Wenona School

255-265 Miller Street, North Sydney

Waste Management Plan

June 2015

Table of contents

Table index

Figure index

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1. Introduction

1.1 255-265 Miller Street, North Sydney

1.1.1 Development details

255-265 Miller Street, North Sydney is a development planned for school properties owned by Wenona School at North Sydney. The development features, among other elements, two pools, a gym and STEM teaching facilities (science, technology, English and maths) as well as staff and other student areas.

A development application is to be lodged in April 2015 for assessment by North Sydney Council. Its location is shown in Figure 1 below.

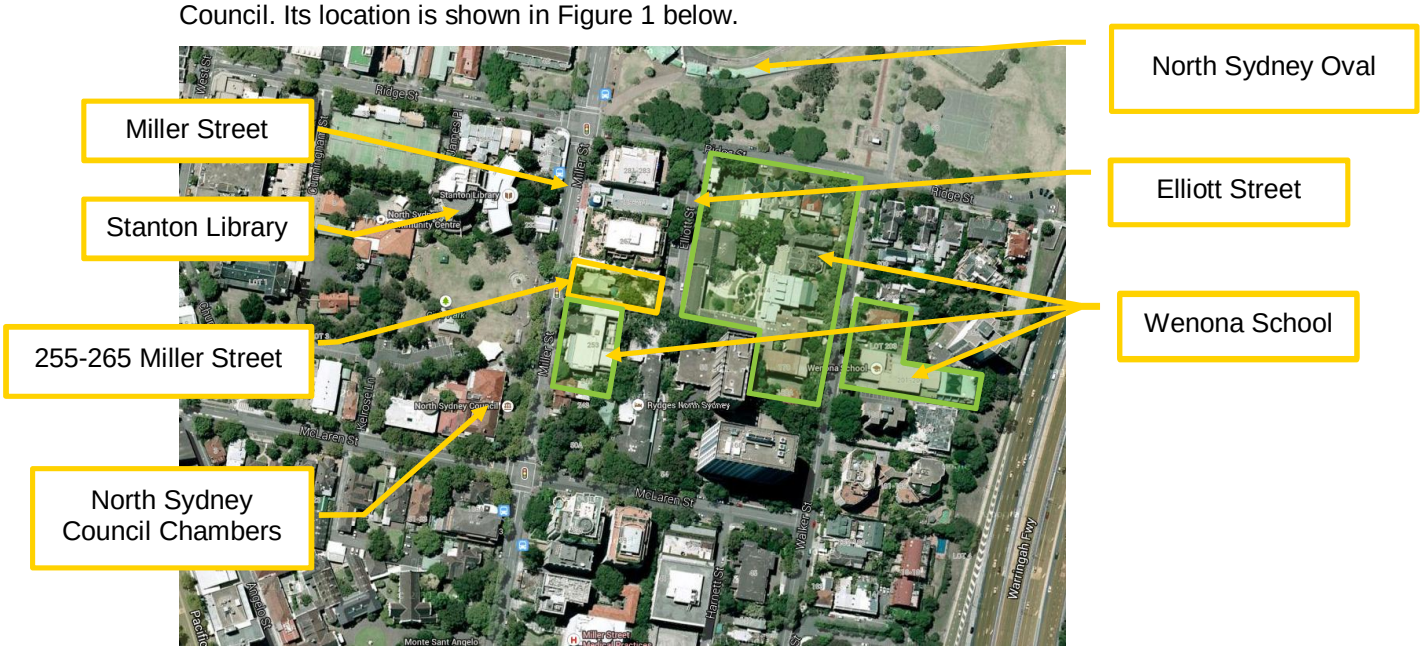

Figure 1 – 255-265 Miller Street location

The proposed development features:

- Two pools
- Sports and training areas
- Existing gymnasium
- Change rooms
- First aid area
- Food technology areas
- STEM areas
- Other learning areas and spaces and
- Staff areas.

The pools will be on the lower ground level and the other facilities located on three upper levels.

