impacts. An incident register is to be maintained on-site at all times and include the 24-hour EPA Pollution Line contact details. Potential incidents during demolition and construction may include fuel or chemical spills, seepage or mishandling of hazardous waste, and unlicensed discharge of pollutants to the environment.

6.3 Opportunities for Reuse and Recycling

There are many opportunities to reduce waste volumes during demolition and construction. Adaptive reuse of building materials should be encouraged, with consideration given to both reusing or recycling materials on-site and sourcing used or recycled materials from external suppliers for use in the development.

Where practical, the site should facilitate reuse and recycling through 'deconstruction', in which materials are carefully dismantled and sorted. Unwanted but reusable items can be taken to second-hand building centres, helping to reduce disposal costs.

Where possible, individually wrapped materials should be avoided. Preference should be given to products supplied in returnable or reusable packaging, such as timber pallets.

The table below provides examples of potential reuse and recycling options for materials likely to be generated or required during demolition and construction of this development:

Table 4: Potential Reuse/Recycling Options for Construction Materials

Material	Reuse/Recycling Potential
Asphalt	Hot in-place recycling or reprocessed into Reclaimed Asphalt Pavement (RAP).
Bricks	Cleaned and/or rendered for reuse, crushed for fill, sold or provided to a recycled materials yard
Cardboard Packaging	Recycled at a paper/cardboard recycling facility
Carpet	Cleaned and reused for the same purpose, reused in landscaping or garages/sheds, recycled at an appropriate processing facility
Concrete, Masonry, Spoil	Reused on-site as fill, levelling or crushed for road base
Doors, Windows, Fittings	Reused in new or existing buildings or sent to second-hand supplier
Glass	Recycled at a glass recycling facility, aggregate for concrete production, crushed for termite barrier, reused as glazing
Green Waste (Organics)	Mulched, composted for reuse, trees chipped for use in landscaping or removed carefully and reused onsite or sold
Hardwood Beams	Reused as floorboards, fencing, furniture or sent to second-hand timber supplier
Insulation Material	Reprocessed to remove impurities and reused for the same purpose or as off-cuts, compressed for ceiling tile manufacture
Metal, Steel/Copper Pipe	Recycled at a metal recycling facility, melted into secondary materials for structural steel, roofing, piping etc. copper sold for re-use

Material	Reuse/Recycling Potential
Other Timber	Reused in formwork, ground into mulch for garden or sent to second-hand timber supplier
Plasterboard	Crushed for reuse in manufacture of new plasterboard, returned to supplier or used in landscaping
Plastics	Reused as secondary materials for playgrounds, park benches etc.
Roof Tiles	Cleaned and reused, crushed for reuse for landscaping and driveways or sold or provided to a recycled materials yard
Soil	Stockpiled onsite for reuse as fill
Synthetic & Recycled Rubber	Reused for the same purpose or reprocessed for use in manufacture/construction of safety barriers, speed humps
Topsoil	Stockpiled onsite for reuse in landscaped areas

6.4 Management of Hazardous Waste Materials

For the purpose of this report, hazardous waste materials include any waste that poses a hazard or potential harm to human health or the environment, particularly asbestos waste and asbestos containing material (ACM). The general advice provided in this report is superseded by any specific hazardous materials or remediation control plans prepared for the project.

6.5 Management of Asbestos

Airborne asbestos is a health hazard. Illegal dumping of asbestos may lead to increased exposure to asbestos fibers. As a result, the movement of asbestos must be monitored to ensure it does not harm the environment or human health.

During the demolition phase of the development, there must be a commitment to engage qualified and certified contractors to remove all contaminated/hazardous materials (e.g., asbestos) and dispose of all contaminated/hazardous waste at an appropriately licensed facility, where applicable.

Removal must be by a professional licensed by SafeWork NSW.

Asbestos waste must be tracked when transported from its place of generation to its final destination. WasteLocate is NSW EPA's online system for tracking asbestos waste within NSW.

Under clause 79 of the *Protection of the Environment Operations (Waste) Regulation 2014*, waste operators, transporters, and waste and recycling facilities must use WasteLocate when consigning, transporting or accepting more than 100kg of asbestos waste, or more than 10 square metres of waste asbestos sheeting, in any single load.

