Hanson Construction Materials Pty Ltd

Waste Management Plan:

Concrete Batching Plant
Lot 10 Glebe Island, Rozelle NSW.

P1706122JR03V02
February 2018

martens consulting engineers

ENVIRONMENTAL

WATER

WASTEWATER

GEOTECHNICAL

CIVIL

PROJECT MANAGEMENT

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All enquiries regarding this project are to be directed to the Project Manager.

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1 Introduction

1.1 Overview

This waste management report outlines an environmentally sustainable strategy for the management of solid and liquid waste generated from the construction and operation of the proposed concrete batching plant at Glebe Island, Rozelle, NSW (hereafter known as "the site").

The report is written to support a State Significant Development (SSD) project application to the NSW Department of Planning and Environment (DoPE).

1.2 Project Scope and Aims

The main objectives of this report are as follows:

1. Address the Secretary's Environmental Assessment Requirements (SEARs) No. 8544 as they relate to waste management;

2. Identify types of waste to be generated by the construction and operation at the site.

3. Identify relevant environmental controls for the management of generated waste streams.

4. Document procedures for handling, classification and disposal of waste of all anticipated waste streams from the site.

1.3 Relevant Planning Controls and Design Principals

The following planning controls and design principals have been consulted and, where relevant, incorporated into the design of the site's proposed waste management system;

- State Regional Environmental Plan (Infrastructure) 2007;

- Sydney Regional Environmental Plan No. 26 – City West;

- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 and Foreshores and Waterways DCP;

- Leichhardt Municipal Council Development Control Plan (DCP) 2013.

2 Site Description

2.1 Background

Hanson is seeking development consent to develop a new concrete batching plant at Glebe Island. The Site has been selected so as to facilitate the co-location of the concrete plant with aggregate shipping facilities, which in proximity to the Sydney CBD and Bays Precinct offers several logistical and environmental benefits. Hanson, and its subsidiary Hymix, already provide 30-35% of Sydney's concrete demand from the two nearby sites (Blackwattle Bay and Pyrmont). The proposed facility at Glebe Island will allow Hanson to continue its supply of concrete to a range of concrete intensive projects around Central Sydney, in a way that is efficient, reduces overall environmental impact and that minimises regional road traffic impacts by securing ongoing aggregate shipping terminal capability.

2.2 Location and existing Land-use

The site is located in the south-eastern portion of Lot 10 Glebe Island, Rozelle, NSW with a total area of approximately 16,200 m^2. It is bound by White Bay to the north, Johnson Bay to the east, Rozelle Bay to the south and mainland Rozelle to the west. The site has been recently used for industrial and port activities, and is currently 100% impervious unused hardstand.

The site falls under the jurisdiction and management of the Port Authority of NSW. It is situated in the Inner West Council (formerly Leichhardt Municipal Council) Local Government Area.

2.3 Proposed Development

Hanson propose to develop a new intermodal aggregate storage facility and concrete plant to be located adjacent to Glebe Island Berth one (GLB1 - legally described as Lot 10 in DP 1170710) (the Site), as shown in Figure 1. The plant will be designed with a capacity to produce up to 1 million cubic metres of concrete per annum and will supply aggregate to other Hanson sites in the vicinity. The proposed plant will serve two purposes:

- To act as a shipping facility that will support a number of Hanson (and Hymix) concrete batching plants by improving the delivery of aggregates into the city centre; and

- To operate as a concrete batching plant that can supply concrete for infrastructure and buildings in the CBD and inner suburbs.

Figure 1: The site

The concrete batching plant will be supported by new aggregate shipping terminal facilities at GLB1 with the capacity to manage up to 1 million tonnes of concrete aggregates per annum delivered by ship from the Hanson Bass Point Quarry and other facilities if deemed viable. By facilitating delivery by ship, the proposed development will reduce the number of trucks required to haul aggregates into Sydney on the regional road network by up to 65,000 trips per annum.

