Cranbrook Senior School Redevelopment

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Operational Waste Management Plan

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1. Introduction

This Waste Management Plan (WMP) has been prepared on behalf of Buildcorp Contracting NSW to accompany a Development Application for the Cranbrook Senior School Redevelopment.

This development essentially consists of a range of buildings and other infrastructure appropriate to the school in delivering educational services (eg., aquatic centre, dining areas, performance spaces, assembly hall etc).

The Municipality of Woollahra's DCP 2015 (Chapter E5, Waste Management), has been referred to in the development of the waste estimates and related requirements.

The location is represented below:

Waste audit and management strategies are recommended for new developments to provide support for the building design and promote strong sustainability outcomes for the building. All recommended waste management plans will comply with council codes and any statutory requirements. The waste management plan has three key objectives:

1. ***Ensure waste is managed to reduce the amount of waste and recyclables to land fill*** by assisting staff and visitors to the buildings to segregate appropriate materials that can be recycled; displaying signage to remind and encourage recycling practices; and through placement of recycling and waste bins to reinforce these messages.

2. ***Recover, reuse and recycle*** generated waste wherever possible.

3. ***Compliance*** with all relevant codes and policies.

2. Waste Generation

2.1 Waste Streams

Based on the development profile (as per Section 1), the following are the predominant waste streams that would be expected on a regular basis:

- Paper/Cardboard recycling;
- Commingled recycling;
- Organics; and
- General waste.

Paper and cardboard recycling will be consolidated into the one bin provided by the appointed contractor for recycling – this is to ensure that the system is economically viable. Other wastes may be generated, but these would be irregular in terms of when generated and as such the quantities not able to be estimated.

2.2 Waste Generation Estimates

The following tables show the estimated waste generation for the Redevelopment. This is based on the profile as provided.

The following tables show the estimated waste generated from the various components of the development – these estimates are based on averages for quantity of waste generated and composition as determined by industry data (ie., data/information provided by WACS' waste audits conducted in the healthcare sectors) as well as consideration of waste generation rates as detailed in the Municipality of Woollahra's DCP.

It is estimated that the redevelopment will generate a total of approximately **4.8m^3** of waste, **3.2m^3** of recyclables and **1.3m^3** of organics per day – a total of **9.3m^3** per day.

Based on the above calculations the following are the bin requirements and associated footprint.

School bin requirements

Waste Stream	Bin Type (MGB)	No. of Bins	Clearance Frequency	Capacity - Litres (daily)	Estimated volume / daily (litres)	Footprint per bin (m2)	Total Footprint
Paper/Cardboard	660	1	**5**	**3,300**	1,346	0.98	0.98
Commingled	660	1	**5**	**3,300**	1,822	0.98	0.98
Organics	120	3	**5**	**1,800**	1,320	0.28	0.84
General Waste	660	2	**5**	**6,600**	4,752	0.98	1.96
TOTAL		**7**		**15,000**	**9,240**		**4.76**

Based on the above a minimum of **4.8m^2** is required for the waste storage room – generally though an additional 30% is allowed for so as to enable bin movement etc to occur. This then results in a minimum requirement of **6.4m^2**.

There will be seasonality – in that wastes/recyclables will be reduced significantly during non-teaching periods. In addition, at the end of terms (and particularly end of year, there will be increases in waste and recyclables generated due to "clean-ups". Increased use of the performance theatre and aquatic centre can also add to the generation rates per stream (excluding organics). As illustrated in the above Table, there is sufficient space to cater for the seasonality issues. In addition, the waste storage area has capacity for spare bins to be located within it.

3. Waste Management Systems

3.1 Existing Waste Management System

Currently waste and recyclables are collected by Doyle Bros on a daily basis (ie., 5 times per week) from two kerbside locations. These are:

- 4-5 x 660 litres per day Rose Bay Road
- 8-9 x 660 litres bins per day New South Head Road

The system that is used is that all waste and recycling bins are collected in the same vehicle and transported to the Doyle Bros Materials Recycling Facility for sorting. In addition approximately 2 x 660 litres of organics from the kitchen are disposed of as general waste per day.