For more information, visit www.asbestos.nsw.gov.au

Technical Support – Amtac Professional Services – 1800 420 380 or WasteLocate@QR2id.com

In the event that any contaminated or hazardous materials are unexpectedly uncovered during demolition or excavation works, the Site Manager is to stop work immediately in that location and contact the relevant hazardous waste contractor prior to further works being undertaken in the area.

6.6 Management of Excavation Waste

For the purpose of this report, excavation waste consists of any unwanted material generated from excavation activities such as a reduced level dig, site preparation and levelling and the excavation of foundations, basements, tunnels and service trenches. This will typically consist of soil and rock. The general advice provided in this report is superseded by any specific hazardous materials or remediation control plans prepared for the project.

All excavated material generated on this site may be re-used in the landscaping or used on other sites as fill material, provided no contamination is present. If sandstone is found to be present, this may be sold or incorporated into the building design.

7 SITE SPECIFIC WASTE MANAGEMENT PROVISIONS

7.1 Demolition Waste Volumes and Management

Demolition waste volumes were estimated using benchmark waste generation rates published by Camden Council (2019) and Shoalhaven City Council (2012). As there are no state-wide demolition waste benchmarks currently available in NSW, these local government figures represent the most robust and recognised guidance for estimating waste generation.

The steps taken in our calculations were as follows:

1. **Establish demolition GFA** – total area of existing buildings scheduled for demolition.
2. **Apply benchmark rates** – published average waste generation rates (m^3/m^2 and t/m^2) applied to demolition GFA in line with Camden and Shoalhaven guidelines.
3. **Material breakdown** – proportions for each material stream allocated in line with Camden and Shoalhaven guidelines.
4. **Diversions assumptions** – recovery rates assigned to each material stream based on available processing capacity in NSW (EPA, *Waste and Resource Recovery Infrastructure Strategy 2017–2021*) and established industry practice in the construction and demolition sector.

The table below presents the estimated demolition waste volumes by material stream, expressed in both cubic metres (m^3) and tonnes (t).

Table 5: Demolition Waste Volumes and Management

Material	Volume (m^3)	Mass (t)	Recovery %	Diverted (t)
Excavation Material	0.00	0.00	100%	0.00
Green Waste	73.31	21.99	95%	20.89
Bricks	1072.84	1716.55	90%	1544.90
Tiles	24.44	43.99	90%	39.59
Concrete	6983.01	16759.24	95%	15921.27
Timber	1470.26	882.16	80%	705.73
Plasterboard	1783.86	891.93	30%	267.58
Metals	24.44	195.49	98%	191.58
Asbestos	12.22	12.22	0%	0.00
Residual Waste	2125.98	637.79	10%	63.78
Other Waste	24.44	12.22	20%	2.44

Total Diversion (%)	89%
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Based on our calculations, 89% of demolition waste is expected to be diverted from landfill, exceeding the NSW WARR Strategy target of 80%.

The following table outlines the disposal pathways for each waste stream expected to arise during the demolition phase. It identifies whether materials can be reused on site, recycled through established recovery facilities, or must be directed to landfill. This breakdown demonstrates the application of industry best practice and compliance with NSW recycling infrastructure capacity.

Table 6: Demolition Waste Disposal Pathway

Material	Reuse on site	Recycled	Landfilled	Notes
Excavation Material	Yes	Yes	No	Clean spoil reused as backfill or sent as clean fill
Green Waste	Yes	Yes	No	Mulch/compost
Bricks	Possible	Yes	Residual	Crushed to aggregates
Tiles	No	Yes	Residual	Crushed to aggregates
Concrete	Possible	Yes	Minimal	Crushed for road base/aggregate
Timber	Possible	Yes	Yes	Untreated timber recyclable; treated to landfill
Plasterboard	No	Yes	Residual	Specialised gypsum recycling
Metals	No	Yes	No	Scrap metal recovery
Asbestos	No	No	Yes	Licensed disposal only
Residual Waste	No	Limited	Yes	Unrecyclable mixed waste
Other Waste	Yes	Yes	Yes	Depends on material type

The above allocations indicate that the majority of demolition waste can be diverted from landfill through reuse and recycling, significantly reducing environmental impact and supporting compliance with project diversion targets.

