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Waste Strategy Report

Tallawong Station Precinct South

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Waste Strategy Report - State Environmental Planning Policy (SEPP) Submission

Client: Landcom

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Executive Summary

The NSW Government is currently building the Sydney Metro Northwest (SMNW) that is due to start operations in 2019. The SMNW is Stage 1 of the overall Sydney Metro project and involves the construction of eight new metro stations supporting infrastructure between Tallawong Road and Epping and converting five existing stations between Epping and Chatswood. Stage 2 will deliver a new metro rail line from Chatswood through Sydney's CBD to Sydenham (Sydney Metro City and Southwest).

Landcom and the Sydney Metro Delivery Office (SMDO), part of Transport for NSW (TfNSW), are working in collaboration to develop walkable, attractive, mixed use places around the SMNW stations. This includes using the surplus government owned land located around the Tallawong Road Station.

The subject site, the Tallawong Road Station Precinct South, is located between Tallawong Road, Tallawong Road, Schofields Road and the Metro corridor and comprises around 7.8ha of government owned land. It is within the southern part of the broader Tallawong Road Station Precinct (Area 20) of the North West Priority Growth Area, a substantial land release area for homes and jobs in Sydney's northwest.

AECOM has been engaged to carry out the Civil Engineering Design to support the State Significant Development Application (SSDA) for the Station Precinct South concept proposal. The concept proposal allows for approximately 1,100 dwellings and 9,000m^2 of retail, commercial and community uses. It also includes a central park, new streets and supporting public domain.

This report provides advice on the waste strategy in response to the SEARs issued for the concept SSD application (SSD 9063). This has been prepared in accordance with but not limited to existing NSW legislation, policy and guidelines.

It is noted that this is a concept proposed only and will be subject to future detailed DAs. This report provides a strategy for guidance for future DAs.

The key tasks undertaken and associated findings are summarised below.

Background Review and Identification of Key Issues

A desktop review of information related to the proposed Tallawong Road Station Precinct South, including draft concept layouts and site area schedules for developable land. In addition, a desktop review of relevant local government, NSW and Commonwealth waste legislation/regulations/guidelines was also undertaken.

Waste Characterisation

Based on the background review, broad waste types and quantities anticipated from the proposed Tallawong Road Station Precinct South were identified for the operation phase. These are summarised in the table below.

Table ES1 Estimated Waste Generation (Residential) - Operations

Waste Type	Estimated (Approximate) Quantity	Classification
General Waste	37.71kL/day	General Solid Waste (Putrescible)
Co-mingled Recycling	12.57kL/day	General Solid Waste (Non-Putrescible)

Table ES2 Estimated Waste Generation (Commercial and Retail) - Operations

Waste Type	Estimated (Approximate) Quantity	Classification	Primary Source
General Waste	38.83kL/day	General Solid Waste (Putrescible)	Retail, Community Space, Child Care. Health and Fitness, Gym
Co-mingled Recycling	33.44kL/day	General Solid Waste (Non-Putrescible)	Retail , Community Space, Child Care, Health and Fitness, Gym

Development of Preferred Waste Management Strategies

Potential measures for maximising resource recovery and management of waste during the operational phase were identified to meet the respective SEARs requirements. The waste management strategies were based on implementation of the waste hierarchy, encompassing the whole waste lifecycle from generation and collection through to transport, processing and disposal. The proposed waste management strategies are summarised below.

- Source separation of waste streams at the proposed Tallawong Road Station Precinct South would be implemented to enhance material reuse and improve recycling; in particular, source separation of recyclable waste from the general waste stream.
- Traditional waste collection methods i.e. mobile garbage bins (MGBs) and collection trucks, have been proposed in this waste strategy. Waste chutes should be used for residential general waste collection, and residents would be responsible for transferring their recyclables to the basement MGBs.
- Once all waste and recycling bins are at capacity, building management would take the bins to the kerbside on the night before collection, and return the bins after collection.

The total minimum area required for the waste storage rooms for both residential and commercial (and retail) development at the proposed site are shown in Table ES3. Further detail will be provided in detailed DAs.

Table ES3 Minimum storage room area requirements

Residential	Minimum Area Required (m^2)
Site 1A	175
Site 1B	351
Site 2A	262
Site 2B	105
Site 2C	254
Site 2D	295
Site 2E	142
Commercial and Retail	**Minimum Area Required (m^2)**
Commercial and Retail	108

Note: The minimum areas in depend on final MGB size and arrangements, e.g. general waste and recycling bins placed on opposite ends of the room and ensuring enough space for moveability within the waste storage room.

1.0 Introduction

This document summarises the design approach, key assumptions, relevant references and standards applied to the development of the civil design documentation for the Tallawong Road Station Precinct South development, which is subject to a concept proposal.

This report is to be read in conjunction with the following reports:

- Tallawong Road Station Precinct South – Civil Engineering Design Report;
- Tallawong Road Station Precinct South – Utilities Report; and
- Tallawong Road Station Precinct South – Integrated Water Cycle Management Report

1.1 Extent of Work

The extent of work involved in the Tallawong Road Station Precinct South development is illustrated in Figure 1. Notable components of the design include a park, pedestrian and cycle network and associated landscaping as well as residential, retail, commercial and community uses in buildings up to 8 storeys in height.

A waste strategy has been prepared to address the area bounded by the proposed site extents inclusive of Site 1 and Site 2 superlots.

Figure 1 Concept Proposal

2.0 Waste Strategy

This waste strategy has been prepared in response to the SEARs issued for the concept SSD application (SSD 9063) which stated that the Environmental Impact Statement (EIS) must be accompanied by a waste strategy.

2.1 Legislation, Policy and Guidelines

The management of waste from the project would be undertaken in accordance with but not limited to the following state and local government requirements.

2.1.1 NSW State Requirements

Protection of the Environment Operations Act 1997

The NSW waste regulatory framework is set by the *Protection of the Environment Operations Act 1997* (PoEO Act). An objective of the PoEO Act is to:

- Reduce risks to human health and prevent the degradation of the environment by the use of mechanisms that promote the following:
    - Pollution prevention and cleaner production;
    - The reduction to harmless levels of the discharge of substances likely to cause harm to the environment;
    - The elimination of harmful wastes;
    - The reduction in the use of materials and the re-use, recovery or recycling of materials;
    - The making of progressive environmental improvements, including the reduction of pollution at source; and
    - The monitoring and reporting of environmental quality on a regular basis.

The PoEO Act defines 'waste' for regulatory purposes and establishes management and licensing requirements along with offence provisions to deliver environmentally appropriate outcomes. The PoEO Act also establishes the ability to set various waste management requirements via the *Protection of the Environment Operations (Waste) Regulation 2014* (PoEO Waste Regulation).

Protection of the Environment Operations (Waste) Regulation 2014

The PoEO Waste Regulation came into effect on 1 November 2014. The PoEO Waste Regulation sets out provisions that cover the way waste is managed in terms of classification and transportation as well as reporting and record keeping requirements for waste management facilities.

Waste Avoidance and Resource Recovery Act 2007

The *Waste Avoidance and Resource Recovery Act 2007* (WARR Act) includes the majority of NSW's over-arching objectives and guiding principles to encourage beneficial re-use and resource recovery.

The WARR Act promotes waste avoidance and resource recovery by providing a framework for the development of strategies and programs. It defines the waste hierarchy which is a set of priorities for the efficient use of resources which underpin the objectives of the WARR Act. The waste hierarchy ensures that resource management options are considered against the following priorities:

1. **Avoidance** including action taken to reduce the amount of waste generated, to maximise efficiency and avoid unnecessary consumption.

2. **Resource recovery** including reuse, recycling, reprocessing and energy recovery. Where avoiding and reducing waste is not possible, the next most preferred option is to re-use the

materials without further processing, avoiding the costs of energy and other resources required for recycling.

3. **Disposal** including management of all disposal options in the most environmentally sensitive manner. Disposal is the least preferred option, and is appropriate for materials such as asbestos that cannot be safely reused or recycled.

Waste Avoidance and Resource Recovery Strategy 2014-2021

The *Waste Avoidance and Resource Recovery Strategy 2014-2021*(WARR Strategy) provides the strategic direction for future waste management and resource recovery activities in NSW. The priorities for waste reform were determined by the NSW Government in the *NSW 2021: A plan to make NSW number one*.

