

DEPARTMENT OF PLANNING, LANDS  
AND HERITAGE

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# Annexure 8

## Waste Management Plan



# Waste Management Plan

10 Morley Drive, Tuart Hill

Prepared for Truenorth Properties Pty Ltd

25 February 2021

Project Number: TW21007

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## Executive Summary

Truenorth Properties Pty Ltd is seeking development approval for the proposed mixed use development located at 10 Morley Drive, Tuart Hill (the Proposal).

To satisfy the conditions of the development application the City of Stirling (the City) requires the submission of a Waste Management Plan (WMP) that will identify how waste is to be stored and collected from the Proposal. Talis Consultants has been engaged to prepare this WMP to satisfy the City's requirements.

A summary of the bin size, numbers, collection frequency and collection method is provided in the below table.

### Proposed Waste Collection Summary

Waste Type	Generation (L/week)	Bin Size (L)	Number of Bins	Collection Frequency	Collection
<b>Residential Bin Storage Area</b>					
Refuse	4,760	660	4	Two times each week	City of Stirling
Recycling	4,080	660	4	Two times each week	City of Stirling
<b>Commercial Bin Storage Area</b>					
Refuse	225	240	1	Once each week	City of Stirling
Recycling	225	240	1	Once each week	City of Stirling

The City will service the Proposal onsite, directly from the Bin Storage Areas. The City's waste collection vehicle has capacity to enter and exit the Proposal in forward gear via Main Street.

A strata manager/caretaker will oversee the relevant aspects of waste management at the Proposal.

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## 1 Introduction

Truenorth Properties Pty Ltd is seeking development approval for the proposed mixed use development located at 10 Morley Drive, Tuart Hill (the Proposal).

To satisfy the conditions of the development application the City of Stirling (the City) requires the submission of a Waste Management Plan (WMP) that will identify how waste is to be stored and collected from the Proposal. Talis Consultants has been engaged to prepare this WMP to satisfy the City's requirements.

The Proposal is bordered by Morley Drive to the north, residential properties to the east, and south and Main Street to the west, as shown in Figure 1.

### 1.1 Objectives and Scope

The objective of this WMP is to outline the equipment and procedures that will be adopted to manage waste (refuse and recyclables) at the Proposal. Specifically, the WMP demonstrates that the Proposal is designed to:

- Adequately cater for the anticipated volume of waste to be generated;
- Provide adequately sized Bin Storage Areas, including appropriate bins; and
- Allow for efficient collection of bins by appropriate waste collection vehicles.

To achieve the objective, the scope of the WMP comprises:

- Section 2: Waste Generation;
- Section 3: Internal Transfer of Waste;
- Section 4: Waste Storage;
- Section 5: Waste Collection;
- Section 6: Waste Management; and
- Section 7: Conclusion.

## 2 Waste Generation

The following section shows the waste generation rates used and the estimated waste volumes to be generated at the Proposal.

### 2.1 Proposed Tenancies

The anticipated volume of refuse and recyclables is based on the number of residential apartments and the floor area (m<sup>2</sup>) of the commercial tenancies at the Proposal. The Proposal consists of the following:

- Residential:
  - Residential Apartments – 68.
- Commercial:
  - Commercial 1 – 173m<sup>2</sup>;
  - Commercial 2 – 76m<sup>2</sup>;
  - Commercial 3 – 77m<sup>2</sup>; and
  - Commercial 4 – 121m<sup>2</sup>.

### 2.2 Waste Generation Rates

Correspondence with the City was undertaken to confirm waste generation rates for the residential dwellings, based on the City’s standard service (communal bin use).

In addition, consideration was given to the Western Australian Local Government Association’s (WALGA) Commercial and Industrial Waste Management Plan Guidelines (2014).

Table 2-1 shows the waste generation rates which have been applied to the Proposal. Note:

- Commercial tenancies 1-4 have been identified as office type tenancies, therefore an ‘Office’ waste generation rate has been utilised; and
- The gym on the ground floor is for the private use of the residential tenants and is therefore included as an amenity within the residential generation rate as it is to be expected that if they are using the gym they are not within their apartment.

