



NSW Department Of Education

NSW Waitara Public School

Waste Management Plan

August 2017

Executive summary

GHD has prepared this Waste Management Plan to assess the waste management requirements for site construction works and operation of the upgraded Waitara Public School and address the various requirements.

Information is presented herein to support the Waitara Public School Environmental Impact Statement (EIS), by responding to the SEARs requirements, which are stated as follows:

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.

Clause 11 of State Environmental Planning Policy (State and Regional Development) 2011 states that Development control plans (whether made before or after the commencement of this Policy) do not apply to State significant development. Notwithstanding this, the SEARs have requested that the DCP be addressed.

Hornsby Shire Council has published a Waste Minimisation and Management Guide, which provides estimates for waste generated by demolition of a typical double brick house, which is 1.2 tonnes per m² of building area. This has been used to estimate overall demolition quantities, which are of the order of 3,169 tonnes for permanent buildings. Demountable buildings are assumed to be relocated to other schools, so are not counted as waste.

In addition, it has been assumed that bitumen surfaces within the new building footprint will also be removed, and it has been estimated that approximately 120 tonnes of bitumen and sub base material waste will need to be disposed of. In addition, it is estimated that the amount of waste arising from tree removal will be of the order of 5 m³, or approximately 5 tonnes. The civil design for the site is targeting a balanced cut and fill design, so no significant soil waste is expected.

The Hills Shire Council Development Control Plan DCP 2012 has been used to estimate construction waste quantities, as the figures calculated from the Hornsby Council Waste Minimisation and Management Guide (which were for a typical house) seemed too low. A total of 253 tonnes of waste was estimated to be produced from construction activities, based on the Hills Shire DCP 2012 Waste Management Plan factors, for office building construction, as no factors are available for schools.

During construction, wastes generated on the site would typically be managed and minimised by a combination of waste planning and on site controls. Waste planning would include designing buildings to minimise on site cutting of components, and maximising on site assembly tasks, careful ordering of materials such as sand and building products to match quantities with amounts required, and on time ordering rather than having materials stored on site for months before being used and segregating materials and providing weather protection for stored materials on site, to maximise their fitness for use.

On site controls would include developing and implementing a Construction Waste Management Plan, segregating wastes generated on site, using different skip bins for recycling and waste, with separate bins for different recyclable materials, ensuring all waste disposal bins are clearly marked, keeping records of quantities of waste and recycled materials disposed of, and the destinations of these materials and ensuring that wastes are only disposed to licenced facilities.

It has been estimated that the operational wastes would be generated that would require two 660 litre rear lift bins per week, one for waste and one for recyclables. It may also be necessary to have a third bulk bin for bulk cardboard. Some contractors may also provide a separate bin

for office paper. In addition, items such as batteries and fluorescent tubes may be separated by staff for recycling.

If these bin sizes are insufficient, the area provided of sufficient size to enable larger bins such as 1,100 litres to be used if desired. Bins would be collected more frequently than weekly, which increases the effective capacity of the system.

It is expected that the current bin location will be retained. The area is sufficiently sized to fit at least three 660 litre bins, or larger (1,100 litre) bins if desired. The current access from Highland Avenue looks to be suitable as it is currently used by collection vehicles.

The SEARs also require the development to be assessed against a suitably accredited rating scheme to meet industry good practice. An Ecologically Sustainable Development Report was prepared for the project by GHD Woodhead. A Self-Assessment of the project against the GBCA Green Star Rating Tool was conducted to assess this requirement. Waste requirements were included in this assessment.

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1. Introduction

1.1 Background

The Department of Education is carrying out a major upgrade of Waitara Public School.

As part of the planning and development of the design for the school, concept designs have been prepared by GHD for the school buildings and associated infrastructure to support the school operations.

As the proposed development comprises an educational establishment and has a Capital Investment Value (CIV) in excess of \$30 million it is categorised as State Significant Development (SSD) for the purposes of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Therefore an Environmental Impact Statement (EIS) is required.

Think Planners, which is preparing the EIS, sought Secretary's Environmental Assessment Requirements (SEARs) from the NSW Department of Planning and Environment, and these were issued on 12 July 2017.

