# Appendix HH

## Waste management plan

Sydney Metro West

# Parramatta Over and Adjacent Station Development Waste Management Plan

Appendix HH

September 2022

NSW GOVERNMENT

sydney METRO

**Document Number:** SMWSTEDS-SMD-PTA-SN600-WM-RPT-044001

| REVISION | DATE | SUITABILITY CODE | TEAMBINDER DOCUMENT NUMBER | TB REVISION |
|---|---|---|---|---|
| E | 13/09/2022 | S4 | SMWSTEDS-SMD-PTA-SN600-WM-RPT-044001 | E |

**Approval Record**

| FUNCTION | POSITION | NAME | DATE |
|---|---|---|---|
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**Amendment Record**

| DATE | REVISION | AMENDMENT DESCRIPTION | AUTHOR |
|---|---|---|---|
| 02/11/2021 | A | Initial Issue | Ethan Egglestone |
| 16/12/2021 | B | Second Issue | Ethan Egglestone |
| 11/04/2022 | C | Third Issue | Ethan Egglestone |
| 08/06/2022 | D | Fourth Issue | Ethan Egglestone |
| 13/09/2022 | E | Final Issue | Ethan Egglestone |

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# Glossary

| Term | Definition |
|---|---|
| ASD | Adjacent station development |
| CBD | Central business district |
| Comingled recycling | A mixture of items that are commonly recycled usually segregated through a material recovery facility. Typically include food and beverage containers (e.g. aluminium, steel, hard plastics, cartons). |
| Concept and Stage 1 CSSI Approval | Application SSI-10038 including all major civil construction works between Westmead and The Bays, including station excavation and tunnelling, associated with the Sydney Metro West line |
| Concept SSDA | A concept development application as defined in section 4.22 of the EP&A Act, as a development application that sets out concept proposals for the development of a site, and for which detailed proposals for the site or for separate parts of the site are to be the subject of a subsequent development application or applications. |
| Chute | A ventilated, essentially vertical pipe passing from floor to floor of a building with openings as required to connect with hoppers, normally terminating at its lower end at the roof of the waste room |
| Chute discharge | The point at which waste or recycling exits from the chute |
| Council | City of Parramatta |
| CSSI | Critical state significant infrastructure |
| DCP | Development control plan |
| DPE | NSW Department of Planning and Environment |
| EIS | Environmental impact statement |
| EP&A Act | *Environmental Planning and Assessment Act 1979* |
| EPA | Environment Protection Authority |
| General waste/residual waste | The remaining portion of the waste stream that is not recovered for re-use, processing, or recycling. May include soft plastics, food scraps, polystyrene etc. |
| GFA | Gross floor area |
| Green waste | Organic materials that are biodegradable and/or compostable (e.g., lawn clippings, plant trimmings) |
| LGA | Local government area |
| OSD | Over Station Development |
| POEO Act | *Protection of the Environment Operations Act 1997* |
| SEARs | Secretary's Environmental Assessment Requirements |

| Term | Definition |
|---|---|
| SSDA | State significant development application |
| Stage 2 CSSI Application | Application SSI-19238057, including all major civil construction works between The Bays and Sydney CBD |
| Stage 3 CSSI Application | Application SSI-22765520, including rail infrastructure, stations, precincts and operation of the Sydney Metro West line |
| Sydney Metro West | Construction and operation of a metro rail line and associated stations between Westmead and the Sydney CBD as described in section 1.1 |
| WARR Act | *Waste Avoidance and Resource Recovery Act 2001* |
| WMP | Waste management plan |

# Executive summary

This Waste Management Plan (WMP) supports a Concept State Significant Development Application (Concept SSDA) submitted to the Department of Planning and Environment (DPE) pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Concept SSDA is made under section 4.22 of the EP&A Act.

Sydney Metro is seeking to secure concept approval for an over station development (OSD) and adjacent station development (ASD) on the Parramatta metro station site (referred to as the 'proposed development'). The proposed development will comprise of three new commercial office buildings (Buildings A, C, D) and one new residential building (Building B).

The Concept SSDA seeks consent for a building envelope and mixed-use purposes, maximum building height, a maximum gross floor area (GFA), pedestrian and vehicular access, circulation arrangements and associated car parking and the strategies and design parameters for the future detailed design of development.

The WMP forms the framework for the management of operational and construction waste for the proposed development. The WMP has been prepared as Appendix Q of the environmental impact statement for the Concept SSDA to specifically respond to the Secretary's Environmental Assessment Requirements (SEARs) issued on the 22 of February 2022. This report aligns with the City of Parramatta's Waste Management Guidelines for new Development Applications 2016. Construction and operational waste management will be further assessed as part of future detailed SSD design, staging and delivery, demonstrating how the requirements have been met in the final building design.

**Construction waste assessment**

In accordance with the waste hierarchy and relevant legislation the assessment has concluded that preventing waste at the source is the best way to reduce the impact on the environment. This can be achieved through:

- careful procurement of materials
- better utilisation of materials already available on site
- reducing the amount of waste generated where it cannot be eliminated completely
- re-using and recycling as much as possible when waste cannot be reduced any further.

The impact of waste produced by demolition and bulk excavation activities has been assessed under the Stage 2 CSSI Application and the impact of station construction up to transfer level will be assessed under the Stage 3 CSSI Application.

**Operational waste assessment**

The operational assessment has identified the waste infrastructure required to manage the residual and recycling waste streams expected to be generated by the operation of the proposed development.

A summary of waste management requirements for the proposed development is outlined below:

- commercial/retail (Buildings A, C and D): Individual premises will be allocated with bins for temporary holding of residual and recycling waste. Staff/ facilities management would transfer / dispose of these directly into the appropriate 660L bins provided within the central waste room located in the basement, accessed via service lifts. Residual waste will need to be compacted prior to disposal using the compaction facility within the central waste room. It is assumed that retail waste be collected 5 times a week and commercial waste 3 times a week.
- residential/retail (Building B): Individual premises will be allocated bins for temporary holding of residual waste and comingled recycling. Owners/occupiers would drop these off directly into the nearest chute (dual chute system) available on each residential level of the building. The chute will terminate at the central waste room located in the basement, where it will be deposited into 660L bins. A linear or circular carousel can be used to move the bins when full. Waste chute compactors for residual waste should be used to reduce manual handling of waste. It is assumed that retail waste and recycling would be collected 5 times a week and residential waste and recycling once a week.
- collection points are located within the basement of the proposed development. Trucks will enter the buildings via entry points located on George and Smith Street thus minimising any potential traffic disruptions.

The area and spaces allocated for operational waste storage and collection for the three buildings are considered appropriate based on the expected waste volumes estimated to be generated from proposed development. Areas and spaces have been nominally indicated on floor plans and may be subject to further design development as part of future Detailed SSD applications.

# 1 Introduction

## 1.1 Sydney Metro West

Sydney Metro West will double rail capacity between Greater Parramatta and the Sydney Central Business District (CBD), transforming Sydney for generations to come. The once in a century infrastructure investment will have a target travel time of about 20 minutes between Parramatta and the Sydney CBD, link new communities to rail services and support employment growth and housing supply.

Stations have been confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street (Sydney CBD).

Sydney Metro West station locations are shown in Figure 1-1.

