Erskine Park Resource Management Facility Staged SSD

Stage 1 Waste Transfer Station

Waste Management Plan

Report Number 610.14324-R1

October 2015

Transpacific Cleanaway Pty Ltd

50 Quarry Road

Erskine Park NSW 2759

Version: FINAL

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Stage 1 Waste Transfer Station

Waste Management Plan

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1 INTRODUCTION

1.1 Background

This Waste Management Plan (WMP) has been prepared by SLR Consulting Australia (SLR) on behalf of Transpacific Cleanaway Pty Limited (Cleanaway) to accompany an application for State Significant Development (SSD 7075) to the NSW Department of Planning and Environment (DP&E), seeking Development Approval under Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The application relates to the Erskine Park Resource Management Facility, located approximately 11 kilometres (km) south-east of Penrith in western Sydney, New South Wales (NSW).

Cleanaway propose to develop the Erskine Park Resource Management Facility in two stages:

- Stage 1 – Site-wide Concept Design (the Concept) and Waste Transfer Station (the Development)
- Stage 2 – Resource Recovery Facility (RRF)

This EIS relates to Stage 1 (herein referred to as the Development), with a separate EIS to be prepared for Stage 2.

Cleanaway own and operate the Erskine Park Landfill which is located adjacent to the proposed Development site. The Erskine Park Landfill was opened in 1994 and involves rehabilitation of a former quarry through non-putrescible waste disposal. The landfill currently accepts commercial and industrial waste, general solid waste, low level contaminated soils, construction and demolition waste, and clean fill. The site does not accept asbestos, putrescible waste, moderately or highly contaminated soils or hazardous waste. The landfill at Erskine Park currently represents Cleanaway's major post-collections facility in NSW. Based on current input rates it is anticipated that the landfill has approximately two years of commercial operations remaining. Cleanaway is therefore seeking approval for ongoing use of the site as a Resource Management Facility.

1.2 Secretary's Environmental Assessment Requirements

A Request for SEARs relating to the form and content of the EIS required to accompany the development application was submitted to the NSW DP&E in May 2015. The SEARs were subsequently issued by the DP&E on 30 June 2015.

Table 1 presents the waste management requirements and key issues to be addressed in the EIS in accordance with the SEARs, and identifies where each requirement is addressed in this WMP.

Table 1 SEARs: Key Issues – Waste Management

Waste Management	Relevant Plan Section
A detailed description of the waste types and their origins that would be handled at the facility	Addressed in Section 6.12 of the EIS document.
Details of how waste would be stored and handled on site, and transported to and from the site	Management and servicing of construction and operational wastes associated with the Development site are addressed in Sections 5.5, 5.6 and 6.5, 6.6 of this WMP. Wastes received and handled at the Waste Transfer Station are addressed in Section 6.12 of the EIS document.
A description of the technology involved in processing waste for transfer and the quality control measures that would be implemented	Addressed in Section 6.12 of the EIS document.
Details of the location and size of stockpiles of unprocessed waste on the site	Addressed in Section 6.12 of the EIS document.
A detailed description of the relationship and likely interactions with the adjoining landfill and any potential impacts on landfilled cells	Addressed in Section 6.12 of the EIS document.
The measures that would be implemented to ensure that that the development is consistent with the aims, objectives and guidance in the NSW Waste Avoidance and Resource Recovery Strategy 2014-2021	Whole of document, Sections 5.4, 5.5, 6.1 and 6.4.

1.3 Scope

This WMP applies to the construction and operation of the Waste Transfer Station only. Other requirements of the SEARs associated with the operation of the Station have been addressed within the overarching EIS document (see **Table 1**). Further, the construction and operation of the RRF, which forms part of Stage 2 of the development, is outside the scope of this EIS. A separate WMP would be prepared to assess the impacts of the RRF.

The provisions contained in the WMP must be implemented at all stages of the Development and may be subject to review upon expansion or changes in operational procedures.

- See page 13 for the Construction WMP.
- See page 25 for the Operational WMP.

1.4 Objectives

The principal objective of this WMP is to identify all potential wastes likely to be received and generated at the site during development and operational phases of the development, including a description of how waste would be handled, processed and disposed of (or re-used/recycled). This is done by providing information on:

The specific objectives of this WMP are as follows:

- To encourage the minimisation of waste production and maximisation of resource recovery.
- To ensure the appropriate management of contaminated/hazardous waste.
- To identify procedures and chain of custody records for waste management.
- To assist in ensuring that any environmental impacts during the operational life of the Development comply with the approval conditions and other relevant regulatory requirements.

2 DEVELOPMENT DESCRIPTION

2.1 Development Overview

Cleanaway are seeking development consent under Part 4 of the EP&A Act for Stage 1 of the Erskine Park Resource Management Facility which includes the site wide concept design and the construction and operation of a putrescible Waste Transfer Station and associated infrastructure.

The key aspects of the Station are:

- General site clearance and earthworks to establish suitable grades for construction;
- A steel framed and transfer station building with associated two storey offices, amenities and lower level transfer vehicle load-out area;
- Concrete slab transfer station working floor with concrete and asphalt peripheral roads;
- An active ventilation and treatment system and controlled discharge points as part of the overall approach to air emissions and odour management;
- Associated infrastructure including all hardstand areas, car parks, weighbridges and sealed roads; and
- Ancillaries including perimeter security fencing, security gates, rain water harvesting, fire suppression system, signage, landscaping, drainage and services.

Once operational, the Station would receive a nominal daily volume of approximately 1,040 tonnes of putrescible waste per day (design capacity 300,000 tonnes per annum (tpa)). However, initially 90,000 tpa would be received at the site. All received waste would then be transported off-site to an appropriately licensed waste management facility.