This Waste Management Plan addresses the key requirements of the SEARs, as well as taking into account other requirements outlined in the Hornsby Development Control Plan (DCP) 2013, and project specific ESD objectives.

1.2 State significant development application

The specific elements that this State Significant Development Application seeks approval for are as follows:

- Removal of 13 demountable spaces and 11 Modular Design Range buildings
- Construction of 37 permanent teaching spaces/ homebases
- Construction of core facilities including a hall, canteen and library

Three new buildings comprising a four-storey building on the corner of Myra Street and Edgeworth David Avenue and two @ three storeys buildings along the Edgeworth David Avenue are proposed to be constructed.

The school has an existing equivalent student population of 760. After the additional classrooms are added, it will have teaching equivalent space for 874 students. However sufficient facilities will be provided to future proof the school and allow for 1,000 students if needed.

1.3 Reliance

This report: has been prepared by GHD for the NSW Department of Education and may only be used and relied on by the NSW Department of Education for the purpose agreed between GHD and the NSW Department of Education as set out in section 1.4 of this report.

GHD otherwise disclaims responsibility to any person other than the NSW Department of Education arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no

responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

1.4 Purpose of this report

Information presented herein is to support the Waitara Public School Environmental Impact Statement (EIS), by responding to the SEARs requirements.

2. EIS requirements

2.1 State Significant Development Application

This report supports a State Significant Development Application for 120 Hezlett Road, Kellyville to be submitted to the Department of Planning and Environment pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

2.2 Secretary's Environmental Assessment Requirements

The SEARs requirements for the EIS that relate to waste management are as follows:

18. 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.

2.3 Hornsby Development Control Plan 2013

The Hornsby Development Control Plan DCP 2013 provides guidance on preparing Waste Management Plans in Appendix A of the document, and a standard format for such plans. It also provides guidance on estimating construction waste quantities which has been utilised in this waste management report.

2.4 Green star assessment

The SEARs require the development to be assessed against a suitably accredited rating scheme to meet industry good practice.

An Ecologically Sustainable Development Report was prepared for the project by GHD Woodhead. A Self-Assessment of the project against the GBCA Green Star Rating Tool was conducted to assess this requirement. Waste requirements were included in this assessment.

3. Addressing requirements

3.1 SEARs

The SEARs requirements for the EIS for waste management are addressed as follows:

Table 1 SEARs requirements

SEARs requirements	Where addressed
16. 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.	Sections 4 and 5
Identify appropriate servicing arrangements (including but not limited to, waste management, loading zones, mechanical plant) for the site.	Section 5 covers Operational waste requirements

3.2 DCP requirements

Clause 11 of State Environmental Planning Policy (State and Regional Development) 2011 states that Development control plans (whether made before or after the commencement of this Policy) do not apply to State significant development. Notwithstanding this, the SEARs have requested that the DCP requirements be addressed.

Clause 1C.2.3 Waste Management of the Hornsby DCP 2013 outlines the following requirements:

3.3 Desired outcomes under the DCP

- Development that maximises re-use and recycling of building materials.
- Waste storage and collection facilities that are designed to encourage recycling, located and designed to be compatible with the streetscape, accessible, clean and safe for users and collectors.

3.4 Prescriptive measures

3.4.1 Demolition and construction waste

The DCP requirements for construction and demolition waste are as follows:

a. A Waste Management Plan should be prepared in accordance with Council guidelines and submitted with the development application, to address demolition and construction waste, and include:

- An estimate of the types and volumes of waste and recyclables to be generated,*
- A site plan showing sorting and storage areas for demolition and construction waste and the vehicle access to these areas,*
- How excavation, demolition and building waste materials will be re-used or recycled and where residual wastes will be disposed, and*
- The total percentage (by weight) of demolition and construction waste that will be reused or recycled to achieve the minimum waste minimisation target established by the State Government.*

d. New Commercial and Industrial developments proposing on site collection of waste should design for a HRV commercial garbage truck. (see Note 4)

Note:

The guideline reference notes above are included within the Council's guideline (the Waste Minimisation and Management Guide) available at website hornsby.nsw.gov.au, as noted below:

Note 4: See reference A5.02

Heavy Rigid Vehicles for waste collection details are provided at A5.02 of the Waste Minimisation and Management Guide.