1.1.2 State Significant Development Application

This report supports a Development Application for 255-265 Miller Street to be submitted to the Department of Environment and Planning pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.1.3 Secretary's Environmental Assessment Requirements

Secretary's Environmental Assessment Requirements have been issued for this development. They cover waste management as follows:

> *14. Waste*
>
> *Identify, quantify and classify the likely waste streams to be generated during construction and operation and describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste. Identify appropriate servicing arrangements (including but not limited to, waste management, loading zones, mechanical plant) for the site.*

2. Section 1 - Demolition

2.1 Waste Quantities

The types of waste to be generated during demolition and the quantities are shown in Table 1, based upon information in the *Wenona Project Archimedes - Draft CP2 Breakdown* provided by APP.

Table 1 - Demolition waste estimates

Material	Tonnes	Cubic Metres
Brick & Tile	1,246.2	683.5
Concrete	471.1	231.2
Metal	0.5	0.3
Miscellaneous	14.7	13.5
Green Waste	15.0	11.5
Total	**1,747.5**	**940.1**

The table shows that about 1.7 t, or 940 m^3, of waste will be generated during demolition, of which most will be brick and tile.

Each of the materials listed in Table 1 above will be separated on site. In addition to these materials, cardboard, paper and other packaging and glass would be recycled. Quantities of these materials generated during demolition would be relatively small. The only material going to landfill would be residual waste. All separated materials would be taken to licensed facilities.

2.2 Waste Handling

2.2.1 General Waste Management Procedures

Project Manager

A Project Manager (PM) will have responsibility for safety, quality, environmental, record management, time and cost as well as overseeing site staff and reporting to management. The Project Manager will administer a number of general waste management procedures including:

- At the time of contract negotiation and tender interview, all sub-contractors and suppliers will be advised of the requirement to minimise waste (including packaging materials). Bulk handling and use of reusable and returnable containers will be encouraged
- Sub-contractors will be informed that their waste generation will be monitored and that the generation of excessive quantities will be considered non-conformance
- The waste disposal sub-contractor who is selected and engaged will be the one who most effectively recycles waste materials
- Engaging specialist and licensed sub-contractors to remove suspected hazardous waste. Removal will be done to comply with legal requirements and records will be kept
- The waste disposal sub-contractor and the waste processing and disposal facilities will be licensed to receive the waste expected to be generated on site, including any hazardous waste.

The PM has the responsibility of determining which materials would be separated on site. Materials expected to be separated at this site during demolition are listed in Table 1.

Site Supervisor

The Site Supervisor will be responsible for on-site supervision during demolition. The Site Supervisors responsibilities include reporting to Project Manager, control of site labour and plant and communicating all necessary information to site personnel.

A number of general waste management procedures that are administered by the Site Supervisor including:

- Establishing recycling and waste bins
- Discussion the site's waste management and recycling policy with employees and subcontractors during site inductions
- Ensuring all waste disposal bins are identified for all personnel
- Explaining the rules relating to waste bins to all personnel
- Receiving and holding waste disposal licenses and records
- Following-up any outstanding disposal licenses and records
- Recording quantities and types of waste and forwarding the information each month to the Project Manager
- Recording details of any soil leaving the site including quantities, truck details and disposal locations
- Ensuring all green waste is recycled as mulch if it acceptable to do so and approved
- Supervising specialist and licensed subcontractors removing suspected asbestos. Removal will be done to comply with legal requirements and records will be kept. Before any work commences or re-commences, a qualified and licensed agent will certify that any areas from which hazardous waste was collected are now clear
- Ensuring all identified materials are separated, recycled or lawfully disposed of.

2.3 Metals

Approximately 0.5 tonnes of metals (0.3 m^3) are expected to be generated during demolition. The Site Supervisor would establish bins for this waste and record quantities. Metals will be collected by a metals recycler.

2.4 Concrete

Approximately 471 tonnes (231 m^3) of concrete waste will be generated during demolition. The Site Supervisor will establish bins for this waste and record quantities. Concrete will be collected by a licenced waste contractor and transported to a licensed construction waste processing facility, possibly Kimbriki Resource Recovery Centre, at Ingleside.

2.5 Brick and tiles

Approximately 1,246 tonnes (683 m^3) of brick and tile waste will be generated during demolition. The Site Supervisor will establish bins for this waste and record quantities. Bricks and tiles will be collected by a licenced waste contractor and transported to a licensed construction waste processing facility, possibly Kimbriki Resource Recovery Centre, at Ingleside.