2.2 Development Site

The Development site is located approximately 11 km south-east of Penrith in Western Sydney, NSW. It is addressed to 50 Quarry Road, Erskine Park NSW, and is identified as Lot 1 in Deposited Plan (DP) 1140063 in the Penrith Local Government Area (LGA) (refer to **Figure 1**). The title comprises approximately 3 hectares. As evident on **Figure 2**, the site is currently utilised by Cleanaway to support the existing Erskine Park Landfill that is located adjacent to the site (Lot 4, DP 1094504). Current site infrastructure includes buildings, car parks, sheds, laydown areas, a weighbridge, and sealed roads. Some vegetation is also located around the site.

The site gains vehicular access from the adjoining Quarry Road. The site is directly serviced by Quarry Road; a two lane asphalt sealed road servicing the Erskine Business Park and providing a link to Mamre Road via James Erskine Drive. The Erskine Park site sits adjacent to the M4 and M7 Motorway. Mamre Road provides an interchange with the M4 Motorway, which incorporates off ramps from the M4 in both directions approximately 4.1 km to the north of the Development site. Erskine Park Road is also a classified Main Road (MR629) and connects to the M4 Motorway to the east of Mamre Road, some 4.3 km to the north east of the site. Mamre Road itself is classified Main Road (MR 536) which provides single lane flow in each direction north and south of James Erskine Drive.

In addition to Quarry Road and Mamre Road, there are a number of other options for access from the site via approved heavy vehicle routes, including James Erskine Drive, Erskine Park Road, Lenore Drive and Old Wallgrove Road.

Figure 1 Development Site

Figure 2 Site Location and Surrounding Environment

3 BETTER PRACTICE FOR WASTE MANAGEMENT AND RECYCLING

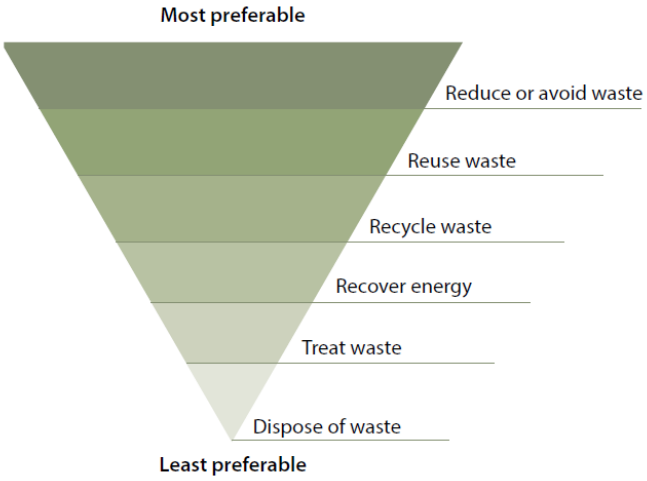
3.1 Waste Management Hierarchy

Where appropriate, this WMP aims to meet the principles of the waste management hierarchy, by promoting waste as a resource through the following in order of preference:

- Waste avoidance through prevention or reduction of waste generation. Waste avoidance is best achieved through better design and purchasing choices;
- Waste reuse, without substantially changing the form of waste;
- Waste recycling through the treatment of waste that is no longer usable in its current form to produce new products;
- Energy recovery through thermal treatment of residual waste materials and from green waste processing; and
- Waste disposal, in a manner that causes the least harm to the natural environment.

The waste hierarchy pictured below demonstrates a classification of waste management options in order of their environmental impacts, as established under the Waste Avoidance and Resource Recovery Act 2001.

Figure 3 Waste Hierarchy



Source: NSW Waste Avoidance and Resource Recovery Strategy 2014-21 (2014, NSW EPA)

3.2 Benefits of Implementing Better Practice for Waste Management and Recycling

- Enhanced social and environmental reputation of an organisation.
- Reduced costs associated with waste disposal.
- Benefits to all stakeholders and the wider community.
- Improved environmental outcomes.

4 WASTE LEGISLATION AND GUIDANCE

The legislation and guidance outlined in **Table 2** below should be referred to during the construction and operational phases of the Development.

Table 2 Waste Legislation and Guidance

Legislation	Objectives
Waste Avoidance and Resource Recovery Act 2001	To promote extended producer responsibility in place of industry waste reduction plans. Specific objectives include: • To encourage efficient use of resources. • To minimise the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste. • To ensure that industry shares with the community the responsibility for reducing and dealing with waste. • To ensure the efficient funding of waste and resource management planning, programs and service delivery.
Protection of the Environment Operations Act (POEO) 1997 & Amendment Act 2011	Administered by the Environmental Protection Authority (EPA) to enable the Government to establish instruments for setting environmental standards, goals, protocols and guidelines. ***Important Note:*** *The owner of a premises, the employer or any person carrying on the activity which causes a pollution incident is to immediately notify the relevant authorities when material harm to the environment is caused or threatened.* A list of each relevant authority is provided in the POEO Amendment Act and will be noted in the site's incident register.
POEO (Waste) Regulation 2014	Contains provisions relating to the waste levy, waste tracking, management requirements for certain waste types, payment schemes for councils, consumer packaging recycling and other miscellaneous provisions.
NSW EPA's Waste Classification Guidelines (Part 1) 2014	To assist waste generators to effectively classify, manage, treat and dispose of waste to ensure the environmental and human health risks associated with waste are managed appropriately and in accordance with the POEO Act and is associated regulations.
Building Code of Australia (BCA) and relevant Australian Standards (AS)	The BCA (and AS) have the aim of achieving nationally consistent, minimum necessary standards of relevant health and safety, amenity and sustainability objectives efficiently.
Penrith City Council Development Control Plan (DCP) 2014*	Section C5 Waste Management of the DCP outlines the general provisions of WMPs, and general and site specific controls. Section D4.6 Industrial Development provides conditions for accessing and servicing the site.
NSW EPA's Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities 2012	The EPA's Better Practice Guidelines (2012) encourage efficient waste minimisation and resource recovery for commercial and industrial facilities and is used as a benchmark document when assessing waste production rates within Australia and details a range of waste management provisions.
NSW EPA's Waste Avoidance and Resource Recovery (WARR) Strategy 2014-21	A key component of the State Government's vision for the environmental and economic future of the state that will be supported financially by the *Waste Less, Recycle More* funding initiative providing long-term targets for 6 key result areas including reduced illegal dumping.
Australian Packaging Covenant	Each building should be encouraged to establish an Action Plan to demonstrate their contribution to the achievement of the Australian Packaging Covenant's (APC) goals. The three main performance goals of the APC are: • Design: Optimise packaging to use resources efficiently and reduce environmental impact without compromising product quality/safety. • Recycling: Efficiently collect and recycle packaging. • Product Stewardship: Demonstrate commitment of all signatories.