**Table 2-1: Waste Generation Rates**

Tenancy Use Type	Guidelines	Guideline Reference	Refuse Generation Rate	Recycling Generation Rate
<b>Residential</b>				
Residential Apartments	City of Stirling	Standard Waste Service – Communal Bins	70L/week	60L/week
<b>Commercial</b>				
Commercial Tenancies 1-4	WALGA	Offices	10L/100m <sup>2</sup> /day	10L/100m <sup>2</sup> /day

## 2.3 Waste Generation Volumes

Waste generation is estimated by volume in litres (L) as this is generally the influencing factor when considering bin size, numbers and storage space required.

### 2.3.1 Residential Waste

Residential waste generation volumes in litres per week (L/week) adopted for this waste assessment are shown Table 2-2. It is estimated that the residential apartments at the Proposal will generate 4,760L of refuse and 4,080L of recyclables each week.

**Table 2-2: Estimated Waste Generation – Residential**

Residential	Number of Apartments	Waste Generation (L/week)	Waste Generation (L/week)
<b>REFUSE</b>			
Residential Apartments	68	70	4,760
<b>RECYCLABLES</b>			
Residential Apartments	68	60	4,080

### 2.3.2 Commercial Waste

Commercial waste generation volumes in litres per week (L/week) adopted for this waste assessment are shown Table 2-3. It is estimated that the commercial tenancies at the Proposal will generate 225L of refuse and 225L of recyclables each week.

**Table 2-3: Estimated Waste Generation – Commercial**

Commercial	Floor Area (m <sup>2</sup> )	Waste Generation (L/100m <sup>2</sup> /day)	Waste Generation (L/week)
<b>REFUSE</b>			
Commercial 1	173	10	87
Commercial 2	76	10	38
Commercial 3	77	10	39
Commercial 4	121	10	61
<b>Total</b>			<b>225</b>
<b>RECYCLABLES</b>			
Commercial 1	173	10	87
Commercial 2	76	10	38
Commercial 3	77	10	39
Commercial 4	121	10	61
<b>Total</b>			<b>225</b>

## **3 Internal Transfer of Waste**

### **3.1 Residential Internal Bins**

To promote positive recycling behaviour and maximise diversion from landfill, the residential apartments will have room to accommodate two under counter/kitchen bins for the separate disposal of refuse and commingled recyclables.

The residents will take the waste from these internal bins to the Residential Bin Storage Area for consolidation in the appropriate bins.

### **3.2 Commercial Internal Bins**

Commercial tenancies will also have a minimum of two bins to facilitate the separate disposal of refuse and recycling within each commercial tenancy. Waste from these bins will be transferred by staff/cleaners, or their authorised representative, to the Commercial Bin Storage Area and be deposited into the appropriate bin.

## 4 Waste Storage

The residential units and the commercial tenancies have separate Bin Storage Areas. Waste materials generated within the Proposal will be consolidated in the bins in the Bin Storage Areas, as discussed in the following sub-sections.

### 4.1 Bin Sizes

Table 4-1 gives the typical dimensions of standard bins sizes that may be utilised at the Proposal. It should be noted that these bin dimensions are approximate and can vary slightly between suppliers.

**Table 4-1: Typical Bin Dimensions**

Dimensions	Bin Sizes			
	240L	360L	660L	1,100L
Depth (mm)	730	848	780	1,070
Width (mm)	585	680	1,260	1,240
Height (mm)	1,060	1,100	1,200	1,300
Area (mm <sup>2</sup> )	427	577	983	1,327

Reference: *SULO Bin Specification Data Sheets*

### 4.2 Residential Bin Storage Area Size

To ensure sufficient area is available for storage of the residential bins, the amount of bins required for the Residential Bin Storage Area was modelled utilising the estimated waste generation in Table 2-2, bin sizes in Table 4-1 and based on collection of refuse and recyclables two times each week.

Based on the results shown in Table 4-2 the Residential Bin Storage Area has been sized to accommodate:

- Four 660L refuse bins; and
- Four 660L recycling bins.

**Table 4-2: Bin Requirements for Bin Storage Area – Residential**

Waste Stream	Waste Generation (L/week)	Number of Bins Required		
		240L	360L	660L
Refuse	4,760	10	7	4
Recycling	4,080	9	6	4

The configuration of these bins within the Residential Bin Storage Area is shown in Figure 2. It is worth noting that the number of bins and corresponding placement of bins shown in Figure 2 represents the maximum requirements assuming two collections each week of refuse and recyclables. Increased collection frequencies would reduce the required number of bins.

