



Assets | Engineering | Environment | Noise | Spatial | Waste

## Waste Management Plan

10-14 Forbes Road and 40A, B & C Kishorn Road, Applecross

Prepared for Apex View Pty Ltd

January 2019

Project Number: TW18037

Appendix

# WASTE MANAGEMENT

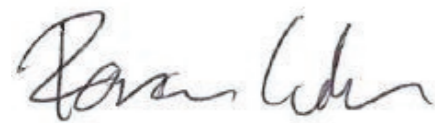
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## Executive Summary

Apex View Pty Ltd is seeking development approval for the proposed mixed use development located at 10-14 Forbes Road and 40A, B & C Kishorn Road, Applecross (the Proposal) within the Kintail Quarter of the Canning Bridge Activity Centre.

To satisfy the conditions of the development application the City of Melville (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. Mustera Property Group on behalf of Apex View Pty Ltd has engaged Talis Consultants Pty Ltd (Talis) to prepare this WMP to satisfy those conditions.

The anticipated quantities of refuse and recyclables for the Proposal were based upon the City's *Waste and Recyclable's Collection for Multiple Dwellings, Mixed Use Developments and Non Residential Developments* (2016). In addition, discussions with the City were also undertaken to ensure that the selected generation rates were suitable for the Proposal.

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

**Proposed Waste Collection Summary**

| Waste Type                    | Generation (L/week) | Bin Size (L) | Number of Bins | Collection Frequency/Week | Collection       |
|-------------------------------|---------------------|--------------|----------------|---------------------------|------------------|
| <b>Residential Apartments</b> |                     |              |                |                           |                  |
| Refuse                        | 8,193               | 660          | 5              | 3                         | City of Melville |
| Recyclables                   | 4,313               | 660          | 3              | 3                         | City of Melville |
| <b>Commercial Spaces</b>      |                     |              |                |                           |                  |
| Refuse                        | 6,798               | 660          | 4              | 3                         | City of Melville |
| Recyclables                   | 1,989               | 660          | 2              | 3                         | City of Melville |

The City will utilise its rear lift waste collection vehicle to service the Proposal from Loading Bay within the development. The City's waste collection staff will ferry the receptacles to and from the City's rear lift waste collection vehicle for servicing. The City will provide a 'spotter' who will accompany the driver to assist when the waste collection vehicle is reversing on-site.

Building management will oversee the relevant aspects of waste management at the Proposal.



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## Introduction

Apex View Pty Ltd is seeking development approval for the proposed mixed use development located at 10-14 Forbes Road and 40A, B & C Kishorn Road, Applecross (the Proposal), within the Kintail Quarter of the Canning Bridge Activity Centre.

To satisfy the conditions of the development application the City of Melville (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. Apex View Pty Ltd has engaged Talis Consultants Pty Ltd (Talis) to prepare this WMP to satisfy those conditions.

The Proposal is bordered by residential premises to the north, Forbes Road to the west, Kishorn Road to the south and a mix of commercial premises to the east, 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 all waste (refuse and recyclables) at the Proposal. Specifically, the WMP demonstrates that the Proposal should be designed to:

- Adequately cater for the anticipated quantities of waste and recyclables to be generated;
- Provide suitable Bin Storage Areas including appropriate receptacles; and
- Allow for efficient collection of receptacles by appropriate waste collection vehicles.

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

- Section 2: Waste Generation;
- Section 3: Waste Storage;
- Section 4: Waste Systems;
- Section 5: Waste Collection;
- Section 6: Waste Management Activities; and
- Section 7: Conclusion.

## 2 Waste Generation

This section outlines the waste generation rates used and the estimated waste volumes to be generated at the Proposal.

### 2.1 Proposed Tenancies

The anticipated quantities of refuse and recyclables to be generated were based on the number of residential and commercial tenancies at the Proposal. The Proposal consists of the following residential and commercial spaces:

- Residential:
  - Apartments – 97; and
  - Amenities including, pool deck, gym, treatment, bbq, dining/lounge and clubhouse – 618m<sup>2</sup>;
- Commercial Tenancies:
  - Short Stay Apartments – 15;
  - Restaurant/Cafe – 110m<sup>2</sup>;
  - Co-working space – 520m<sup>2</sup>; and
  - Retail (non-food) – 73m<sup>2</sup>.

### 2.2 Waste Generation Rates

The anticipated quantities of refuse and recyclables for the Proposal were based upon the City's *Waste and Recyclable's Collection for Multiple Dwellings, Mixed Use Developments and Non Residential Developments* (2016). In addition the discussions with the City were also undertaken to ensure that the selected generation rates were suitable for the Proposal.