2.6 Green Waste

Approximately 15 tonnes (11.5 m^3) of green waste (trees and plants) will be generated during demolition. The Site Supervisor will establish bins for this waste and record quantities. Green

waste will be collected by a licenced waste contractor and transported to a licensed processing facility, possibly Kimbriki Resource Recovery Centre, at Ingleside.

2.7 Residual/mixed

Approximately 14.7 tonnes (13.5 m^3) of residual and mixed waste will be generated during demolition. This material is expected to consist of:

- Small quantities of food and drink
- The packaging in which food and drink is sold or stored
- Packaging in which building material is delivered or stored
- Composite materials not able to be separated, and
- Small quantities of miscellaneous waste generated during the demolition process.

The Site Supervisor will establish bins for this waste and record quantities. Sub-contractors and suppliers will be expected to minimise this waste in particular and reusable and returnable containers will be encouraged to reduce packaging waste.

Cardboard, paper, other packaging and glass are likely to be included in this stream and these materials have been identified for separation for recycling.

General waste will be collected by a licenced waste contractor and disposed of at a licensed facility, possible Artarmon transfer station.

3. Section 2 - Construction

3.1 Classification of Waste

A preliminary site contamination assessment[1] has reported the possibility that there is some low level contamination by asbestos and chemicals. This conclusion is based on previous site use only so the presence of contamination is not confirmed. In any event its concentration is described as 'low' and 'low to moderate'.

As a result, before construction begins, testing will need to be undertaken to classify soils under the NSW EPA's *Waste Classification Guidelines* 2014. As contamination is not confirmed and concentration is likely to be moderate to low and localised, it is expected that the bulk of waste generated on-site will be classified as general solid waste (non-putrescible) under the Guidelines.

3.2 Waste Quantities

The types of waste to be generated during construction and the quantities are shown in Table 2, based upon information in the *Wenona Project Archimedes - Draft CP2 Breakdown* provided by APP.

Table 2 - Construction waste estimates

Material	Tonnes	Cubic Metres
Brick & Tile	78.8	45.0
Concrete	580.9	266.9
Metal	1.1	0.4
Miscellaneous	54.8	36.0
Green Waste	15.5	8.8
Soil	21,365.4	10,953.7
Plastic	1.0	0.8
Glazing	0.7	1.2
Plasterboard	16.6	6.1
Timber	2.0	2.3
Total	**22,116.7**	**11,321.1**

The table shows that about 22,000 t and 11,000 m^3 of waste will be generated during construction of which most will be soil.

3.3 Waste Handling Procedures

3.3.1 General Waste Management Procedures

Project Manager

A Project Manager (PM) will have responsibility for safety, quality, environmental, record management, time and cost as well as overseeing site staff and reporting to management. The Project Manager will administer a number of general waste management procedures including:

- At the time of contract negotiation and tender interview, all sub-contractors and suppliers will be advised of the requirement to minimise waste (including packaging materials). Bulk handling and use of reusable and returnable containers will be encouraged

[1] Coffey Geotechnics Pty Ltd (2015) Wenona School - Preliminary Site Contamination Assessment

- Sub-contractors will be informed that their waste generation will be monitored and that the generation of excessive quantities will be considered non-conformance
- The waste disposal sub-contractor who is selected and engaged will be the one who most effectively recycles waste materials
- The waste disposal sub-contractor and the waste processing and disposal facilities will be licensed to receive the waste expected to be generated on site, including any hazardous waste.

The PM has the responsibility of determining which materials would be separated on site. Materials expected to be separated at this site during construction are listed in Table 2.

Site Supervisor

The Site Supervisor will be responsible for on-site supervision during construction. The Site Supervisors responsibilities include reporting to Project Manager, control of site labour and plant and communicating all necessary information to site personnel.