The WARR Strategy aims to drive the efficient use of resources, reduce the environmental impact of waste and improve the well-being of the NSW environment, community and economy. The WARR Strategy sets out long-term targets and provides a framework for the development of various implementation plans. The WARR Strategy sets the following targets for 2021–22 which are applicable to the Project

- Avoiding and reducing the amount of waste generated per person in NSW;
- Increasing recycling rates to 70% for commercial and industrial waste;
- Increasing recycling rates to 80% for construction and demolition waste; and
- Increasing waste diverted from landfill to 75%.

The WARR Strategy provides a clear framework for waste management to 2021-22 and provides an opportunity for NSW to continue to increase recycling across all waste streams. The Project will aim to meet the objectives of the WARR Strategy and implement measures to manage waste in a way which minimises the impact waste has on the environment.

NSW Waste Classification Guidelines

Waste classification helps those involved in the generation, treatment and disposal of waste, ensure the environmental and human health risks associated with their waste is appropriately managed in accordance with the PoEO Act and its associated regulations. Part 1 of the *Waste Classification Guidelines* (EPA, 2014) provides advice and direction on classifying waste so that appropriate management of all waste types is achieved.

The following waste classifications are relevant to the operational works:

- Pre-classified waste including:
  - General solid waste (putrescible); and
  - General solid waste (non-putrescible).

Central City District Plan

In addition to the aforementioned guidelines and requirements, the NSW Government has released its District Plans for core components of Sydney's metropolis. The Central City District Plan outlines a series of objectives and priorities for the city to strive towards for greater efficiency, resiliency and liveability.

Priority 19 outlines the opportunities for innovations in waste management by determining the nature of growth, location and demand for utilities. Objective 35 highlights the city's need for greater reuse and recycling to support the development of a circular economy. It also states that the planning and design of new developments should support the sustainable and effective collection and management of waste.

2.1.2 Local Government Requirements

The Blacktown Local Environmental Plan 2015 aims to make local environmental planning provisions for land in Blacktown in accordance with the relevant standard environmental planning instrument under section 33A of the Environmental Planning and Assessment Act 1979. The plan also aims to provide for infrastructure to maintain and meet demands arising from housing and employment growth.

The Blacktown City Council Growth Centre Precincts Development Control Plan 2010 (also referred to as BCC Growth Centre DCP) aims to ensure the orderly, efficient and environmentally sensitive development of the Precincts as envisaged by the North West Growth Centre Structure Plan and State Environmental Planning Policy (*Sydney Region Growth Centres*) 2006 (the Growth Centres SEPP). Furthermore, this DCP aims to promote high quality urban design outcomes within the context of environmental, social and economic sustainability.

This DCP sets out the objectives for Ecologically Sustainable Development and includes a number of key controls, including:

- Implementing a waste management strategy that promotes the overall reduction of waste levels; and
- Promoting the achievement of the 60 percent waste reduction target for New South Wales.

In addition to the above, correspondence from Blacktown City Council addressed to Annie Leung has been used to guide the further development of this waste strategy. Blacktown City Council provided comments on the State Significant Development lodged under Part 4 of the *Environmental Planning and Assessment Act 1979* for the proposal. The matters provided in Attachment A of this correspondence have been addressed where relevant for waste management.

2.1.3 Guidelines

The following guidelines have been used in preparation of the waste strategy. Relevant waste management practices have been extracted from these guidelines for incorporation into this waste strategy.

NSW EPA (2012) Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities

This guide provides advice to help architects, developers, council staff and building managers to incorporate better waste management practice into the design, establishment, operation and ongoing management of waste services in commercial and industrial developments.

Department of Environment & Climate Change NSW (2008) Better Practice Guide for Waste Management in Multi-unit Dwellings

This guide has been developed to assist council staff; architects, residential developers and building management incorporate better practice in the design, establishment, operation and ongoing management of waste services in residential multi-unit developments. It outlines various essential points to be considered when designing a waste management system for medium or high-density residential, mixed-use and integrated housing developments.

2.2 Waste Management Objectives

The objectives for waste generated by the proposed Tallawong Road Station Precinct South operational works are:

- To maximise opportunities for re-use through source separation and on-site storage;
- To minimise waste generation and maximise re-use and recycling; and
- To ensure efficient collection, storage and transport and disposal of waste in an environmentally friendly manner.

These objectives are in line with the WARR Strategy and the Blacktown City Council Growth Centre Precincts Development Control Plan 2010.

2.3 Potential Environmental Impacts

If not managed responsibly, waste generated by the operations has the potential to cause the following impacts:

- Land and surface water contamination as a result of spills or inappropriate storage, handling, transportation and disposal of waste;
- Noise impacts associated with waste collection, movement and transport;
- Odours and vermin resulting from improper storage and treatment of putrescible wastes;
- Visual amenity impacts resulting from waste storage and movements at the Site (e.g. bin storage, collection and transport); and
- Off-site land and water pollution due to windblown waste from inappropriate storage, handling, and transportation.

2.4 Operational Waste Generation

2.4.1 Area Schedule

The Tallawong Road Station Precinct South project will eventually involve the delivery of a mixed-used development offering residential, commercial, retail and community uses.

A total of 1,100 residential dwellings are envisaged at the proposed development. The potential apartment type mix and number of units has been outlined below in Table 1.

Table 1 Tallawong Road Station Precinct South Residential Area Schedule

		1 Bedroom	2 Bedroom	3 Bedroom
Site 1	**1A**	36	60	18
	1B	65	131	30
Site 2	**2A**	54	100	27
	2B	20	43	11
	2C	53	97	26
	2D	58	68	78
	2E	33	46	15
	TOTAL	**308**	**529**	**201**

This breakdown has been provided for the purpose of waste infrastructure assessment and is subject to change as detailed design continues.

The major waste streams anticipated to be generated include general waste and co-mingled recycling waste.

Estimates of waste generation rates were based on the area schedule (developable land) contained in the reference design (Tallawong Road Station South – Stage 1 SSDA Application Draft) by Bennet and Trimble and a site description provided in Section 1.2 of the Tallawong Road Station Precinct South – Ecologically Sustainable Development Report by AECOM.

According to these documents, the commercial aspect of the development will feature:

- Approximately 4,500m^2 retail gross floor area (GFA);
- Approximately 3,000m^2 commercial GFA; and
- Approximately 1,500m^2 of community use (including 800 m^2 child care, 400m^2 health and fitness and 300m^2 of flexible community space).

2.4.2 Waste Generation

Indicative estimates of the quantity and classification of waste streams generated from residential premises are summarised below in Table 2**.** The waste generation rates used to estimate daily residential waste generation have been provided in Table 3**.**

Table 2 Estimated Waste Generation (Residential) - Operations

Waste Type	Estimated Quantity	Classification
General Waste	38.72kL/day	General Solid Waste (Putrescible)
Co-mingled Recycling	12.9kL/day	General Solid Waste (Non-Putrescible)

Table 3 Waste Generation Rates (Source: Blacktown City Council correspondence Re Submission: SSD9063 – Tallawong Station Precinct South, *15 August 2018*.

Apartment Size	General Waste	Recycling*
3 bedroom or greater	240 L/week	80 L/week
2 bedroom	240 L/week	80 L/week
1 bedroom or studio	240 L/week	80 L/week

**Paper and cardboard waste generation has been included under "co-mingled recycling" as Blacktown City Council does not offer separate collection of paper and cardboard.*

Table 4 shows indicative estimates of the quantity, classification and primary source of waste streams generated from the commercial and retail areas (including flexible community space) based on seven day per week operation. A breakdown of the estimated volume of waste generated per day based on the type of premises is shown in Table 5.