Small Rigid Vehicles (SRV) for waste collection is defined by AS 2890.2.

3.4.2 Operational waste

The DCP requirements for operational waste are as follows:

j. A Waste Management Plan should be prepared in accordance with Council's guidelines and submitted with the development application, to address the generation of waste from the occupation of the development, and include:

- *an estimate of the amount of waste and recyclables to be generated, identify the number of, and capacity of, waste storage bins and volume handling equipment required, a site plan showing:*
 - *areas allocated for waste storage and recycling, details of any volume handling equipment,*
 - *nomination of the waste collection point for the site,*
 - *identification of the path of access for users and collection vehicles.*
- *details of the on-going management of the storage and collection of waste, including responsibility for cleaning, transfer of bins between storage areas and collection point, maintenance of signage, and security of storage areas.*

4. Construction and demolition wastes

4.1 Demolition wastes

Hornsby Shire Council has published a Waste Minimisation and Management Guide, which provides estimates for waste generated by demolition of a typical house, but there is no guide as to how much would be generated from a school. An estimate is provided here for 60 tonnes from a timber frame house and 120 tonnes from a double brick house. On the basis of this, an approximate rate for a brick building is 120 tonnes per 100 m², or 1.2 tonnes per m² of building area.

According to the demolition plan (refer Appendix A), the structures to be demolished in the location of the new building, and their approximate areas (from scaling off the plan) are:

Table 2 Estimated building areas and demolition waste quantities

	Building	Approximate area (m ²)	Estimated demolition waste (tonnes)
A	Admin	406	487
B	HB	140	168
D	HB	289	347
	COLA	144	173
F	Hall/canteen	476	571
G	SP Program	260	312
H	After school	184	221
J	HB	360	432
K	Kindergarten	96	115
	COLA	286	343
	Total	2,641	3,169

Source: Site Demolition Plan

The total building area to be demolished is approximately 2,641 m². On this basis of approximately 1.2 tonnes of waste per m², the demolition waste from buildings alone is estimated to be 3,169 tonnes.

The demountable building are assumed to be removed from site, and relocated to another school, so are not included in these estimates.

In addition to this, it is assumed that the bitumen surface beneath the new building would be removed. If it is assumed that the bitumen and sub base is approximately 50 mm thick, and the footprint of the new building is approximately 34 m by 70 m, this would result in approximately 119 m³ of waste bitumen to be disposed of. Assuming a density of 1 tonne per m³, this equates to about 120 tonnes of bitumen and sub base material waste to be disposed of.

In addition, some trees will need to be removed. The tree retention plan prepared by the arborist shows that only 2 trees would be removed, so it is estimated that the amount of waste arising from this would be of the order of 5 m³, or approximately 5 tonnes.