*In accordance with the provisions of the State Environmental Planning Policy (State and Regional Development) (SRD SEPP), a DCP is not relevant in this case given the Development is a State Significant Development. However, this WMP has been designed to take into consideration the requirements of the DCP.

5 CONSTRUCTION WASTE MANAGEMENT PLAN

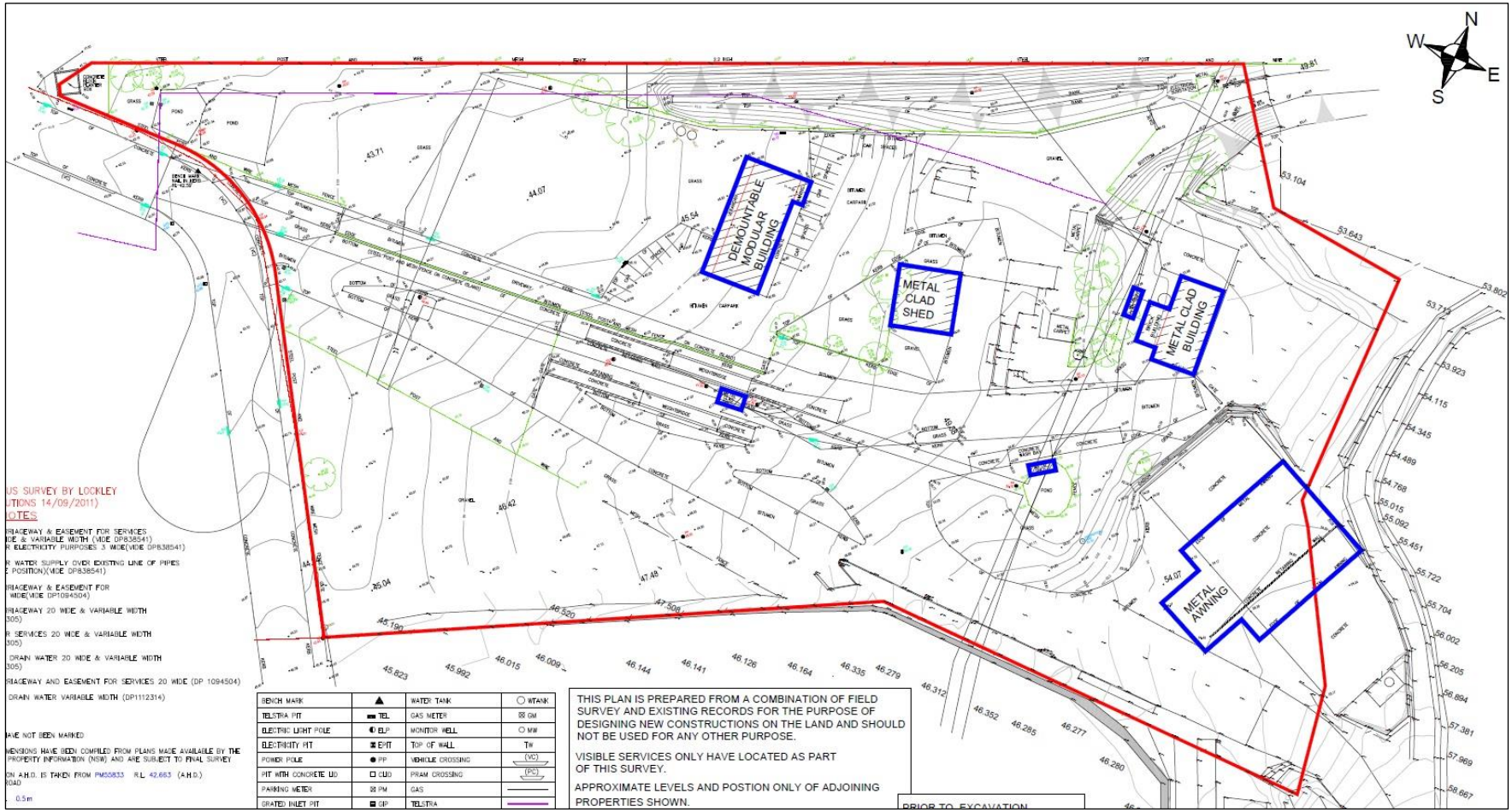
Demolition and construction stages of development projects have the greatest potential for waste minimisation.

Construction of the Waste Transfer Station and associated structures would initially require the relocation, demolition and removal of the existing buildings and redundant infrastructure on the Development site. The main existing features within the current site are identified on **Figure 4** and described in **Section 2.1**.

The Waste Transfer Station building would be located towards the rear of the Development site, with sealed roads approaching and surrounding the building. An external footprint of 85 m (in north-south orientation) and 50 m (east-west orientation) is proposed for the main transfer building. Foundations for the structure would require excavations to a depth of approximately 2 m to 3 m.