2.4 Description of Process

2.4.1 Operation

The proposed hours for the operation of the concrete batching plant are 24 hours a day, seven days a week. The proposed plant will employ approximately 67 full time equivalent employees. Three main types of commercial vehicles will operate at the plant:

- Total of 55 concrete agitator trucks – delivering concrete mixed at the plant on-site to building sites throughout the city. Some of these are standard rigid-axle agitator vehicles and some are articulated agitator vehicles.

- Cement tankers – delivering cement to the Site, this cement will most likely come from the Cement Australia Glebe Island facilities and therefore will not have to access the public road network.

- Aggregate trucks – two tipper trucks will be based at the Site, trucks based at other Hanson facilities may also access the plant. Aggregate trucks dispatch aggregates and sand to other concrete batching plant facilities – including the Hymix plant at Pyrmont. These are typically truck and dog trailer combinations.

Cement deliveries are expected to be made by B-Double tankers. Concrete agitator trucks are usually parked on the Site overnight, day shift drivers will arrive to the Site in the morning between 5am and 8am to start the shift, leaving the Site between 3pm and 6pm in the evening. It is anticipated that the majority of staff will travel to the Site by car. All batching activities will take place within an enclosed building. A plan of the proposed plant is provided as Figure 2. A brief description of the batching process is provided below.

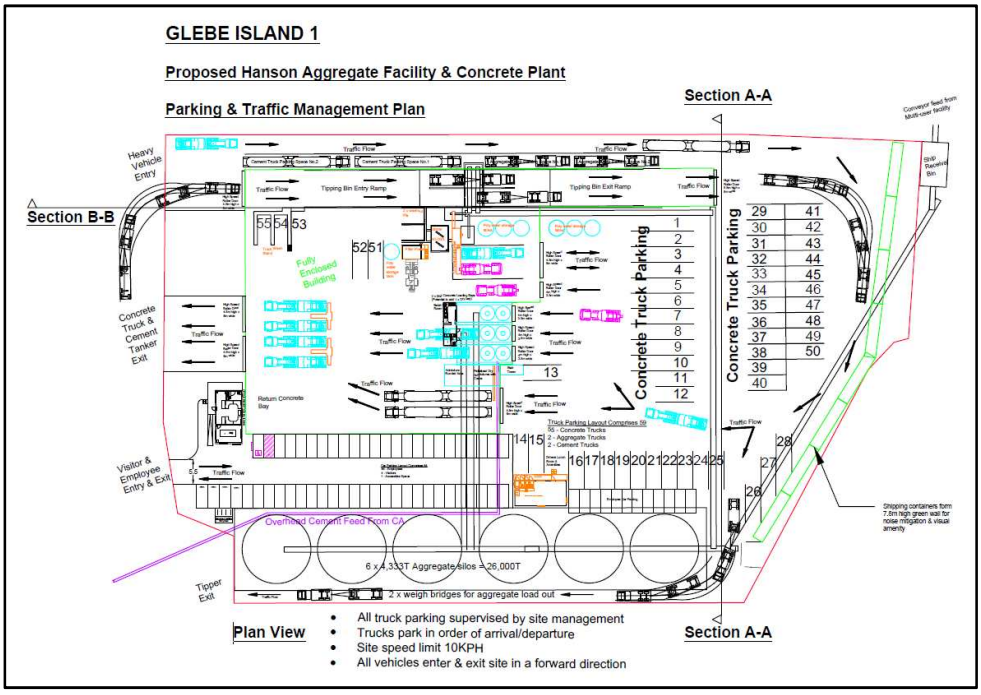

Figure 2: Site layout

2.4.2 Delivery

Delivery vehicles will access the Site from James Craig Road beneath the old Glebe Island Bridge abutment. Cement tankers will enter the building from the east and exit from the west. Aggregate trucks will deliver sand entering the building from the west and exit from the east. Cement and fly ash delivered to the Site will be stored in silos. All deliveries will take place within the enclosed building. Ships will deliver aggregate to the Site via GLB1. Aggregate and sand will be conveyed to the storage silos by enclosed overhead conveyors.