Table 4 Estimated waste generation during operation (commercial and retail)

Waste Type	Estimated Quantity	Classification	Primary Source
General Waste	38.83kL/day	General Solid Waste (Putrescible)	Retail, Community Space, Child Care. Health and Fitness, Gym
Co-mingled Recycling	33.44kL/day	General Solid Waste (Non-Putrescible)	Retail , Community Space, Child Care, Health and Fitness, Gym

Table 5 Estimated daily waste generated during operation (general waste and recycling)

Generator Category	NSA[1] (m^2)	Daily Garbage Generated (L/day)	Daily Recycling Generated (L/day)
Commercial (Offices)	2,700	432	324
Health and Fitness (Gym)	360	58	43
Child Care	720	2,160	3,528
Flexible Community Space	270	1,350	594
Retail	4,050	34,830	28,958
Total	**8,100**	**38,830**	**33,447**

[1] NSA – Measured from internal face of apartment. Excludes balconies. NSA = 95% GFA

The waste generation rates outlined below in Table 6 have been used to estimate the daily commercial and retail waste generation provided above in Table 5**.**

Table 6 Waste Generation Rates (Source: NSW EPA Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities, *Waste Generation Rates, December 2012)*

Area	Type of Premises	General Waste Generation	Co-mingled Recycling Generation
Offices	Offices	16L/100 m^2 floor area/day	12L/100 m^2 floor area/day
Gym	Offices	16L/100 m^2 /day	12L/100 m^2 /day
Child Care	Shops more than 100m^2 space	300L/100 m^2 floor area/week	300L/100 m^2 floor area/week
Flexible Community Space	Blacktown City Council specified rate	500L/100 m^2 floor area/day	220L/100 m^2 floor area/day
Retail	All retail	860L/100 m^2 floor area/day	715L/100 m^2 floor area/day

2.5 Waste Management Measures

The operational waste management strategy has been developed by adopting the waste hierarchy as a framework for waste management practices to achieve the best environmental outcomes. The preferred order of adoption is as follows:

- **Avoid** the potential of waste generation;
- **Reduce** waste during operations;
- **Re-use** waste where applicable;
- **Recycle** waste whenever possible;
- **Recovery** of waste materials; and
- **Disposal** of waste when there is no reuse or recycling potential.

2.5.1 Source Separation

Source separation involves identification and separation of waste into common material streams or categories at the point of generation for separate collection. This aids material reuse and improves recycling, thereby capturing reusable or recyclable material that would otherwise end up in landfill. All waste materials generated during operation would be identified and classified in line with the *Waste Classification Guidelines* (EPA, 2014) prior to separation.

Appropriate containers and bins would be provided on all levels across the site during operation for general waste and recyclable materials. These containers would be clearly marked and identifiable to staff/caretakers and the public to encourage correct separation. All containers and bins would be placed in allocated areas on each commercial floor. The following waste streams will be source-separated at the proposed development:

- General waste; and
- Co-mingled recyclables.

Separation of organic waste could be considered in the detailed design phase.

2.5.2 Waste Collection and Storage

- Separate waste storage rooms (bin rooms) for residential, commercial/retail are to be provided) at the proposed development.
- Space should be allocated for temporary bin storage within the various waste generating areas;

- The waste strategy assumes that residential waste is collected by Blacktown City Council and commercial and retail waste is collected by a private contractor;
- Dedicated loading bays will be provided for both residential and commercial buildings so as not to hinder traffic flow. These bays may be monitored by Building Management to prevent unauthorised parking, and correct use by waste vehicles i.e. the truck is wholly contained within the bay;
- Traditional waste collection methods (i.e. MGBs and waste service trucks) have been proposed in this waste strategy. Waste chutes should be used for residential general waste and recycling collection where applicable. Residents' access to the waste storage room would have to be restricted if chute systems are implemented;
- Typical MGB types, sizes and collection vehicle dimensions have been selected in accordance with the NSW EPA Better Practice Guidelines and typical local waste contractor standards; and
- Residential waste services typically include 240L MGBs. The most common capacities of MGBs in commercial applications in Australia are 660L and 1,100L. Exact measurements differ between suppliers, however typical bin dimensions are provided in Table 7.

Table 7 MGB dimensions[2]

Dimensions	240L MGB	660 L MGB	1,100 L MGB
Height (mm)	1,080	1,250	1,470
Depth (mm)	735	850	1,245
Width (mm)	580	1,370	1,370
Approx. Footprint (m^2)	0.43	1.16	1.71

Typical dimensions for a rear-lift waste collection vehicle have been provided in Table 8 below.

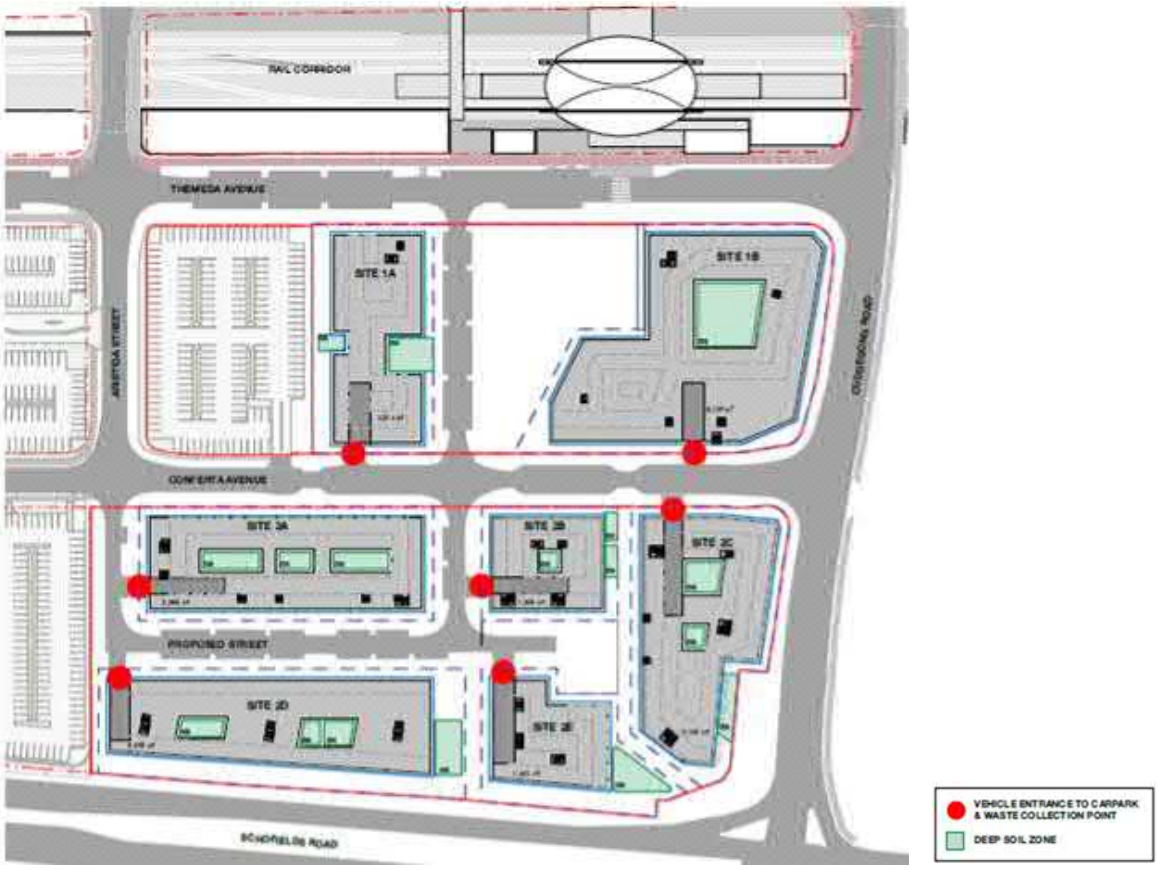
Table 8 Typical dimensions of rear-lift collection vehicle

Dimension	Measurement
Length overall	Up to 10.24m
Width overall	2.5m
Operational height	Up to 3.5m
Travel height	Up to 3.5m
Weight (vehicle only)	12.4 tonnes
Weight (payload)	9.5 tonnes
Turning circle	18.0m

The location, size and access requirements of the loading bays and dedicated waste collection zones will be outlined once architectural drawings of the buildings have been developed. Proposed vehicle entrance and waste collection points are illustrated in Figure 2.

[2] NSW EPA (2012) *Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities*

Figure 2 Access driveways at the Tallawong Rd Station Precinct



If MGBs are to be collected in a basement, the following traffic design requirements should apply:

- Forward in, forward out movement of trucks;
- All truck manoeuvring to occur on-site;
- Ramp grades do not exceed 15.4%;
- Loading bay should be in close proximity to the waste room;
- The full length of the truck is contained in the loading bay, not within the driveway;
- Bin transfer grades not to exceed 1:30;
- Bin travel distances not to exceed 10m: and
- Demonstrated 4.5m headroom allowance.

