Foresight Environmental

Bounce – Northern Beaches Business Park, Cromer

Construction & Operational Waste Management Plan

This report is based on information provided by **Bounce Inc** coupled with Foresight Environmental's knowledge of waste generated within the commercial 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 **Bounce Inc.**

This report is not a substitute for legal advice on the relevant environmental related legislation, which applies to businesses, contractors or other bodies. Accordingly, Foresight Environmental will not be liable for any loss or damage that may arise out of this project, other than loss or damage caused as a direct result of Foresight Environmental's negligence.

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Table of Contents

1. Executive Summary

This Operational Waste Management Plan has been prepared by Foresight Environmental on behalf of **Bounce Inc**. The plan details the way in which the proposed development at **Northern Beaches Business Park, Warehouses 6 – 7, 4 – 10 Inman Road, Cromer NSW** will manage waste and recycling generated during both the construction and ongoing phase of the development in accordance with the requirements of Northern Beaches Council and the Warringah Development Control Plan and Local Environment Plan 2011.

2. Overview of Development

The proposed development at **4 – 10 Inman Road, Cromer** will consist of the construction and ongoing use of a single level recreational facility; predominantly consisting of recreational areas along with some kitchen/café areas and some office space.

3. Construction Waste Estimate

The aim of this Plan is to ensure that all waste resulting from construction activities is managed in an effective and environmentally aware manner. Specifically,

- To maximize the reuse and recycling of demolition materials
- To reduce the volume of materials going to landfill
- To maximise waste material avoidance and reuse on site
- To ensure that where practicable, an efficient recycling procedure is applied to waste materials and
- To ensure efficient storage and collection of waste

The quantity of waste materials to be generated onsite are estimates based on the information provided to Foresight Environmental and therefore the systems that will be put in place need to incorporate flexibility to allow for variation in the total quantities generated.

3.1 Construction Waste

Active site management during the construction phase will ensure all waste/recyclable materials are disposed of appropriately and that all waste receptacles are of sufficient capacity to manage onsite activities. All materials ordered during the construction phase of development will be carefully measured to ensure no over ordering and materials are used efficiently.

The table below detail the estimated composition by volume of construction waste to be generated.

Table 1 – Estimated composition of construction waste by volume

Material	M^3
Concrete	5
Mixed residual	5
Metal	2
Timber	1
Total	**13**

4. C&D Waste Management Strategy

Consideration of waste management during all phases of the development will provide the best opportunity to minimise the volume of waste generated throughout the project's lifetime. Whilst recycling and reuse of materials are important aspects of waste management, waste minimisation techniques incorporated into construction can prevent materials from being brought onto the site that will eventually become waste.

The construction and demolition teams will implement this Waste Management Plan, incorporating the following best practice management techniques as a minimum.

4.1 Avoid and Reduce

Minimise the production of waste materials in the construction process by:

- Assessing and taking into consideration the resultant waste from different design and construction options;
- Purchasing materials that will result in less waste, which have minimal packaging, are pre-cut, or fabricated. Where possible, arrange for packaging to be removed by the delivery company;
- Not over ordering products and materials;
- Ordering materials cut to size to reduce waste material onsite.

4.2 Reuse

Ensure that wherever possible, materials are reused either on site or offsite:

- Identify all waste products that can be reused;
- Any demolition and excavation materials should be salvaged and retained onsite for re-use where possible;
- Put systems in place to separate and store reusable items;
- Identify the potential applications for reuse both onsite and offsite and facilitate reuse.

4.3 Recycling

Identify all recyclable waste products to be produced on site

- Provide systems for separating and stockpiling of recyclables;
- Provide clear signage to ensure recyclable materials are separated;
- Process the material for recycling either onsite or offsite.

Note: In some cases, it may be more efficient to send the unsorted waste to specialised waste contractors who will separate and recycle materials at an offsite location.

4.4 Disposal

Waste products which cannot be reused or recycled will be removed and disposed of. The following will need to be considered:

- Ensure the chosen waste disposal contractor complies with OEH requirements;
- Implement regular collection of bins;
- Maintain records of both recycled and general waste volumes being transferred offsite or reused onsite;
- The only materials to be sent to landfill are those that cannot be recycled due to contamination, legal requirements or lack of facilities to enable recycling.