A number of general waste management procedures that are administered by the Site Supervisor including:

- Establishing recycling and waste bins
- Discussion the site's waste management and recycling policy with employees and subcontractors during site inductions
- Ensuring all waste disposal bins are identified for all personnel
- Explaining the rules relating to waste bins to all personnel
- Receiving and holding waste disposal licenses and records
- Following-up any outstanding disposal licenses and records
- Recording quantities and types of waste and forwarding the information each month to the Project Manager
- Ensuring concrete waste from concrete pump wash out is disposed of appropriately
- Ensuring all identified materials are separated, recycled or lawfully disposed of.

3.4 Soil

Spoil refers to fill and soil from surface clearing, excavation and site re-profiling. During construction approximately 21,365 tonnes (10,953 m^3) of soil is expected to be generated from excavation activities.

Most soil will be loaded directly into trucks for transport to licenced processing facilities to other sites where it can be lawfully used. Subject to the results of testing (see Section 3.1) some contaminated soil may not be able to be reused and will be disposed of at a site that can lawfully accept it. Some material would be retained for use during construction and stockpiled on-site.

3.5 Metals

Approximately 1.1 tonnes (0.4 m^3) of metals are expected to be generated during construction. The Site Supervisor would establish a bin for this waste and record quantities. Metals will be collected by a metals recycler.

3.6 Concrete

Approximately 581 tonnes (267 m^3) of concrete waste will be generated during demolition. The Site Supervisor will establish bins for this waste and record quantities. Concrete will be collected by a licenced waste contractor and transported to a licensed construction waste processing facility, possibly Kimbriki Resource Recovery Centre, at Ingleside.

3.7 Brick and tiles

Approximately 79 tonnes (45 m^3) of brick and tile waste will be generated during demolition. The Site Supervisor will establish bins for this waste and record quantities. Bricks and tiles will be collected by a licenced waste contractor and transported to a licensed construction waste processing facility, possibly Kimbriki Resource Recovery Centre, at Ingleside.

3.8 Green Waste

Approximately 15.5 tonnes (8.8 m^3) of green waste will be generated during demolition. The Site Supervisor will establish a bin for this waste and record quantities. Green waste will be collected by a licenced waste contractor and transported to a licensed processing facility, possibly Kimbriki Resource Recovery Centre, at Ingleside.

3.9 Timber

Approximately 2 tonnes (2.3 m^3) of timber will be generated during construction. The Site Supervisor will establish a bin for this waste and record quantities. Timber will be collected by a licenced waste contractor and transported to a licenced processor.

3.10 Plastic

Approximately 1 tonne (0.8 m^3) of plastic will be generated during construction. The Site Supervisor will establish a bin for this waste and record quantities. Plastic will be collected by a licenced waste contractor and transported to a recycling facility or licenced disposal facility depending on its quality and suitability for recycling.

3.11 Glazing

Approximately 0.7 tonnes (1.2 m^3) of glazing waste (broken glass) will be generated during construction. The Site Supervisor will establish a bin for this waste and record quantities. Glass will be collected by a licenced waste contractor and transported to a recycling facility or licenced disposal facility depending on its suitability for recycling.

3.12 Plasterboard

Approximately 16.6 tonnes (6.1 m^3) of plasterboard will be generated during construction. The Site Supervisor will establish a bin for this waste and record quantities. Plasterboard will be collected by a licenced waste contractor and transported to a recycling facility or licenced disposal facility depending on its suitability for recycling.

3.13 Residual/mixed

Approximately 55 tonnes (36 m^3) of residual and mixed waste will be generated during demolition. This material is expected to consist of:

- Small quantities of food and drink
- The packaging in which food and drink is sold or stored
- Packaging in which building material is delivered or stored

- Composite materials not able to be separated and
- Small quantities of miscellaneous waste generated during the demolition process.

The Site Supervisor will establish bins for this waste and record quantities. Sub-contractors and suppliers will be expected to minimise this waste in particular and reusable and returnable containers will be encouraged to reduce packaging waste.

Cardboard, paper, other packaging and glass are likely to be included in this stream and these materials have been identified for separation for recycling.

General waste will be collected by a licenced waste contractor and disposed of at a licensed facility, possible Artarmon transfer station.

4. Section 3 – On-Going Use

4.1 Council requirements

This development is to be assessed by the Department of Environment and Planning so the North Sydney Development Control Plan 2013 does not strictly apply. It has been used as a guide in this case. There are three parts of the DCP relevant to waste management for the on-going use of the development.