2.4.3 Batching

Concrete agitator trucks will move from their holding area to within the enclosed building to receive the concrete for delivery. Concrete agitator trucks will enter the building from the east. Aggregate, sand, cement and fly ash will be transported from their storage silos via an enclosed conveyor system to weigh hoppers. From here, the ingredients will be transferred to an agitator truck within the enclosed building. The concrete agitator trucks will mix the ingredients before moving to the slump stand for final quality checking.

2.4.4 Dispatch

Once the concrete trucks are loaded, they can depart from the west of the enclosed building. Concrete agitator trucks will exit the Site via James Craig Road and from there, travel to where their delivery is required. When the plant is operating at peak capacity, up to 120 concrete deliveries can be made from the plant each hour. However this is only likely to occur a minimal number of times a year depending on demand.

Aggregates not used in the batching of concrete on the Site will be dispatched from the storage silos by conveyor directly for loading to an aggregate truck for dispatch to another concrete batching plant.

2.5 Physical Description

The plant is proposed to adopt a low profile design sympathetic to its surrounding environs. The majority of the batching activities will be undertaken in an enclosed area in order to limit the noise and air quality impacts of the proposed plant. The highest structures will be the cement silos which will be up to 34m tall, which is significantly lower than the adjoining heritage listed Glebe Island Silos.

Physical elements of the plant will include:

- Cement silos;
- Aggregate silos;
- Sand silos;
- Water tanks;
- Weigh bridges;
- Weigh hoppers;
- Slump stand;
- Conveyors,
- Truck parking;
- Car parking;
- Building enclosure; and
- Ancillary offices and staff areas.

3 Waste Management Plan – Construction

3.1 Key Activities

Key construction activities at the site are anticipated to include:

- Site preparation on the existing hardstand area;
- Installation of cement, aggregate and sand silos;
- Installation of water tanks, weigh bridges, weigh hoppers and slump conveyors
- Construction of truck and car parking area;
- Construction of office building;
- Construction of enclosure for general storage, machinery and waste bins.

3.2 Waste Streams and Classifications

The construction stages of the proposed development are anticipated to generate the following broad waste streams:

- Excavation waste, including concrete, asphalt pavement and underlying, potentially contaminated, soil and fill;
- Construction waste;
- Plant maintenance waste;
- Packaging waste; and
- Work compound (site employees) waste.

According to Martens and Associates' Preliminary Site Investigation (P1706122JR01V01), the site has been recently used for industrial and port activities, and is currently unoccupied with bitumen and concrete seal surface. Table 1 summarises types of waste that is likely to be generated during construction, along with their waste classifications according to EPA NSW (2014) and recommended management methods.

Table 1: Potential waste types, classifications and management methods – construction

Waste Types	NSW EPA Classification	Proposed Reuse / Recycling / Disposal Method
Excavation spoil	Non-putrescible waste. Waste classification depends on concentration of contaminants.	Re-use for under ramp embankments (if assessed to meet criteria for re-use) or off-site disposal
Sediment fencing, geotextile materials	General solid waste (non-putrescible)	Reuse at other sites where possible or disposal at landfill
Steel (structural and reinforcing) and other metal	General solid waste (non-putrescible)	Off-site recycling
Timber formwork	General solid waste (non-putrescible)	Reuse on-site or off-site recycling
Glass	General solid waste (non-putrescible)	Off-site recycling
Concrete	General solid waste (non-putrescible)	Remaining concrete to be taken back by delivering concrete truck to concrete batching plant for re-use. Alternatively, the remaining concrete will be taken to offsite crushing facilities for recycling. Excavated concrete shall be transported to offsite crushing facility to form recovered aggregates.
Packaging materials, including wood, plastic, metals and cardboard	General solid waste (non-putrescible)	Returned to suppliers or off-site recycling
Other construction waste (Plasterboard, metal wire, etc.)	General solid waste (non-putrescible)	Most material is used as best as possible to reduce waste. Specific contractors to recycle most materials.
Truck/Machinery Waste	Hazardous waste if contains or was previously in contact with Dangerous Goods	Off-site recycling or disposal by servicing contractors of truck/machinery
Recyclable beverage containers, tin cans, paper and cardboard	General solid waste (non-putrescible)	Any general recyclables to a recyclables bin onsite and emptied by construction contractors preferred supplier for off-site recycling
General staff amenities waste	General solid (non-putrescible) waste mixed with putrescible waste	Disposal at a landfill