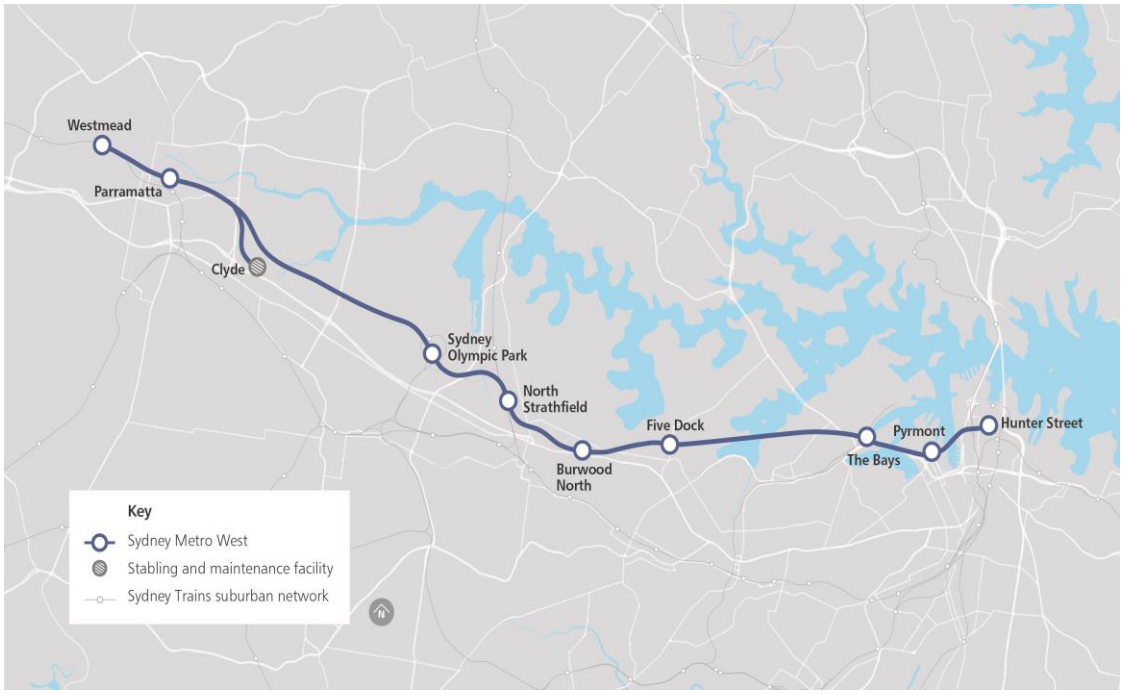


**Figure 1-1 Sydney Metro West**

## 1.2 Background and planning context

Sydney Metro is seeking to deliver Parramatta metro station under a two-part planning approval process. The station infrastructure is to be delivered under a Critical State Significant Infrastructure (CSSI) application subject to provisions under Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), whereas the over and adjacent station developments are to be delivered under a State Significant Development (SSD) subject to the provisions of Part 4 of the EP&A Act.

### 1.2.1 Critical State Significant Infrastructure

The State Significant Infrastructure (SSI) planning approval process for the Sydney Metro West metro line, including delivery of station infrastructure, has been broken down into a number of planning application stages, comprising the following:

- Concept and Stage 1 CSSI Approval (SSI-10038) – All major civil construction works between Westmead and The Bays including station excavation, tunnelling and demolition of existing buildings (approved 11 March 2021)

- Stage 2 CSSI Application (SSI-19238057) – All major civil construction works between The Bays and Hunter Street Station (approved 24 August 2022)
- Stage 3 CSSI Application (SSI-22765520) – Tunnel fit-out, construction of stations, ancillary facilities and station precincts between Westmead and Hunter Street Station, and operation and maintenance of the Sydney Metro West line (under assessment, lodged).

### 1.2.2 State Significant Development Application

The SSD will be undertaken as a staged development with the subject Concept State Significant Development Application (Concept SSDA) being consistent with the meaning under section 4.22 of the EP&A Act and seeking conceptual approval for a building envelope, land uses, maximum building heights, a maximum gross floor area, pedestrian and vehicle access, vertical circulation arrangements and associated car parking. A subsequent Detailed SSD/s is to be prepared by a future development partner which will seek consent for detailed design and construction of the proposed development.

## 1.3 Purpose and scope

This Waste Management Plan (WMP) supports a Concept SSDA submitted to the Department of Planning and Environment (DPE) pursuant to Part 4 of the EP&A Act. The Concept SSDA is made under section 4.22 of the EP&A Act.

This report has been prepared to specifically respond to the Secretary's Environmental Assessment Requirements (SEARs) issued for the Concept SSDA on the 22 of February 2022 which states that the environmental impact statement (EIS) is to address the following requirements shown in Table 1-1.

**Table 1-1 SEARs and where this is addressed in this SSD report**

| Reference | SEARs requirement | Where addressed in report |
|---|---|---|
| 17. Waste management | • Identify, quantify and classify the likely waste streams to be generated during construction and operation. | Section 4.2 and 4.3 |
| | • Provide the measures to be implemented to manage, reuse, recycle and safely dispose of this waste. | Section 5 |
| | • Identify appropriate servicing arrangements for the site. | Section 4.3 |

This WMP identifies and quantifies the various waste streams likely to be generated during construction and operation, identifies the waste management infrastructure required to service commercial, residential and retail users within the proposed development and provides management strategies for effective and best practice storage, reuse, recycling and/or disposal of waste generated. The WMP considers and aligns with current planning and environmental legislative and policy requirements relevant to the proposed development.

# 2 The site and proposal

## 2.1 Site location and description

The subject application is in the Parramatta CBD, in the City of Parramatta Local Government Area (LGA). It is within the city block bounded by George Street, Church Street, Smith Street, and Macquarie Street.

The site presents a 164m long frontage to Macquarie Street, 125m frontage to George Street, 48m frontage to Church Street, and 15.5m frontage to Smith Street (in the form of Macquarie Lane).

The site location is shown in Figure 2-1 and Table 2-1.

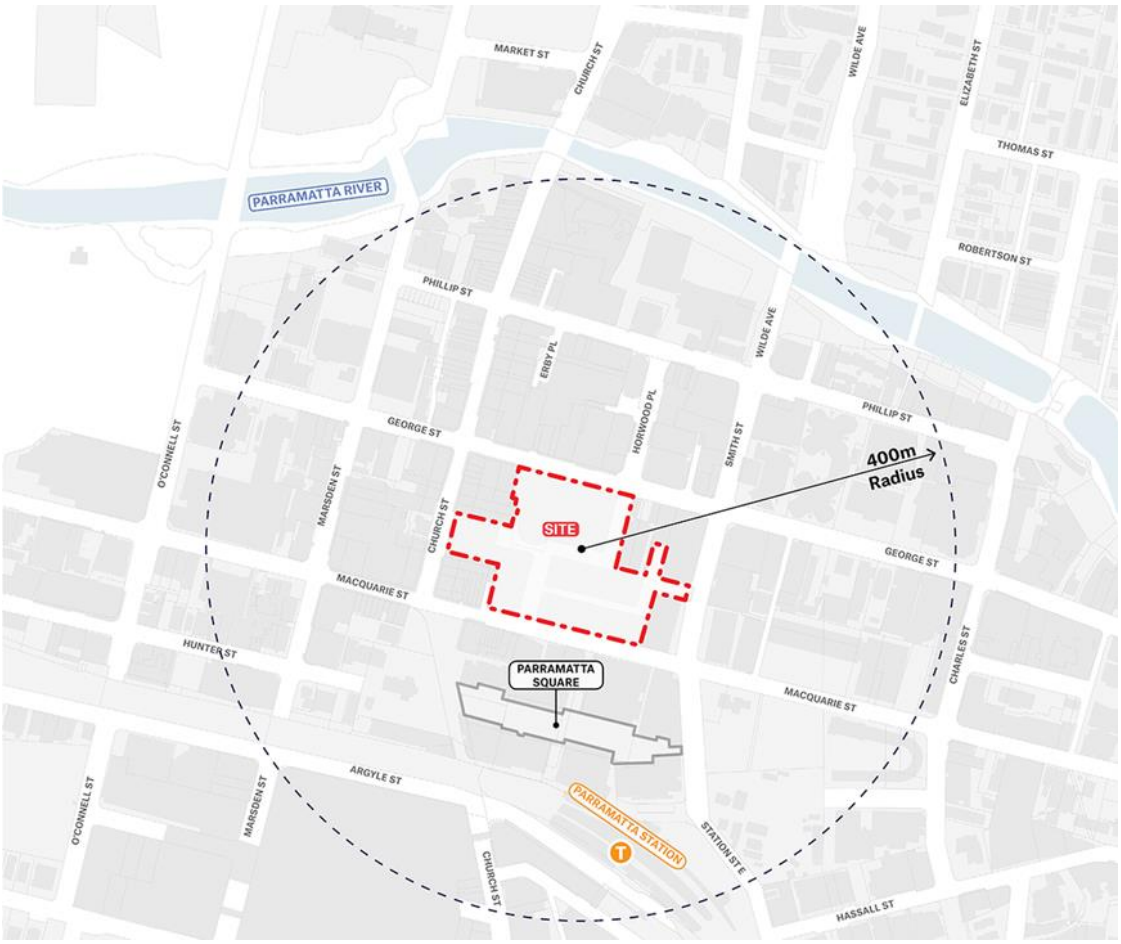


**Figure 2-1 Parramatta Station precinct location**

As described in Table 2-1, the site comprises fourteen different allotments of varying sizes. It is irregular in shape, with a total area of approximately 24,899m$^2$.