4.1.1 Part B Section 3 Non-Residential Development in Residential Zones

Section 3.4.9 says that there should be sufficient space to store waste storage, that garbage storage areas should be screened from the public and collection must be convenient.

A guide is provided to calculate the amount of space required to store bins in different non-residential development types. Schools are not one of the types listed.

If there is a lift in the building garbage chutes have to be installed that emptying into a central bin store with a compactor. There must also be recycling rooms on each floor. Other requirements include:

- The garbage store has to be within 2 m of the street.
- The garbage store can be elsewhere but there has to be a collection point for bins within 2 m of the street.
- The storage area must be
  - screened from the street
  - located to avoid smell and nuisance etc
  - undercover and protected from the weather
  - allow for separation of recyclables
  - integrated into the building where possible
- Bins must not be visible from the street

Section 3.5.6 Waste Management and Minimisation also specifies, among other things, that:

- There must be a Waste Management Plan for the demolition, construction and operation of the building
- Adequate recycling systems must be included in the design of the garbage room and
- The storage of any hazardous waste materials must be adequately secured.

4.1.2 Part B Section 19 Waste Minimisation and Management

This section specifies that:

- A Waste Management Plan must accompany all development applications involving demolition.
- The Waste Management Plan must provide details of all on-site sorting areas, storage areas and vehicular access.

The Waste Management Plan must provide details of :

a. how waste is to be stored and treated on site

b. how residual waste is to be disposed of.

This section specifies that:

This section also refers to Appendix 3 Council's Waste Facility Guide (see Section 4.1.3 below).

The building must be design to:

- Provide appropriate space for temporary storage of recyclables, garbage and compost
- Ensure space is easily accessible from each part of the building and from the collection point.
- Include adequate access and manoeuvring space, at least an area equivalent to the combined footprint of the bins.
- Provide administrative arrangements for ongoing waste management, including signs.
- Locate and design waste storage and recycling areas to complement the streetscape.

Applications must include plans that show, among other things:

- The location of the waste storage and recycling area
- The location of the collection area
- Access for collection vehicles;
- Management of hazardous waste where appropriate.

The Waste Management Plan must describe the type of waste to be generated, expected volume per week, proposed on-site storage and treatments facilities, destination of waste materials and describe the proposed on-going management of waste and recycling.

4.1.3 Appendix 3 Waste Handling Guide

This document covers many of the specifications already mentioned in the DCP proper. Most of it is not relevant to this type of development other than it specifies the construction materials and finish required for waste storage areas.

4.2 Waste Quantities

Table 3 below shows the estimates of the quantities of waste likely to be generated on each level during on-going use. Details of each area of each level can be found in Appendix A. The number of bins likely to be required has been estimated and the quantities of the contents (garbage and recycling) calculated based on how full the bins might be. Bins are assumed to be either 10 L (in smaller areas) or 50 L (in larger areas) and in use five days per week during term time.

Table 3 - Waste Quantity Estimates - On-Going Use

Level	Number of Bins		Estimate of Quantities per Week (litres)	
	Garbage	Recycling	Garbage	Recycling
LG2	3	3	500	250
LG3	13	13	1,950	1,550
LG2 Mez	25	25	3,550	2,800
LG1	10	10	1,100	850
GF	2	2	250	250
L1	11	11	1,175	1,175
L2	2	-	250	-
Total	**66**	**64**	**8,775**	**6,875**

The table shows that about 8.8 m^3 of garbage and about 6.9 m^3 of recyclables are estimated to be generated each week.

4.3 Storage and collection

It is anticipated that cleaners, operating after classes have finished each day, will collect the contents of the bins in each area and on each level. Waste materials are expected to be collected in bags and transported by the cleaners using pushed trolleys to the main garbage room on the ground level. The garbage room opens onto Elliott Street from where bins will be serviced. Council collection staff or waste collection contractors will open the main waste room doors, pull out bins as required for servicing and replace them when emptied.

Use of the building when complete is expected to feature both steady numbers of students, staff[2] and other occupants as well as occasional surges due to academic requirements, sporting events, training requirements or seasonal factors. As a result, an additional overflow garbage area has been provided on the ground level.