3.3 Estimated Quantities of Construction Waste

In the absence of waste generation rates for the proposed development type from the Inner West Council, we have adopted the waste types and quantities for construction of a factory building provided in *The Hills Development Control Plan 2012* to provide an estimate of construction wastes for the development (Table 2). Of the buildings types available in *The Hills Development Control Plan 2012*, the rates for a factory building were chosen as a factory best reflects the construction of pre-fabricated structures onsite. As the site requires little surface preparation works, the amount of spoil to be generated is unknown at this stage and is believed to be less than construction projects that requires extensive earthwork.

Table 2: Summary of waste producing processes for proposed development.

Feature	Area (m^2)	Estimated quantity (tonnes)						
		Timber	Concrete	Bricks	Gyprock	Spoil	Metal	Other
Maritime facility	2053	0.5	4.3	3.4	0.9	9.9	1.2	1.0
Office and Enclosure	4130	1.0	8.7	6.8	1.9	19.8	2.5	2.1
Total	6183	1.5	13.0	10.2	2.8	29.7	3.7	3.1

3.4 Waste Management and Minimisation

Construction is anticipated to produce materials that will be stockpiled for either reuse on-site or wastes for disposal off-site. Specific site stockpiles shall be required for construction materials (including access materials, concrete, fencing, prefabricated structural elements, erosion protection materials, fuel, etc.), construction wastes and spoil. Location of stockpiles shall be determined on-site to allow ease of access; to ensure stockpiles are clear of overland flow paths and to minimise the impact on site amenity. Stockpiles shall require appropriately designed sediment and erosion controls.

Excavation and foundation works have been designed to minimise the amount of waste generated by the proposed works. The waste concrete material is to be either reused on-site or transferred to offsite crushing facilities for future reuse. Should contaminated materials be encountered during site earthworks, these materials are to classified according to EPA NSW (2014) and disposed of to an off-site licenced waste management facility. Disposal of contaminated materials is to be determined by the site superintendent and management method(s) should be determined irrespective of the volume of contaminated materials encountered.

During construction works skip bins shall be utilised to manage generated solid waste. These bins shall be covered overnight and during windy conditions to prevent material being lost and spread over the site. Access for waste management service vehicles is proposed to be via existing and construction entrances from James Craig Road beneath the old Glebe Island Bridge abutment. Removal of waste is anticipated to be carried out during approved hours.

4 Waste Management Plan – Operation

4.1 Waste Streams and Classifications

Operation of the concrete batching plant is anticipated to generate the following waste streams:

- Waste concrete, including returned concrete and agitator 'washout' waste;
- Wastewater, including from concrete production wastewater and sewage;
- Bulk packaging wastes, including timber pallets and cardboard boxes;
- General waste and co-mingled recycling.

Table 3 summarises types of waste that is likely to be generated during the operation of the concrete batching plant, along with their waste classifications according to EPA NSW (2014) and recommended management methods.

Table 3: Potential waste types, classifications and management methods – operation