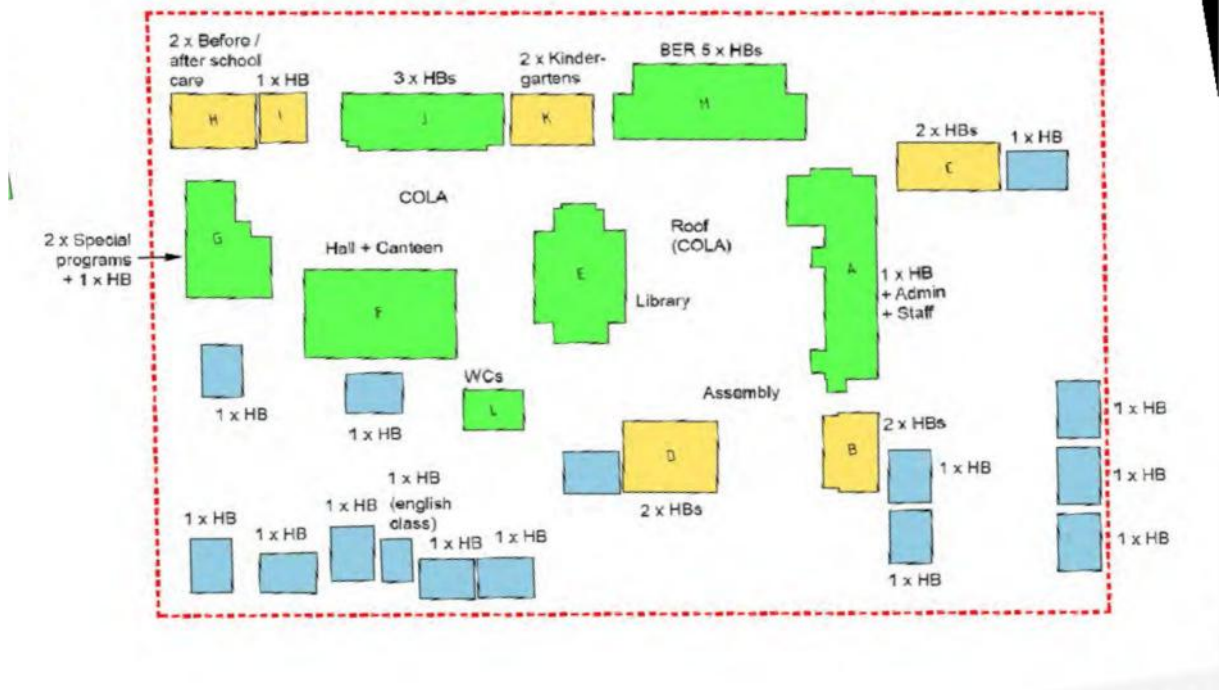


Figure 1 Existing building plan showing permanent structures – source Design Development report)



Figure 2 Tree retention plan - source: Arborist report



Figure 3 Current landscaping plan showing new buildings – Source Design Development Report

There is a possibility that some asbestos may be encountered during demolition works. A hazardous materials study is to be carried out, which would identify this. Any asbestos or other hazardous materials would be removed by specialist contractors, and so they are not covered by this waste plan.

4.2 Construction waste generation

The new building will be a four storey building, similar to that shown below.



Intersection of Edgeworth David Ave & Myra Street View

Figure 4 New building sketch – Source Design Development Report

4.2.1 Typical wastes

Wastes that would typically be produced by construction works are as follows:

- Brick
- Waste mortar

- Concrete
- Metal offcuts
- Timber
- Soils
- Paper and cardboard

4.2.2 Hornsby Waste Minimisation and Management Guide

Hornsby Shire Council has published a Waste Minimisation and Management Guide, which provides estimates for waste generated by construction of a dwelling, but there is no guide as to how much would be generated from a school. An estimate is provided here for construction waste generated from a dwelling house, which is 0.0133 tonnes of waste per m² of floor area.

On this basis, with the new school internal area being 4,400 m², there would be 58 tonnes of waste generated from the building construction works. This seems low, as this equates to only 1 tonne of waste being produced per week, if a 52 week construction period is assumed.

4.2.3 Other Council guidelines

The Hills Shire Council DCP 2012 Appendix A provides guidance on typical quantities of construction wastes for office buildings (but not schools), broken down by material types.

Table 3 Estimated quantities of construction wastes

Building type	Timber	Concrete	Bricks	Gyprock	Sand/Soil	Metal	Other
Office Block (assumed to be tonnes per 1,000 m ²)	5.10	18.8	8.50	8.60	8.80	2.75	5.0

Assuming that a school is similar to an office building, and based on a new internal building area of approximately 4,400 m², the following quantities of waste are estimated.

- Timber – 22 tonnes
- Concrete – 83 tonnes
- Bricks – 37 tonnes
- Gyprock – 38 tonnes
- Sand/soil – 39 tonnes
- Metal – 12 tonnes
- Other – 22 tonnes

This adds up to a total of 253 tonnes of waste estimated to be produced from construction activities. This seems more realistic, although a bit high. This equates to an average of about 5 tonnes per week, over 52 weeks, which seems reasonable for a large building project of this type.