7.2 Construction Waste Volumes and Management

Construction waste volumes were estimated using benchmark waste generation rates published by Camden Council (2019) and Shoalhaven City Council (2012). As there are no state-wide construction waste benchmarks currently available in NSW, these local government figures represent the most robust and recognised guidance for estimating waste generation.

In addition, excavation waste has been calculated separately. The methodology was as follows:

1. **Establish new GFA** – total area of new construction works.
2. **Apply benchmark rates** – published average waste generation rates (m³/m² and t/m²) applied to the new GFA.
3. **Material breakdown** – proportions for each material stream allocated in line with Camden and Shoalhaven guidelines.
4. **Excavation waste** – calculated separately using the following formula:

The excavation volume has been calculated using the following equation:

$$V = (A + (2S + \frac{D}{\tan \alpha})\sqrt{A}) \times D$$

Where:

- V = Excavation volume (m³)
- A = Plan area of the basement footprint (m²)
- D = Depth of excavation (m)
- S = Working space allowance (m)
- α = Side-slope angle of excavation (degrees)
- W = Width of basement (m)
- L = Length of basement (m)

For the purposes of the estimate:

- The slope angle α is taken as 45°, typical for loose soils.
 - The working space allowance S is assumed as 0.6 m for excavation depths up to 3 m, and 1.0 m for depths greater than 3 m.
5. **Diversion assumptions** – recovery rates assigned by material stream based on available processing capacity in NSW (EPA, *Waste and Resource Recovery Infrastructure Strategy 2017–2021*) and established industry practice in the construction and demolition sector.

The table below presents the estimated construction waste volumes by material stream, expressed in both cubic metres (m³) and tonnes (t).

Table 7: Construction Waste Volumes and Management

Material	Volume (m³)	Mass (t)	Recovery %	Diverted (t)
Excavation Material	89344.00	160818.00	100%	160818.00
Green Waste	97.16	29.15	95%	27.69
Bricks	655.86	1049.37	90%	944.43
Tiles	72.87	131.17	90%	118.05
Concrete	1761.10	4226.63	95%	4015.30
Timber	449.38	269.63	80%	215.70
Plasterboard	194.33	97.16	30%	29.15
Metals	5866.28	46930.21	98%	45991.61
Asbestos	0.00	0.00	0%	0.00
Residual Waste	72.87	21.86	10%	2.19
Other Waste	1250.99	625.49	20%	125.10

Total Diversion (%)	99%
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Based on our calculations, 99% of construction waste is expected to be diverted from landfill, exceeding the NSW WARR Strategy target of 80%.

The following table outlines the disposal pathways for waste streams expected during the construction phase of the project. Materials are categorised according to their most suitable management option, including reuse on site, recycling, or landfill disposal where no recovery options are available. This approach ensures construction waste is managed in line with industry practice and contributes to achieving the project's waste diversion targets.

Table 8: Construction Waste Disposal Pathways

Material	Reuse on site	Recycled	Landfilled	Notes
Excavation Material	Yes	Yes	No	Clean spoil reused as backfill or sent as clean fill
Green Waste	Yes	Yes	No	Mulch/compost
Bricks	Possible	Yes	Residual	Crushed to aggregates
Tiles	No	Yes	Residual	Crushed to aggregates
Concrete	Possible	Yes	Minimal	Crushed for road base/aggregate
Timber	Possible	Yes	Yes	Untreated timber recyclable; treated to landfill
Plasterboard	No	Yes	Residual	Specialised gypsum recycling
Metals	No	Yes	No	Scrap metal recovery
Asbestos	No	No	Yes	Licensed disposal only
Residual Waste	No	Limited	Yes	Unrecyclable mixed waste
Other Waste	Yes	Yes	Yes	Depends on material type

As shown above, most construction waste streams can be effectively reused or recycled, ensuring that landfill disposal is limited to residual materials and supporting the achievement of high diversion rates.

7.3 Recycling Directory

Construction and demolition materials removed from site will need to be managed in accordance with the provisions of current legislation and may include segregation by material type classification in accordance with NSW EPA (2014) *Waste Classification Guidelines, Part 1: Classifying Waste* and disposal at facilities appropriately licensed to receive the particular materials.

