FORESIGHT ENVIRONMENTAL

9 – 13 Cook St

Forestville NSW 2087

Operational Waste Management Plan

Prepared by Foresight Environmental

e. info@foresightenvironmental.com

w. www.foresightenvironmental.com

This report is based on information provided by Trumen Norman Forestville Pty Ltd coupled with Foresight Environmental's knowledge of waste generated within the mixed-use development sector. To that extent this report relies on the accuracy of the information provided to the consultant. It has been compiled by Foresight Environmental on behalf of Trumen Norman Forestville Pty Ltd.

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1	14 December 2018	Kyle Renwick	Scott Ebsary	Draft issue for review
2	16 January 2019	Kyle Renwick	Scott Ebsary	Update per feedback
3	06 February 2019	Kyle Renwick	Scott Ebsary	Issue for submission

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1. Executive Summary

This Operational Site Waste Minimisation and Management Plan has been prepared by Foresight Environmental on behalf of Trumen Norman Forestville Pty Ltd (the 'Applicant'). The plan details the way in which the proposed development at 9-13 Cook St, Forestville NSW will manage the waste and recycling generated during the ongoing operational phase of the self-storage development.

2. Overview of Development

The proposed development will be comprised of a 3-storey storage facility whilst also containing a small office and retail space.

Table 1 below details the **waste generating areas** of the development, these areas will form the basis of the waste generation estimates and subsequent equipment/management recommendations. These figures do not represent the total NLA of the new development – only the areas that will actually contribute to waste generation.

Table 1 - Area breakdown and usage

Component	Area (m^2)
Retail	89
Office	168
Total	**257**

3. Waste Generation

Based on the information provided, the Northern Beaches Council Waste Management Guidelines and Foresight Environmental's benchmark data from similar developments, the primary waste streams expected to be generated in the ongoing operation of the development would be:

- Mixed recycling (paper/cardboard, plastics, glass, aluminium)
- General waste

Additional smaller waste streams may include toner cartridge recycling, fluoro tube/globe recycling and battery recycling.

3.1 Estimates

The following tables summarise the expected quantities and composition of waste and recyclables to be generated through the ongoing operation of the development for each component. It should be noted that the material streams and waste generation estimates are based on operational waste generated from a typical facility retail and office tenancy as well as information provided.

Table 2 - Retail waste generation estimate

Stream	Kg/day	L/day	Kg/week	L/week
General Waste	9.35	133.50	65.59	937.07
Mixed Recycling	5.34	89.00	37.48	624.71
Total	**14.69**	**222.50**	**103.08**	**1,561.78**

Table 3 - Office waste generation estimate

Stream	Kg/day	L/day	Kg/week	L/week
General Waste	1.41	20.16	9.91	141.51
Mixed Recycling	0.81	13.44	5.66	94.34
Total	**2.22**	**33.60**	**15.57**	**235.85**

It is recommended that both components be combined for ease of management, the systems recommended will thus be based off the combined total:

Table 4 - Total waste generation estimate

Stream	Kg/day	L/day	Kg/week	L/week
General Waste	10.76	153.66	75.50	1,078.58
Mixed Recycling	6.15	102.44	43.14	719.05
Total	**16.90**	**256.10**	**118.64**	**1,797.63**

3.2 Other Waste/Recycling

The following waste stream will be collected on call as needed:

- Green Waste/vegetation – vegetation generated from onsite maintenance activities will be managed by grounds staff. A bulk 3m^3 front lift bin is recommended for the management of this stream which should be collected on request as required.
- Battery Recycling – Battery recycling boxes will be present where deemed necessary e.g. copy rooms, office common areas. These boxes will be collected when full by a dedicated contractor.
- Toner Cartridge Recycling – Used toners will be collected by administration staff and consolidated for collection by specialty cartridge recycler (usually provided by office supplier).

4. Waste Management Systems

The following table details the recommended equipment and collection frequency required to service waste and recycling streams for the facility:

Table 5 - Recommended equipment and collection frequency

Stream	Bin Type	No. of Bins	Weekly Clearance Frequency	Weekly Capacity (L)	Estimated volume / week (L)	Footprint per bin (m^2)	Total Footprint (m^2)
General Waste	MGB - 660L	1	2	1,320	1,079	1.05	1.05
Mixed Recycling	MGB - 660L	1	2	1,320	719	1.05	1.05
Total bin footprint							**2.05**
Recommended Room Size – including circulation space							**3.08**

5. Waste and Recycling Storage Area

5.1 Waste Area

The systems outlined in table 5 above are to be located on the ground floor within a holding bay near the carpark entry off Cook St, as per figure 1. Figure 2 provides an indicative layout of several holding bay designs.