The main garbage room that opens onto Elliott Street will be used for day-to-day waste storage requirements while the overflow waste room will be used to accommodate additional waste during surge periods. The overflow waste room has direct access to Elliott Street on the same level as the main garbage room. From this area bins would be transported by cleaners as required through a covered external entry space to get to the collection point on Elliott Street.

The locations of the main garbage room, overflow area and collection point are shown in Figure 2 below.

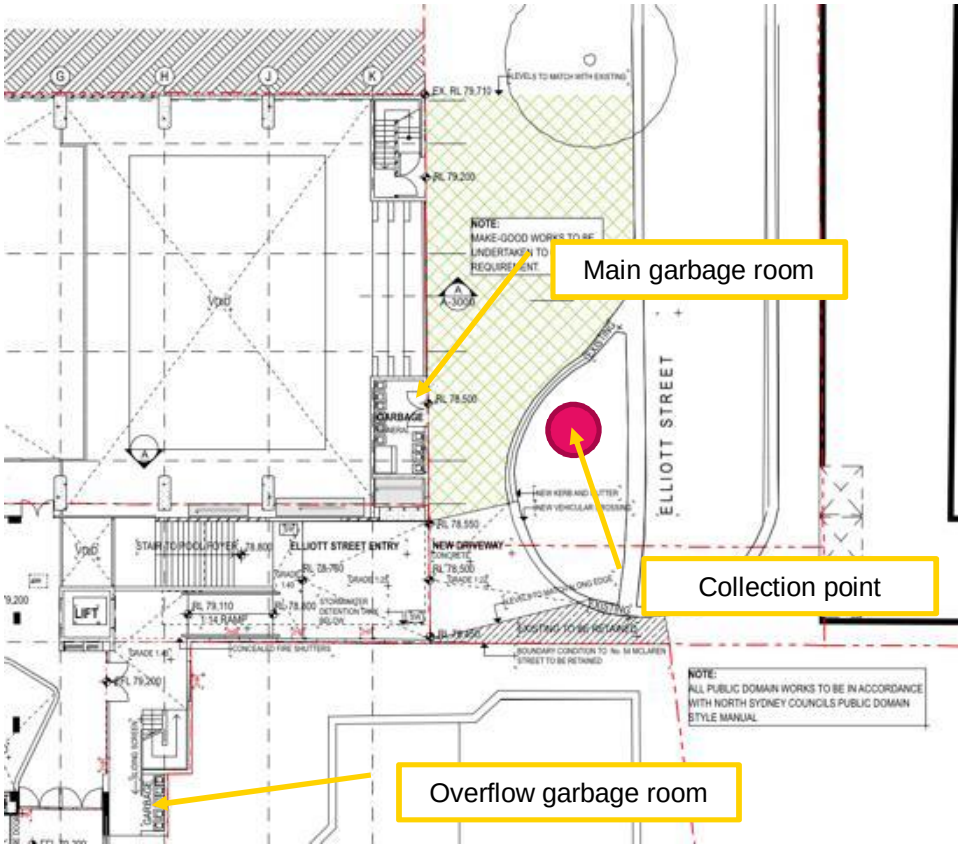

Figure 2 - Location of waste rooms

4.4 Storage requirements

Based on the quantities of garbage and recyclables estimated to be generated from the development (see Table 3) the area required to store this material in bins of certain capacities has been calculated and is shown in Table 4

[2] The development will not result in any additional numbers of students or staff.

Table 4 - Estimated Bin Storage Requirements

Bins Capacity	Collections per Week	Quantity Estimated (m^3)		Number of Bins Required			Area Required - Bins Only (m^2)			Area Required – Including Manoeuvring (m^2)
		Garbage	Recyclables	Garbage	Recyclables	**Total**	Garbage	Recyclables	**Total**	
240 L	5	8.8	6.9	8	6	**14**	3.4	2.6	**6.0**	**12.0**
660 L				3	3	**6**	3.5	3.5	**7.0**	**14.0**
1100 L				2	1	**3**	3.5	1.8	**5.3**	**10.5**

The table shows that assuming five collections per week and 8.8 m^3 of garbage and 6.9 m^3 of recyclables being generated a certain number of bins of three common capacities would be required. The table shows that 1100 L bins would occupy the least space at 10.5 m^2, while 660 L bins would require the most at 14.0 m^2.