The intent for this development is to utilise the existing waste management system to manage wastes and recyclables.

3.2 System Management

The following summarises the system for managing wast/recyclables at the school:

- All students, staff and cleaning/maintenance staff will be briefed on the proper use of the waste management systems. Recycling streams will be monitored and reported by cleaners/school management, as it is imperative that they remain free of contamination to ensure compliance with Council and contractor collection protocols. Staff and students will be encouraged to maximise the separation of general waste and mixed recyclables to aid the proper disposal of all materials.
- Signage will be a crucial element of the waste management system. Appendix A contains examples of signage. These are the type of signs that should be used throughout the school grounds and facilities.
- The following provides an indication as to the location of the bins for the various streams and that will be utilised by students, staff, and cleaning/maintenance staff.
    - Cardboard/paper recycling bins will be located in all teaching spaces (as food is not permitted in these areas, no general waste bins are required).
    - Commingled and general waste bins will be located in public areas (eg., school grounds, swimming pool and performance areas).
    - Organics, recycling and waste bins will be located in the kitchen and dining room areas.
    - Recycling bins will be located in office and other areas.
    - Cleaning staff will be responsible for collecting all waste and recyclables and transporting to the bin storage area for consolidation into the 660 bins.
- All waste and recycling bins will be colour coded and clearly signed. This will assist in easy identification of correct bins by staff, students and cleaners.

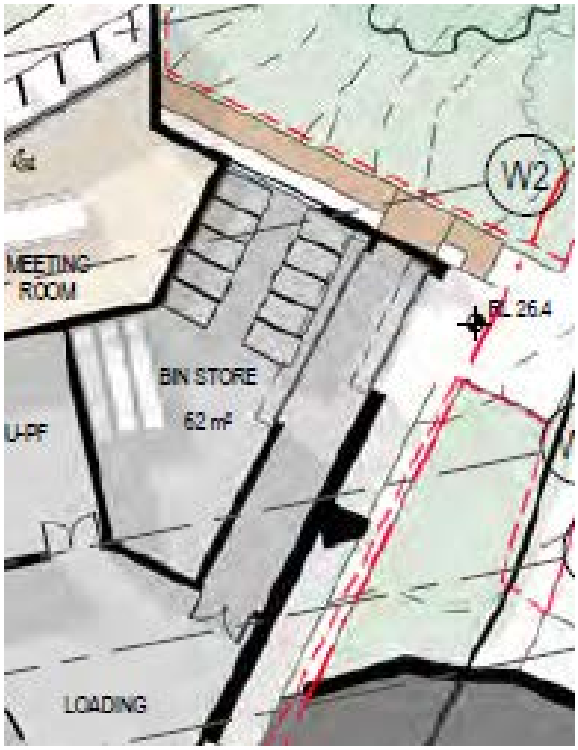
- Signage will be a crucial element of the waste management system. Appendix A contains examples of signage. These are the type of signs that should be used throughout the buildings and waste storage area. Other signs can be accessed from the NSW EPA website at: http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm.
- Containers located within the school for waste and recycling should be consistent. The following table outlines the colour coding that has been developed by Standards Australia.

Standards Australia waste/recycling container colour coding

Waste Stream	Bin Body Colour	Lid Colour
Paper Recycling	Blue	Blue
Cardboard Recycling	Green	Blue
Food Organics	Burgundy	Burgundy
Commingled Recycling	Green	Yellow
General Waste	Green	Red

3.3 Waste Storage

The following diagram illustrates the bin store (on Level 2), where the waste/recycling bins will be located:



Based on the calculations for bin requirements (and space for bin movement), this space allocation is sufficient for storage of bins and the other recommend waste management systems. In addition, there is space for additional waste materials should they be generated, as well as contingencies should a collection be missed.