See Appendix **A** for a detailed swept path analysis for the development.

2.5.3 Waste Storage Room General Requirements

All waste and recycling should be stored and managed in dedicated waste storage rooms. Adequate space should be provided for equipment (e.g. compactors or balers), and MGBs to store waste and recycling in between collections. Some requirements for waste storage rooms include the following:

- Sufficient area for general waste MGBs;
- Sufficient area for co-mingled recycling and paper/cardboard (where applicable);
- Appropriate access for 1,100L MGBs where applicable – it will be important to ensure the doors to the storage room are designed to accommodate the width of these MGBs; and
- An area for the storage of bulky waste, e-waste and fluorescent and LED lighting.

The number of MGBS recommended for each residential storage room and the total area required for all equipment and maneuverability factors at the proposed site are shown in Table 9. Due to the limited architectural information available at this stage, these area requirements are yet to be verified and will be provided in more detail at the DA stage.

Table 9 is based on a once weekly collection for general waste and once fortnightly collection for recycling (Blacktown City Council waste collection schedules[3]).

Increased collection frequency and larger MGBs may minimise the area required for waste storage, so long as the large MGBs are compatible with Council's waste collection vehicle.

Table 9 Estimated number of MGBs required and minimum areas (residential)

Waste Room	General Waste Bins	Recycling Bins	Minimum area required for MGBs only (m^2)*	Total Minimum Area Required (m^2)
Site 1A	133	89	110.6	129
Site 1B	271	180	224.4	262
Site 2A	200	134	166.4	195
Site 2B	89	59	73.9	86
Site 2C	195	130	161.5	188
Site 2D	244	163	202.5	236
Site 2E	113	76	94.2	110

**NB: The minimum areas presented include a contingency factor to account for the safety and maneuverability of the bins within the storage room. This column accounts for MGBs only, no equipment or storage space for cardboard bales etc.*

For commercial and retail waste, the indicative number of bins required for the entire development is based on collection of both general waste and recycling seven days per week are shown in Table 10.

It should be noted that waste compactors can be considered to reduce the area required for storage rooms.

Table 10 Estimated number of MGBs required and minimum areas (commercial / retail)

Type of premises	General Waste Storage	Recycling Waste Storage	Minimum Area required for MGBs (m^2)*	Total Minimum Area Required (m^2)
Commercial and Retail	40 × 1,100L MGBs	34 × 1,100L MGBs	129	297

**NB: The minimum areas presented include a contingency factor to account for the safety and maneuverability of the bins within the storage room. This column accounts for MGBs only, no equipment or storage space for cardboard bales etc.*

2.5.4 Bulky Waste

Bulky / hard waste storage will be supplied for all residential buildings and commercial tenants. The storage area for the proposed development must be:

- Caged with a minimum 1.5m doorway to aid movement of large items;
- suitable line marked and signposted; and
- managed by the on-site Building Management for the life of the development.

Bulky waste storage cages have been sized at a rate of $4m^2$/40 units and $1m^2$/20 additional units, as per Blacktown City Council's request. Each building's bulky storage area requirements have been outlined in Table 11 below.

[3] https://www.blacktown.nsw.gov.au/Services/Waste/Waste-and-recycling-service#section-2

Table 11 Bulky Waste Storage Area Requirements

Building	Minimum Area for Bulky Waste Storage
1A	13m^2
1B	18m^2
2A	16m^2
2B	12m^2
2C	15m^2
2D	17m^2
2E	12m^2

2.5.5 Other Design Considerations

In order to minimise the hazards and impacts associated with the usage of the waste storage facilities, the following should be taken into consideration:

- Adequate sizing to accommodate all waste from the building;
- Ensuring Work, Health and Safety (WHS) requirements for waste contractors are met;
- Mechanically ventilated fully enclosed waste facilities complying with AS 1668;
- Provide wash down facilities for general waste and recycling storage areas and also for the disinfection of containers on-site;
- Hot and cold water hose cocks within the waste rooms or nearby;
- Adequate signage within the storage rooms, with a description of storage facilities within the area;
- Ensure lighting in the waste facility room is in accordance with AS 1680; and
- Ensure appropriate access and space for vehicle collection.

2.5.6 Waste Movement

All residential buildings should have a single chute system installed on each level for general waste. Chutes in commercial spaces may prove challenging due to the high volume of organic waste being disposed down the chute, and the potential for increased maintenance and disinfecting of the chute.

Residents would take their general waste to the chute opening on each level, where it can be dropped down the chute and into MGBs in the basement storage room. All recycling can be transported by the resident down to the waste storage room and placed in appropriate bins. There should be adequate space in the chute opening room to store 1 x 240L general waste bin for overflow.

A caretaker would monitor the capacity of the MGBs in the basement and change out full bins for empty ones as required. Full MGBs may be stored in the room until collection day. The MGBs can be moved to the kerbside on the night prior to collection, and returned once emptied.

Commercial and retail waste would be transported by a caretaker from the point of generation via a dedicated service lift to the commercial waste storage room at the end of each day, to be collected by a private waste contractor as required.

2.5.7 Waste Re-use, Recycling and Disposal

Waste should be minimised, re-used and recycled where possible. Where practical and considering potential health and hygiene issues, waste and recycling would be collected and segregated on-site and stored in suitable containers to maximise recovery before being transported to offsite processing/disposal facilities. Waste would be handled and disposed of in a manner that causes the least environmental harm.

Preferably, general waste from residential apartments and commercial / retail would be transported to an advanced resource recovery facility, otherwise sent to landfill. Any waste classified as restricted, special, or hazardous will be transported to a suitably licensed facility in line with regulatory requirements.

Co-mingled recyclables from the proposed development would be transported to a Materials Recovery Facility (MRF). During the detailed design additional opportunities for re-use, recycling and disposal could be identified.

2.5.8 Waste Monitoring and Auditing

Throughout the operational works, on-site waste monitoring and auditing procedures would be developed for each waste stream; volumes produced, and waste management practices adopted.

The objectives of these procedures would be to provide:

- An assessment of the actual waste quantities and their classification;
- Monitor the potential environmental impacts;
- Review the waste transportation records and disposal routes;
- Enable positive actions to be taken in the event of incidents or accidents occurring on-site;
- Recommend future actions to improve waste management practices; and
- Monitor the implementation of the principles of waste management hierarchy.

2.6 Summary of Waste Management Requirements

It should be the responsibility of a Building or Facilities Manager to oversee the weekly implementation of the proposed waste management system outlined below, in order to maximise logistical efficiency and resource recovery.

Table 12 Details of Waste Management -Operations

Waste Type	Classification	Primary Source	Management Requirements	Destination
Residential				
General Waste	General Solid Waste (Putrescible)	All units	General waste would be transferred from units and placed in designated waste chutes by residents. Waste will fall into MGBs located in the basement waste storage room. No recyclable materials are to be placed in the general waste chute Blacktown City Council may collect all general waste bins for disposal or recovery.	To an appropriately licensed an advanced resource recovery facility where available or to landfill.
Co-mingled Recycling	General Solid Waste (Non-Putrescible)	All units	Residents will be responsible for transferring all recycling to communal recycling bins in the basement storage room. Blacktown City Council may collect recycling bins and transfer to a recycling or recovery facility.	To a Materials Recovery Facility (MRF)
Commercial and Retail				
General Waste	General Solid Waste (Putrescible)	Retail, Flexible Community Space, Child Care, Offices, Health and Fitness	General waste may be collected by retail tenants on-site in designated general waste MGBs. It will be the tenant's responsibility to transfer the MGBs to the central waste storage room the night before collection. No recyclable	To a licensed disposal facility