Consideration was also given to Western Australian Local Government Association's *Multiple Dwelling Waste Management Guidelines* (2014) and *Commercial and Industrial Waste Management Plan Guidelines* (2014).

### 2.3 Waste Generation Volumes

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

#### 2.3.1 Residential Waste

Residential waste volumes in litres per week (L/week) of refuse and recyclables adopted for this waste assessment are shown Table 2-1. It is anticipated that the residential apartments and associated amenities will generate 8,193L of refuse and 4,313L of recyclables each week.

**Table 2-1: Estimated Waste Generation - Residential**

| Residential Tenancies  | Number of Apartments / floor area (m <sup>2</sup> ) | Waste Generation Rate (L/week) | Waste Generation (L/Week) |
|--|---|--------------------------------|---------------------------|
| <b>Refuse</b>  |   |                                |                           |
| Apartments   | 97  | 80                             | 7,760                     |
| Amenities: pool deck, gym, treatment, bbq, dining/lounge and clubhouse | 618   | 10                             | 433                       |
| <b>Total</b>   |   |                                | <b>8,193</b>              |
| <b>Recyclables</b>   |   |                                |                           |
| Apartments   | 97  | 40                             | 3,880                     |
| Amenities: pool deck, gym, treatment, bbq, dining/lounge and clubhouse | 618   | 10                             | 433                       |
| <b>Total</b>   |   |                                | <b>4,313</b>              |

### 2.3.2 Commercial Waste

Commercial waste generation volumes in litres per week (L/week) of refuse and recyclables adopted for this waste assessment are shown in Table 2-2. It is anticipated that the commercial tenancies at the Proposal will generate 6,798L of refuse and 1,989L of recyclables each week.

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

| Commercial Tenancies  | Number of serviced apartments / floor area (m <sup>2</sup> ) | Waste Generation Rate (L/week) | Waste Generation (L/Week) |
|-----------------------|--|--------------------------------|---------------------------|
| <b>Refuse</b>         |  |                                |                           |
| Short Stay Apartments | 15   | 80                             | 1,200                     |
| Restaurant/Café       | 110  | 660                            | 5,082                     |
| Co-working spaces     | 520  | 10                             | 260                       |
| Retail (non-food)     | 73   | 50                             | 256                       |
| <b>Total</b>          |  |                                | <b>6,798</b>              |
| <b>Recyclables</b>    |  |                                |                           |
| Short Stay Apartments | 15   | 40                             | 600                       |
| Restaurant/Café       | 110  | 130                            | 1,001                     |
| Co-working spaces     | 520  | 10                             | 260                       |
| Retail (non-food)     | 73   | 25                             | 128                       |
| <b>Total</b>          |  |                                | <b>1,989</b>              |

### 2.4 Potential Waste Streams

Identification of the following waste materials is relevant to the potential opportunities to avoid and reduce their impact on the waste stream at the Proposal. Waste materials relevant to all apartments and commercial tenancies at the Proposal are predominantly:

- General Waste (refuse);
- Organics;
- Corrugated Cardboard and Paper;

- White office Paper;
- Mixed Plastics (PET and HDPE);
- Beverage containers included in the proposed Container Deposit Scheme;
- Glass;
- E-waste; and
- Hazardous wastes including batteries and fluorescent/LED light globes.

### 3 Waste Storage

To ensure that waste is managed appropriately at the Proposal, it is important to allow for sufficient space to accommodate the required number of receptacles within the Bin Storage Area. The procedure and receptacles to be used in this area is described in the following sections.

#### 3.1 Residential Internal Receptacles

To promote positive recycling behaviour and maximise diversion from landfill, the Proposal will have a minimum two receptacles within each apartment for the separate disposal of refuse and recyclables. These receptacles will be transferred by the resident, or their authorised representative, to the waste chute system for disposal to the Residential Bin Store. Large cardboard items or bulky materials will be taken by the resident to the Bin Storage Area to reduce the likely hood of blockage in chutes.

A minimum of two receptacles will be located in common use areas across the Proposal's residential amenities for the separate disposal of refuse and recyclables. These receptacles will be taken by the building manager, or their authorised representative, to the Residential Bin Store for disposal into the appropriate receptacles.