Please find the below recommendations for recycling drop off locations for all materials likely to be generated at this development. Only the nearest locations are provided. See www.businessrecycling.com.au for additional locations:

Table 9: Recycling Directory

	Business Name	Suburb	Distance (km)
Excavation Material	Bingo Recycling Centre	Artarmon	2
	SUEZ Resource Recovery Centre	North Ryde	4.6
	Kimbriki Resource Recovery Centre	Ingleside	12.6
Green waste	Bingo Recycling Centre	Artarmon	2
	Kimbriki Resource Recovery Centre	Ingleside	12.6
	Genesis Alexandria	Alexandria	12.9
Bricks	Bingo Recycling Centre	Artarmon	2
	SUEZ Resource Recovery Centre	North Ryde	4.6
	AE Biggs	Oxford Falls	9
Tiles	Bingo Recycling Centre	Artarmon	2
	SUEZ Resource Recovery Centre	North Ryde	4.6
	Kimbriki Resource Recovery Centre	Ingleside	12.6
Concrete	SUEZ Resource Recovery Centre	North Ryde	4.6
	AE Biggs	Oxford Falls	9
	Kimbriki Resource Recovery Centre	Ingleside	12.6
Timber	Bingo Recycling Centre	Artarmon	2
	SUEZ Resource Recovery Centre	North Ryde	4.6
	Advantage Recycling Pty Ltd	Balgowlah	6.4
Plasterboard	Bingo Recycling Centre	Artarmon	2
	AE Biggs	Oxford Falls	9
	Kimbriki Resource Recovery Centre	Ingleside	12.6
Metals	SMS Municipal Services	Brookvale	1.3
	Bingo Recycling Centre	Artarmon	2
	SUEZ Resource Recovery Centre	Artarmon	2.6
Asbestos	Kimbriki Resource Recovery Centre	Ingleside	12.6
	Sydney Transwaste Industries	Homebush West	14
	AKA Civil	Rosehill	28.6

7.4 Site-Specific Operational Measures

Training/Site Inductions

All staff employed during the demolition and construction stages of the development must undertake site-specific induction training regarding the procedures for waste management. Employees of the head contractor will undertake a specific induction outlining their duties and how they are to enforce the waste management procedures.

Induction training will include the following at a minimum:

- Legal obligations;
- Emergency response procedures on site;
- Waste storage locations and separation of waste;
- Litter management in transit and on site;
- The implications of poor waste management practices;
- Correct use of general-purpose spill kits;
- Responsibility and reporting (including identification of personnel responsible for waste management and individual responsibilities).

Materials Selection and Ordering

- Selection of all materials will be undertaken by architectural designers;
- Prefabrication of materials off-site where possible;
- Materials requirements are to be accurately calculated to minimise waste from over-ordering;
- Materials ordering process is to aim at minimisation of materials packaging;
- Material Safety Data Sheets (MSDS) are to accompany all materials delivered to site, where required, to ensure that safe handling and storage procedures are implemented.

Waste Avoidance Opportunities

- Limiting unnecessary excavation;
- Selection of construction materials taking into consideration to their long lifespan and potential for reuse;
- Ordering materials to size and ordering pre-cut and prefabricated materials;
- Reuse of formwork;
- Planned work staging;
- Use of naturally ventilating buildings to reduce ductwork;
- Reducing packaging waste on-site by returning packaging to suppliers where possible, purchasing in bulk and requesting cardboard or metal drums rather than plastics;
- Requesting metal straps rather than shrink wrap and using returnable packaging such as pallets and reels;
- Reduction of PVC use;
- Use of low VOC (volatile organic compounds) paints, floor coverings and adhesives;
- Use of fittings and furnishings that have been recycled or incorporate recycled materials;
- Use of building materials, fittings and furnishings with consideration to their longevity, adaptation, disassembly, reuse and recycling potential.