**Table 2-1 Site legal description**

| Street address | Use description |
|---|---|
| 41-59 George Street | Lot 10 in DP858392 |
| 45A George Street | Lot 2 in DP701456 |
| 61B George Street | Lot 1 in DP607181 |
| 71 George Street | Lot 100 in DP607789 |
| 220 Church Street | Lot 1 in DP1041242 |
| 222 Church Street | Lot 1 in DP702291 |
| 232 Church Street | Lot 1 in DP651992 |
| 236 Church Street | Lot 1 in DP128437 |
| 238 Church Street | Lot 2 in DP591454 |
| 48 Macquarie Street | Lot B in DP394050 |
| 58-60 Macquarie Street | Lot 1 in DP399104 |
| 62-64 Macquarie Street | Lot AY in DP400258 |
| 68 Macquarie Street | Lot 1 in DP711982 |
| 70 Macquarie Street | Lot E DP 402952 |
| 72 Macquarie Street | Lot 3 in DP218510 |
| 74 Macquarie Street | Lot H in DP405846 |

## 2.2 Overview of this proposal

The Concept SSDA will seek consent for four building envelopes as detailed in Table 2-2 and Figure 2-2.

**Table 2-2 Parramatta proposed development overview**

| Item | Description |
|---|---|
| Building use | **Building A:** Commercial and retail<br>**Building B:** Residential and retail<br>**Building C:** Commercial<br>**Building D:** Commercial and retail |
| Building height (Number of storeys) | **Building A:** 38 storeys<br>**Building B:** 33 storeys<br>**Building C:** 26 storeys<br>**Building D:** 24 storeys |
| Gross floor area (m²) | **Building A:** 78,700<br>**Building B:** 20,000<br>**Building C:** 35,950<br>**Building D:** 55,350<br>**TOTAL: 190,000** |
| Car parking spaces | 455 |

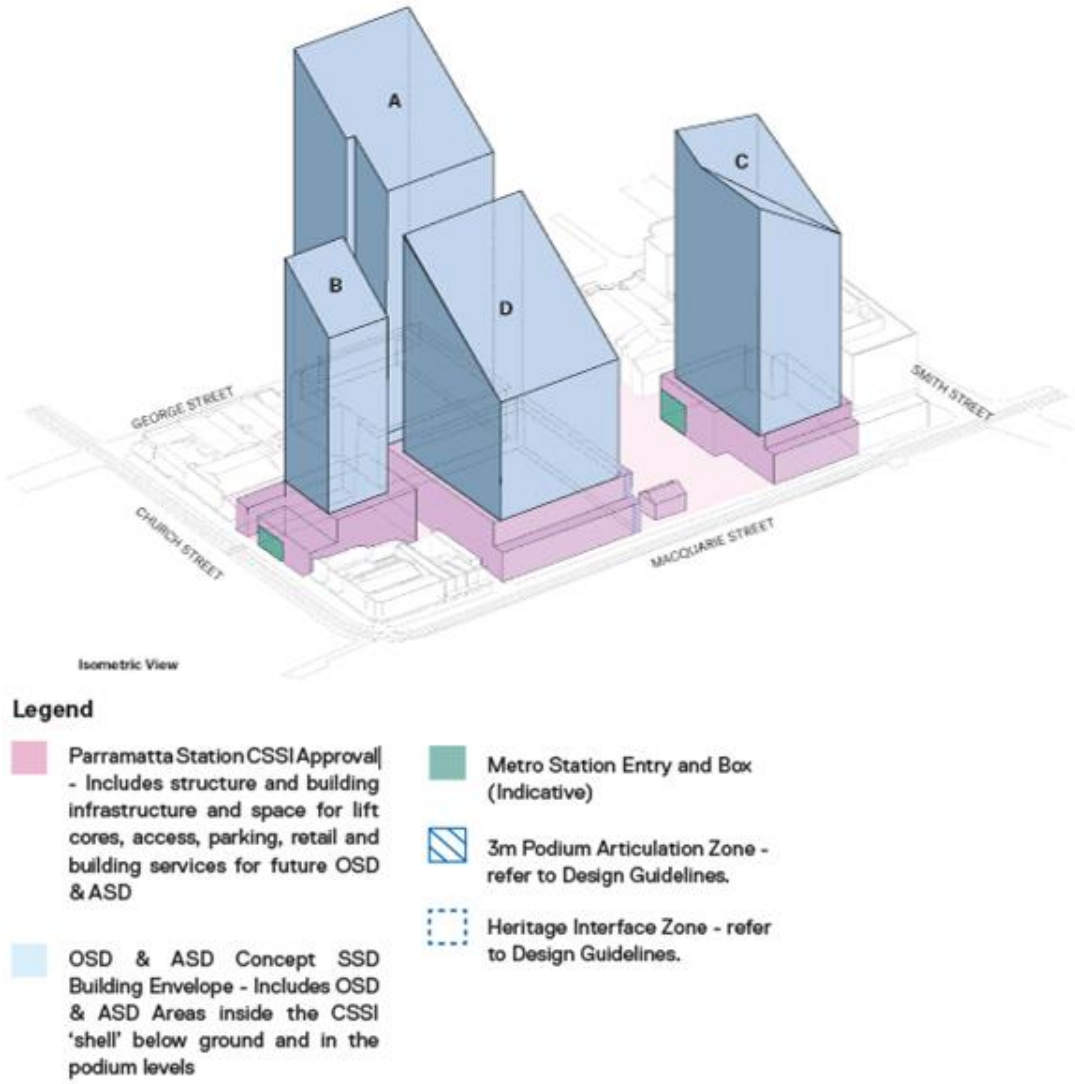


**Figure 2-2 Proposed Concept SSDA development and CSSI scope**

# 3 Scope of assessment

## 3.1 Methodology

This report assesses the waste management requirements relating to the construction and operational activities for the proposed development based on the area schedule and development mix of uses (commercial, residential and retail use). Key operational waste modelling assumptions have been included in Appendix A of this report.

Relevant management strategies for effective storage, recycling, re-use/recovery, treatment and/or disposal of waste generated from the concept design have been proposed, in accordance with applicable guidelines and regulatory requirements specifically to address the requirements of the SEARs outlined in section 1.3.

As per the SEARs, this WMP addresses the likely waste streams, indicative quantities, and management measures for the storage, re-use/recovery, treatment and/or disposal of waste generated at the site. The WMP assessment involved:

- a reviewing relevant legislation, policies and guidelines associated with waste management
- identifying likely waste generating activities and likely waste types during the construction and operation of the proposed development
- quantifying construction and operation waste volumes likely to be generated during construction and operation of the proposed development
- assessing and identifying appropriate operational waste disposal, storage and collection systems and servicing arrangements
- identifying management measures to manage potential impacts associated with waste management.

## 3.2 Legislation, policy and guidelines

This section summarises key legislation, policies and guidelines relevant to managing waste generation from the proposed development. These include:

- state legislation
- local government requirements
- Green Star Buildings Version 1.

### 3.2.1 State legislation

Key NSW regulatory and policy requirements that are relevant to the construction and operational phase of the proposed development are outlined in the following sections.

**Protection of the Environment Operations Act 1997**

Section 88 of the *Protection of the Environment Operations Act 1997* (POEO Act) sets a levy on waste disposed to landfill. The levy aims to reduce the amount of waste being disposed and promote resource recovery and varies between different areas of NSW. The landfill levy significantly increases over time and therefore presents a financial driver for minimising waste generation and increasing waste recovery.