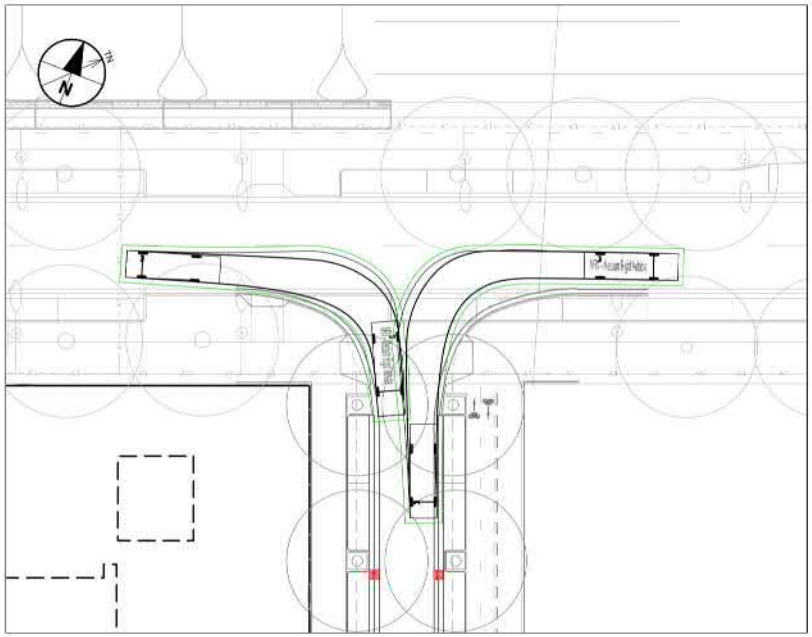
Waste Type	Classification	Primary Source	Management Requirements	Destination
			materials are to be placed in these general waste bins. A private waste service contractor would collect the general waste for transport to a licensed facility for disposal or recovery.	
Co-mingled Recycling	General Solid Waste (Non-Putrescible)	Retail, Flexible Community Space, Child Care, Offices, Health and Fitness	Co-mingled recycling may be collected by retail tenants on-site in designated recycling MGBs. It will be the tenant's responsibility to transfer the MGBs to the central waste storage room the night before collection. No general waste is to be placed in the recycling bins. A private waste service contractor would collect the co-mingled recycling and transfer to a licensed facility for recycling or recovery.	To a Materials Recovery Facility (MRF)

Appendix A

Swept Path Analysis

Appendix A Swept Path Analysis

ISO A1 594mm x 841mm



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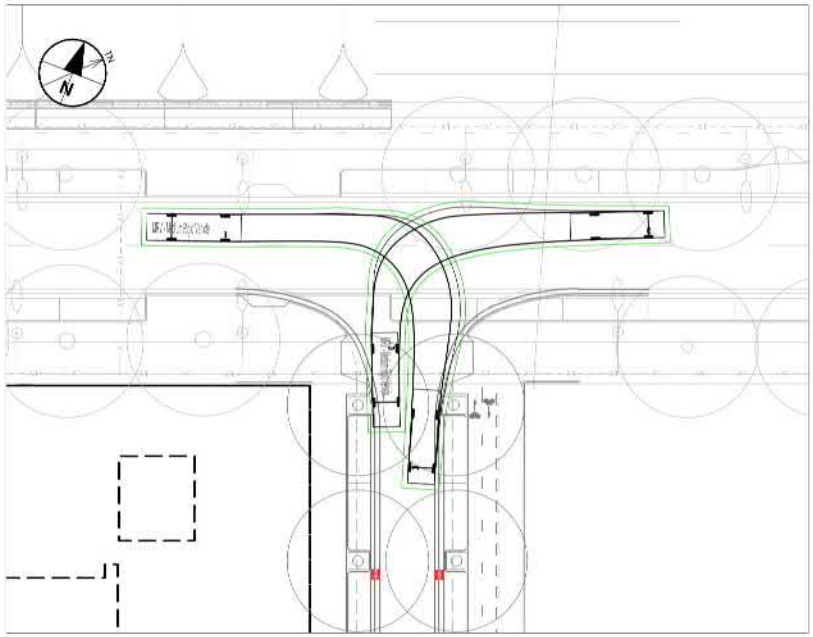
Scale 1:250



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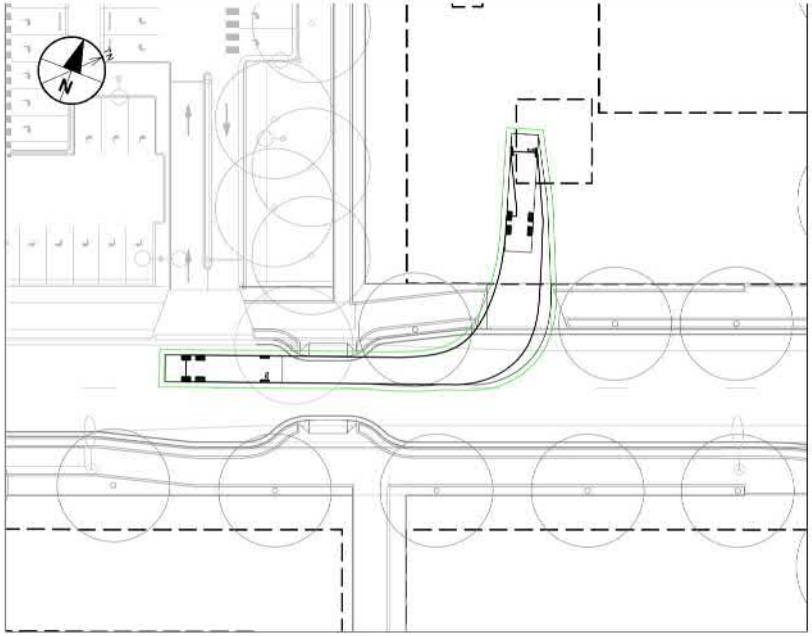

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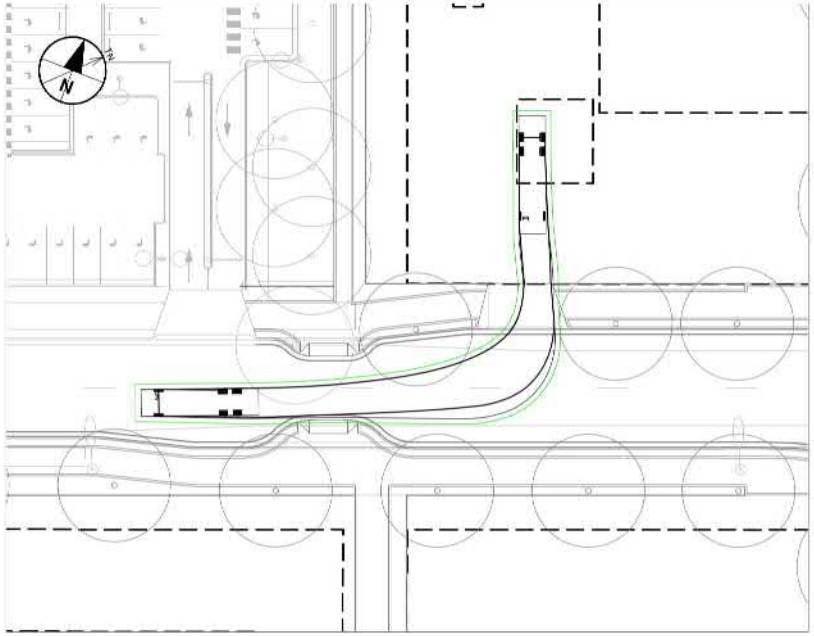

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CIVIL PACKAGE

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SCALE BAR
0 6.25 12.5 m
1:250

