FORESIGHT ENVIRONMENTAL

Alexandria Park Community School

Construction & Demolition Waste Management Plan

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This report is based on information provided by The NSW Department of Education c/o TKD Architects coupled with Foresight Environmental's knowledge of waste generated within the education and commercial sectors. 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 TKD Architects.

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 negligence.

Revision No.	Issue date	Author	Reviewed by	Reason/comments
1	11/09/17	Yvette Pascoe	Scott Ebsary	Initial issue for review

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1. Introduction

This Construction and Demolition Waste Management Plan has been prepared by Foresight Environmental on behalf of the New South Wales Department of Education (the 'Applicant'). The plan details the way in which the proposed development at Alexandria Park Community School will manage the waste and recycling generated during the demolition and construction phases of the development. The site is located on the corner of Park Road and Buckland Street in Alexandria.

2. Overview of Development

The proposed development seeks to redesign the existing school to accommodate 1000 primary students, 1200 secondary students and approximately 200 full time employees.

The proposed school development includes the following:

- Shared facilities including Communal Hall, Library, Gym, Science Hub, Outdoor Learning Space, Canteen and other specialist learning spaces;
- Administration area for the whole school;

The purpose of this construction and demolition waste management plan is to outline the systems and practices involved in managing waste and recycling during the ongoing operation of the School.

This following tables provide details on the waste estimates and collection protocols for the proposed development during demolition and construction phases.

3. Waste Generation Estimate

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

- To maximize the reuse and recycling of demolition and construction 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
- To ensure efficient storage and collection of waste

3.1 Demolition

The testing and classification of any excavated material is not covered in this report. Where necessary separate specialist testing should be conducted by the project managers.

If acid sulphate soils are present on site, a separate management plan will need to be prepared for handling and disposal of such soil.

Based on the cost plan provided to TKD Architects, it is estimated that approximately 35,592m^3 of waste will be generated during the demolition/excavation phase of the development. The following table details the estimated composition by area or volume of demolition waste to be generated.

Table 1 - Composition of demolition waste by volume

Material	M^3
Fill	26,121
Concrete	3,282
Bricks/stone	2,500
Carpet	375
Timber	250
Residual general (incl. fittings, fixtures etc)	49
Metal	15
Total	**32,592**

3.2 Construction

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. 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.

Table 2 below details the estimated composition by area or volume of construction waste to be generated.

Table 2 - Composition of construction waste by volume

Material	M^3
Concrete	406
Plasterboard	283
Timber	109
Paint	106
Metal	104
Brick/paving	79
Insulation	78
Carpet	73
Tilling	32
Synthetic Turf	29
Vegetation	24
Vinyl	15
Waterproof	14
Glazing	2
Total	**1,355**

4. Waste Management Strategy

The following waste hierarchy will be used as a guiding principle:

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.
- Not over ordering products and materials

Reuse

Ensure that where ever possible, materials are reused either on site or offsite

- Identify all waste products that can be reused
- Put systems in place to separate and store reusable items
- Identify the potential applications for reuse both onsite and offsite and facilitate reuse

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 economical to send the unsorted waste to specialised waste contractors who will separate and recycle materials at an offsite location.

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

5. Waste Management Systems

5.1 Onsite and Offsite Systems

Table 3 – Waste management systems (demolition)

Material	Estimated volume (m^3)	Onsite (re-use or recycle)	Offsite (recycling contractor)	Disposal (contractor and landfill site)
Fill	26,121	Suitable soil to be reused where appropriate for onsite landscaping/fill	All surplus fill will be taken offsite to suitable C&D facility for processing/reuse	
Concrete	3,282		Removed from site as required for recycling/reuse at C&D facility for processing.	
Bricks	2,500		Separated onsite then transported to brick recycling facility	
Carpet	375		Stockpiled and collected as required by carpet supplier for recycling contractor	Unsuitable material will be taken to landfill for disposal
Residual general waste (incl. fittings, fixtures etc)	49			Collected by contractor and disposed at appropriate landfill
Metal	15		Stockpiled and collected as required by specialty metal recycler or taken to appropriate C&D facility for separation and recycling	

Table 4 details the expected waste materials and management systems for the construction phase of the project.