5. C&D Waste Management Systems

Onsite separation of the various waste streams is encouraged to lower recycling costs so to avoid additional fees for sorting at appropriate facilities – this is particularly relevant for higher value recycling stream i.e. metal. However, to maximise operational and spatial efficiency, it is highly likely that the majority of materials will be disposed together and will be collected for separating and processing at an offsite recycling facility.

Table 2 – Waste management systems (construction)

Material	Estimated volume (m^3)	Onsite (re-use or recycle)	Offsite (recycling contractor)
Concrete	5		Separated where possible and taken to concrete recycling facility – deposited onsite directly into skips or trucks to be removed from site.
Mixed residual	5		Stockpiled and collected as required by specialty metal recycler or taken to appropriate C&D facility for separation and recycling
Metal	2		Collected by contractor to be sorted and re-processed at an appropriate C&D recycling facility into recycled products where possible
Timber	1		Collected by contractor to be sorted and re-processed at an appropriate C&D recycling facility into recycled products where possible

6. Construction Waste Facilities

The following waste recycling facilities provide disposal options within reasonable distance to the project. It is the responsibility of the site manager to ensure that the chosen facilities can accept the material being sent to it.

KIMBRIKI RESOURCE RECOVERY CENTRE – TERREY HILLS

Contact	Materials Accepted
Kimbriki Road Terrey Hills, NSW Welcome to Kimbriki Resource Recovery Centre - Kimbriki Resource Recovery Centre	• Concrete • Bricks • Solid Fill

WANLESS WASTE MANAGEMENT - ARTARMON

Contact	Materials Accepted
1 – 5 Whiting Street Artarmon, NSW https://wanless.com.au/construction-waste/	• Concrete • Bricks • Solid Fill

BINGO RECYCLING CENTRE – ARTARMON

Contact	Materials Accepted
10 McLachlan Ave, Artarmon, NSW Artarmon Recycling Centre | Bingo Industries	• Concrete • Brick • Metals

7. Operational Waste Generation Estimate

Based on the information provided, the Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities[1], Department of Environment Studies on Commercial & Industrial Waste and Recycling in Australia[2] and Foresight Environmental's benchmark data from similar developments[3], the primary waste streams expected to be generated in the ongoing operation of the development would be:

- General waste (including organics*)
- Mixed recycling (plastics, glass, aluminium, steel)
- Paper and cardboard

*The option to include an organics stream is not addressed in this report but could potentially be implemented by the operator if the level of food waste warrants a dedicated recycling service. Food waste generation will be monitored when the facility is operational.

The following tables detail the estimated waste profile for the facility based on the main waste generating areas of the development as per table 3 below. Based on operator experience from their other facilities, waste is typically not generated in gym/activity areas, but rather primarily from cafe and function operations/areas.

Table 3 – Waste Generation Area(s)

Area/NLA	Usage/function
316m^2	kitchen/café/function rooms/staff room

[1] https://www.epa.nsw.gov.au/resources/managewaste/120960-comm-ind.pdf
[2] http://www.environment.gov.au/protection/national-waste-policy/publications/commercial-industrial-waste-recycling-australia
[3] Foresight Environmental currently reports the ongoing operational waste data for over 7million m^2 of Australian A and B grade commercial/retail/industrial/mixed use property. This extensive database provides the most current and detailed information on real-world waste generation performance and trends available and enables very accurate modelling for prospective property developments

Table 4 – Waste Generation Estimate

Waste Stream	Kg/day	L/day	Kg/week	L/week
Landfill	60	408	419	5,066
Paper/Cardboard	25	274	173	1,923
Mixed Recycling	7	192	47	2,339
Total	**90**	**850**	**631**	**5,969**

8. Waste Management Systems

The following table shows the recommended bin systems for the management of total waste for the facility within the waste storage area:

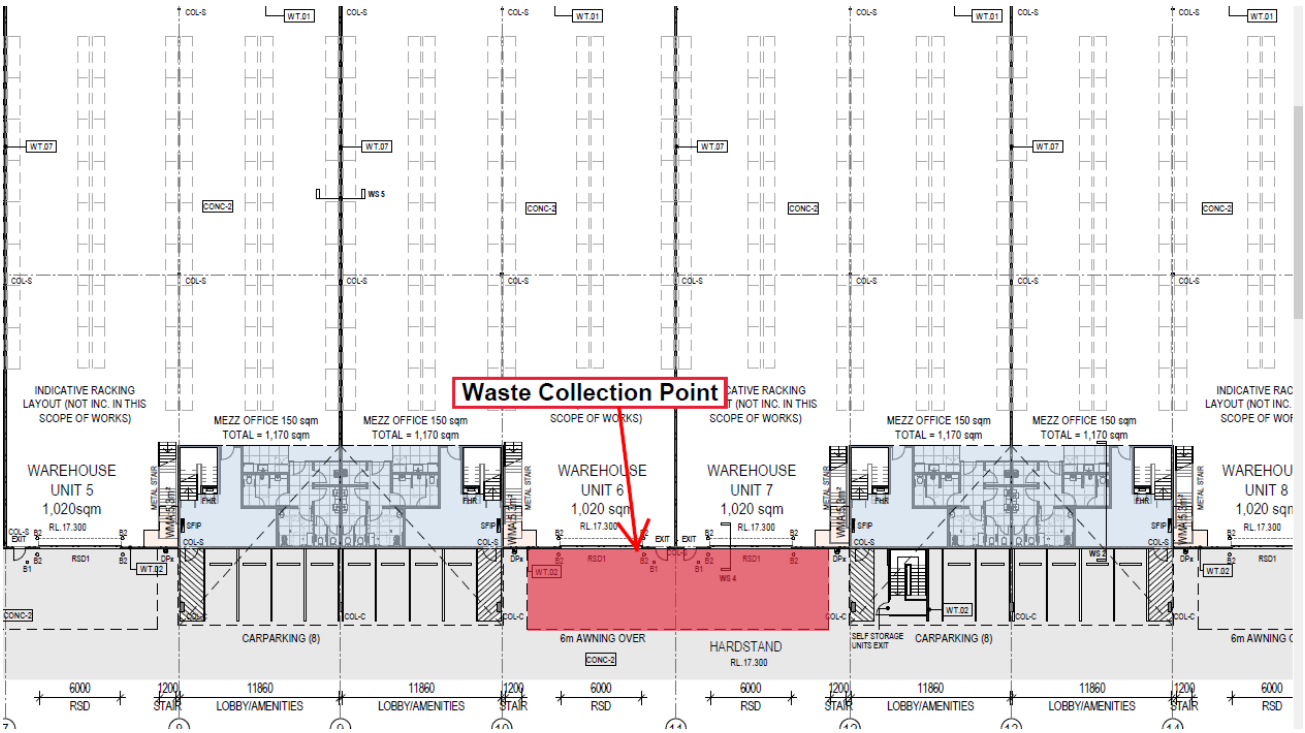
Table 5 – Recommended Equipment and Collection Frequency

Waste Stream	Bin Type	Size in m^3	No. of Bins	Weekly Clearance Frequency	Weekly capacity (L)	Estimated volume / Week (L)	Footprint per bin m^2	Total Footprint (m2)
Landfill	MGB	0.66	2	2	2,640	2,826	1.0	2.0
Paper/Cardboard	MGB	0.66	1	3	1,980	1,923	1.0	1.0
Mixed Recycling	MGB	0.66	1	2	1,320	1,219	1.0	1.0
Total					**5,940**	**5,969**		**4.0**
Including 50% additional space for manoeuvring								**6.0**

9. Waste and Recycling Storage Area

Waste from inside the facility is to be taken directly to MGB bins located directly in front of the building near the car parking area, as depicted in the figure below. Final location to be determined by operator to ensure bins do not interfere with parking or pedestrian access.

Figure 1: Waste collection point



9.1 Signage

All waste and recycling streams should be differentiated with clear signage on all bins and on walls within the waste storage area. Below are examples of appropriate signage incorporating textual information, pictures, and colour-coding to communicate the message. It is recommended that a signage package is developed specifically for use within the facility to ensure messaging and acceptance criteria is in line with the provided streams and their specific requirements.