#### 4.2.1 Provision for Food Organics Garden Organics (FOGO)

In the near future the City will be introducing bins for the separate collection of food organics and garden organics (FOGO) in line with the state government's Waste Avoidance and Resource Recovery (WARR) Strategy 2030. As such, the development has provided sufficient space to

accommodate additional bins, should the development change to a 3 bin system to include FOGO collection in the future.

Local Governments typically provide kitchen caddies for residences for the collection of food waste. Residents will be responsible for taking their food waste to the dedicated lime green lidded FOGO bins which will be located within the Residential Bin Storage Area.

The City will assess the Proposal's requirements for FOGO in the future.

### 4.3 Commercial Bin Storage Area Size

To ensure sufficient area is available for storage of the commercial bins, the amount of bins required for the Commercial Bin Storage Area was modelled utilising the estimated waste generation in Table 2-3, bin sizes in Table 4-1 and based on collection of refuse and recyclables once each week.

Based on the results shown in Table 4-3 the Commercial Bin Storage Area has been sized to accommodate:

- One 240L refuse bin; and
- One 240L recycling bin.

**Table 4-3: Bin Requirements for Bin Storage Area – Commercial**

Waste Stream	Waste Generation (L/week)	Number of Bins Required
		240L
Refuse	225	1
Recycling	225	1

The configuration of these bins within the Commercial Bin Storage Area is shown in Figure 3. It is worth noting that the number of bins and corresponding placement of bins shown in Figure 3 represents the maximum requirements assuming one collection each week of refuse and recyclables. Increased collection frequencies would reduce the required number of bins.

### 4.4 Bin Storage Area Design

The design of the Bin Storage Areas will take into consideration:

- Smooth impervious floor sloped to a drain connected to the sewer system;
- Taps for washing of bins and Bin Storage Areas;
- Adequate aisle width for easy manoeuvring of bins;
- Doors to the Bin Storage Areas self-closing and vermin proof;
- Doors to the Bin Storage Areas wide enough to fit bins through;
- Ventilated to a suitable standard;
- Bins not to be visible from the property boundary or areas trafficable by the public; and
- Bins are reasonably secured from theft and vandalism.

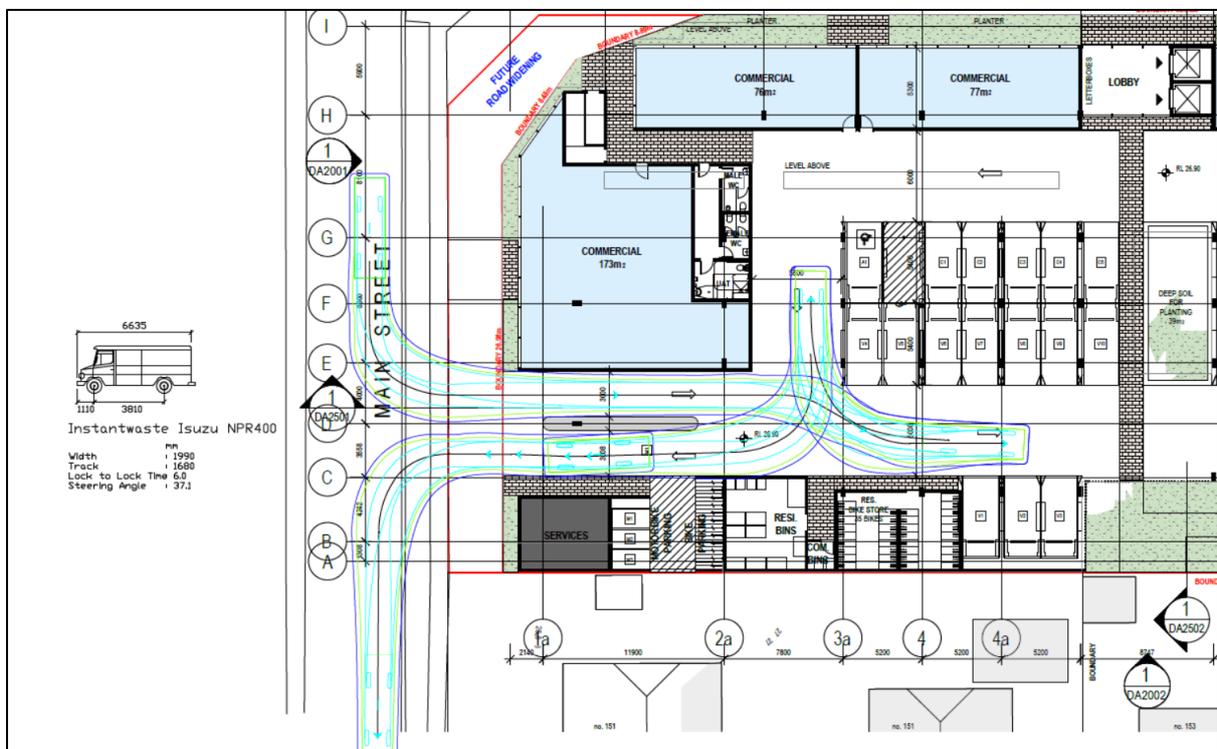
Bin numbers and storage space within the Bin Storage Areas will be monitored by the strata manager/caretaker during the operation of the Proposal to ensure that the number of bins and collection frequency is sufficient.