Waste Types	NSW EPA Classification	Proposed Reuse / Recycling / Disposal Method
Concrete	General solid waste (non-putrescible)	Depending on final design, returned concrete and concrete washout will be captured through the use of traditional washout pits and/or a concrete reclaimer. Washout pits - storage areas specially designed for trucks to washout residual concrete. The pits capture the washout and provide a mechanism for progressive drying of the material for subsequent transport to an off-site recycling facility for use on recycled aggregates and road base materials. Concrete reclaimer - recovers aggregate & sand from unused concrete returned to the plant. The recovered sand & aggregate is reused in concrete product. Plate filter press - filters the cementitous particles from the slurry water produced by the concrete reclaimer. This process produces high pH water which is used in concrete production and solid cement "cakes" that are disposed of in landfill. Note: Some returned concrete & washout pit waste is unsuitable to processed through the concrete reclaimer & will be crushed at an offsite facility for future reuse. The quantity treated by this method is minimal.
Industrial waste waters	Liquid waste	Reused onsite for concrete production
Sewage	Liquid waste	Disposed of to Sydney Water sewer
Gross pollutants and sediments captured by WSUD devices	General solid waste (non-putrescible)	To be disposal removed offsite by a servicing contractor for
Bulk packaging materials	General solid waste (non-putrescible)	Returned to suppliers or off-site recycling
E-waste, batteries, printer toners and ink cartridges	Hazardous waste	Off-site recycling
Light bulbs / fluorescent tubes	Hazardous waste	Off-site recycling
Recyclable beverage containers, tin cans, paper and cardboard	General solid waste (non-putrescible)	Any general recyclables to a recyclables bin onsite that recycles off-site
General staff amenities waste	General solid (non-putrescible/ putrescible)	Disposal at a landfill

4.2 Waste Management and Minimisation

4.2.1 Liquid waste

Sources of industrial wastewater are listed below:

- Dust suppression – approximately 1 kL/day of wastewater will be produced and re-collected within the stirrer pit to supplement other supplies.
- Washdown and Barrel 'Washout' water – approximately 61.5 kL/day of wastewater will be generated from washing down work areas and trucks, and 220 kL/day from washing out truck concrete barrels. This water is collected within the stirrer pit to be used to supplement other water supply for concrete production.

Each of the identified wastewater systems is considered a 'closed' self sufficient system, where wastewater is used onsite. Therefore, no industrial wastewater requiring off site disposal shall be generated.

Staff amenities is estimated to generate approximately 7 kL/day of wastewater that will be disposed of to Sydney Water sewer. This estimation is based on a total of 67 staff expected onsite at any one time. Amenities are to be provided for both drivers and site staff.

4.2.2 General solid waste (non-putrescible and putrescible)

The main solid waste generated by batching plants is waste concrete. As the recommended best practice, accurate ordering, accurate production and quality control shall minimise the need to return unused concrete and prevent waste generation.

Some waste concrete can be transported offsite for crushing to create recovered aggregates. Solid washout waste is a mixture of aggregates and sand from the original concrete and shall be reused for batching.

Unhardened waste concrete can be used for construction purposes at the batching plant, such as the manufacturing of concrete blocks. Additionally, Hanson intend to install a concrete reclaimer to recover aggregate and sand for reuse in concrete production. The choice of reuse/recycling method subjects to the final design.

The proposed Enviropods stormwater management system shall create a 'point source' of litter, debris and other pollutants. MUSIC modelling indicates that Enviropods will capture approximately 4,500 kg/yr of sediments and 420 kg/yr of gross pollutants. Such waste will be collected

and removed from the site by a contractor specifically servicing this need.

The operation of the site also generates office waste and domestic waste. The main type of office waste is waste paper, comprising general office paper, photocopy paper, office stationery and paper from other sources. Other office waste includes cardboard/packaging, and toner/printer cartridges from printers, photocopiers and facsimile machines. The quantity of waste generated is minimal and the majority recycled. Staff amenities waste, such as food scraps, aluminium cans, glass bottles, plastic and paper containers and putrescible waste, are generated by employees and contractors while onsite. This waste shall be sorted and recycled where practical or otherwise disposed of offsite by a licensed contractor.

5 References

Cement Concrete & Aggregates Australia (2014) *New South Wales*

Concrete by-product Recycling and Disposal Industry Guidelines

EPA NSW (2014) *Waste Classification Guidelines Part 1: Classifying waste*, Sydney

EPA Victoria (1998) *Environmental Guidelines for the Concrete Batching Industry*, Melbourne

Leichhardt Municipal Council Local Environmental Plan (2013).

Marten and Associates (2017) *Preliminary Site Investigation: Part of Lot 10 DP 1170710, Concrete Batching Plant (SSD 8544) at Glebe Island, Rozelle, NSW (P1706122JR01V01)*

Secretary's Environmental Assessment Requirements (2017).

The Hills Development Control Plan 2012