The POEO Act sets out requirements for the management for all waste material excavated and removed from construction sites. The act places accountability on waste generators to correctly manage waste, including the final disposal. These requirements include:

- ensuring waste is classified appropriately and in accordance with relevant guidelines
- waste is disposed at licensed landfill facilities
- recoverable and other materials for recycling are sent to facilities lawfully able to accept and/or process such materials.

### Protection of the Environment (Waste) Operations Regulation 2014

The Protection of the Environment (Waste) Operations Regulation 2014 (the Regulation) sets out requirements relating to non-licensed waste activities and waste transport. The proposed works on the site are not required to be licensed however section 70 of the Regulation requires that wastes are stored in an environmentally safe manner. It also stipulates that vehicles used to transport waste must be covered when loaded.

The Regulation exempts certain waste streams from full waste tracking and record keeping requirements as waste tracking is required only for industrial and hazardous waste.

### Waste Avoidance and Resource Recovery Act 2001

The *Waste Avoidance and Resource Recovery Act 2001 (WARR)* establishes the waste hierarchy to ensure that resource management options are considered against the following principles:

- Avoidance – actions to reduce unnecessary resource consumption
- Resource recovery – which includes reuse, reprocessing, recycling and energy recovery
- Disposal – to minimise any negative environmental outcomes.

### NSW Waste and Sustainable Materials Strategy Stage 1: 2021-2027

The NSW Waste and Sustainable Materials Strategy Stage 1: 2021-2027 provides strategic direction on future waste reduction and recycling in NSW to work towards the transition to a circular economy over the next 20 years. The strategy sets the following state targets:

- reduce total waste generated by 10% per person by 2030
- have an 80% average recovery rate from all waste streams by 2030
- significantly increase the use of recycled content by governments and industry
- phase out problematic and unnecessary plastics by 2025
- halve the amount of organic waste sent to landfill by 2030.

This strategy has been referred to in preparing the WMP.

### NSW Waste Classification Guidelines

The NSW Waste Classification Guidelines provides direction to organisations in appropriately classifying, recovering, treating or disposing the waste generated from the activities.

**NSW Circular Economy Policy 2019**

The NSW Circular Economy Policy Statement provides a framework for implementing initiatives throughout the product life cycle, from design, manufacturing, and retail to end-of-life-disposal. These initiatives will promote long-lasting design, maintenance, repair, re-use, sharing, transforming products into services, remanufacturing, and recycling. The NSW Government will be an early adopter, implementing those opportunities where the benefits are clear.

### 3.2.2 Local government requirements

**Parramatta Development Control Plan**

The proposed development is located within the City of Parramatta which is governed by the Parramatta Local Environmental Plan (LEP) 2011 and the Parramatta Development Control Plan (DCP) 2011. Although, the proposed development is not subject to the LEP 2011 and DCP, the requirements outlined have been used as a reference during the preparation of this WMP. This WMP aims to align as close as possible with the LEP and DCP requirements.

The City of Parramatta DCP outlines the waste management guidelines and objectives for the waste and recycling produced during construction and operation activities. The relevant guidelines which are applicable to the WMP include:

- Section 3.3.7 of the DCP: Waste management – This section sets out the waste management objectives of the DCP and provisions required by all development applications that includes demolition, construction (including earthworks), alteration/addition and/or change of use of buildings for all types of developments in the City of Parramatta.
- Appendix 8.1 of the DCP: Waste Management Guidelines for new Development Applications 2016 – This section provides detailed provisions of the waste management requirements for new Development Applications lodged with City of Parramatta.

Key requirements from the City of Parramatta DCP that have informed this WMP for the proposed development are summarised below:

- expected volumes and types of waste to be generated from use of the site. Waste generation rates of 80 litres/unit/week for general garbage and 40 litres/unit/week for co-mingled recycling should be applied when calculating this figure
- details of how this waste will be stored on site, including provisions for the separation of waste and recycling, and details of any garbage chutes or compaction equipment
- separate waste facilities must be provided for residential and commercial tenants. These are to be designed and located so that the residential tenants cannot access the commercial waste facilities and vice versa
- each commercial unit must be provided with a clearly defined storage area that is of a size that easily accommodates all waste and recycling generated from that unit for at least one day
- a caretaker must be appointed to manage the separate residential and commercial waste facilities and ensure ongoing management of the proposed development.

**City of Parramatta Environmental Sustainability Strategy**

The City of Parramatta Environmental Sustainability Strategy outlines key environmental sustainability directions and priorities, the strategy aims to ensure that as the city grows, the natural environmental improves with it.

The Environmental Sustainability Strategy objectives relevant to the WMP include:

- reduce resource consumption from 8.2 kg to 6.1 kg per person by 2038 (based on 2015 levels)
- increase diversion from landfill to 85% by 2038.

### 3.2.3 Green Star buildings

A sustainability rating strategy has been established for Sydney Metro West packages and station development. The Green Star Buildings tool rates buildings on all relevant aspects of their environmental performance. The proposed development targets a 6-Star Green Star rating for Buildings A, C and D using the Green Star Version 1. The target for Building B is a 5-Star Green Star rating using the Green Star Version 1. To achieve the desired rating, certain credits need to be met. Each credit addresses an initiative that improves or has the potential to improve a design, project, or building's environmental performance. The following credits have identified the minimum expectations that must be achieved by all projects to achieve a Green Star Buildings rating:

- Credit 2.3 Construction and Demolition Waste
- Credit 4.1 Collection of Waste Streams
- Credit 4.2 Dedicated Waste Storage Area
- Credit 4.3 Sign-off by Waste Specialist and/or Contractor.

This WMP will provide the preliminary evidence required to meet the credits criteria listed above.

# 4 Assessment

## 4.1 Method of assessment

The following assessment method has been used to develop an understanding of the waste characteristics of the proposed development and to assess potential construction and operational phase requirements and potential environmental impacts.

Key steps in the waste management assessment are shown in Figure 4-1.

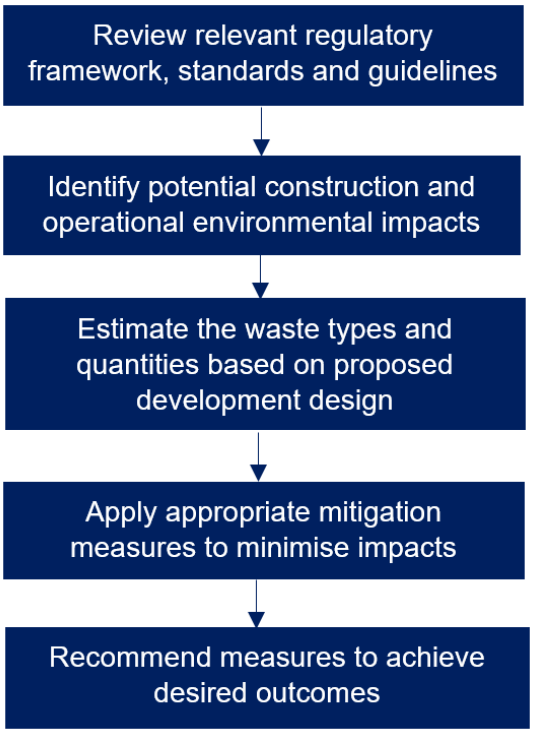


**Figure 4-1 Method of assessment**

The WMP, including the estimation of waste arisings, has been completed based on the proposed development, the regulatory and legislative requirements outlined in section 3.2, and consideration of the NSW EPA waste hierarchy.

The principles of the waste hierarchy are shown in Figure 4-2 and have been adopted where possible. The waste hierarchy gives top priority to preventing waste generation in the first place. When waste is created, it gives priority to preparing it for re-use, then recycling, then recovery, then disposal (e.g., to landfill) as the last option as shown in Figure 4-2. Higher cost and resource savings are generally associated with management methods higher up in the waste hierarchy.


**Figure 4-2 NSW EPA waste hierarchy**

The following has been considered in the development of the assessment:

- review of relevant legislation, policies and guidelines associated with waste management
- estimation of waste types and quantities (where possible)
- description of waste storage requirements, including bin sizes, storage room sizes and other infrastructure
- collection frequencies and specifications of collection vehicles (where possible)
- description of how the waste streams will be managed, from point of generation to collection
- design requirements for waste storage rooms and collection vehicle access.