Traditional methods of construction would be employed by a contractor to develop the facility. Consideration would be given to staged construction of access ways and weighbridges, prior to removal of existing structures, to ensure business continuity for existing landfilling operations and post closure activities.

Figure 4 Existing Site Plan



Source: SLR

5.1 Waste Streams and Classifications

The development is likely to generate the following broad waste streams:

- green waste
- demolition wastes
- excavation material
- construction wastes
- plant maintenance waste
- packaging waste
- work compound (on-site employee) waste
- waste water

Possible waste types along with their waste classification are provided overleaf in **Table 3**. For further information on how to determine a waste's classification, refer to the EPA's *Waste Classification Guidelines* (2014).

Table 3 Potential Waste Generation and EPA Classifications

Waste Types	NSW Classification	Proposed Reuse / Recycling / Disposal Method
Site Preparatory & Excavation / Demolition & Construction		
Cleared vegetation	General solid (non-putrescible) waste	Reuse on-site
Excavated material (VEMN, EMN)	General solid (non-putrescible) waste	Reuse on-site (where possible)
Sediment fencing, geotextile materials	General solid (non-putrescible) waste	Reuse at other sites where possible or disposal to landfill
Concrete (solids and washouts) and asphalt	General solid (non-putrescible) waste	Crush and reuse on-site where possible or off-site recycling
Steel reinforcing, other metals (eg wire mesh and bulk electrical cabling)	General solid (non-putrescible) waste	Off-site recycling
Conduits and pipes	General solid (non-putrescible) waste	Off-site recycling
Timber formwork	General solid (non-putrescible) waste	Reuse on-site or off-site recycling
Plasterboard	General solid (non-putrescible) waste	Off-site recycling or disposal to landfill
Bricks	General solid (non-putrescible) waste	Crush and reuse on-site where possible or off-site recycling
Glass	General solid (non-putrescible) waste	Off-site recycling
Plant Maintenance		
Tyres	Special waste	Reuse on site or off-site recycling
Empty oil and other drums / tins (e.g. fuel, chemicals, paints, spill clean ups)	Hazardous waste if the containers were previously used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and from which residues have not been removed by washing or vacuuming. General solid (non-putrescible) waste if the containers have been cleaned by washing or vacuuming.	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility. (Note: Discharge to sewer subject to Trade Waste Agreement with Sydney Water.)
Air and oil filters and rags	General solid (non-putrescible) waste	Disposal to landfill
Batteries	Hazardous waste	Off-site recycling

Waste Types	NSW Classification	Proposed Reuse / Recycling / Disposal Method
Packaging		
Packaging materials, including wood, plastic (including stretch wrap or LLPE), cardboard and metals	General solid (non-putrescible) waste	Off-site recycling
Wooden crates	General solid (non-putrescible) waste	Reuse for similar developments, returned to suppliers, or off-site recycling
Work Compound and Associated Offices		
Recyclable beverage containers (glass and plastic bottles, aluminium cans), tin cans	General solid (non-putrescible) waste	Co-mingled recycling at off-site licensed facility
Clean paper and cardboard	General solid (non-putrescible) waste	Paper and cardboard recycling at off-site licensed facility
General domestic waste generated by workers (soiled paper/cardboard, food stuffs, polystyrene)	General solid (non-putrescible) waste mixed with putrescible waste	Disposal at landfill
Pump-out waste and septage (sewage)	Liquid (trade) waste	Off-site disposal at licensed facility or disposal direct to sewer where arranged with Sydney Water

5.2 Waste Generation Rates

The Construction Site Manager will need to record the types and quantities (including the volume in cubic metres and weight in tonnes) of wastes produced during the site preparatory and construction stages of the Development and on this basis, the numbers and capacity of skips/bins can be determined.

Volume to tonnes conversion factors used to calculate weights of waste generated during site preparation and demolition activities are provided in **Table 4**.

Table 4 Volume to Tonnes Conversion Factors

Material	Conversion Factors (tonne per m^3)
Concrete	1.27
Soil / Rubble / Excavated Material	1.25
Metal Clad Sheeting	0.90

Source: WRAP UK 2014

A guide/estimate of the potential waste percentages is provided based on published waste generation rates for construction projects, as indicated in **Table 5**.

Table 5 Guideline to Waste Composition and Volumes - Construction

Material	Estimated Waste %	Conversion Factors (tonne per m^3)
Hard Material (i.e. bricks, tiles)	32%	1.20
Timber	24%	0.34
Plasterboard	6%	0.33
Concrete	9%	1.27
Metals	6%	0.42
Plastics	15%	0.25
Cardboard	4%	0.20
Green waste	3%	0.09

Material	Estimated Waste %	Conversion Factors (tonne per m^3)
Soil	1%	1.20

Source: UK WRAP

The UK Department of Environment, Food and Rural Affairs (DEFRA) and the UK Building Research Establishment (BRE) have developed a number of benchmark indicators to help determine approximate tonnages of waste produced during various construction developments including civil engineering and commercial retail works. These indicators have been used as the basis for waste estimation in lieu of suitable Australian alternatives. The benchmarks include Environmental Performance Indicators (EPI) which measure the volume (cubic metres, m^3) of waste produced per 100 square metres (m^2).

The EPI indicators provided in **Table 6** have been used for the purposes of this WMP to estimate the amounts of demolition and construction wastes that could be generated by the Development.