4.2.4 Waste not DCP

According to the NSW Department of Environment and Climate Change Model Waste Not DCP, 2008, a 'Rule of Thumb' for estimating the quantities of construction waste from renovations and small home building is as follows:

- Timber 5-7% of material ordered
- Plasterboard 5-20% of material ordered
- Concrete 3-5% of material ordered
- Bricks 5-10% of material ordered
- Tiles 2-5% of material ordered

No specific information is available at this stage of the project about the likely quantities of each type of waste produced during construction. If building quantities had been estimated, this could be used as a guide as to whether the figures estimated above are realistic.

If the total floor area is 4,400 m², and the floor thickness is assumed to be 100 mm, and the density of concrete is 2,400 kg/m³, then approximately 1,056 tonnes of concrete will be used for the new building. If 5% of concrete is assumed as wastage, this equates to 53 tonnes of waste concrete. This is of the same order as the quantity of concrete estimated above (83 tonnes).

Therefore the Waste Not DCP estimate above suggests that the figures calculated above using the Hills Shire Council DCP in Section 4.2.3 are a reasonable estimate of construction waste quantities.

4.3 Waste handling procedures and site responsibilities

During construction, wastes generated on the site would typically be managed and minimised by a combination of waste planning and on site controls.

4.3.1 Waste planning

Waste planning activities would include:

- Designing buildings to minimise on site cutting of components, and maximising on site assembly tasks
- Careful ordering of materials such as sand and building products to match quantities with amounts required, and on time ordering rather than having materials stored on site for months before being used
- Segregating materials and providing weather protection for stored materials on site, to maximise their fitness for use
- Bringing in material such as sand in large bags rather than as bulk loads, to enable excess materials to be easily picked up and used at other sites
- Encouraging bulk handling and use of reusable and returnable containers
- At the time of tendering, advise contractors and sub-contractors and suppliers of the requirements to minimise waste on site
- Include provision in the tender documentation for the client to monitor the use of waste and recycling bins on site
- Development of a Construction Waste Management Plan by the main site contractor, which includes all of the above elements

4.3.2 On site controls

On site controls would include:

- Implementation by the main site contractor of a Construction Waste Management Plan
- Segregating wastes generated on site, using different skip bins for recycling and waste, with separate bins for different recyclable materials
- Discussion about the site's waste management and recycling policies and practices with employees and subcontractors during site inductions and tool box talks
- Ensuring all waste disposal bins are clearly marked
- Keeping records of quantities of waste and recycled materials disposed of, and the destinations of these materials
- Ensuring that wastes are only disposed to licenced facilities

4.4 Soil

Spoil refers to fill and soil from surface clearing, excavation and site re-profiling. Bulk earthworks will be required at the site to create level platforms for construction. The civil design is targeting a balanced cut and fill design, so there are not expected to be any soil wastes generated.

4.5 Metals

Small quantities of metals are expected to be generated during construction from trimming of roof sheets and other activities resulting from construction of items that cannot be prefabricated. A dedicated bin would be used for these offcuts, which would be collected by a metals recycler.

4.6 Concrete

Concrete waste would be generated during construction, in the form of excess concrete from site pours, and washout from concrete pumps and other equipment. Concrete waste would be scraped up from the ground and collected in a dedicated bin for transport to a licensed construction waste processing facility.

4.7 Wiring

Wiring offcuts would be generated during building fit out. This would either be disposed of with metal wastes, or separately. Small pieces may be disposed of with mixed wastes, if the quantities are not great enough to justify a separate bin, or they may be collected by the electrical contractor, for co-disposal with their other wastes (assuming they generate this type of waste frequently and can demonstrate that they have suitable recycling arrangements in place).

4.8 Timber

Timber pallets would be stacked on site and returned to the pallet suppliers for re-use. Where pallets are damaged and not suitable for re-use, or non-standard, they would be placed in a dedicated wood waste bin, and sent to a recycling facility for chipping or fuel production. If they are made of treated timber, and not suitable for re-use or fuel, they would be disposed of to a licenced waste facility.

4.9 Plastic

Various plastic wastes would be generated during construction. They would range from shrink wrap, to plastic ties and miscellaneous items. Plastics would be collected in a dedicated bin and transported to a licensed plastic waste reprocessing facility.

4.10 Plasterboard

Plasterboard offcuts and damaged sheets or part sheets would be generated during building fit out. 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.