PRELIMINARY

PROJECT MANAGEMENT INITIALS

J. CHAN	D. FETTELL	D. FETTELL
DESIGNER	CHECKED	APPROVED

ISSUE/REVISION

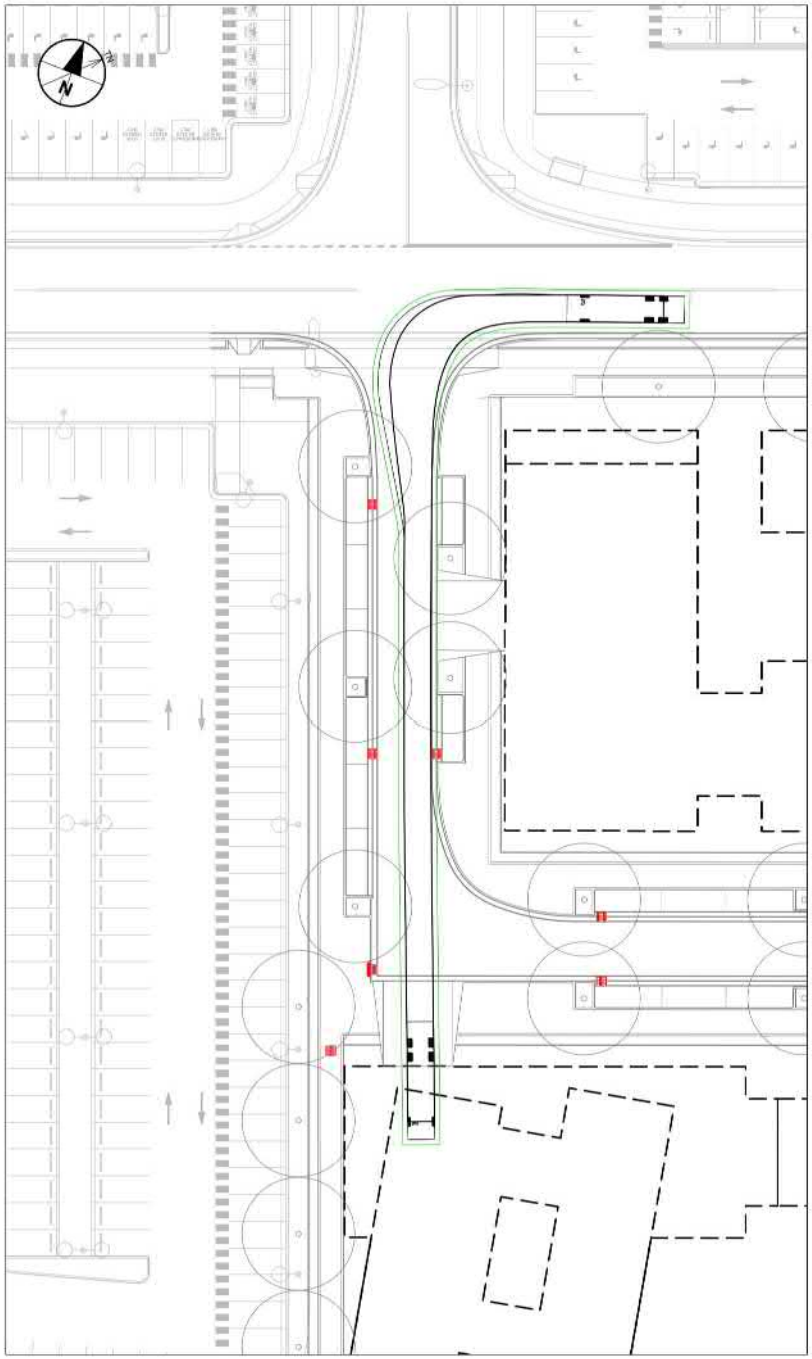
I/R	DATE	DESCRIPTION
A	18/09/2018	ISSUED FOR PRELIMINARY

KEY PLAN

PROJECT NUMBER
60558549

SHEET TITLE
VEHICLE TRACKING
PLAN
SHEET 02

SHEET NUMBER
60558549-SHT-00-0000-CI-0802



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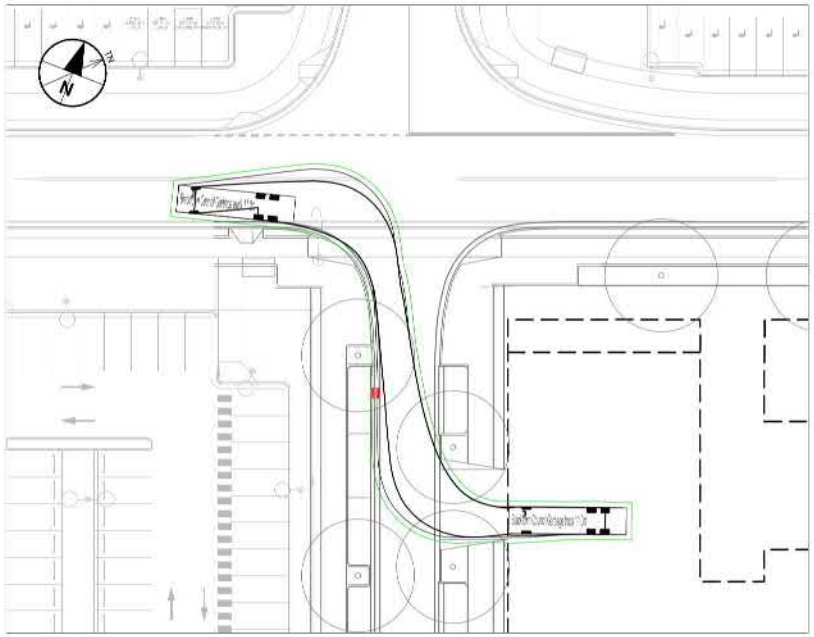

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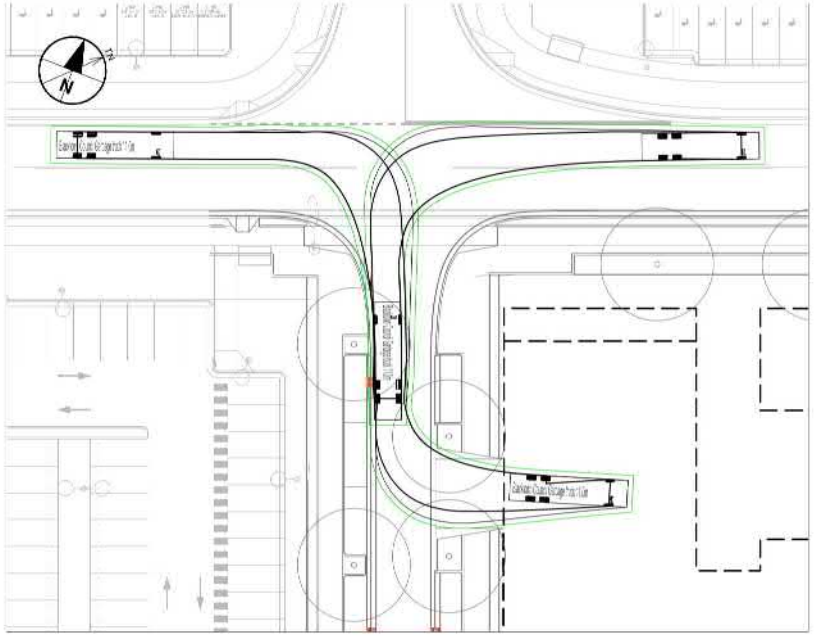

INSET 3 - VEHICLE TRACKING - RIGHT TURNS
Scale 1:250

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SCALE BAR
0 6.25 12.5 m
1:250

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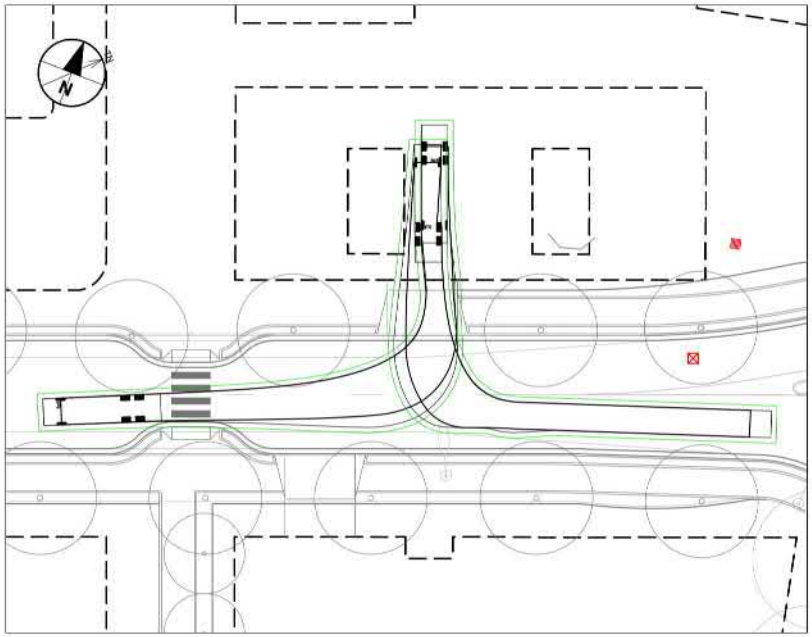
SHEET TITLE
VEHICLE TRACKING
PLAN
SHEET 03