Table 6 Environmental Performance Indicator for Waste Volumes from New Developments

Development Type	Average Volume (m^3) of Waste per 100m^2
Industrial Buildings	14.0
Commercial Offices	20.4
Civil Engineering	28.1

Source: UK BRE

5.2.1 Estimation of Waste Volumes

Site Preparatory Works

Significant earthworks would largely comprise excavation works to reduce the general level of the site. The platform level for the transfer building would require a reduction in ground level to a depth of 3.0 m to 5.0 m (based on a recent ground investigation) and would produce surplus material of approximately 20,000 m^3. In addition, concrete removed from redundant hardstand, recessed weighbridge and roadway areas during excavation works will be crushed on-site. There are also a number of trees that would need to be removed to make way for the new facility, primarily along the site's northern boundary. These trees will be chipped, mulched and reused on the site for landscaping where practicable.

The excavated, crushed and chipped materials would be transported to a stockpile within 300 m of the facility site for later use as restoration material for the adjacent landfill (i.e. it would not require transportation outside of the overall site).

The estimated amount of surplus excavation materials and concrete waste generated during site preparation works is provided in **Table 7** below. Actual tonnage and composition will vary however this estimate is provided to inform potential on-site or off-site re-use and recycling opportunities.

Table 7 Estimated Site Preparatory Material Generation – Major Site Preparation Activities

Item	Approximate Area (m^2)	Approximate Depth (m)	Estimated Waste Generation (m^3)	Estimated Waste Generation (t)
Excavation	4,570	5	22,850	28,563
Concreted areas	10,617	0.2	2,123	2,697

Demolition Works

Other structures to be removed may include service cables, ducting, sewage pipework etc. Metal clad structures on site which include a shed, a building and an awning covering the landfill plant parking area for the existing site, would also be demolished. The estimated amount of metal clad waste likely to be generated during demolition activities is provided in **Table 8** below and assumes an average metal clad sheet thickness of 3 mm. Metal cladding sheets will be recycled off-site.

Table 8 Estimated Waste Generation – Major Demolition Activities

Structure	Approximate Footprint (m^2)	Approximate Amount of Metal Cladding (m^2)	Thickness of Metal (mm)	Estimated Waste Generation (t)
Metal clad shed	165	5,535	3	15
Metal clad building	242	374		1
Metal clad awning	1152	1,152		3
Total	**1,559**	**7,061**		**19**

Construction Works

The proposed facility comprises of hardstand areas, an office and amenities block and the waste transfer facility area. Construction waste estimates are provided in **Table 9** and **Table 10**.

Table 9 Estimated Total Waste Generation – Major Construction Activities

Proposed Land Use	Approximate Area (m^2)	Estimated Waste Generation (m^3)	Total tonnes waste (t)
Hardstand Areas	30,000	759	964
Transfer Station Building	4,027	564	386
Office & Amenities Building	637	130	89
Total	**34,664**	**1,452**	**1,439**

Note: Assumes no waste generated by soft landscaping

Table 10 Estimated Waste Volumes and Materials for the Construction of Buildings

Material	Split (%)	Waste (m^3)	Conversion factor	Waste (tonnes)
Hard Material (i.e. bricks, tiles)	32%	222	1.20	266
Timber	24%	166	0.34	57
Plasterboard	6%	42	0.33	14
Concrete	9%	62	1.27	79
Metals	6%	42	0.42	17
Plastics	15%	104	0.25	26
Cardboard	4%	28	0.20	6
Green waste	3%	21	0.09	2
Soil	1%	7	1.20	8
Total	**100%**	**694**	**-**	**475**

It is estimated that approximately 70% of the predicted construction waste arising from the total development can be re-used (on-site or at another development) or recycled off-site (i.e. concrete, green waste, soil, metal, and a proportion of timber and hard materials).

5.3 Targets for Resource Recovery

Estimated tonnages for both demolition and construction phases demonstrate that a significant proportion of waste (approximately 70%) can be diverted from landfill during the proposed Development. The recycling and resource recovery performance of each development contributes to overall NSW State recycling targets, which for the commercial and industrial (C&I) sector, is 57% increasing to 70% by 2021-22[1].

Waste minimisation measures that can be implemented to assist in achieving this resource recovery target are provided in the following sections. Waste audits will determine the actual percentage of wastes that were recycled and disposed of at landfill during the Development.

5.4 Waste Avoidance Measures

The Construction Site Manager will identify opportunities for waste avoidance by:

- minimising site disturbance and eliminating unnecessary excavation;
- selecting construction materials taking into consideration to their long lifespan and potential for reuse;
- ordering materials to size and ordering pre-cut and prefabricated materials;
- reuse of formwork (where possible);
- planned work staging;
- reducing packaging waste on-site by:
    - returning packaging to suppliers where possible
    - purchasing in bulk
    - requesting cardboard or metal drums rather than plastics
    - requesting metal straps rather than shrink wrap and using returnable packaging such as pallets and reels;
- careful on-site storage and source separation;
- subcontractors informed of site waste management procedures; and
- coordination and sequencing of various trades.

The amount of materials used in the construction of a building should also be reduced wherever possible by:

- exposing structures to reduce the use of floor, ceiling and wall cladding and finishes;
- use of naturally ventilating buildings to reduce ductwork; and
- use of prefabricated components for internal fit outs.

The Construction Site Manager will advise on material selection for the reduction of embodied energy and resource depletion. This includes:

- the use of recycled concrete and steel;
- the use of bulk insulation products that contain recycled content, such as recycled glass in glass-wool;
- the reduction of PVC use;
- the use of fittings and furnishings that have been recycled or that incorporate recycled content;

[1] NSW Waste and Avoidance Resource Recovery Strategy 2014-21

- the use of low volatile organic compounds (VOC) paints and adhesives;
- the use of post-consumer reused timber or certified plantation / Forest Stewardship Council (FSC) certified timber; and
- designs enabling disassembly and reuse of materials.