#### 3.2 Commercial Internal Receptacles

Each serviced apartment and commercial tenancy will have a minimum of two receptacles for the separate disposal of refuse and recyclables. Refuse and recyclable materials generated by the serviced apartments and commercial tenancies will be taken by staff/cleaners, or their authorised representative, and placed in the appropriate receptacles in the Commercial Bin Store. Refuse and recyclable receptacles will be clearly labelled at all times.

In the future the Proposal may provide additional receptacles for the source separation of waste streams identified in Section 2.4 to further assist with diversion of wastes from landfill.

#### 3.3 Bin Storage Area

Refuse and recyclable materials generated within the Proposal will be collected in receptacles located in the Bin Storage Area shown in Figure 2.

##### 3.3.1 Receptacle Sizes

The information in Table 3-1 below presents the typical dimensions of receptacle sizes 660L and 1,100L. It should be noted that these receptacle dimensions are approximate and can vary slightly between suppliers.

Table 3-1: Typical Receptacle Dimensions

| Bin Size (L) | Depth (mm) | Width (mm) | Height (mm) | Area (mm <sup>2</sup> ) |
|--------------|------------|------------|-------------|-------------------------|
| 660          | 770        | 1,306      | 1,200       | 1,500                   |
| 1,100        | 1,100      | 1,400      | 1,400       | 2,000                   |

Reference: City of Melville guidelines

##### 3.3.2 Residential Bin Store Size

To ensure sufficient area is available for storage of the residential waste receptacles, the quantity of receptacles required for Residential Bin Store was using the dimensions in Table 3-1 and assuming three

collections each week of residential refuse and recyclables from the Proposal. Based on modelling results in Table 3-2 the Residential Bin Store is designed to accommodate the following receptacles:

- Five 660L refuse receptacles; and
- Three 660L recyclable receptacles.

Table 3-2: Receptacle Requirements – Residential Bin Store

| Waste Stream | Waste Generation (L/week) | Number of Receptacles Required |        |
|--------------|---------------------------|--------------------------------|--------|
|              |                           | 660L                           | 1,100L |
| Refuse       | 8,193                     | 5                              | 3      |
| Recyclables  | 4,313                     | 3                              | 2      |

The configuration of the receptacles within the Residential Bin Store is shown in Figure 2. It is worth noting that the number of receptacles and corresponding placement of receptacles shown in Figure 2 represents the maximum requirements, assuming three collections each week of refuse and recyclables. Increased collection frequencies or use of a compactor would reduce the required number of receptacles.

##### 3.3.3 Commercial Bin Store Size

To ensure sufficient area is available for storage of the residential waste receptacles, the quantity of receptacles required for Residential Bin Store was using the dimensions in Table 3-1 and assuming three collections each week of residential refuse and recyclables from the Proposal. Based on modelling results in Table 3-3 the Commercial Bin Store is designed to accommodate the following receptacles:

- Four 660L refuse receptacles; and
- Two 660L recyclable receptacles.

Table 3-3: Receptacle Requirements – Commercial Bin Store

| Waste Stream | Waste Generation (L/week) | Number of Receptacles Required |        |
|--------------|---------------------------|--------------------------------|--------|
|              |                           | 660L                           | 1,100L |
| Refuse       | 6,798                     | 4                              | 3      |
| Recyclables  | 1,989                     | 2                              | 1      |

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

##### 3.3.4 Design

The design of the Bin Storage Area will consider the following:

- Impervious floors draining to the sewer, not less than 75mm in thickness, and provided with an adequate liquid refuse disposal system;
- A tap for washing of receptacles and Bin Storage Area as required;
- Adequate aisle width for easy manoeuvring of receptacles;
- No double stacking of receptacles;
- Self-closing doors and are proposed to be vermin proof;
- Doors wide enough to fit bins through;



- Ventilated to a suitable standard, in accordance with the Australian Standard 1668.2: The Use of Ventilation and Air Conditioning in Buildings;
- Signs installed at drop-off points and within the Bin Storage Area to encourage correct recycling and reduce contamination;
- Clear signage instructing how to correctly use the waste management system;
- Located behind the building setback line;
- Receptacles are not visible from the property boundary or areas trafficable by the public; and
- Receptacles are reasonably secured from theft and vandalism.

Receptacle numbers and storage space within the Bin Storage Area will be monitored by the building manager during operation of the Proposal to ensure that the number of receptacles and collection frequency is sufficient.



## 4 Waste Systems

### 4.1.1 Waste Chute

In order to ensure the efficient disposal of waste to the Residential Bin Store a waste chute will be utilised at the Proposal. The Proposal may utilise a single waste chute with diverter system, which uses a common chute with a diverter mechanism at the terminus of the chute for separation of the refuse and recyclables.