Figure 1 - Waste Area

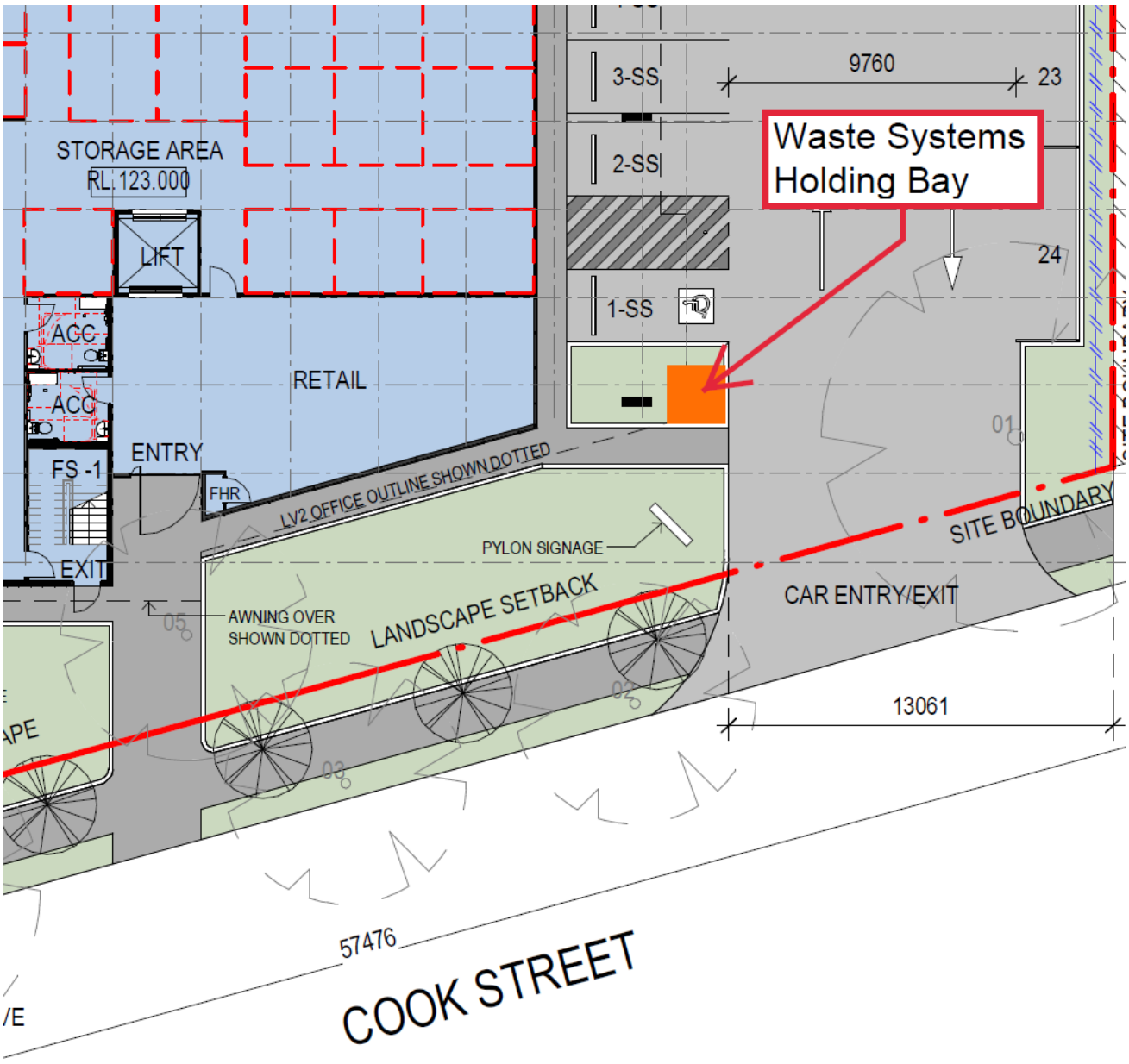
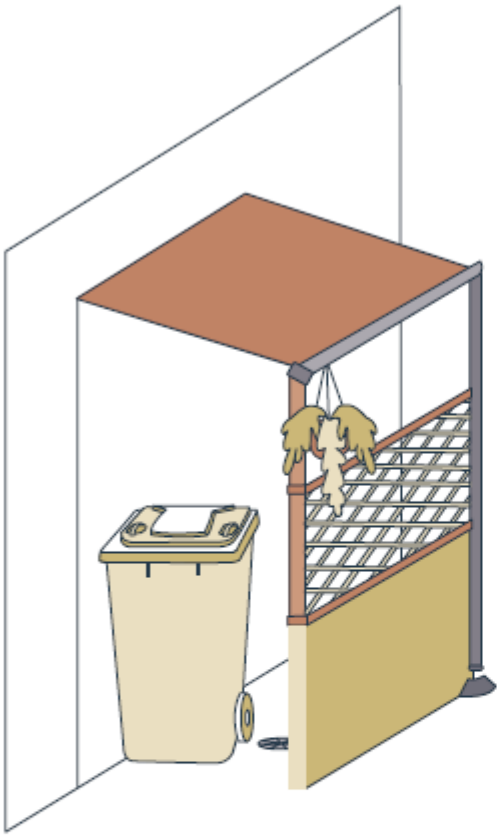
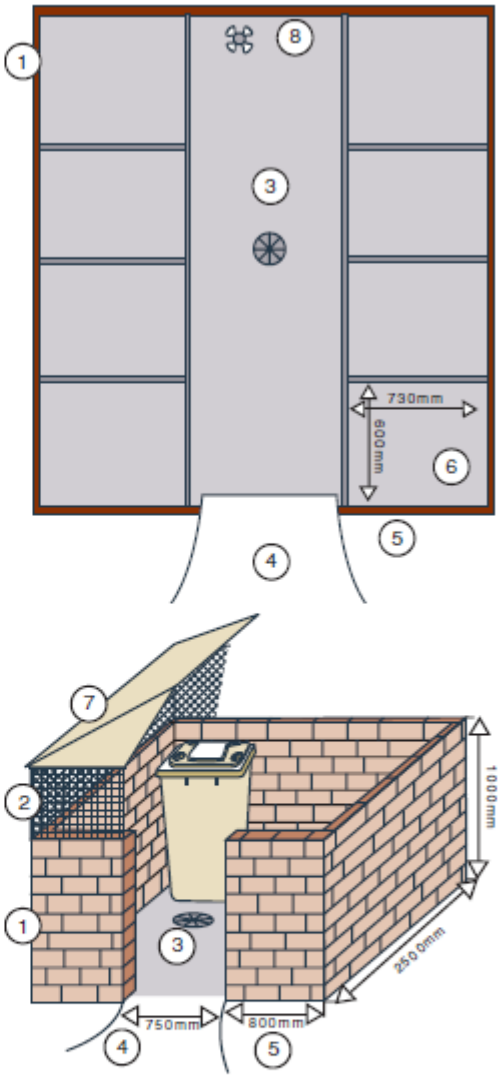