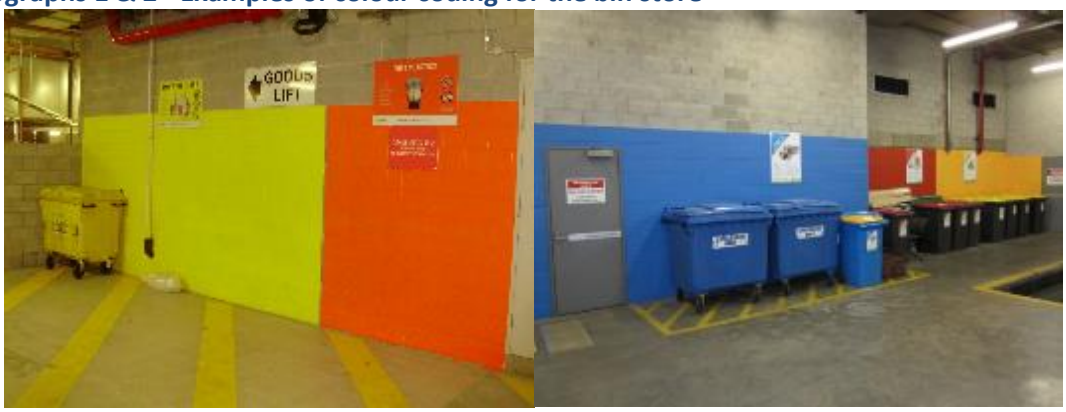
In keeping with best practice sustainability programs, all waste areas and waste and recycling bins will be clearly differentiated through appropriate signage and colour coding to Australia Standards to reflect the materials contained.

There will be a need to ensure that there is sufficient space to allow for bin movement. As a general rule, it is recommended that an additional 30% of the estimated footprint for bins be allocated to this and this has been factored into the waste storage space calculations.

The waste areas will be accessed by cleaning staff only.

The waste and recycling bins will be colour coded and clearly signed. Each stream will be located in a designated area. This will assist in easy identification of correct bins by those with authorised access.

Photographs 1 & 2 - Examples of colour coding for the bin store



The bin store will contain the following to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area:

- waste room area to be sealed with a two pack epoxy;
- waste room walls and floor surface is flat and even;
- all corners coved and sealed 100mm up, this is to eliminate build-up of dirt;
- a water facility with hose cock will be provided for washing the bins;
- any waste water discharge from bin washing must be drained to sewer in accordance with the relevant water board;
- tap height of 1.6m;
- storm water access preventatives (grate);
- all walls painted with light colour and washable paint;
- equipment electric outlets to be installed 1700mm above floor levels;

- waste area must be well lit (sensor lighting recommended);
- optional automatic odour and pest control system installed to eliminate all pest types and assist with odour reduction – this process generally takes place at building handover – building management make the decision to install;
- waste collection area must hold all bins – bin movements should be with ease of access;
- conform to the Building Code of Australia, Australian Standards and local laws; and
- childproofing and public/operator safety shall be assessed and ensured.

Occupational Health and Safety issues such as slippery floors in waste rooms and the weight of the waste and recycling receptacles will need to be monitored. Cleaners will monitor the bin storage area and all spills will be attended to immediately by cleaners.

Other signage to assist in correct placement and segregation of waste/recyclables will be provided such as in the examples below. Appendix A also contains examples of signage that can be utlised in the bin store.

Photographs 3 & 4 - Examples of signage

3.4 Organics Management

Given the volumes of organics generated by the kitchen per day, it is recommended that an organics recycling system be implemented. The first step in such an action will be to determine if there are opportunities to reduce the amount of organic waste generated and then ascertain the composition of what is remaining.

From these actions, the school will be better placed to determine what system is cost-effective. Options include having a contractor collect the food waste to transport to a processing facility (eg., composter), or utilising a system such as the "Pulpmaster" or even on-site systems such as the "Bokashi"

3.5 Public Place Recycling

With public open spaces, consideration needs to be taken regarding public place recycling (PPR). General waste and recycling facilities will be provided in public realm areas throughout the school.

Simple, colour-coded and consistent representation of common recycling and waste streams makes it easier for people to know how and what to recycle - whether at work, school or a public event. Introducing a public recycling system has environmental, social and financial benefits including:

- Responding to community expectations to 'Do the Right Thing'.
- Reducing the amount of waste sent to landfill and recovering valuable resources to be made into new products.
- Financial benefits over time as materials are diverted from landfill and into recycling.
- Contributing to triple bottom line reporting.