Figure 2 shows that the main garbage room has an area of 12.25 m^2 which would be enough to store the estimated number of 240 L or 1100 L bins under the stated assumptions.

5. Summary

5.1 Demolition

About 1.7 t, or 940 m^3, of waste will be generated during demolition of which most will be brick and tile.

A Project Manager and Site Supervisor will be responsible for separating waste types on site.

Waste types will be collected by a licenced waste contractor and transported to licenced processing facilities, possible Kimbriki Resource Recovery Centre, or licenced disposal sites, possibly Artarmon Transfer Station.

5.2 Construction

About 22,000 t and 11,000 m^3 of waste will be generated during construction of which most will be soil. Soil will need to be tested to enable it to be classified for reuse and disposal.

A Project Manager and Site Supervisor will be responsible for separating waste types on site.

Waste types will be collected by a licenced waste contractor and transported to licenced processing facilities, possible Kimbriki Resource Recovery Centre, or licenced disposal sites, possibly Artarmon Transfer Station.

5.3 On-Going Use

About 8.8 m^3 of garbage and about 6.9 m^3 of recyclables are estimated to be generated each week during normal term time.

Cleaners will collect garbage and recyclables after classes end each day and transport them to the main garbage room on the ground level.

A waste and recycling contractor will collect the waste from the storage room.

The main waste storage room is of adequate size to accommodate commonly used bins if the bins are collected five days per week.

An overflow waste room has been provided to accommodate extra waste that might generated from surges in use of facilities in the building.

Appendix

Appendix A - Waste Quantity Estimates - On-Going Use

Table 5 - Waste Quantity Estimates - On-Going Use

Level	Area	Number of Bins		Estimate of Quantities per Week (litres)	
		Garbage	Recycling	Garbage	Recycling
LG2	Store			-	-
LG2	Change 1	1	1	125	125
LG2	Change 2	1	1	125	125
LG2	Staff	1	1	125	125
LG2	Reception	1	1	25	25
LG2	Main Pool	4	4	500	500
LG2	First Aid	1	1	25	25
LG2	LTS Pool	2	2	250	250
LG3	Staff EOJ	1		125	-
LG3	LTS Toilet	1		125	-
LG2 Mez	Viewing areas	2	2	250	250
LG1	Multifunctional	2	2	250	250
LG1	GPLA	1	1	125	125
LG1	Free Gym	1	1	125	125
LG1	Cardio training	1	1	125	125
LG1	Terrace	1	1	50	50
LG1	Staff PE	1	1	125	125
LG1	Staff PE Office	1	1	25	25
LG1	Staff PE Office	1	1	25	25
LG1	Toilets	1	1	250	-
GF	GPLA 1	1	1	125	125
GF	GPLA 2	2	2	250	250
GF	STEM Hub 3	2	2	250	250
GF	STEM Hub 2			-	-
GF	STEM Hub 1	2	2	250	250
GF	STEM Hub 4	1	1	125	125
GF	STEM Hub 5	1	1	125	125
GF	Student Hub	2	2	250	250
GF	Reception	1	1	25	25
GF	Careers	1	1	25	25
GF	Food technology	4	4	1,000	500
GF	Chemical Store	1	1	125	125
GF	Garden	2	2	250	250
GF	Toilets	1	1	250	-
GF	Spine	4	4	500	500
L1	Staff area including kitchen	4	4	1,000	850
L1	Senior Ecosystem	3	3	375	375
L1	Seminar room	1	1	25	25
L1	Senior Room	1	1	25	25
L1	Toilets	1	1	25	25
L1	Staff area including kitchen	4	4	125	125
L1	Senior Ecosystem	3	3	-	-
L1	Seminar room	1	1	125	125

L1	Senior College Staffroom	1	1	250	-
L2	Senior Ecosystem	2	2	250	250
L2	Toilets	1	1	250	-
	Total	**66**	**64**	**8,775**	**6,875**

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