Figure 2 - Indicative layout of holding bay examples

Example diagrams of holding bay styles for villas, townhouses and low-rise developments



Outdoor storage/holding bay for block of 1 - 3 units



Outdoor garbage storage/holding bay for block of 4 - 12 units

Legend

1. face brickwork to match main building
2. lattice upper as visual screen
3. concrete floor graded and drained to Sydney Water connection
4. ramp or path - no steps
5. front brickwork optional - could have completely open front
6. space allocated for MGB
7. roof over bin bay (optional)
8. anti-vandal tap with hose fitting

5.2 Amenity

The waste and recycling storage area will have the following features:

- Ventilation: The bin storage room will be ventilated to external air in accordance with AS 1668.2-2002
- Vermin Prevention:
    - The bin storage room will feature tightly fitted doors
    - Opening will be vermin proof
    - Cleaners are to ensure that bin lids are closed when unattended
- Floor: Structural concrete slab with smooth epoxy topping finish with coved wall and floor junctions. Graded drains to approved sewer connections – fitted with an in-floor dry basket arrestor approved by Sydney Water Corporation
- Walls: Brick work/concrete block or similar finished in a light coloured, washable paint in accordance with AS 3958
- Ceiling: to be constructed of a rigid smooth faced non-absorbent material which may include plasterboard, fibrous cement, cement render, smooth finish off form concrete or other approved material with washable, gloss paint of a light colour.
- Lighting: Lighting in the waste facility room should be in accordance with AS 1680.
- Water Supply: hot and cold-water hose cock located within or nearby the holding bay
- Signage: clear signage identifying the various streams and appropriate use will be prominently displayed (see section on signage below)

5.3 Signage

All waste and recycling streams should be differentiated with clear signage and colour-coding. This is to be present on all bins and on walls within the waste storage area. Below are examples of appropriate signage – incorporating textual information, pictures and colour-coding.