The waste chute system will be located in close proximity to the elevators and be accessible on each residential unit level. Chute doors would be self-closing with a bottom hinge and two hour fire rated to AS1530.4-2005. Chutes are required to be vented to reduce odour and insulated for noise reduction. The chute system should be routinely cleaned via chute flushing operations.

The building manager will be required to swap full receptacles with empty receptacles at the terminus of the waste chute system.

### 4.1.2 Automated Bin Tracks

The Proposal may utilise automated track system within the Residential Bin Store at the terminus of the waste chute. This system is designed to automate the rotation of a number of receptacles through the use of sensors under the waste chute which is activated when the receptacle is full.

The automated track system can be designed to send the building manager a digital alert of the receptacles capacity to ensure the swapping of empty and full bins is done in a timely manner. The automated track system will reduce the amount of work for building management swapping full and empty waste receptacles.

The building manager will be required to manually swap full receptacles with empty receptacles at the terminus of the waste chute.

### 4.1.3 Compactors

Compactors may be introduced to the Proposal and may be combined with the automated track system under the terminus of the chute system or as standalone equipment. Compactors will typically only be used on the general waste stream, and have a compaction ratio set at around 2:1 to reduce OHS problems and mechanical damage caused by heavier receptacles resultant from higher compaction rates.



## 5 Waste Collection

### 5.1 Residential Waste

The City will service the Proposal by providing five 660L receptacles for refuse and three 660L receptacles for recyclables, which will be collected by City's rear lift waste collection vehicle, three times each week for refuse and three times each week for recyclables.

The City's rear lift waste collection vehicle will enter the Proposal in forward motion far enough to then be able to reverse into the Loading Bay adjacent to the Residential Bin Store. The City's waste collection staff will ferry the receptacles to and from the City's rear lift waste collection vehicle for servicing. The path for wheeling bins between the loading bay and the Residential Bin Store is of flat surface, with no steps and will be kept free of obstacles. The Loading Bay allows for a 2.5m loading area behind the rear lift waste collection vehicle. Once servicing is complete the City's rear lift waste collection vehicle will exit the Proposal in forward motion.

In the future, it may be that the City introduces more compact rear lift waste collection vehicles that could be able to service basements with a floor to ceiling clearance (including pipes and services) of less than 4 metres. Clearance for the proposed carpark entry provides sufficient space for vehicles up to 3.35 metres high in order to accommodate any future compact rear lift waste collection vehicles within the Proposal.

The City will provide a 'spotter' who will accompany the driver to assist when the waste collection vehicle is reversing on-site. The City will be provided with key/PIN code access to the security access gate and the Bin Storage Area.

The ability for the waste collection vehicle to access the Proposal has been assessed by Transcore and will be included within their Traffic Impact Assessment.

### 5.2 Commercial Waste

The City will service the Proposal by providing four 660L receptacles for refuse and two 660L receptacles for recyclables, which will be collected by City's rear lift waste collection vehicle, three times each week for refuse and three times each week for recyclables.

The City's rear lift waste collection vehicle will enter the Proposal in forward motion far enough to then be able to reverse into the Loading Bay adjacent to the Commercial Bin Store. The City's waste collection staff will ferry the receptacles to and from the City's rear lift waste collection vehicle for servicing. The path for wheeling bins between the loading bay and the Commercial Bin Store is of flat surface, with no steps and will be kept free of obstacles. The Loading Bay allows for a 2.5m loading area behind the rear lift waste collection vehicle. Once servicing is complete the City's rear lift waste collection vehicle will exit the Proposal in forward motion.

In the future, it may be that the City introduces more compact rear lift waste collection vehicles that could be able to service basements with a floor to ceiling clearance (including pipes and services) of less than 4 metres. Clearance for the proposed carpark entry provides sufficient space for vehicles up to 3.35 metres high in order to accommodate any future compact rear lift waste collection vehicles within the Proposal.

The City will provide a 'spotter' who will accompany the driver to assist when the waste collection vehicle is reversing on-site. The City will be provided with key/PIN code access to the security access gate and the Bin Storage Area.



The ability for the waste collection vehicle to access the Proposal has been assessed by Transcore and will be included within their Traffic Impact Assessment.

### 5.3 Bulk Wastes and Other Waste Services

Residential tenants are entitled to one kerbside bulky goods collection and three kerbside green waste collections each year. Due to the surrounding streetscape placement of bulky or green wastes on the verge would not be appropriate for this development.