The operational waste management assumptions used for this WMP are based on the proposed development design. A summary of the built area and development mix is provided in Table 2-2. Waste generation estimations have been made using the City of Parramatta's Waste Management Guidelines for new Development Applications 2016.

## 4.2 Construction waste assessment

This section outlines the waste management approach for the construction phase of the proposed development which aims to manage and minimise potential environmental impacts from waste generation.

### 4.2.1 Construction waste management objectives

Construction waste management objectives for the proposed development are to:

- minimise waste throughout the project life cycle
- reduce the demand for waste disposal to landfill during construction
- maximise avoidance and resource recovery of construction waste through minimisation, reuse and recycling
- support in achieving resource recovery targets in line with the NSW Waste and Sustainable Materials Strategy Stage 1: 2021-2027
- maximise the recycling and reuse of waste generated during the construction phase.

The proposed development aims to achieve 95% diversion of construction and demolition waste from landfill. This aligns with the sustainability objectives outlined in the Ecologically Sustainable Design Report (Appendix S of the EIS).

### 4.2.2 Construction waste management

Construction waste would be generated from construction and fit out. The proposed development will require construction materials (such as concrete, steel and sheet piles) to be imported to the work the site however detailed specifications of materials to be used in the construction of the proposed development are yet to be confirmed. As such, common waste streams generated by similar scale construction projects have been used to help inform this assessment.

Anticipated waste streams to be generated by the proposed development and their proposed management methods are presented in Appendix B. Existing buildings and utilities will be cleared along with bulk excavation of the tunnel, cavern and station box prior to commencement of station construction activities. It is important to note that the demolition of existing buildings and the excavation and construction of basement parking is subject to separate CSSI application/s and therefore has not been assessed in this report.

### 4.2.3 Waste storage and collection

An area for onsite storage of waste, construction materials and newly procured materials must be identified, appropriately secured, and meet all relevant Workplace Health and Safety requirements.

Additional site controls such as odour covers, and secondary containment areas should be considered to manage any noise, odour, vermin, erosion, surface water runoff, and dust issues resulting from extreme weather events.

The waste management area should be laid out and clearly labelled to facilitate the separation of materials for potential recycling, salvage, reuse and return. Recycling, salvage, and waste bins should be kept clean and clearly marked to avoid contamination of materials.

Different coloured skips should be used (or clearly labelled) to ensure that all onsite workers are clear about where to put each type of waste. This will aid to reduce the level of contamination in the skips and reduce the likelihood of a load being rejected once the waste stream has been sent off-site for processing.

### 4.2.4 Collection and transportation logistics

The contractor must identify appropriate site access and haulage routes, as well as measures to maintain transport capacity and limit construction haulage during peak periods. Site access and potential traffic impacts are considered in the Transport and Access Report (Appendix EE of the EIS).

The contractor must implement and maintain a traffic management plan to ensure localised traffic disruptions would be managed, the plan should include temporary access arrangements (including signage) to maintain access for road users, waste collection and delivery schedules.

Construction of the proposed development may overlap with the construction of other developments within the same area, these projects may include government infrastructure upgrades or private developments. Developers should coordinate their construction activities to minimise impacts on the community, provide safe and efficient access to the worksites and maintain safe access for adjacent occupied buildings. The cumulative impacts of other projects if they were to proceed, can be adequately managed through project planning and coordination so they would not have a significant impact on traffic and transport within the proposal area.

### 4.2.5 Hazardous waste

Hazardous waste must be managed and handled appropriately, kept separate and removed off site in accordance with legislation. Disposal or treatment of hazardous must take place at an EPA licensed facility by an authorised contractor in accordance with all relevant regulations. For certain types of hazardous wastes, an authorised transporter should be engaged to transport the waste to ensure compliance with waste tracking requirements (when applicable).

An unexpected finds protocol must be developed and implemented should hazardous waste and other contaminants be encountered. They will be managed and handled appropriately, kept separate and removed off site in accordance with legislation. Disposal or treatment of such waste must take place at a correctly permitted facility by a licensed contractor in accordance with all relevant regulations.

### 4.2.6 Monitoring and waste records

The contractor must maintain and retain waste transfer records showing the quantity of waste materials removed from site. As a minimum the waste records should detail the following:

- type and quantity of wastes reused, recycled and/or disposed
- waste receipt certificates from the lawful place to which waste was taken to
- waste classification reports, laboratory analysis reports (when required)
- procedures and plans for managing waste, including handling and storage procedures, and incident response plans should be prepared and updated as necessary
- waste records and waste management procedures should be readily accessible for internal audits and regulatory authorities' inspections.

### 4.2.7 Training and communications

In order to develop a culture of promoting best practice and increase knowledge and awareness of waste management issues at the site, waste management procedures and training material should be developed by the contractor.

## 4.3 Operational waste assessment

This section outlines the waste management approach to the operational phase of the proposed development which aims to manage and minimise potential environmental impacts of waste management.

### 4.3.1 Operational waste generation assumptions

Waste volumes for the proposed development have been estimated to determine the waste infrastructure requirements. These waste storage areas and bins have been allowed for in the concept design of the proposed development.

Waste generation estimates have been made using the City of Parramatta's Waste Management Guidelines for new Development Applications 2016 and where appropriate waste generation rates were adopted from the assumptions contained within Appendix A. The guidance requires that the waste generated be segregated into two streams, recycling, and residual waste. The waste storage area required was based on the proposed development design and development mix.

A room or caged/screened area would be made available for the storage of discarded bulky items and problem waste for recycling such as e-waste and chemical/liquid waste. This room would have a minimum doorway width of 1.5m and minimum 1.2m aisle space for manoeuvrability to allow for easy movement of large waste items in and out of the room.

A summary of the waste generation assumptions are presented in Table 4-1, Table 4-2 and Table 4-3 below.

**Table 4-1 Waste generation rates assumptions**

| Use | Units | Residual waste | Recycling |
|---|---|---|---|
| Commercial | Litres / 100m$^2$ / day | 8 | 6 |
| Retail | Litres / 100m$^2$ / day | 80 | 70 |
| Residential | Litres / Unit / week | 80 | 40 |

**Table 4-2 Bin dimensions**

| Capacity (L) | Width (mm) | Depth (mm) | Height (mm) | Area (m$^2$) |
|---|---|---|---|---|
| 660 | 1370 | 850 | 1250 | 1.16 |
| 240 | 580 | 735 | 1080 | 0.42 |

**Table 4-3 Bin collection frequency**

| Use | Waste stream | Collections per week |
|---|---|---|
| Commercial | Residual waste | 3 x weekly |
| | Recycling | 3 x weekly |
| Retail | Residual waste | 5 x weekly |
| | Recycling | 5 x weekly |
| Residential | Residual waste | 1 x weekly |
| | Recycling | 1 x weekly |
| All | Bulky waste | As required |

Note: Collections per week are indicative only and may be subject to further development as part of future Detailed SSD applications.

### 4.3.2 Waste types and quantities

This section outlines the waste assessment and infrastructure requirements for servicing the commercial, retail and residential areas for Buildings A, B, C and D. Waste storage requirements for each waste stream are shown in Tables 4-4 to 4-7. Note that waste servicing requirements outlined for each building may be subject to further design development as part of future Detailed SSD applications.

#### Building A – Commercial and retail

Estimates of key waste streams generated by the operation of Building A are provided in Table 4-4.

**Table 4-4 Building A – Waste types and generation rates (day/week)**

| Use | GFA ($m^2$) | Residual waste (litres) | | Recycling (litres) | |
|---|---|---|---|---|---|
| | | Day | Week | Day | Week |
| Commercial | 74,360 | 5,949 | 29,744 | 4,462 | 22,308 |
| Retail | 3,497 | 2,798 | 19,583 | 2,448 | 17,135 |
| **Total** | **77,857** | **8,747** | **49,327** | **6,910** | **39,443** |

Note: Based on 5-day per week operation for commercial uses and 7-day per week operation for retail uses.

#### Building B – Residential and retail

Estimates of key waste streams generated by the operation of Building B are provided in Table 4-5 below.