Table 4 – Waste management systems (construction)

Material	Estimated volume (m^2 or m^3 where indicated)	Onsite (re-use or recycle)	Offsite (recycling contractor)	Disposal (contractor and landfill site)
Concrete	406		Separated where possible and taken to concrete recycling facility – deposited onsite directly into skips or trucks to be removed from site.	
Plasterboard	283		Stockpiled onsite and collected by plasterboard supplier/recycler or taken to appropriate recycling facility	
Timber	109		Separated onsite then returned to supplier for re-use if appropriate or transported timber recycling yard	
Paint/waterproofing	120L		Clean tins recycled by metal recycler where possible	Residue/wash-off hardened and disposed appropriately
Metal	104		Stockpiled and collected as required by specialty metal recycler or taken to appropriate C&D facility for separation and recycling	
Brick/paving	79		Separated onsite then transported to brick recycling facility	
Insulation	78		Stockpiled and collected as required by roofing supplier for recycling contractor	Unsuitable material will be taken to landfill

				for disposal
Carpet	73		Stockpiled and collected as required by carpet supplier for recycling contractor	Unsuitable material will be taken to landfill for disposal
Tiles	32		Stockpiled and collected as required by specialty metal recycling contractor for recycling/resale	
Synthetic Turf	29		Stockpiled and collected if possible by turf supplier/installer	Unsuitable material will be taken to landfill for disposal
Vegetation	24	Mulched and resused onsite where possible (landscaping)	Separated where possible and taken to appropriate organic processing facility i.e. Australian Native Landscapes	
Vinyl	15		Stockpiled and collected as required by carpet/flooring supplier for recycling	Unsuitable material will be taken to landfill for disposal
Glazing	$2m^3$		Stockpiled and collected as required by specialty glass recycler or taken to appropriate C&D facility for separation and recycling	

Note: The quantities of construction and demolition waste materials have been estimated using industry guides for predicting waste quantities[1]. The figures in Table 3 and 4 above are estimates and are used as a guide for designing the waste management systems on site. These figures will be adjusted according to the final building material selection and quantities. The waste management systems will be adjusted as necessary.

[1] McGregor Environmental Services (2000) Predicting C&D waste quantities in the Inner Sydney Waste Board Waste Planning Guide for Development Applications-Planning for Less Waste (1998) NSW Waste Boards

It should be noted that there are multiple offsite recycling/disposal facilities available for the appropriate processing of the materials detailed above and the facility choice will depend largely on the waste contractor/supplier engaged.

5.2 Contracts and Purchasing

Each subcontractor working on the site will be required to adhere to this Waste Management Plan.
The Head Contractor will ensure each subcontractor:

- Takes practical measures to prevent waste being generated from their work
- Implements procedures to ensure waste resulting from their work will be actively managed and where possible recycled, as part of the overall site recycling strategy or separately as appropriate
- Ensures that the right quantities of materials are ordered, minimally packaged and where practical pre fabricated. Any oversupplied materials are returned to the supplier
- Implements source separation of off cuts to facilitate reuse, resale or recycling.

The Site Manager will be responsible for:

- Ensuring there is a secure location for on-site storage of materials to be reused on site, and for separated materials for recycling off site.
- Ensuring all skips/bins/stockpiles are clearly labeled identifying which material is suitable for each receptacle
- Engaging appropriate waste and recycling contractors to remove waste and recycling materials from the site
- Co-coordinating between subcontractors, to maximise on site reuse of materials
- Monitoring of bins on a regular basis by site supervisors to detect any contamination or leakage
- Ensuring the site has clear signs directing staff to the appropriate location for recycling and stockpiling station/s. And that each bin/skip/stockpile is clearly sign posted
- Providing training to all site employees and subcontractors in regards to the WMP as detailed in section 5.3 below.
- Should a subcontractor cause a bin to be significantly contaminated, the Site Manager will be advised by a non-conformance report procedure. The offending subcontractor will then be required to take corrective action, at their own cost. The non-conformance process would be managed by the Head Contractors' Quality Management Systems

- Retaining demolition and construction waste dockets to confirm and verify which facility received the material for recycling or disposal.

5.3 Training and Education

All site employees and sub contractors will be required to attend a site specific induction that will outline the components of the WMP and explain the site specific practicalities of the waste reduction and recycling strategies outlined in the WMP.

All employees are to have a clear understanding of which products are being reused/recycled on site and where they are stockpiled. They are also to be made aware of waste reduction efforts in regards to packaging.

The site manager will post educational signage in relation the recycling activities on site in breakout areas, lunch rooms etc.