The City encourages bulky waste to accumulate within a storage area and for the building manager to arrange for onsite collection with the City, as it is required. Removal of bulky wastes will be the responsibility of the resident and is to be removed as it is generated so that large amounts of bulk wastes are not accumulated. The building manager will monitor bulky waste and assist residents with its removal, as required.

Each residential apartment has a dedicated store where bulky wastes can be stored for disposal. In addition, a Bulk Waste Store has been allocated for the temporary holding of bulky goods, as shown in Figure 2. This space may also be used for the temporary storage of specialty wastes and bulky commercial wastes and will assist with the reduction of illegal dumping of bulky waste at the Proposal.

It is expected green waste collection will not often be required. Generation of green waste is to be removed as it is generated and will be managed by the building manager.

The City offers a number of additional recycling programs throughout the year and a range of educational opportunities to residents in sustainability and waste minimisation. Information regarding these services can be available on the City's website.

### 5.4 Specialty/Hazardous Waste

Adequate space will be allocated throughout the Proposal for suitable cabinets/containers for the collection and storage of specialty/hazardous wastes that cannot be disposed within the refuse or recyclable receptacles. Specialty/hazardous waste may include items such as:

- Clothing;
- Batteries;
- E-wastes;
- Used cooking oil;
- White goods;
- Cleaning chemicals; and
- Fluorescent/LED light bulbs.

Bulky specialty/hazardous wastes can be accumulated within the Bulky Waste Store, while smaller waste items can be collected in cabinets/containers in centralised locations across the Proposal.

Specialty/hazardous wastes will be removed from the Proposal once sufficient volumes have been accumulated to warrant disposal. Specialty/hazardous waste collection will be managed by the building manager, who will organise for its disposal at the appropriate facility.



### 5.5 Future Waste Recovery

In the future the Proposal may look to reduce waste volumes in order to minimise waste collection costs. The Bin Storage Area has allowed space for future resource recovery from the waste streams. This may include the addition of receptacles for source separation of waste streams identified in Section 2.4.

In addition the Proposal could look to reduce the number of waste receptacles or collections by utilising technology such as balers, compactors, or a containerised composting unit to reduce the volume of food waste through treatment.

The incorporation of source separation or treatment technologies into the waste management system will be dependent on the nature of the tenants, available technologies, market conditions and building management considerations in the future. The building manager should engage with residents, staff and cleaners on what opportunities exist for additional resource recovery.



## 6 Waste Management Activities

Building management will be engaged to complete the following tasks:

- Monitoring and maintenance of receptacles and the Bin Storage Area;
- Cleaning of receptacles and Bin Storage Area when required;
- Monitoring and maintenance of waste systems and equipment;
- Swapping of full bins with empty bins at the terminus of the waste chute;
- Management of bulk, green and specialty wastes, as required;
- Display and maintain consistent signage on all receptacles and in Bin Storage Area;
- Regularly engage with residents, staff and cleaners to develop opportunities to reduce waste volumes and increase resource recovery;
- Monitor resident and cleaner behaviour and identify requirements for further education and/or signage;
- Ensure all residents, staff and cleaners are aware of the Waste Management Plan and their responsibilities thereunder; and
- Regularly engage with the City to ensure an efficient and effective waste service is maintained.



## 7 Conclusion

As demonstrated within this WMP, the Proposal provides a sufficiently large Bin Storage Area for collection and storage of refuse and recyclables based on the anticipated waste generation rates and a suitable configuration of receptacles. This indicates that a satisfactorily designed Bin Storage Area has been provided and collection of refuse and recyclable receptacles can be completed from the Proposal.

The above is achieved using:

- Residential Waste:
  - Five 660L refuse receptacles, collected by the City three times each week; and
  - Three 660L recyclables receptacles, collected by the City three times each week.
- Commercial Waste
  - Four 660L refuse receptacles, collected by the City three times each week; and
  - Two 660L recyclables receptacles, collected by the City three times each week.

The City will utilise its rear lift waste collection vehicle to service the Proposal from Loading Bay within the development. The City's waste collection staff will ferry the receptacles to and from the City's rear lift waste collection vehicle for servicing. The City will provide a 'spotter' who will accompany the driver to assist when the waste collection vehicle is reversing on-site.

Building management will oversee the relevant aspects of waste management at the Proposal.



## Figures

**Figure 1: Locality Plan**

**Figure 2: Bin Storage Area**