**Table 4-5 Building B – Waste types and generation rates (day/week)**

| Use | GFA ($m^2$) | Residual waste (litres) | | Recycling (litres) | |
|---|---|---|---|---|---|
| | | Day | Week | Day | Week |
| Residential | 18,250 | 1,657 | 11,600 | 829 | 5,800 |
| Retail | 1,114 | 891 | 6,238 | 780 | 5,459 |
| **Total** | **19,364** | **2,548** | **17,838** | **1,609** | **16,500** |

Note: Based 7-day per week operation for residential and retail uses.

#### Building C – Commercial

Estimates of key waste streams generated by the operation of Building C is provided in Table 4-6 below.

**Table 4-6 Building C – Waste types and generation rates (day/week)**

| Use | GFA ($m^2$) | Residual waste (litres) | | Recycling (litres) | |
|---|---|---|---|---|---|
| | | Day | Week | Day | Week |
| Commercial | 35,189 | 2,815 | 14,076 | 2,111 | 10,557 |
| **Total** | **35,189** | **2,815** | **14,076** | **2,111** | **10,557** |

Note: Based on a 5-day per week operation for commercial uses.

### Building D – Commercial and retail

Estimates of key waste streams generated by the operation of Building D are provided in Table 4-7.

**Table 4-7 Building D – Waste types and generation rates (day/week)**

| Use | GFA ($m^2$) | Residual waste (litres) | | Recycling (litres) | |
|---|---|---|---|---|---|
| | | Day | Week | Day | Week |
| Commercial | 51,687 | 4,135 | 20,675 | 3,101 | 15,506 |
| Retail* | 2,732 | 2,186 | 15,299 | 1,912 | 13,387 |
| **Total** | **54,419** | **6,321** | **35,974** | **5,013** | **28,893** |

Note: Based on 5-day per week operation for commercial uses and 7-day per week operation for retail uses

## 4.3.3 Waste storage

This section outlines the infrastructure requirements for servicing the commercial, retail, and residential areas for Buildings A, B, C and D. Waste storage requirements for each building are shown in Tables 4-8 to 4-11.

### Building A

Waste storage requirements for each waste stream are shown in Table 4-8.

**Table 4-8 Building A – Waste storage and handling space requirements**

| Use | Waste stream | Bin size (litres) | No. of bins | Area required $m^2$ (excluding manoeuvring space) | Recommended area $m^2$ (including manoeuvring space)** |
|---|---|---|---|---|---|
| Commercial | Residual waste* | 660 | 6 | 20 | 64 |
| | Recycling | 660 | 11 | | |
| Retail | Residual waste* | 660 | 2 | 8 | |
| | Recycling | 660 | 5 | | |
| Commercial and retail | Bulk waste | N/A | N/A | | 20 |

Notes:
* Residual waste compaction ratio 3:1 assumed
** 0.15 m clearance in between bins has been included for manoeuvring and cleaning
** Minimum aisle space of 1.2m
** Bin wash area $4m^2$
** Stationary compactor/ bin press $4m^2$
** Cardboard baler $2m^2$

### Building B

Waste storage requirements for each waste stream are shown in Table 4-9. Residential and retail should have separate bulk storage waste areas.

**Table 4-9 Building B – Waste storage and handling space requirements**

| Use | Waste stream | Bin Size (litres) | No. Bins | Area required $m^2$ (excluding manoeuvring pace) | Area required $m^2$ (including manoeuvring space)** |
|---|---|---|---|---|---|
| Residential | Residual waste* | 660 | 6 | 17 | 39 |
| | Recycling | 660 | 9 | | |
| | Bulk waste | N/A | N/A | | 32 |
| Retail | Residual waste* | 660 | 1 | 3 | 7 |
| | Recycling | 660 | 2 | | |
| | Bulk waste | | | | 4 |

* Residual waste compaction ratio 3:1 assumed
** 0.15 m clearance in between bins has been included for manoeuvring and cleaning
** Minimum aisle space of 1.2m
** Bin wash area $4m^2$
** Chute compactor and linear carousel $4m^2$
** Stationary compactor/bin press $4m^2$

### Building C

Waste storage requirements for each waste stream are shown in Table 4-10.

**Table 4-10 Building C – Waste storage and handling space requirements**

| Use | Waste stream | Bin Size (litres) | No. of Bins | Area required $m^2$ (excluding manoeuvring pace) | Area required $m^2$ (including manoeuvring space)** |
|---|---|---|---|---|---|
| Commercial | Residual waste* | 660 | 3 | 10 | 22 |
| | Recycling | 660 | 5 | | |
| | Bulk waste | | | | 8 |

Notes:
* Residual waste compaction ratio 3:1 assumed
** 0.15 m clearance in between bins has been included for manoeuvring and cleaning
** Minimum aisle space of 1.2m
** Bin wash area $4m^2$
** Stationary compactor/bin press $4m^2$
** Cardboard baler $2m^2$

**Building D**

Waste storage requirements for each waste stream are shown in Table 4-11.

**Table 4-11 Building D – Waste storage and handling space requirements**

| Use | Waste stream | Bin Size (litres) | No. of Bins | Area required $m^2$ (excluding manoeuvring pace) | Area required $m^2$ (including manoeuvring space)** |
|---|---|---|---|---|---|
| Commercial | Residual waste* | 660 | 4 | 14 | 47 |
| | Recycling | 660 | 8 | | |
| Retail | Residual waste* | 660 | 2 | 7 | |
| | Recycling | 660 | 4 | | |
| Commercial and retail | Bulk waste | | | | 16 |

Notes:
* Residual waste compaction ratio 3:1 assumed
** 0.15 m clearance in between bins has been included for manoeuvring and cleaning
** Minimum aisle space of 1.2m
** Bin wash area 4$m^2$
** Stationary compactor/bin press 4$m^2$
** Cardboard baler 2$m^2$

An indicative concept design layout of the central waste rooms located in the basement of Buildings A, B, C and D are shown in Appendix C. It should be noted that Building D's waste storage room will be shared with Building C.

The area allocated for waste storage and handling space requirements for the central waste room within each of the buildings is considered appropriate and meets the requirements based on the expected waste generation from the proposed development design and assumptions.

The central waste storage areas should be further reviewed and updated as the concept design progresses to ensure there is sufficient space for waste storage and handling.

### 4.3.4 Internal waste management

Residential premises will be allocated with bins for temporary holding of residual waste and recycling. Owners / occupiers would transfer / dispose of these directly into the nearest chute (dual chute system) available on each residential level of the building. The chute will terminate at the central waste room located in the basement, where it will be deposited in 660L bins. A linear or circular carousel can be used to move the bins when full. Waste chute compactors for residual waste should be used to reduce manual handling of waste.

Bulky household waste storage would need to be transferred directly by the owners / occupiers to storage areas provided within the central waste room located in the basement, accessed via service lifts.

Commercial and retail premises will be allocated with bins for temporary holding of residual waste and recycling. Commercial and retail tenants / building management would transfer / dispose of these directly into the appropriate 660L bins provided within the central waste room located in the basement, accessed via service lifts. Residual waste would need to be compacted prior to disposal using the compaction facility within the central waste room.

Paper and cardboard balers should be considered if waste generation is very high (e.g. commercial space is more than 20,000m$^2$, retail space is more than 2,000m$^2$), in these cases it is recommended that paper and cardboard is segregated out at source so that it can be baled separately from other recyclables. Moreover, if bins have high quantities of food waste, frequent movement of bins from the commercial and retail units is recommended to reduce odour and potential vermin issues.

The ongoing operation and maintenance of the central waste room and compaction facility will be the responsibility of facilities management. A bin wash area should be provided within or adjacent to the central waste room to enable cleaning of bins. The facilities management will also be responsible for the application of the internal waste management procedures, including avoiding the mixing of commercial and residential waste.

### 4.3.5 Waste collection

The transfer of waste and all bin movements (to and from the loading dock) should require minimal handling and if required, the operator must assess the risks associated with manual handling and provide any relevant documentation to building management.

A bin-tug, trailer or tractor consultant should be contacted by the developer to provide equipment recommendations, if required.

Assumed collection frequencies for each waste stream are outlined in Table 4-12 below.