## 5 Waste Collection

The City will service the Proposal and provide the residential apartments and commercial tenancies with the required bins.

The City's low profile rear loader waste collection vehicle will service the bins onsite, directly from the Residential and Commercial Bin Storage Areas, utilising the Main Street entry. The City's low profile rear loader waste collection vehicle will enter the Proposal from Main Street in forward gear, complete a three-point turn within the Proposals carpark and pull up adjacent the Bin Storage Areas for servicing, as shown in Diagram 1.

Note, swept path analysis has been prepared with the use of a typical low profile rear loader which is greater in dimensions than the City's low profile rear loader, which indicates that the Proposal provides adequate clearance for the City's low profile rear loader waste collection vehicle to service the Proposal.



Reference: Transcore 17/02/21

**Diagram 1: Waste Collection Vehicle Swept Path**

The City's waste collection vehicle may provide a "spotter" to accompany the driver and to assist the driver to reverse within the Proposal in a safe manner. A minimum 2.5m area is available at the rear of the vehicle to facilitate servicing. The City will be provided with key/PIN code to access to any security access gates/doors to facilitate servicing, if required.

The City's waste collection staff will ferry bins to and from the low profile rear loader waste collection vehicle and the Bin Storage Areas during servicing.

Once servicing is complete the City's rear loader waste collection vehicle will exit in a forward motion, turning onto Main Street moving with traffic flow.

The above servicing method will preserve the amenity of the area by removing the requirement for bins to be placed out to the verge and the requirement of collection vehicles to be standing on Main Street holding up traffic on collection days.

The ability for the City's low profile rear loader waste collection vehicle to access the Proposal has been assessed by TRANSCORE and is included within their Traffic Impact Assessment.

## 5.1 Bulk Waste

To assist with the reduction of illegal dumping of bulky wastes, the Residential Bin Storage Area has provided space for the temporary storage of bulky wastes, refer Figure 2. In addition, each residential apartment has an allocated storage room which could be used for the temporary storage of bulk waste.

The City offers residents the following on demand collection services annually:

- One – 3m<sup>3</sup> skip bin
- One – E-waste collection;
- One – Whitegoods collection; and
- One – Mattress collection.

An area on the verge will be designated for the placement of a skip bin, and for use as a collection point for e-wastes, whitegoods and mattresses, as required. The strata manager/caretaker will liaise with residents and commercial tenants on procedures for disposal of bulk waste.

## 6 Waste Management

The strata manager/caretaker will be engaged to complete the following tasks:

- Monitoring, maintenance and cleaning of bins and the Bin Storage Areas, as required
- Ensure all residents/tenants at the Proposal are made aware of this WMP and their responsibilities thereunder;
- Monitor resident/tenant behaviour and identify requirements for further education and/or signage;
- Manage bulk waste and liaise with residents/tenants on collection procedures;
- Regularly engage with residents/tenants to develop opportunities to reduce waste volumes and increase resource recovery; and
- Regularly engage with the City to ensure efficient and effective waste service is maintained.