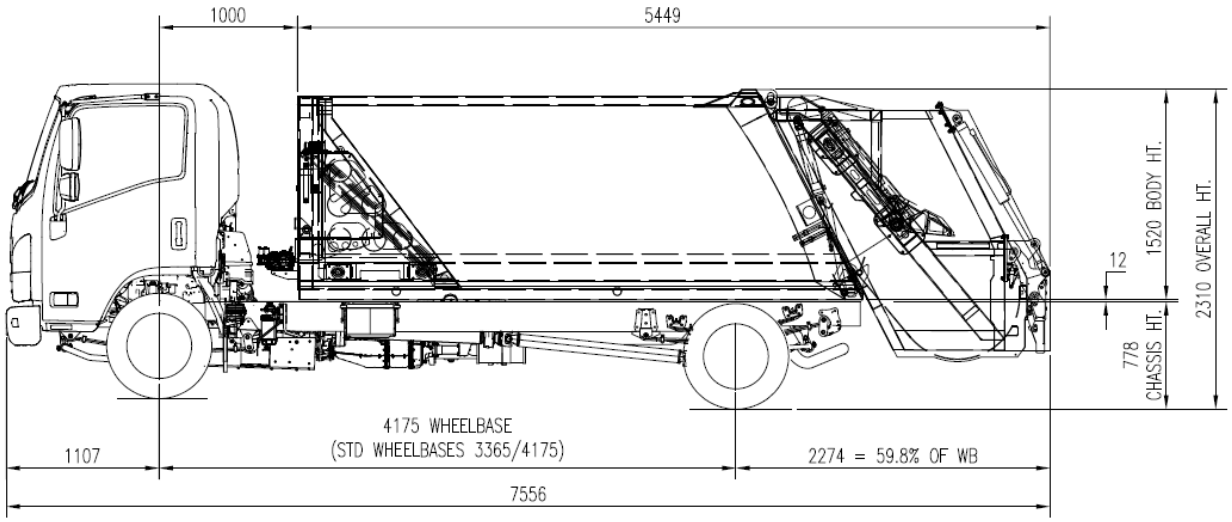
Figure 3 - Best practice signage

6. Collection

6.1 Waste Collection Vehicle

Waste truck specifications will vary slightly between contractors however as a guide, all streams and bins recommended in this report would typically be collected by a medium-rigid rear lift waste truck – figure 4 provides an example of a commonly used truck by most commercial waste contractors in accordance with AS2890.2.