5.5 Reuse, Recycling and Disposal

Effective management of construction materials and demolition/construction waste, including options for reuse and recycling where applicable and practicable, will be conducted. Only wastes that cannot be cost effectively reused or recycled are to be sent to landfill or appropriate disposal facilities.

Refer to **Table 3** for an outline of the proposed reuse, recycling and disposal methods for potential waste streams generated by the Development.

The following procedures are to be implemented:

- excavated materials will be re-used on-site and disposed of to a suitably licensed site;
- green waste will be mulched and re-used in landscaping on-site;
- concrete, tiles (where applicable) and bricks will be crushed on site for reuse in the proposed construction or recycled off-site;
- steel will be recycled off-site, all other metals will be recycled where economically viable;
- colour bond roof material off cuts to be stockpiled on site for reuse or recycling;
- framing timber will be reused on-site or recycled off-site;
- windows, doors and joinery will be recycled off-site (where possible);
- waste oil will be recycled or disposed of in an appropriate manner;
- all used crates will be stored for reuse unless damaged;
- all glass that can be economically recycling will be;
- all solid waste timber, brick, concrete, rock that cannot be reused or recycled will be taken to an appropriate landfill site and disposed of in an approved manner;
- all asbestos, hazardous and/or intractable wastes are to be disposed of in accordance with Workcover Authority and EPA requirements;
- provision for the collection of batteries, fluorescent tubes, smoke detectors and other recyclable resources will be provided on site; and
- container and paper/cardboard recycling will be provided on-site for employee use or these items will be sorted recycling at an appropriately licensed facility; all garbage will be disposed of via a council approved system.
- all other solid waste including bitumen paving, tile,, rock and soil will be taken to an appropriate materials recycling facility/landfill site and processed in an approved manner; and
- all garbage will be disposed of via a council approved system.

5.6 Waste Storage and Servicing

The Development will be managed ensuring effective source separation and appropriate collection of waste during demolition and construction works.

For construction stages, minimum dedicated skips would be used for:

- timber;

- plasterboard/gyprock;
- concrete;
- bricks;
- steel/scrap metal;
- general waste; and
- other waste (i.e. for the collection of materials that may be re-used on future developments).

Separate receptacles for the safe disposal of hazardous waste types (i.e. light bulbs, batteries, etc) will also be provided where applicable.

Where possible, employee container recycling bins will be provided nearby common areas at work compounds/work sites for plastic and glass bottles, soft drink cans, aluminium and tin cans to ensure these items do not end up at landfill. Specialised bins for cigarette butts should also be provided outside lunchrooms and nearby common areas at work compounds/work sites.

5.6.1 Space and Amenity

Waste storage areas will be accessible and allow sufficient space for storage and servicing requirements. The storage areas will be flexible in order to cater for change of use throughout the Development. Where space is restricted, dedicated stockpile areas are to be delineated on the site, with regular transfers to dedicated skip bins for sorting.

The positions of the designated waste holding areas on site will change according to building works and the progression of the Development, but must consider visual amenity, OH&S and accessibility in their selection. Appropriate siting of waste stockpile locations will take into account slope and drainage factors to avoid contamination of stormwater drains during rain events.

All waste placed in stockpile areas/skips for disposal or recycling shall be adequately contained to ensure that the waste does not fall, blow, wash or otherwise escape from the site. Waste containers are to be kept clean and in a good state of repair.

5.6.2 Servicing and Transport

The frequency of the waste removal will, in most cases, be dictated by the volume of material being deposited into each of the dedicated skips. Skips are to be checked on a daily basis by the Site Manager to ensure that skips do not overflow. If skips and/or bins are reaching capacity, removal and replacement should be organised for the next 24 hours.

All skips/bins leaving the site will be covered with a suitable tarpaulin to ensure that the spillage of wastes from the skips whilst in transit is eliminated.

All waste collection for construction works are to be conducted between 7am and 6pm daily. All site generated building waste collected in the skips and/or bins will leave the site and be deposited in the approved and appropriately licensed recycling centre, transfer station or landfill site.

5.6.3 Contaminated / Hazardous Waste

During the construction phases of the Development, there must be a commitment to engage qualified and certified contractors to remove all contaminated/hazardous materials (e.g. asbestos) and dispose of all contaminated/hazardous waste at an appropriately licenced facility, where applicable and in accordance with EPA regulations.

In the event that any contaminated or hazardous materials are unexpectedly uncovered during demolition or excavation works, the Construction Site Manager is to stop work immediately and contact the relevant hazardous waste contractor prior to further works being undertaken in the area.

Contaminated material stockpiled on site will be minimised as far as possible and should be stored on HDPE liner, in a bunded location which is protected from inclement weather. Sediment fences should also be installed around the base of stockpiles and the stockpiles should be covered. Where excavated material requires validations, samples should be taken for NATA laboratory testing as per the requirements of the contamination assessment prior to restoration works, backfilling exercises and disposal.

Any trucks carrying contaminated materials should be securely and completely covered immediately after loading the materials, to prevent windblown emissions and spillage.

Decontamination of all equipment prior to demobilisation from the site is important in order that contaminated materials are not spread off-site. This should be achieved using dry cleaning methods as far as practicable and collection of material for disposal. The following additional measures should be employed on site:

- as far as possible, all tracked surfaces to be kept free of contaminated material; and
- all equipment should be cleaned in an area contained contaminated soils so that they remain within the area, or on a lined surface and collected spoil should be treated as contaminated material.

5.6.4 Liquid Waste Management

Any liquid wastes and dangerous goods wastes generated by the demolition and construction activities (e.g. due to damage or leakage of containment) will be disposed of by a suitably qualified contractor to an appropriately licensed disposal facility.