## 7 Conclusion

As demonstrated within this WMP, the Proposal provides sufficiently sized Bin Storage Areas for storage of refuse and recyclables, based on the estimated waste generation volumes and suitable configuration of bins. This indicates that adequately designed Bin Storage Areas have been provided, and collection of refuse and recyclables can be completed from the Proposal.

The City will service the Proposal onsite, directly from the Bin Storage Areas. The City's waste collection vehicle has capacity to enter and exit the Proposal in forward gear via Main Street.

A strata manager/caretaker will oversee the relevant aspects of waste management at the Proposal.

## Figures

Figure 1: Locality Plan

Figure 2: Residential Bin Storage Area

Figure 3: Commercial Bin Storage Area



**LEGEND**

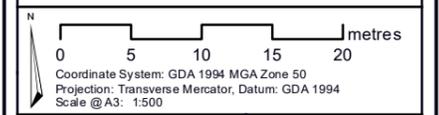
- Site Boundary
- Lot Boundary

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**LOCALITY**

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Tuart Hill, WA 6060  
TrueNorth Properties Pty Ltd



Prepared:	F Walker	Date:	23/02/2021
Reviewed:	D Patel	Revision:	A
Project:	TW21007		

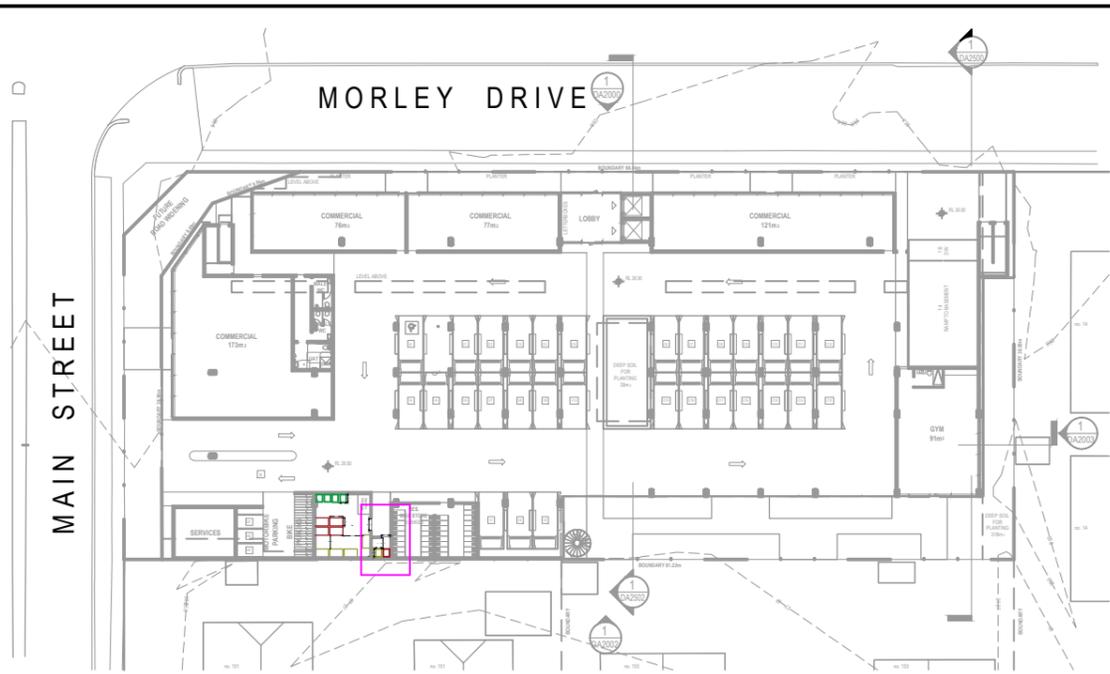


Figure 01

Data source: Roads - MRWA, 2020. Imagery: Landgate, 2020.