**Table 4-12 Waste collection frequency**

| Use | Waste stream | Collection |
|---|---|---|
| Commercial | Residual waste | 3 x weekly |
| | Recycling | 3 x weekly |
| | Bulky items | As needed |
| Retail | Residual waste | 5 x weekly |
| | Recycling | 5 x weekly |
| | Bulky items | As needed |
| Residential | Residual waste | 1 x weekly |
| | Recycling | 1 x weekly |
| | Bulky household waste | As needed |

Note: Collections per week are indicative only and may be subject to further development as part of future Detailed SSD applications.

The delivery of bins to / from the loading dock of the buildings should be coordinated with the private collection company responsible for the transfer of waste to treatment and disposal facilities. As a minimum, a two-day waste storage capacity has been designed into central waste rooms to allow for missed or delayed collections.

- Building A and B waste will be collected directly from the central waste storage room located in the basement as depicted in Appendix C, which illustrates trucks entering Building A via George Street, and manoeuvring within the loading dock to collect the waste and exit.

- Building C and D waste would be collected directly from the central waste storage room located in the basement as depicted in Appendix C, which illustrates trucks entering Building D via Smith Street, and manoeuvring within the loading dock to collect the waste and exit.

The loading dock and access points for the collection areas should be further reviewed by a traffic consultant as the concept design progresses, this is necessary to ensure that height and manoeuvring clearances for collection vehicles is suitable to service the buildings. It is noted that a medium sized waste collection vehicle would be suitable for waste collection from each building.

Obstructions to turning circles, clearances to kerbs, existing buildings or other hindrances should be designed to accommodate the largest collection vehicle that could service the proposed development. At minimum, turning circles should be designed to comply with AS2890.2 Parking facilities: off-street commercial vehicle facilities which provides specifications for turning path and reverse entry manoeuvres for medium and heavy rigid class vehicles, these specifications are provided in Table 4-13.

**Table 4-13 Australian standards for turning circles for medium and heavy rigid class vehicles**

| Vehicle class | Length (m) | Width (m) | Turning radius (m) | Swept circle (m) | Clearance height (m) |
|---|---|---|---|---|---|
| Medium rigid Vehicle | 8.80 | 2.5 | 10.0 | 21.6 | 4.5 |
| Heavy rigid vehicle | 12.5 | 2.5 | 12.5 | 27.8 | 4.5 |

### 4.3.6 Station waste

All station waste will be collected and managed by Sydney Metro. Station cleaning staff will collect and dispose of waste / recyclables in the back of house station services to be incorporated into the station design. Station waste collection may share the use of loading bays allocated for the proposed development collection outlined in this WMP, although collection times and contractors may differ. Station management and the proposed development building operators will liaise to ensure there are no conflicts in shared use of loading bays.

### 4.3.7 General design principles

General design principles and specifications for the central waste rooms and waste chute system are provided in the City of Parramatta's Waste Management Guidelines for new Development Applications 2016. Specifications are detailed below. Future detailed SSDAs should consider these general design principles.

**Central waste rooms**

- the size being large enough to accommodate all waste generated on the premises, with allowances for the separation of waste types
- be located on either the ground floor or basement with a minimum 1.2m aisle space for access
- the floor being graded and drained to an approved drainage outlet connected to the sewer and having a smooth, even surface, coved at all intersections with walls

- the walls being cement rendered to a smooth, even surface and coved at all intersections
- cold water being provided in the room with the outlet located in a position so that it cannot be damaged, and a hose fitted with a nozzle being connected to the outlet
- the room shall be adequately ventilated (either natural or mechanical) in accordance with the Building Code of Australia
- the maximum travel distance from any dwelling to the waste services room is not to exceed 75m.

**Dual chute system**

- chutes, service openings and inlet hoppers are to be constructed of metal or other smooth-faced, durable, fire-resistant and impervious material of a non-corrosive nature, capable of being easily cleaned
- chutes are to be cylindrical in cross-section and the internal diameter is to be a minimum 500mm and adequate for material being deposited
- chutes are to be vertical without bends or 'off-sets' and are not to reduce in diameter over the fall
- chutes are to be ventilated to ensure that air does not flow from the chute through any service opening
- a cut-off is to be provided at or near the base of the chute to effectively close off the chute while the storage container or compacting device is withdrawn
- chute rooms are to be provided with an inlet hopper and be in convenient, well-lit and ventilated positions
- the floor below each charging device and service opening is to be finished with a smooth impervious material with a minimum area of not less than one square metre ($1m^2$) situated centrally below the inlet hopper
- inlet hoppers are to be designed to:
    - effectively close off the service opening in the chute when the device is opened for loading
    - automatically return to the closed position after use
    - permit free flow of waste into the chute
    - not project into the chute
    - permit easy cleaning of the device and connection between the service opening and the chute
    - be not less than one metre (1m) or more than one and one-half metres (1.5m) above the floor level.
- inlet hoppers are to be capable of delivering the waste to the chute without using force.

# 5 Management measures

This section outlines management measures for consideration as part of future Detailed SSDAs to reduce construction and operational waste through appropriate recovery, re-use and recycling practices and minimise environmental impacts from the proposed development and to meet waste objectives and targets noted in this WMP and the Ecologically Sustainable Development Report (Appendix S of the EIS).

## 5.1 Strategies for waste reduction in the construction phase

### 5.1.1 Waste avoidance in design

Sustainable design should be considered during the detailed design phase, where it presents opportunities to incorporate waste minimisation and resource efficiency. Measures may include:

- specifications relating to incorporation of used materials or materials with recycled content which contribute to landfill diversion targets set by the City of Paramatta
- enabling the purchase of materials in shape / dimension and form that minimises the creation of off-cuts/waste
- consideration of what will happen to the materials specified when they reach end-of-life. Where possible, elements should be designed for repair, modular repair, recycling at the end of life or safe disposal. The use of hazardous materials should be minimised.

### 5.1.2 Reuse and recycling in construction

The following measures are recommended for minimising construction waste:

- use of prefabricated elements where possible
- material reuse (such as concrete, tarmac, timber and landscaping features)
- any excavated materials will be carefully stored in segregated piles for subsequent reuse on the site wherever possible. These excavated materials should be reused as deposition material for infilling or landscaping
- avoiding over-purchasing and accurate delivery times, ensuring materials are ordered for delivery shortly before they are used on the proposed development would also avoid possible damage and therefore wastage
- use of take back schemes, some suppliers offer a take back scheme, which should be utilised where practicable, particularly for packaging and pallets.

## 5.2 Strategies for waste reduction in the operational phase

In line with the reduce, reuse, recycle hierarchy to waste management, it is recommended that the following measures are taken to allow owners and occupiers to participate in best practice operational waste management.

- exploring segregation of organic waste from the residual stream within commercial premises
- exploring the viability of small-scale organic waste treatment. Treatment via composting has the potential to recycle the organic waste into a product which may be used within the proposed development green areas, offset the use of imported materials and reduce emissions due to transport and disposal
- introduction of paper and cardboard balers in buildings with high paper and cardboard usage
- facilities management may engage with the City of Parramatta or private contractors in delivery of waste handling training to increase awareness of waste avoidance activities for both staff, residents and visitors.

# 6 Conclusion

This WMP has been prepared to outline the potential impacts from waste generation, storage and collection of the proposed development, to specifically respond to the SEARs issued for the Concept SSDA.

The proposed development design has considered relevant planning and regulatory requirements as detailed in section 3.2 during both construction and operation.

This WMP forms the framework for the waste management measures for the future detailed design and planning stages of the development.

The area and spaces allocated for operational waste storage and collection for buildings A, B, C and D are considered appropriate, based on the expected waste generation from the proposed development design and assumptions.

It is noted that approval is being sought for the Concept SSDA and the waste requirements of the proposed development should be considered further during the detailed design phase. Future detailed design should be generally consistent with the minimum waste area requirements proposed in this WMP, and a detailed waste management plan should be submitted with the future Detailed SSDAs demonstrating how the recommendations in this report have been addressed and met in the final building design.

# 7 References


Australian Standard AS2890.2 Parking facilities: off-street commercial vehicle facilities.

City of Parramatta 2011, Parramatta Development Control Plan, https://www.cityofparramatta.nsw.gov.au/sites/council/files/inline-files/DCP%202011_2.pdf.