SHEET NUMBER
60558549-SHT-00-0000-CI-0803



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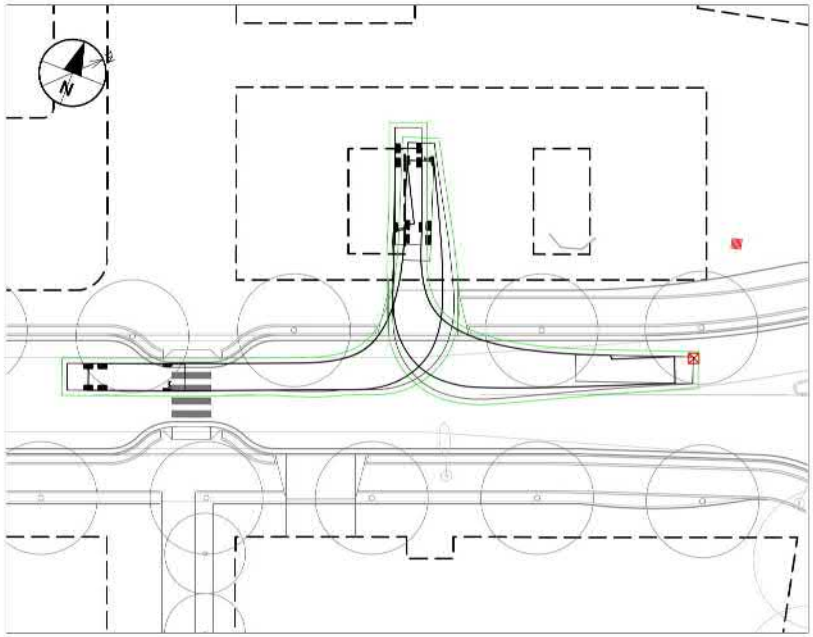

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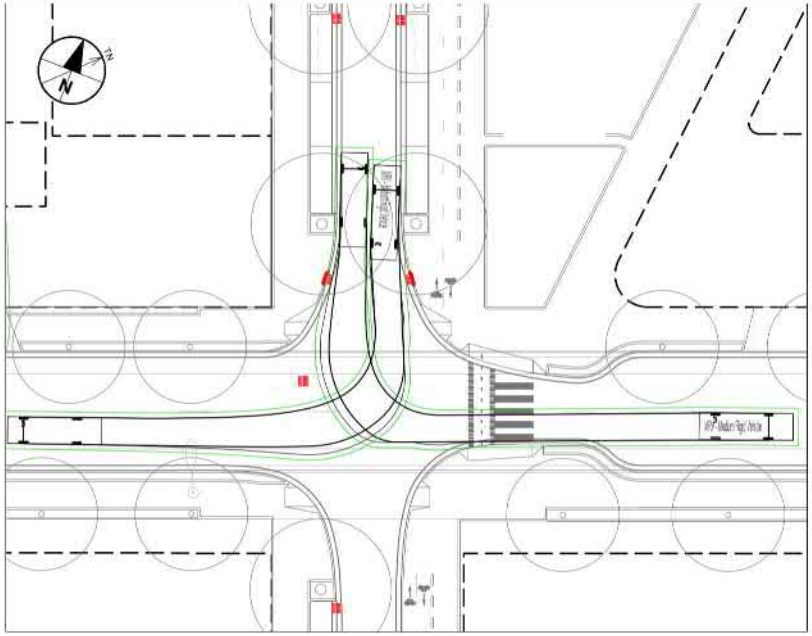

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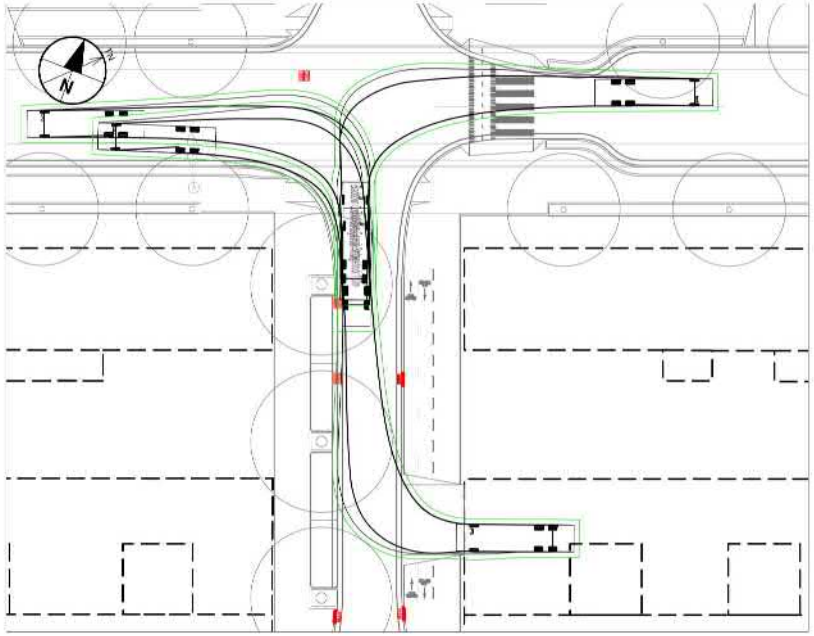

INSET 5 - RIGHT TURN FROM BUILDING
Scale 1:250

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SCALE BAR

0 6.25 12.5 m
1:250

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SHEET TITLE

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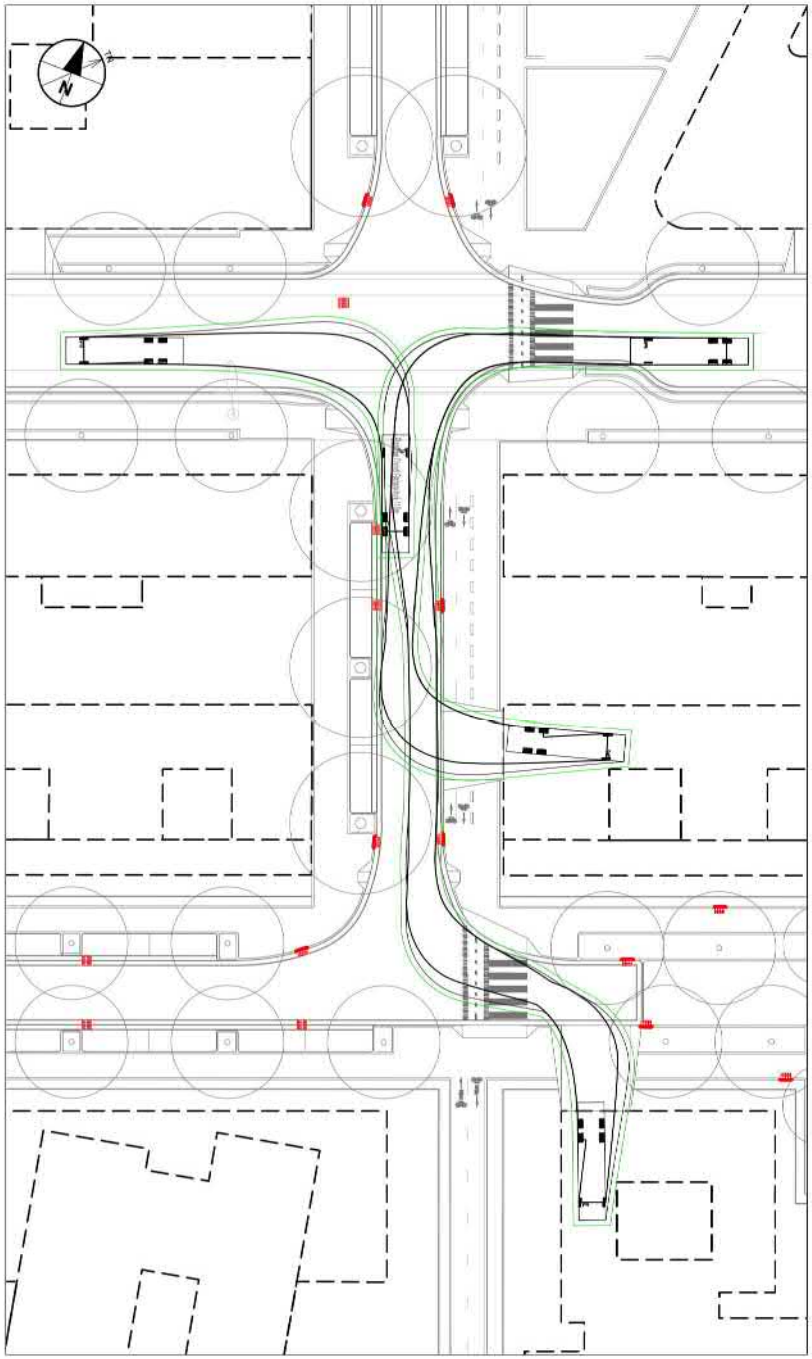
PLAN
SHEET 04