# Commercial Bin Storage Area

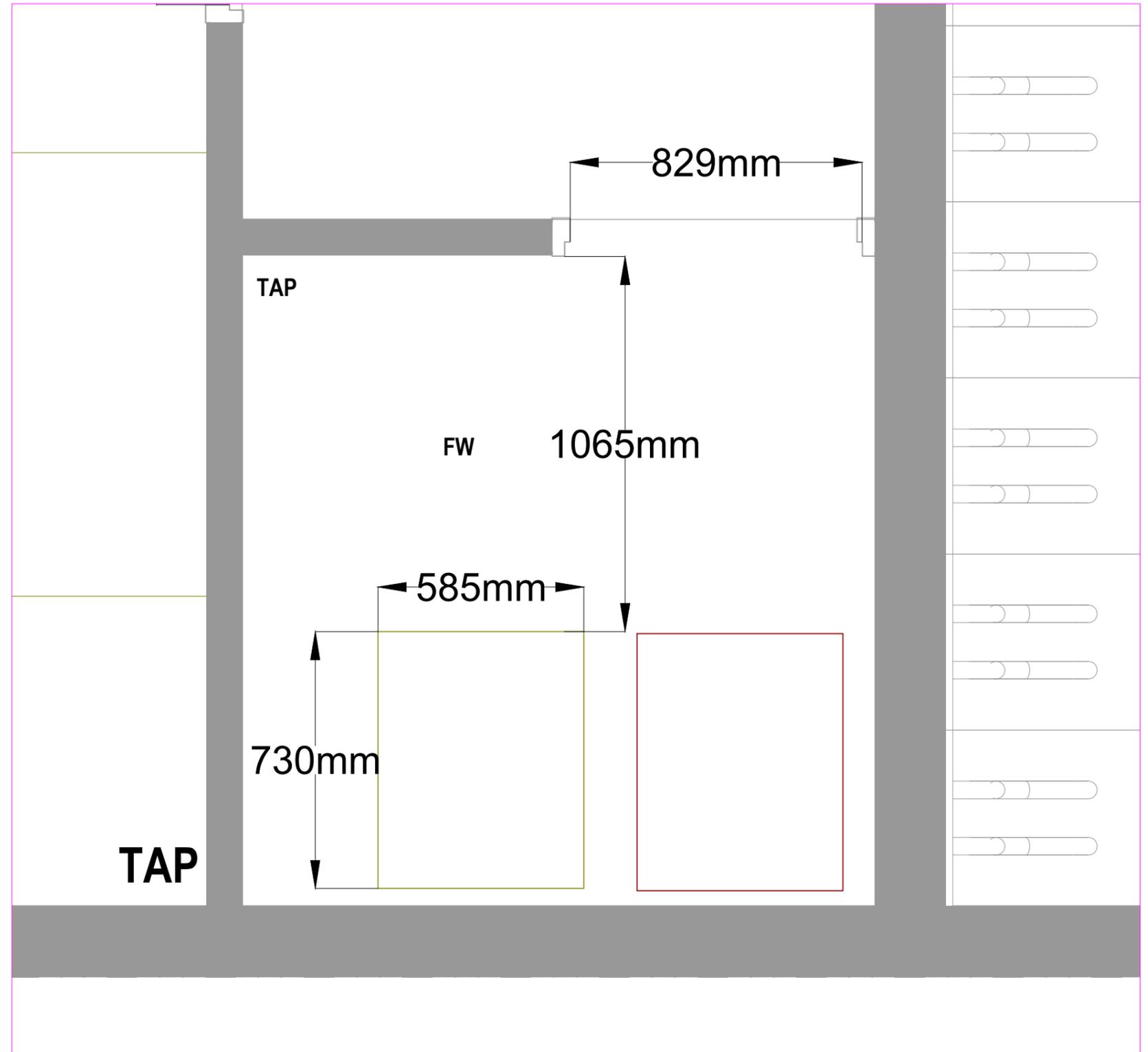


## Legend:



### Commercial Bin Storage Area

- 1 x 240L refuse (730mm x 585mm)
- 1 x 240L recycling (730mm x 585mm)