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City of Parramatta 2016, Parramatta Waste Management Guidelines for new Development Applications 2016, https://www.cityofparramatta.nsw.gov.au/sites/council/files/2017-05/Waste%20Management%20Guidelines%20for%20new%20Development%2024%20March%202017.pdf.

City of Parramatta 2017, City of Parramatta Environmental Sustainability Strategy, https://www.cityofparramatta.nsw.gov.au/environment/environmental-sustainability-strategy.

Green Building Council Australia 2017, Green Star Design and As Built Manual v1 (version B), https://new.gbca.org.au/green-star/rating-system/design-and-built/.

NSW EPA 2012, Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities, https://www.epa.nsw.gov.au/~/media/EPA/Corporate%20Site/resources/managewaste/120960-comm-ind.ashx.

NSW EPA 2019, Better practice guide for resource recovery in residential developments, https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/warrlocal/19p1559-resource-recovery-in-residential-developments.pdf?la=en&hash=C29AFB3B95D416F29A6F711B684C620900174075.

NSW EPA 2021, Waste Classification Guidelines, https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines.

NSW Department of Planning and Environment 2021, NSW Waste and Sustainable Materials Strategy 2041 Stage 1: 2021-2027, https://www.dpie.nsw.gov.au/our-work/environment-energy-and-science/waste-and-sustainable-materials-strategy.

Sydney Metro, 2017, Sydney Metro City and Southwest Sustainability Strategy 2017-24, Sydney Metro City and Southwest Sustainability Strategy 2017-24.

# Appendix A Operation waste modelling assumptions

## A.1 Waste generating areas

| Waste generating area | | GFA ($m^2$) | Residential units |
|---|---|---|---|
| Building A | Commercial | 74,360 | |
| | Retail | 3,497 | |
| Building B | Residential | 18,250 | 145 |
| | Retail | 1,114 | |
| Building C | Commercial | 35,189 | |
| Building D | Commercial | 51,687 | |
| | Retail | 2,732 | |

Notes: The floor area is the basis for estimating the scale of waste generation. Residential units are an exception to this rule, where waste generation is based on number of units.

## A.2 Waste generation rates

| Waste generating area | Residual | Recycling | Units |
|---|---|---|---|
| Retail | 80 | 70 | Litres / 100$m^2$ / day |
| Commercial | 8 | 6 | Litres / 100$m^2$ / day |
| Residential | 80 | 40 | Litres / unit / week |

Source: City of Paramatta's Waste Management Guidelines for new Development Applications 2016

## A.3 Bin dimensions

| Capacity (L) | Width (mm) | Depth (mm) | Height (mm) | Area ($m^2$) |
|---|---|---|---|---|
| 1100 | 1370 | 1245 | 1470 | 1.71 |
| 660 | 1370 | 850 | 1250 | 1.16 |
| 240 | 580 | 735 | 1080 | 0.42 |

## A.4 Standard bin colours

| Waste stream | Bin body | Bin lid colour |
|---|---|---|
| General waste | Dark Green | Red |
| Recycling | Dark Green | Yellow |
| Garden organics waste | Dark Green | Lime Green |

# Appendix B Waste management and resource recovery plan for construction waste

| Waste stream | Anticipated volume | Recovery potential | Onsite reuse/recycling | Offsite reuse/recycling | Treatment/disposal |
|---|---|---|---|---|---|
| Excavation material | Very low | High | Topsoil has excellent potential for reuse opportunities in landscaping around the development. | Due to the properties of anthropogenic fill, opportunities to reuse the material compared to natural, or topsoil are more limited. However, reuse where possible within the project or send off site for recycling. | All soil extracted (whether contaminated or not) will be stockpiled at the site and subject to laboratory analysis prior to reuse or removal to an off-site waste facility to identify whether the material or will require landfilling at an appropriately permitted facility. |
| Timber | Low | High | Any timber taken down at the site shall in the first instance be re-used on site, e.g., for formwork, bridging, blocking and propping.<br><br>Timber off-cuts to be used in landscaping. | Small timber offcuts and untreated timber should be placed in skips and sent to local recycling facilities, where it can be mulched.<br><br>Opportunities should be explored for supplier packaging take back schemes | Disposal of treated timber however minimal disposal requirements expected. |
| Concrete | Low | High | Small quantities may arise, components will be pre-casted prior to arrival on site to minimise waste generation on site in the first place.<br><br>Crushed concrete can be used as clean fill or aggregate in pavements. | Concrete waste should be placed in skips and sent to a local recycling facility for crushing and subsequent reuse on other developments. | No disposal required. |
| Bricks | Low | High | Waste /surplus bricks can used as clean fill or aggregate in pavements and/or landscaping around the development. | Brick waste should be placed in skips and sent to a local recycling facility for crushing and subsequent reuse on other developments. | No disposal required. |
| Tiles | Low | High | Waste /surplus tiles can used as clean fill or aggregate in pavements and/or landscaping around the development. | Tile waste should be placed in skips and sent to a local recycling facility for crushing and subsequent reuse on other developments. | No disposal required. |

| Waste stream | Anticipated volume | Recovery potential | Onsite reuse/recycling | Offsite reuse/recycling | Treatment/disposal |
|---|---|---|---|---|---|
| Metal | Low | High | Limited opportunities for onsite reuse of offcuts or excess metal strips. | Metal waste should be placed in skips and sent to a specialty metal recycler for processing.<br><br>Opportunities should be explored for supplier buy back schemes. | No disposal required. |
| Glass | Low | High | Limited opportunities for onsite reuse | Glass waste should be placed in skips and sent to a specialty glass recycler and subsequent reuse on other developments or products (reused as glazing or aggregate for concrete production) | No disposal required. |
| Plasterboard | Low | High | Limited opportunities for onsite reuse | Plasterboard waste should be placed in skips and sent to a specialty recycler | No disposal required. |
| Fixtures and fittings | Low | High | Limited opportunities for onsite reuse | Opportunities should be explored for supplier buy back schemes. | No disposal required. |
| Floor coverings | Low | High | Limited opportunities for onsite reuse | Opportunities should be explored for supplier buy back schemes. | Minimal disposal required. |
| Packaging | High | High | This waste will predominantly consist of plastic sheeting, shrink-wrap, wooden pallets, metal strips. Opportunities should be explored for each material reuse potential. | Segregate each waste stream into skips and remove offsite to an appropriate local facility for recycling. Opportunities should be explored for supplier take back schemes. | Minimal disposal required. |
| Vegetation | N/A | High | Opportunities for site vegetation to be reused in landscaping around the development. | Potential for site vegetation to be composted at composting facilities | No disposal required. |
| Containers | Low | High | Opportunities should be explored for reuse on site, e.g., temporary storage | Opportunities should be explored for supplier take back schemes | No disposal required. |

| Waste stream | Anticipated volume | Recovery potential | Onsite reuse/recycling | Offsite reuse/recycling | Treatment/disposal |
|---|---|---|---|---|---|
| Paper/ cardboard | Low | High | Limited opportunities for onsite reuse. | Maintain clean waste stream by segregating each waste stream into skips and remove offsite to an appropriate local facility for recycling.<br><br>Opportunities should be explored for supplier take back schemes. | No disposal required. |
| General waste (residual waste) | Medium | Medium | Likely to comprise food waste and non-recyclable materials. Consideration should be given for providing separate bins for the collection of food waste, newspapers and non-recyclable materials. | Segregate each waste stream into skips and remove offsite to an appropriate local facility for disposal. | Disposal required for general waste. |
| Hazardous / special waste | Low | Low | Not applicable | These waste streams should be segregated from other waste streams and stored in appropriately designed and secure bunded storage areas/cupboards for subsequent identification and removal for treatment off-site at a hazardous waste facility. | These waste streams should be segregated from other waste streams and stored in appropriately designed and secure bunded storage areas/cupboards for subsequent identification and removal for treatment off-site at a hazardous waste facility. |
| Other | N/A | N/A | Reuse opportunities to be explored for other material streams as appropriate | Segregate each waste stream into skips and remove offsite to an appropriate local facility for recycling where feasible | Drop-off non-recyclables items at local transfer or disposal facilities |

# Appendix C Indicative waste storage room