SHEET NUMBER

60558549-SHT-00-0000-CI-0804



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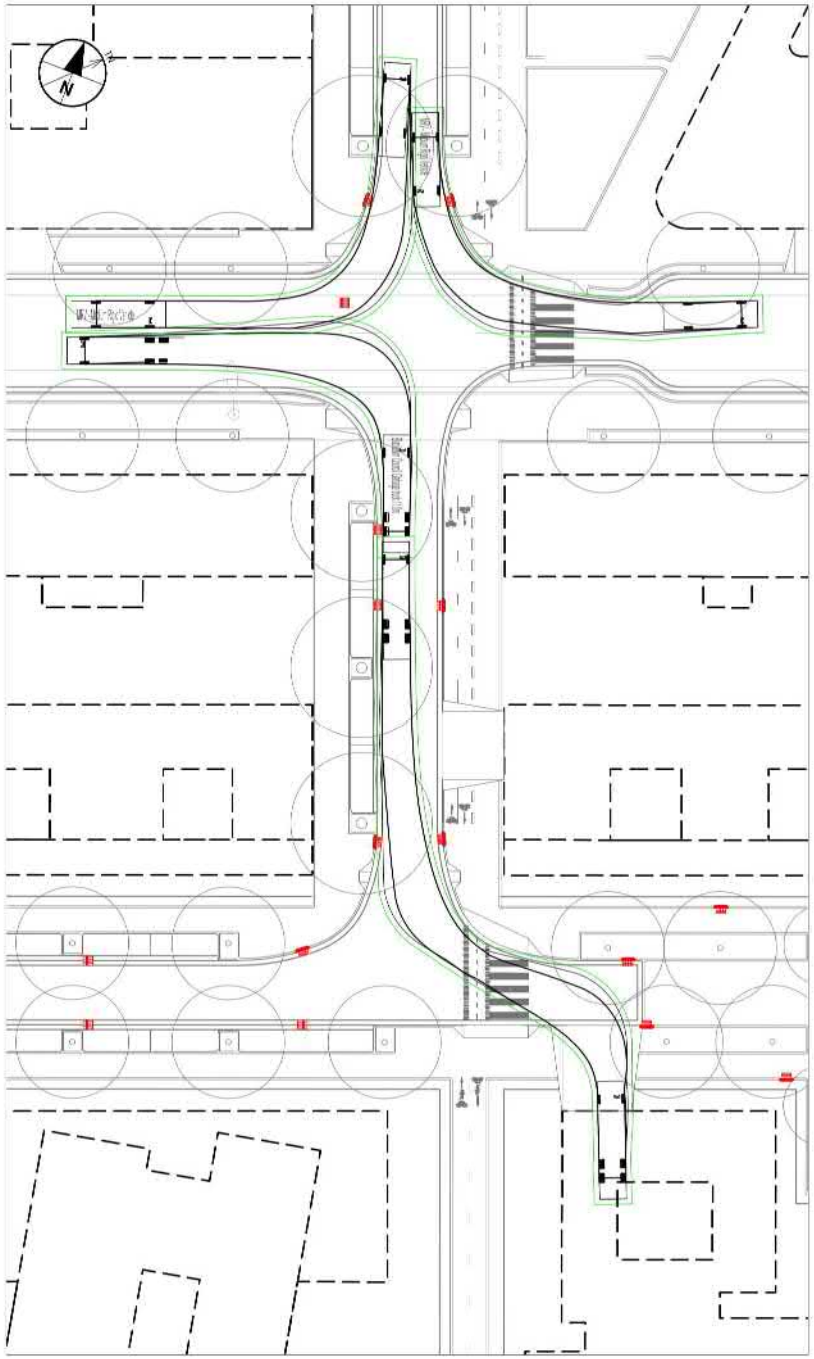

INSET 5 - LEFT TURNS
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SHEET NUMBER

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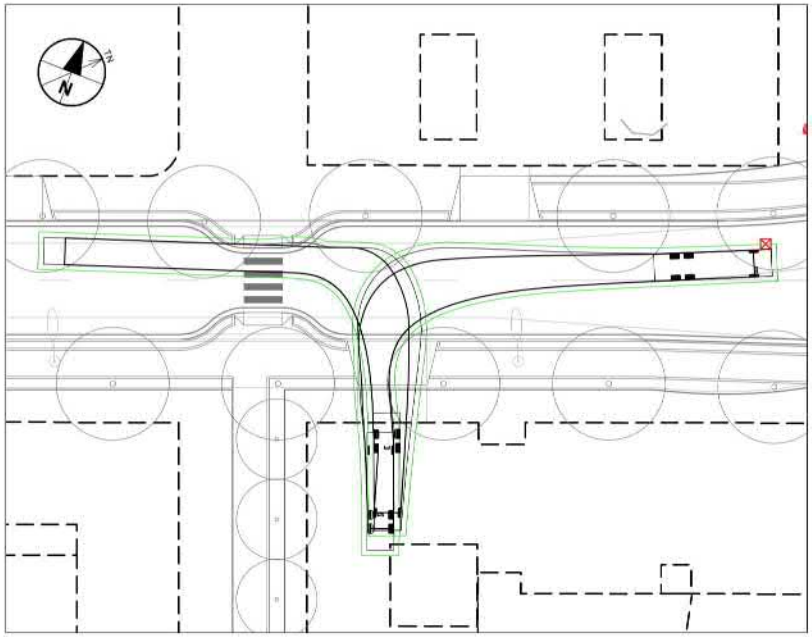

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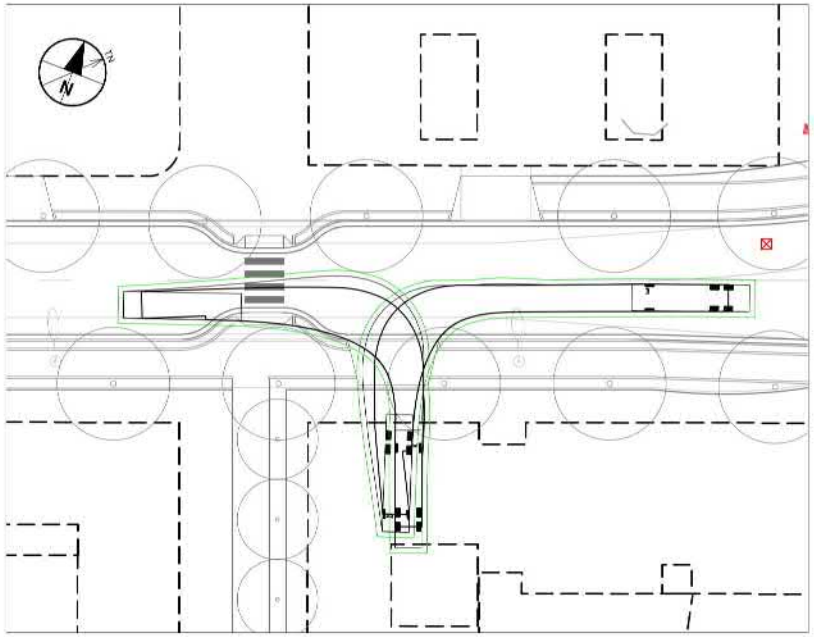

INSET 7 - LEFT TURNS
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1:250

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KEY PLAN

PROJECT NUMBER

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SHEET TITLE

VEHICLE TRACKING
PLAN
SHEET 06

SHEET NUMBER

60558549-SHT-00-0000-CI-0806