Waste water storage tanks (where applicable) will be carefully monitored to ensure overflow does not occur and no liquid wastes or wash down waters will be disposed of via the stormwater drainage system.

Liquid waste is often produced from the washing down of plant and apparatus. Washdown of equipment/plant/machinery and concrete delivery trucks will take place within a specified, appropriately bunded, washdown bay. It is envisaged that the existing sewer network servicing the current site facilities will be used to dispose of washdown waters. A petrol/oil interceptor may be placed within the washdown area to restrict oil based liquids entering the sewer network. An alternative will be a pumped sump that would allow waste water to be pumped and transferred into a local waste water treatment facility or plant.

Refuelling activities will be undertaken in designated areas with appropriate spill containment measures to avoid overspill to sensitive areas.

5.6.5 Spills Management

Spills on the worksite are most likely to involve fuel, hydraulic oil or engine oil spilled from plant items, and paints and solvents.

If a spillage occurs, site staff will immediately identify the spilled materials and notify the Construction Site Manager, then contain the spill as soon as possible so it doesn't spread.

Containment measures for spillages will be provided at appropriate locations and in close proximity to staff car park areas, dangerous goods stores areas and main development work areas (e.g. a spill kit containing non-combustible absorbent material).

Material Safety Data Sheets (MSDS) will also be located nearby spill kit areas for advice on spillage clean-up and disposal.

5.7 Fire Incident Management

Waste and litter will be cleaned up from across the site at the end of each day. All fuel and chemicals will be stored in secure, lockable, bunded, sealed and covered areas. Stockpiled materials will be kept to designated areas.

Smoking will be restricted to designated areas away from flammable material stockpiles. No cutting, welding, grinding or other activities likely to generate fires must be undertaken in the open on "total fire ban" days.

Fire extinguishers will be made available both on site and nearby waste storage areas. Emergency procedures will be displayed in a prominent position within the site working area and adjacent to the fuel/chemical storage area.

Fire incidents on site will be reported to the EPA in accordance with the POEO Act and Amendment Act, as relevant.

5.8 Signage

Standard signage will be posted in all storage/waste collection areas and all skips/drums/bins are required to be labelled correctly and clearly to identify materials stored within.

Refer to the EPA's website for construction and demolition waste and recycling signs http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm.

5.9 Training and Awareness

All staff (including sub-contractors and labourers) employed during the demolition and construction phases of the Development must undergo induction training regarding waste management for the development site.

Induction training is to cover, as a minimum, an outline of the WMP including:

- legal obligations;
- emergency response procedures on site;
- waste storage locations and separation of waste;
- litter management in transit and on site;
- the implications of poor waste management practices;
- correct use of general purpose spill kit; and
- responsibility and reporting (including identification of personnel responsible for waste management and individual responsibilities).

5.10 Monitoring and Reporting

The following measures will be undertaken to improve demolition and construction waste management and to provide more reliable waste generation figures:

1. Compare Development waste quantities with actual waste quantities produced.
2. Conduct waste audits of current developments (where feasible).
3. Note waste generated and disposal methods.
4. Look at past waste disposal receipts.
5. Record this information to help in waste estimations for future waste management plans.

Records of waste volumes recycled, reused or contractor removed are to be maintained. Additionally, dockets/receipts verifying recycling/disposal in accordance with the WMP must be kept and presented to Council and/or the EPA when required.

Daily visual inspections of waste storage areas will be undertaken by site personnel and inspection checklists/logs recorded for reporting to the Site Manager on a weekly basis or as required. These inspections will be used to identify and rectify any resource and waste management issues.

Waste audits are to be carried out by the Construction Contractor to gauge the effectiveness and efficiency of waste segregation procedures and recycling/reuse initiatives. Where audits show that the above procedures are not carried out effectively, additional staff training will be undertaken and signage re-examined.

All environmental incidents are to be dealt with promptly to minimise potential impacts. An incident register must be maintained on-site at all times and include the contact details of the 24 hour EPA Pollution line. Likely incidents to occur during the construction phase of the Development may involve fuel or chemical spills, seepage of mishandling of hazardous waste, or unlicensed discharge of pollutants to environment. A waste recycling/disposal proforma is presented within **Appendix A**, this document is typically used to track what materials are reused or recycled during the construction phase of the Development.

5.11 Roles and Responsibilities

All personnel have a responsibility for their own environmental performance and compliance with all legislation.

It will be the responsibility of the Construction Contractor to implement the WMP, and an employee responsibility to ensure that they comply with the guideline at all times.

Where possible, an Environmental Management Representative (EMR) should be appointed for the Development. Suggested roles and responsibilities are provided below.

Table 11 Recommended Roles and Responsibilities

Role	Responsibility
Construction Site Manager	- Ensuring plant and equipment are well maintained. - Ordering only the required amount of materials. - Keeping materials segregated to maximise reuse and recycling. - Ultimately responsible for routinely check waste sorting and storage areas for cleanliness, hygiene and OH&S issues, contaminated waste materials, and also ensuring that all monitoring and audit results are well documented and carried out as specified in the WMP.
Environmental Management Representative (EMR)	- Approaching and establishing the local commercial reuse of materials where reuse on-site is not practical. - Establishing separate skips and recycling bins for effective waste segregation and recycling purposes. - Training and awareness of the requirements of the WMP and specific waste management strategies adopted for the Development. - Contaminated waste management and approval of off-site waste transport, disposal locations and checking licensing requirements. - Approval of off-site waste disposal locations and checking licensing requirements. - Assessment of suspicious potentially contaminated materials, hazardous materials and liquid wastes. - Monitoring, inspection and reporting requirements.

Daily visual inspections of waste storage areas may be delegated to other on site staff. All subcontractors will be responsible for ensuring that their work complies with the WMP through the site induction and contract engagement process.