It is important that general waste and recycling bins are always located together in order to make recycling as accessible as general waste disposal. Recycling bins should never be located on their own in isolation from a general waste bin as patrons are likely to contaminate the recycling bin with general waste if there is no other option to dispose their general waste.

The implementation of organics recycling bins is not recommended in public places due to the high levels of contamination commonly observed in such systems.

All bins should be clearly signed and appropriately colour-coded to ensure the streams are readily identifiable. Signage for PPR should be:

- Colour-coded: red for general waste and yellow for recycling
- Large and easily viewed from all angles: this may mean that signs are placed on all sides of the bin or above the bin.
- Simple: don't use jargon (words such as PET, comingled, HDPE and even the recycling triangle can be confusing as this symbol can appear on a number of items that are not necessarily recyclable.
- Unambiguous and uses visual imagery

All public domain waste and recycling bins will be managed and collected by the appointed waste contractor as part of their existing waste and recycling operations.

The following are some examples of public place recycling bins that could be used within the school precinct. Contacting providers of these type of bins will enable Cranbrook School to obtain bins that are "fit for purpose" as well as integrating into the school design.

3.6 Container Deposit Scheme

The NSW container deposit scheme, Return and Earn, will commence across NSW on 1 December 2017. Under Return and Earn, most empty 150-millilitre to 3-litre drink containers will be eligible for a 10-cent refund when presented to an approved NSW collection point. Container materials that may be eligible for a refund include

- PET

- HDPE
- glass
- aluminium
- steel
- liquid paperboard

This initiative by the NSW Government can be viewed as an opportunity for the school to collect legible containers and the transport them to a collection point in order to obtain the refund. Students could also deposit eligible containers from other sources as a means of fund raising for the school.

Collection points will be published in December 2017 and then the school can determine where to take the eligible containers.

Cranbrook Senior School can keep informed of the scheme and developments by signing up for information at container.deposit@epa.nsw.gov.au.

4. Staff/Student Education

All school staff and students will receive information regarding the waste collection systems including how to use the system and which items are appropriate for each stream. Appropriate signage and updated information will also be provided, as well as receiving feedback on issues such as contamination of the recycling stream or leakage of the recyclables into the general waste.

All waste receptacles will be appropriately signed and any additional signage is usually provided by the waste contractor during implementation of the waste contract. Examples of signage are included in Appendix A.

It is recommended that all signs should:

- Clearly identify the waste/recycling stream;
- Use correct waste/recycling stream colour coding;
- Identify what can and cannot be disposed of in the receptacle; and
- Include highly visual elements to accommodate for individuals with inadequate English literacy.

As part of the staff and student education process, a waste and recycling toolkit will be provided. This toolkit will include the details of each of the systems in place, acceptance criteria for each stream and how each stream is managed.

5. Ongoing Management

Having suitable systems in place is only one element of an effective waste management system. Compliance by all stakeholders is essential.

Cleaners are a key element in the effectiveness of the systems in place. Prior to acceptance of the cleaning contract, the contractor will be required to demonstrate how the management of waste and recycling will be carried out so as to ensure that segregated materials are placed in the correct systems. This process will be agreed and a training program implemented by the cleaning contractor to ensure full understanding by all cleaners. The school's management throughout the term of the contract will carry out monitoring of the system.

In addition, cleaners will be required to feed back to site management any non- compliance issues they observe during their cleaning activities. This may include contamination of recycling, non-participation in the recycling system, or missing or damaged bins. In this way issues can be promptly dealt with by management.

The waste contractor will be required to report actual volumes collected by stream so that site management can monitor performance and feed this back to stakeholders.

It is highly recommended that a basic reporting program be set up at the site which would include bin tally sheets that detail the number of bins collected and how full they are at the time of collection, in addition to communication procedures to allow waste contractors to provide feedback regarding contamination and leakage.

All students and staff should be educated and made aware of any changes to the existing waste systems.

Appendix A – Example Signage

Example wall posters

Example bin lid stickers