4.11 Carpet/underlay

Carpet and underlay offcuts would be generated during building fit out. 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.

4.12 Residual/mixed

Residual and mixed wastes would be generated during construction works. This material is expected to consist of:

- Small quantities of food and drink
- Non recyclable 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 construction process.

General waste would be collected by a licenced waste contractor and disposed of at a licensed waste disposal facility.

5. Operational waste

5.1 Commercial and Industrial waste guidelines

The NSW EPA Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities, 2012 provides useful guidance on siting waste collection locations. It is recognised that this guideline is not strictly applicable to schools, but no school specific guidelines are available.

If a collection point is difficult for contractors to access collection charges may be higher. Ideally the collection point and storage area should be in the same place, avoiding the need to move bins to the collection point in time for servicing. If this is not possible, the collection point should be as close to the storage area as possible. If the storage area is not suitable as a collection point, the contractor will need to nominate a collection point where they can gain safe and easy access.

There are some general guidelines for collection points. They should:

- not be near intersections, ramps, roundabouts, pedestrian crossings, on busy roads or in narrow lanes
- not be near awnings, overhead wires, trees or other overhead structures
- be clear of air-conditioning and other service ducts and pipes, sprinklers, CCTV cameras, movement sensors, smoke detectors and other ceiling fixtures if located inside a building
- be on level surfaces rated for heavy vehicles
- have plenty of room for trucks to manoeuvre and reverse if necessary
- have enough room for bins to be manoeuvred by the driver for servicing
- be away from public areas;
- be well clear of vehicle, pedestrian, public, staff and visitor traffic areas
- not be restricted by parked cars or vehicle loading or unloading
- not be restricted by bollards, signs, plants, bins, seats or other street furniture
- not require vehicles to reverse
- not block the normal operations of the building
- be accessible at the times the collections are scheduled to take place and not behind locked gates.

All collections should take place in accordance with all the relevant acts, regulations, guidelines and codes administered by Austroads, the NSW Roads and Traffic Authority, NSW WorkCover and any local traffic requirements.

If the storage area and collection point are in separate locations, bins will have to be moved by staff or cleaners from the storage area to the collection point. Where bins smaller than 660 L in capacity are to be moved by hand:

- the distance between the storage area and collection point over which the bins are to be transported should
- not exceed 75 m in all circumstances
- the grades between the storage area and collection point should not exceed 1:14
- there should be no steps or kerbs anywhere on the route.

Bins greater than 660 litre and less than 1.5 m³ should not be moved more than five metres from the storage area to the collection point.

Manual movement of bins greater than 1.5 m³ in capacity should be avoided wherever possible. If movement cannot be avoided, these bins should not be moved more than three metres from the storage area to the collection point. No grade on the route should exceed 1:30.

The current site design would meet all of these requirements.

5.2 Waste generation estimates

There is little published information about the amount of waste and recycling typically produced by schools. There are a number of different tools available for estimating waste quantities for schools:

- (1) NSW EPA Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities (2012)
 - Garbage 2.6 litres per student per year
 - Recycling 7.2 litres per student per year
- (2) Randwick City Council Waste Guidelines (2015)
 - Garbage 1.5 litres per day per student
 - Recycling 0.5 litres per day per student
- (3) City of Melbourne waste guidelines (2015)
 - Garbage 0.5 litres of waste per student per week
 - Recycling 0.5 litres of recycling per student per week

On the basis of the City of Melbourne guidelines, which is the most recently published reference, the waste generation rates for 1,000 students would be 500 litres per week of waste and 500 litres per week of recycling.

This would require two 660 litre rear lift bins per week, one for waste and one for recyclables. It may also be necessary to have a third bulk bin for bulk cardboard. Some contractors may also provide a separate bin for office paper. In addition, items such as batteries and fluorescent tubes may be separated by staff for recycling.

If these bin sizes are insufficient, the area provided of sufficient size to enable larger bins such as 1,100 litres to be used if desired. Bins would be collected more frequently than weekly, which increases the effective capacity of the system.

5.3 Site access for waste collection vehicles

It is expected that the current bin location will be retained. The area is sufficiently sized to fit at least three 660 litre bins, or larger (1,100 litre) bins if desired. The current access from Highland Avenue looks to be suitable as it is currently used by collection vehicles.