Site Procedures

- Excavated materials will be used onsite where practical;
- Green waste will be mulched and reused in landscaping either onsite or offsite;
- Concrete, tiles and bricks will be reused or recycled offsite;
- Steel will be recycled offsite; all other metals will be recycled where economically viable;
- Framing timber will be reused on-site or recycled off-site;
- Windows, doors and joinery will be recycled off-site where possible;
- Plumbing, fittings and joinery will be recycled off-site where possible;
- Plasterboard will be re-used in landscaping on-site or returned to the supplier for recycling where possible;
- All used crates will be stored for reuse unless damaged;
- All glass that can be economically recycling will be;
- All solid waste timber, brick, concrete, rock, plasterboard and other materials that cannot be reused or recycled will be taken to an appropriate facility for treatment to recover further resources or for disposal to landfill in an approved manner;
- All asbestos, hazardous and/or intractable wastes are to be disposed of in accordance with WorkCover Authority and EPA requirements;
- Provision for the collection of batteries, fluorescent tubes, smoke detectors and other recyclable resources will be provided on site;
- Beverage container recycling will be provided on-site for employee use;
- All waste and recycling will be disposed of via council approved systems.

7.5 Location and Design of Waste Management Facilities

General Requirements

All waste management facilities onsite should:

- Be conveniently located to enable easy access for on-site movement and collection;
- Be incorporated with other loading/unloading facilities;
- Have sufficient space for the quantity of waste generated and careful source separation of recyclable materials;
- Have sufficient space to contain any on-site treatment facilities, such as compaction equipment;
- Have adequate weather protection and, where required, be enclosed or undercover;
- Be secure and lockable;
- Be well-ventilated and drained to the sewer;
- Be clearly sign-marked to ensure appropriate use.

Waste and Recycling Receptacles

A sufficient quantity of skip bins should be provided for the separate storage of each type of C&D material generated on site. This will assist in maximising source separation and resource recovery, while reducing the costs and quantity of materials disposed of at landfill.

The size of the receptacles should be appropriate to the nature of waste generated and the available storage area. In general, the following options would be acceptable:

Bin Size	Access	Dimensions
2.5m	Top loading	
3m	Drop door walk-in	
4m	Drop door walk-in	
5m	Drop door walk-in	
6m	Double doors walk-in	

Source: Aussie Bins

If the developer chooses to adopt a traditional waste management strategy, whereby waste is deposited into comingled skip bins to be sorted offsite, a single skip bin would be considered sufficient for purpose. However, if the site is to pursue source separation, dedicated skips for the following materials are recommended:

- Timber;
- Plasterboard;
- Concrete;
- Bricks;
- Scrap metal;
- General waste.

Separate receptacles for the safe disposal of hazardous waste types (i.e. light bulbs, batteries, etc) will also be provided where applicable. Where possible, additional bins will be provided in common areas for the collection of comingled recyclables such as beverage containers (glass, plastic, aluminium), paper products, recyclables food containers, etc. Specialised bins for cigarette butts should also be provided.

Safety and Signage

The following safety measures should be considered for the waste storage area:

- Location should not interfere with sight lines of drivers entering or leaving the site;
- Skip bins should be clearly visible and located in well-lit areas;
- Safe paths of travel should be designated using reflective tape, barriers and cones;
- Skip bins must be secured and must not be over-filled to reduce risk of injury through bins moving and falling objects.

Standard signage will be installed in all waste areas, with all skip bins colour coded and labelled appropriately on all sides to allow clear identification of the type of waste to be deposited into each bin.

Refer to the EPA's website for standard construction waste and recycling signs:

www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm

Space and Siting Requirements

The waste storage area will be located adjacent to the entrance to the site to enable access and allow sufficient space for the required skip bins and servicing requirements. The storage area will also be flexible in order to cater for change of use throughout demolition and construction works.

Where space is restricted, dedicated stockpile areas will be allocated onsite, with regular transfers to the dedicated skip bins for sorting and collections.

The position of the designated waste holding area onsite may change according to building works and the progression of the development. Access, visual amenity and WHS will always be integral to the selection of waste storage area locations. Any stockpile locations will take into account slope and drainage factors to avoid contamination of stormwater drains during rain events.