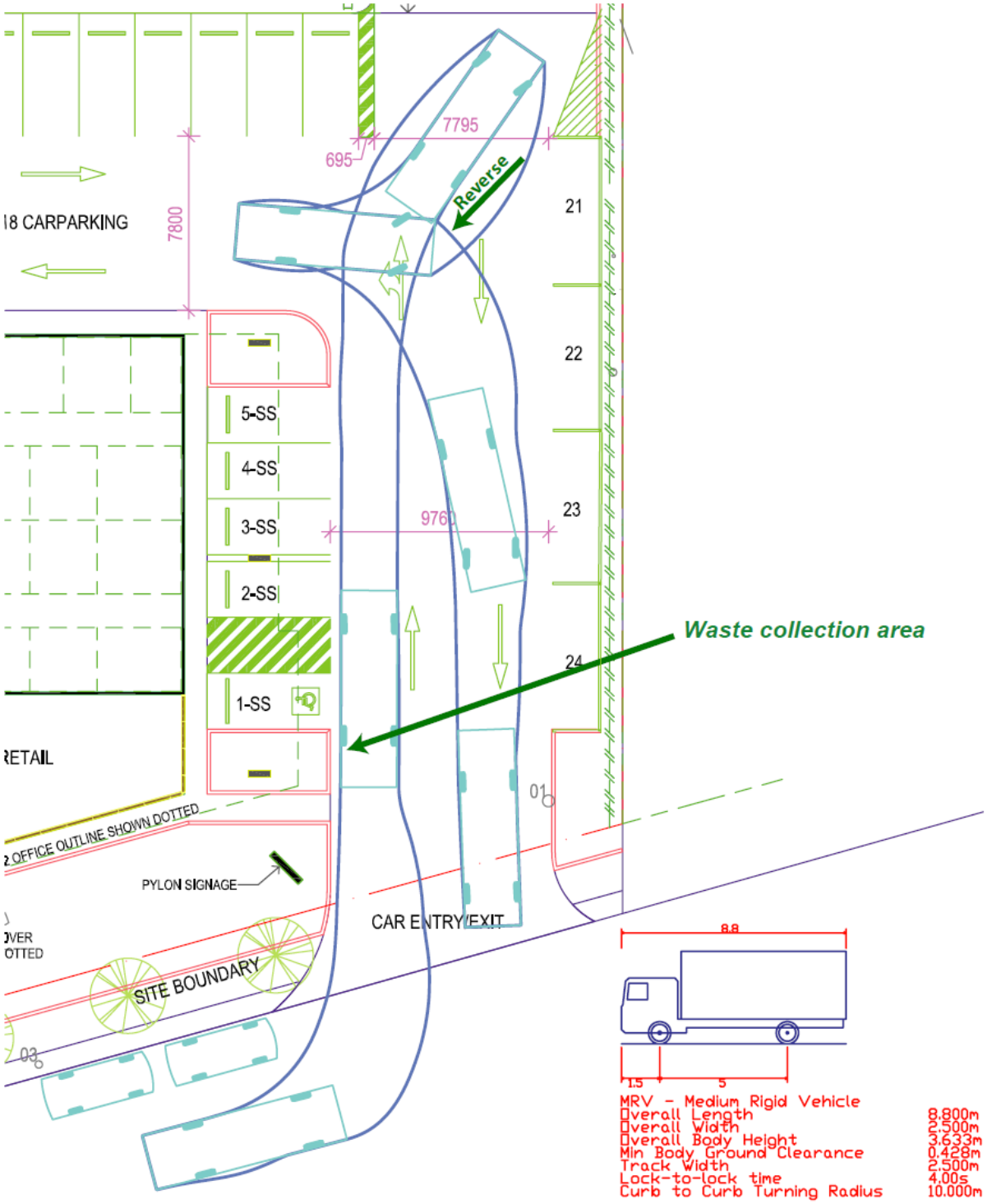
Figure 4 - Medium rigid rear-lift commercial waste truck specifications



6.2 Collection Access

Bins are to be collected by the waste contractor immediately adjacent the bin room via the carpark entry off Cook St. A swept path analysis has been produced which demonstrates that a medium rigid vehicle (MRV) can adequately access the site, as can be seen from figure 5:

Figure 5 - MRV swept path demonstrated in carpark



7. Onsite Management Protocols

7.1 Waste Systems

It is recommended that a "Multi-sort" bin hub be established within the office space and retail tenancy. This encourages tenants/staff using the spaces to separate any waste they have and place it in the appropriate bin at the hub – such a practice promotes recycling by giving users the choice of stream to dispose material into, and also reduce the time taken for cleaners to empty the bins.

Figure 6 depicts a bin hub that would be appropriate for the proposed development.

Figure 6 - Multi-sort bin hub

7.2 Waste Stream Collection Practices

Table 7 outlines the cleaners and operational staff collection practices for each waste stream.

Table 6 - Collection Practices

Waste Stream	Collection Practices
Mixed Recycling	1. Staff/tenants are to take waste from hubs to the appropriate waste storage area and transferred into the MGB mixed recycling bin(s) in waste storage area. 2. Where possible, bulky cardboard should be flattened and taken directly to the waste storage area to be disposed of into the appropriate MGB. 3. Bins collected from the waste storage areas directly by waste contractor via the carpark
General Waste	1. Staff/tenants are to take waste from hubs to the appropriate waste storage area and transferred into the MGB mixed recycling bin(s) in waste storage area. 2. Bins collected from the waste storage areas directly by waste contractor via the carpark

8. Conclusion

The details of this waste management plan confirm that the waste facilities provided in the proposed design adequately cater for the projected waste generation rates at the completion of the development.

9. Appendix

Figure 7 - 660L MGB Dimensions