Assets | Engineering | Environment | Noise | Spatial | Waste

Talis Consultants

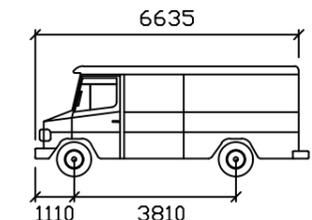
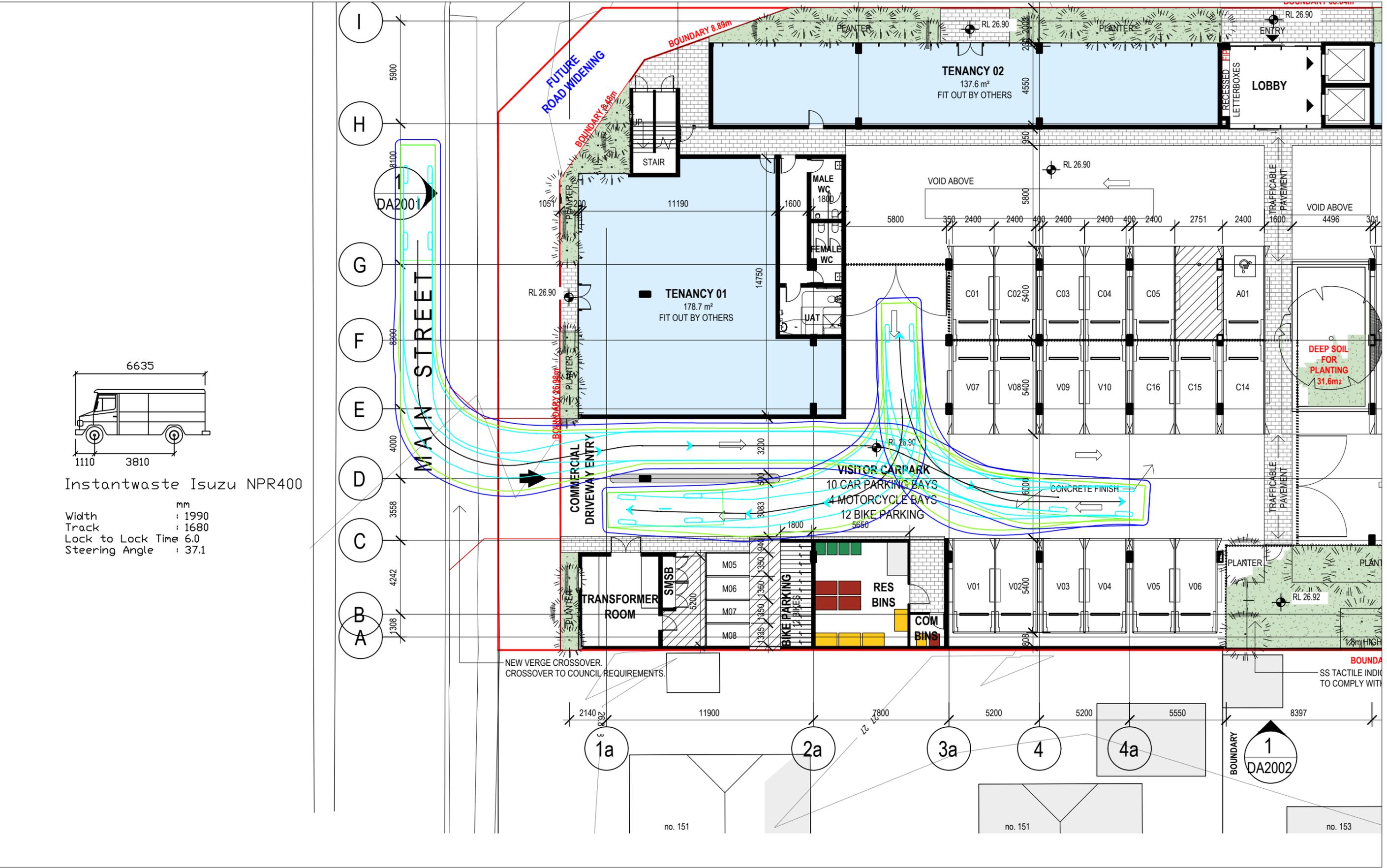
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Instantwaste Isuzu NPR400

Width : 1990 mm  
 Track : 1680 mm  
 Lock to Lock Time : 6.0  
 Steering Angle : 37.1

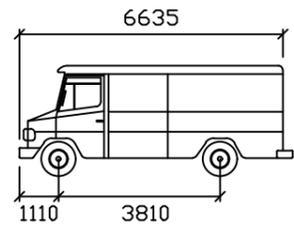
10 Morley Drive, Tuart Hill  
 6.6m Instantwaste Isuzu NPR400  
 Service Vehicle Entry