Servicing and Transport

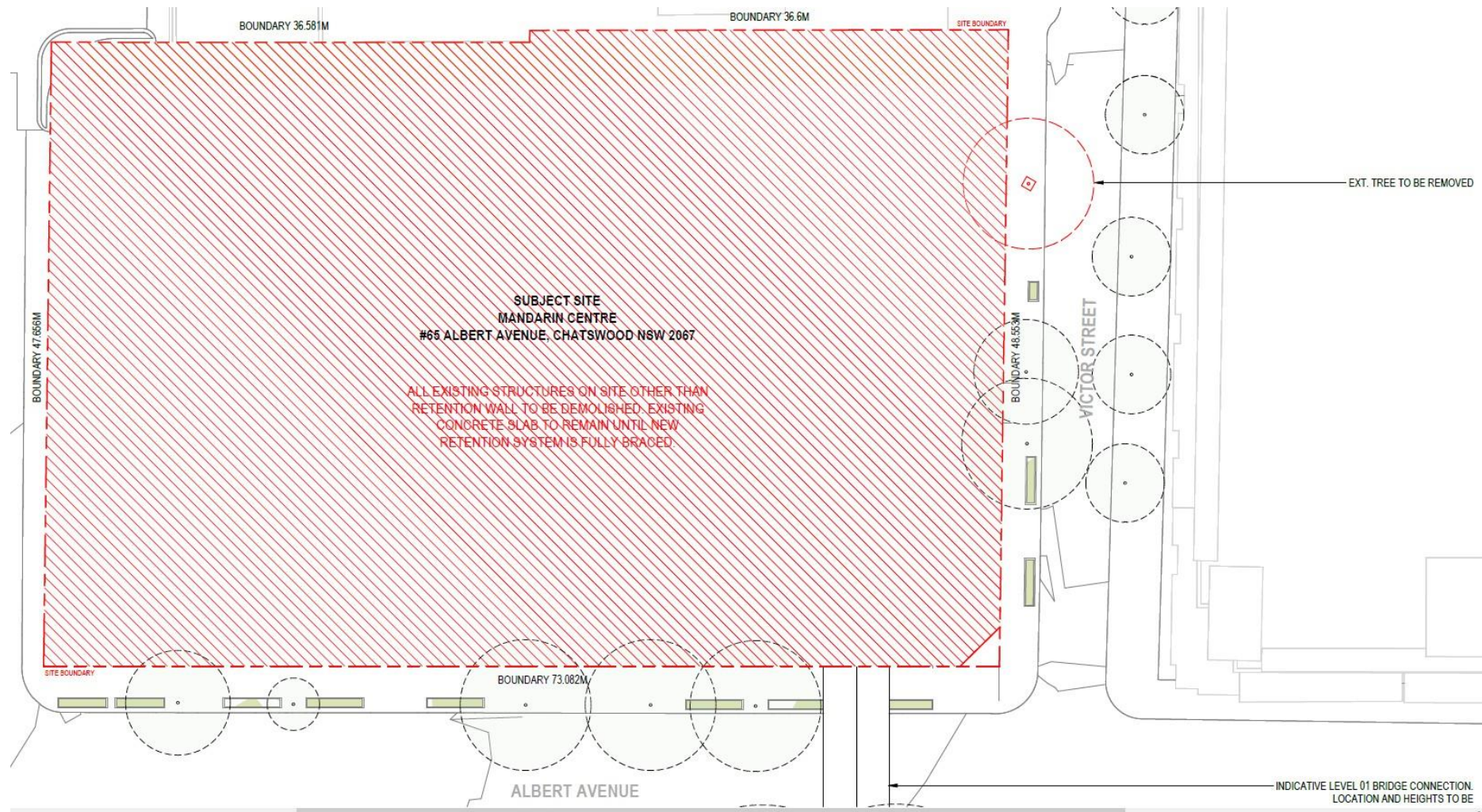
The frequency of waste removal from site will be determined by the volume of materials deposited into the dedicated skip bins. Skip bins will be monitored on a daily basis by the Site Manager to ensure they do not overflow. If skip bins are reaching capacity, removal and replacement should be organised for within 24 hours.

All skip bins leaving the site will be covered with a suitable tarpaulin to reduce spillage of waste while in transit.

All waste collection for construction works will be conducted between approved hours as per Council requirements (typically between 7am and 7pm Monday to Friday, and between 7am and 1pm on Saturdays). All waste generated on site will be transported to an approved and appropriately licensed resource recovery facility and/or landfill site.