10. Onsite Management Protocols

10.1 Waste systems

It is recommended that bin hubs be established in common spaces to service all areas. This encourages staff and clientele to dispose of any waste they may have into the appropriate bin at the nearest hub. As a practice, this should promote recycling by providing a choice of stream to dispose material into, and reduce the time taken for cleaners/staff to empty the bins. See photograph below for an example of the recommended bin hubs for retailer/operator use.

The following table provides a high-level management procedure for the movement of waste internally.

Table 6 – Recommended waste streams and systems in each area

Waste Streams	Collection Procedure
Landfill Paper/Cardboard Mixed Recycling	Cleaners/Staff will be responsible for the daily collection of the bin-hubs located throughout the facility. They will transfer and decant all waste and recyclables to the respective MGB bins located at the front of the building at the end of each day or as necessary.

Signage will need to be displayed on all bins and, ideally, on walls above bins advising of acceptance criteria within each system.

Figure 2 – Best practice bin hub example

Figure 3 – Best practice bin hub example

10.1.1. Additional Material Streams

The following protocols are in place to manage additional streams.

Table 7 – Management Protocol for Additional Streams

Waste Streams	Management Protocol
Paper hand towel recycling	In an effort to reduce waste generation volumes, a paper hand towel free system in bathrooms should be considered. Replacing hand towel with a system such as the 'Airblade' produced by Dyson[3] or the "Jet Towel" produced by Mitsubishi Electric[4] may prove to be a more environmentally (and economically) efficient than a paper hand towel system. If a paper hand towel system is chosen, then it should be confirmed with the appointed waste contractor which recycling stream is most appropriate for this material.

[3] Information gathered from http://www.dysonairblade.com.au/
[4] Information gathered from http://www.mitsubishielectric.com/bu/handdryer/products/index.html

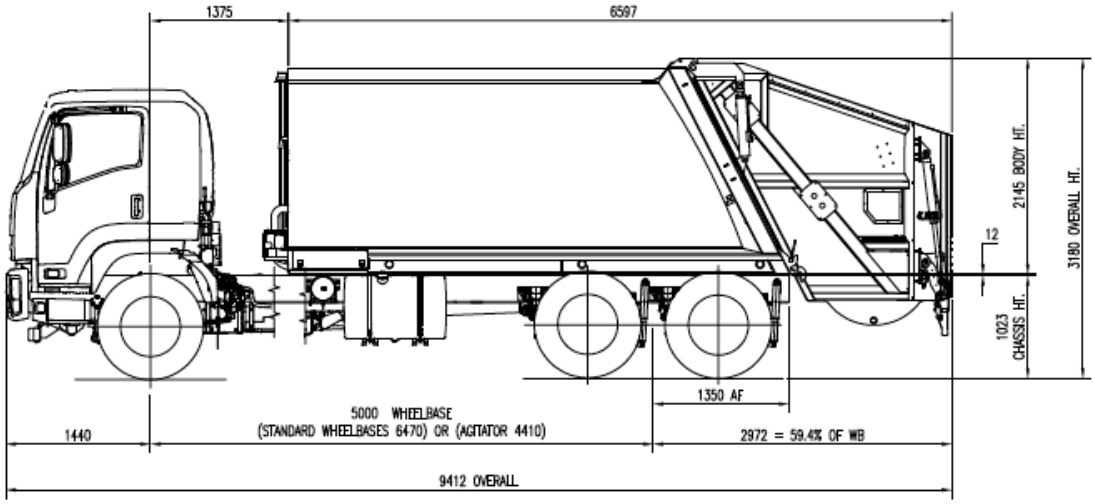
11. Collection

Tables 5 details the suggested collection frequency for all waste and recycling streams. Section 10 details the internal movement of waste for all stakeholders. Waste will be brought to the waste collection point at the front of the building.

11.1 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 – the following figure provides an example of a commonly used truck by most commercial waste contractors.

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



12. 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.

Appendix 1 – Site Plan

Figure 5: Floor Plan