**LEGEND**

Vehicle Body   
 Wheel Path   
 300mm Clearance

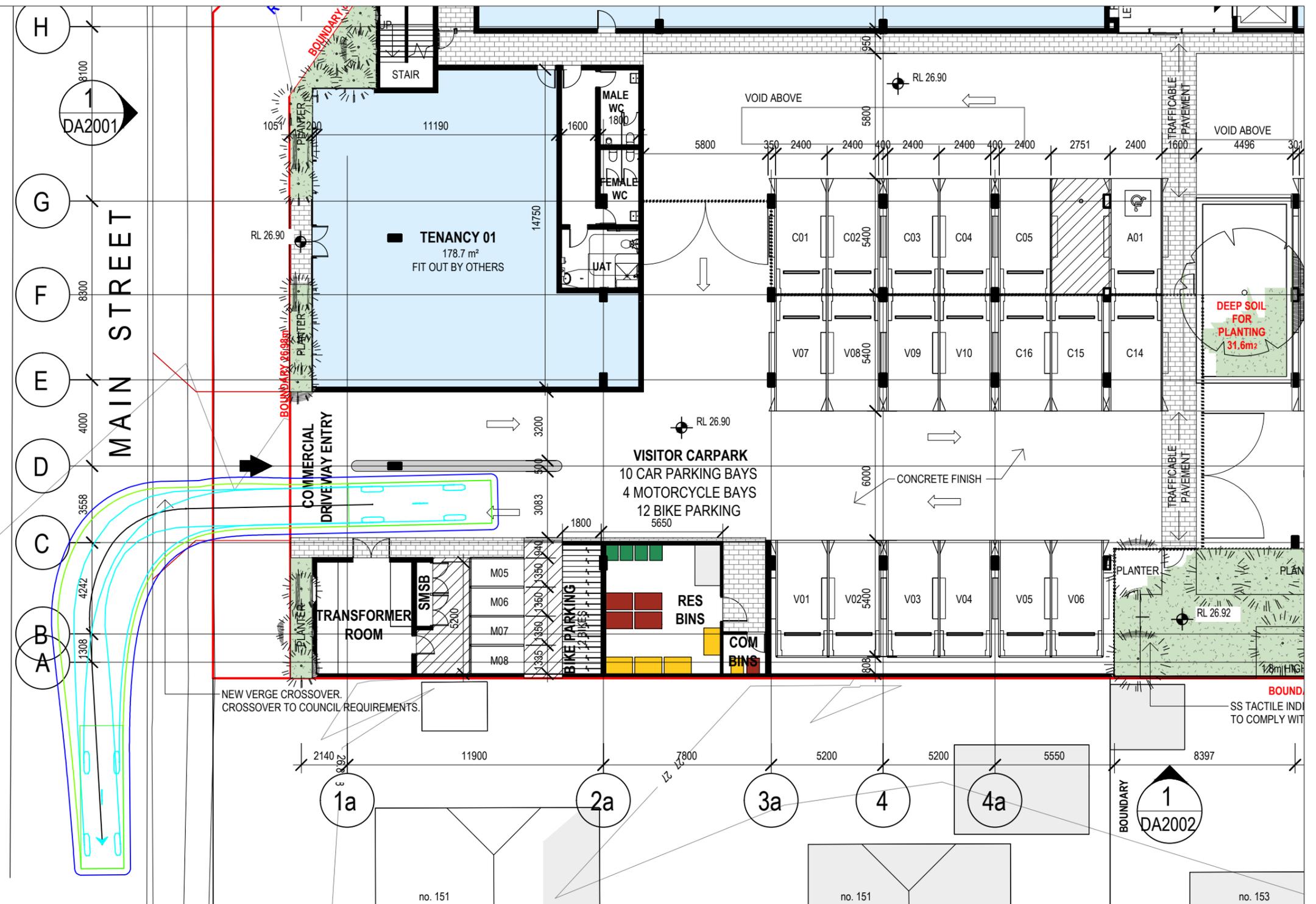
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 1/04/2021  
 Scale: 1:200 @ A3





Instantwaste Isuzu NPR400

Width : 1990 mm  
 Track : 1680 mm  
 Lock to Lock Time : 6.0  
 Steering Angle : 37.1



10 Morley Drive, Tuart Hill  
 6.6m Instantwaste Isuzu NPR400  
 Service Vehicle Exit

**LEGEND**  
 Vehicle Body  
 Wheel Path  
 300mm Clearance



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 1/04/2021  
 Scale: 1:200 @ A3