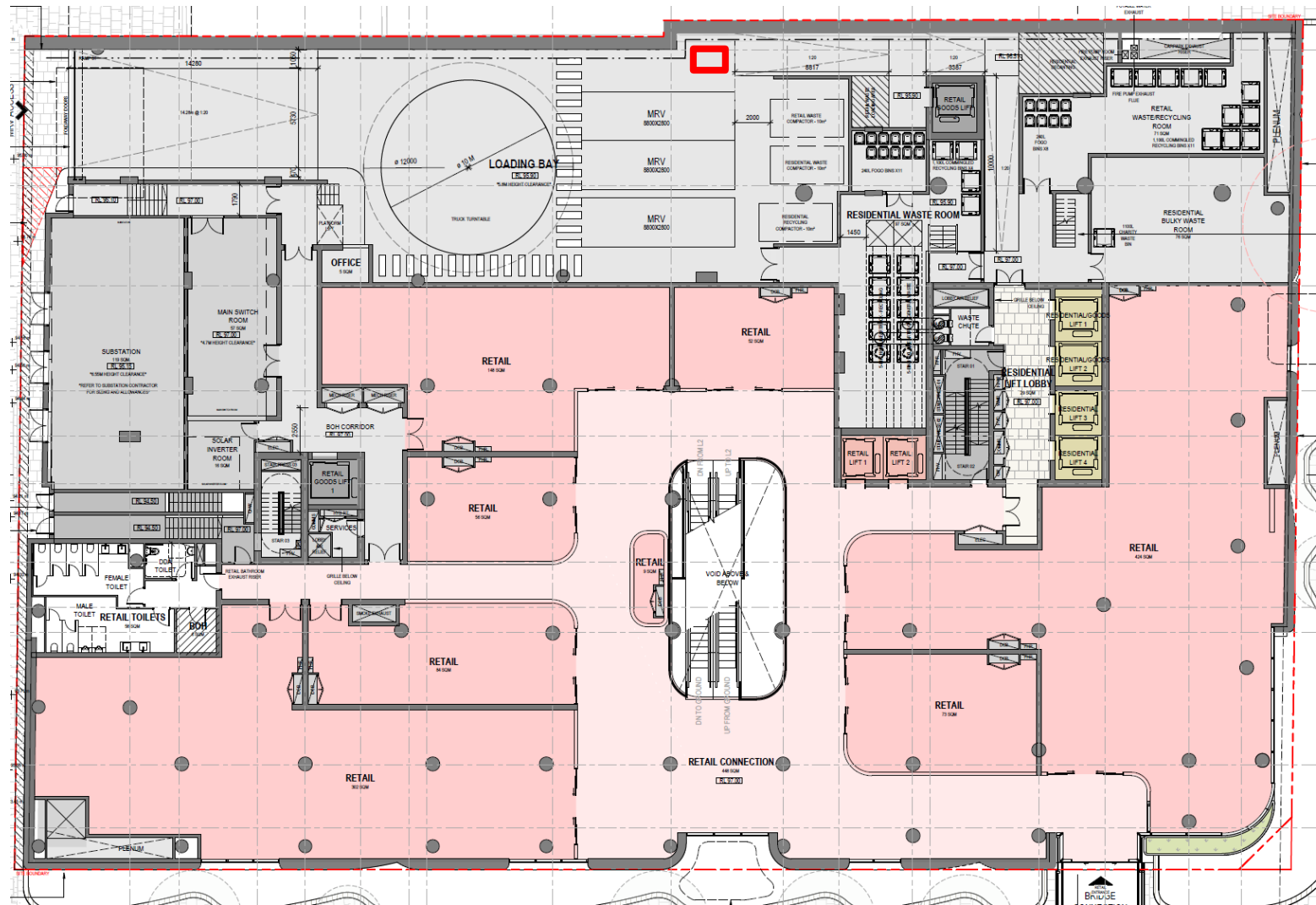
7.6 Site Plans

Existing Structures



Source: Skidmore, Owings & Merrill Australia Architects, Demolition Plan, Mixed-Use Development, Sheet AD05.00, Preliminary

Proposal



**Proposed
Bin Storage
Area**

Source: Skidmore, Owings & Merrill Australia Architects, Mixed-Use Development, Level 1, 12/12/2025