5.4 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. Bins with waste and recycling sections are expected to be located in outdoor common areas, rather than having bins in every classroom.

Waste materials are expected to be collected in bags and transported by the cleaners to the garbage bin area using trolleys. This area will have outdoor lighting, and it is securely within the school grounds.

Waste collection contractors will enter the school after normal hours, pull out bins as required for servicing and replace them when emptied.

5.5 Storage requirements

Two bin sizes are likely to be used. A 660 litre bin front lift bins is easily movable by waste management contractors, or school staff. Alternatively, 1,100 litre rear lift bins could be used.



Figure 5 Typical 660 litre bin



Figure 6 Typical 1100 litre bin

6. Conclusions

GHD has prepared this Waste Management Plan to assess the waste management requirements for site construction works and operation of the upgraded Waitara Public School and address the various requirements.

Information is presented herein to support the Waitara Public School Environmental Impact Statement (EIS), by responding to the SEARs requirements, which are stated as follows:

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.

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In addition, it has been assumed that bitumen surfaces within the new building footprint will also be removed, and it has been estimated that approximately 120 tonnes of bitumen and sub base material waste will need to be disposed of. In addition, it is estimated that the amount of waste arising from tree removal will be of the order of 5 m³, or approximately 5 tonnes. The civil design for the site is targeting a balanced cut and fill design, so no significant soil waste is expected.

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During construction, wastes generated on the site would typically be managed and minimised by a combination of waste planning and on site controls. Waste planning would include designing buildings to minimise on site cutting of components, and maximising on site assembly tasks, careful ordering of materials such as sand and building products to match quantities with amounts required, and on time ordering rather than having materials stored on site for months before being used and segregating materials and providing weather protection for stored materials on site, to maximise their fitness for use.

On site controls would include developing and implementing a Construction Waste Management Plan, segregating wastes generated on site, using different skip bins for recycling and waste, with separate bins for different recyclable materials, ensuring all waste disposal bins are clearly marked, keeping records of quantities of waste and recycled materials disposed of, and the destinations of these materials and ensuring that wastes are only disposed to licenced facilities.

It has been estimated that the operational wastes would be generated that would require two 660 litre rear lift bins per week, one for waste and one for recyclables. It may also be necessary to have a third bulk bin for bulk cardboard. Some contractors may also provide a separate bin

for office paper. In addition, items such as batteries and fluorescent tubes may be separated by staff for recycling.

If these bin sizes are insufficient, the area provided of sufficient size to enable larger bins such as 1,100 litres to be used if desired. Bins would be collected more frequently than weekly, which increases the effective capacity of the system.

It is expected that the current bin location will be retained. The area is sufficiently sized to fit at least three 660 litre bins, or larger (1,100 litre) bins if desired. The current access from Highland Avenue looks to be suitable as it is currently used by collection vehicles.

The SEARs also require the development to be assessed against a suitably accredited rating scheme to meet industry good practice. An Ecologically Sustainable Development Report was prepared for the project by GHD Woodhead. A Self-Assessment of the project against the GBCA Green Star Rating Tool was conducted to assess this requirement. Waste requirements were included in this assessment.

7. References

Birds Tree Consultancy Arboricultural Development Impact Assessment Report Waitara Public School, 25 July 2017

City of Melbourne Waste Generation Rates, Jan 2015

Department of Environment and Climate Change NSW, Model Waste Not DCP Chapter 2008

GHD Woodhead Design Development Report for PRG11 Waitara Public School 08 August 2017

GHD Woodhead Site Demolition Plan Waitara Public School Redevelopment 21-26108 –WA – DA-AR-0110 Rev A

Hornsby Shire Council Waste Minimisation and Management Guide

Hornsby Development Control Plan (DCP) 2013

Hills Shire Council Development Control Plan (DCP 2012) Appendix A Waste Management Plan

NSW EPA Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities, 2012

Randwick City Council Waste Management Guidelines, 2015

Appendices

Appendix A - Site demolition plan

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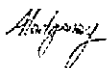
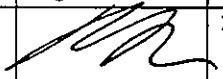
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Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
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