It is the responsibility of the Construction Contractor (or site operative) to notify Council of the appointment of waste removal, transport or disposal contractors.

6 OPERATIONAL WASTE MANAGEMENT PLAN

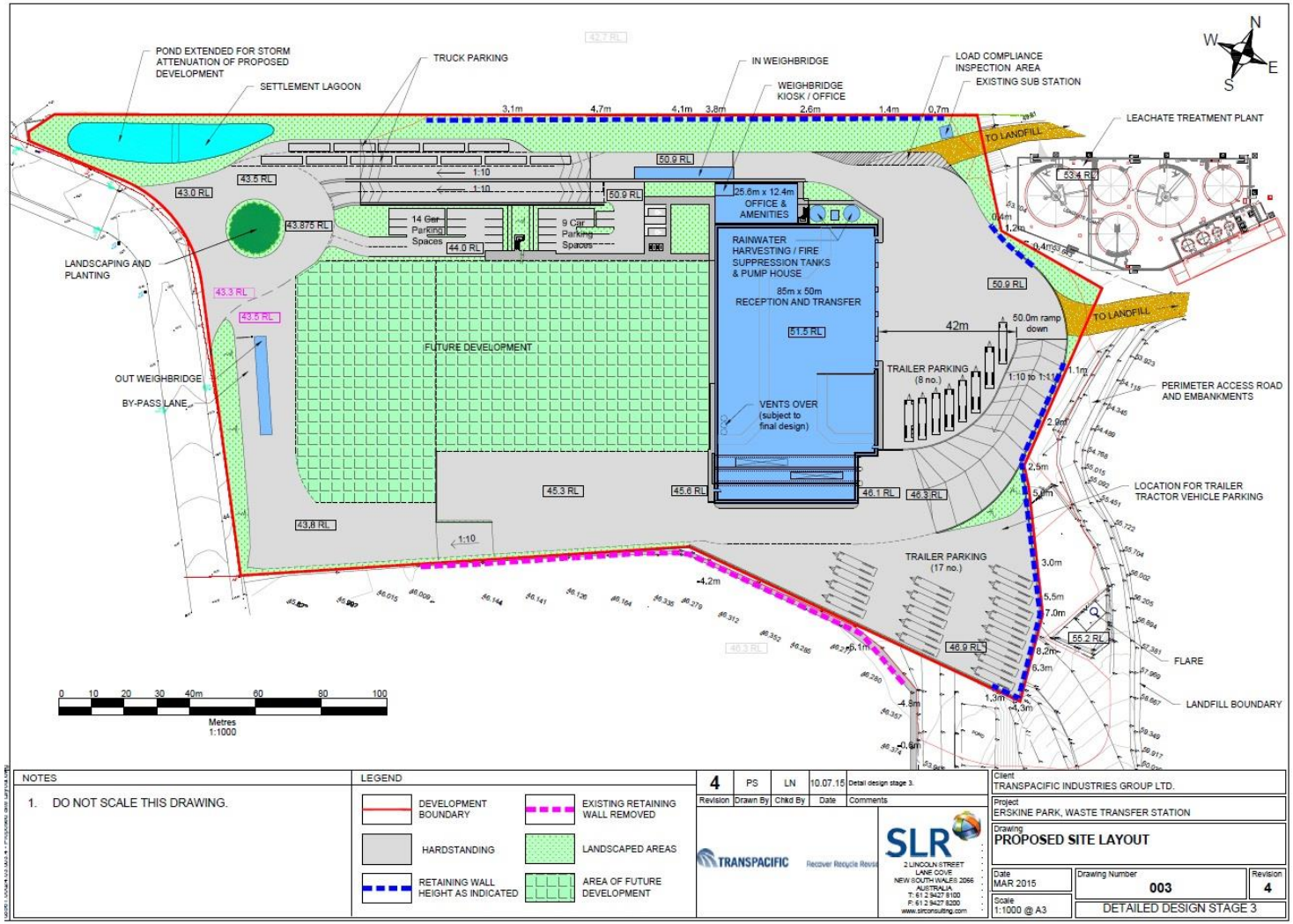
Ineffective waste management for commercial premises can lead to environmental pollution, offensive odours, litter, attraction of vermin and occupational safety and hygiene issues.

Effective waste management reduces costs through the reuse of resources and minimisation of fees associated with removal, transportation and disposal of waste, and improves environmental outcomes locally, regionally and globally.

Effective waste management is achieved through the implementation of a WMP for the operational life of the Development.

The following sections describe the operational waste management procedures relating to the general operation of the Development site (see **Figure 5** for the proposed layout). The receipt, handling and transfer of Waste Transfer Station wastes has been addressed separately within the overarching EIS document.

Figure 5 Proposed Site Layout



6.1 Waste Streams and Classifications

The general operation of the site will generate the following broad waste streams:

- office wastes;
- packaging wastes (ie cardboard, paper, plastic / shrink wrap, pallets);
- amenity wastes; and
- maintenance wastes.

Potential waste types along with their waste classification are provided below in **Table 12**.

Table 12 Potential Waste Generation and EPA Classifications – Operational

Waste Types	NSW Classification	Proposed Reuse / Recycling / Disposal Method
General Operations		
General garbage (including non-recyclable plastics)	General solid (putrescible and non-putrescible) waste	Disposal at landfill
Recyclable beverage containers (glass and plastic bottles, aluminium cans), tin cans	General solid (non-putrescible) waste	Co-mingled recycling at off-site licensed facility
Paper/cardboard	General solid (non-putrescible) waste	Off-site secure shredding and recycling
Food waste	General solid (putrescible) waste	Option to compost on site. Alternatively, off-site recycling or dispose to landfill with general garbage
Packaging		
Bulk cardboard	General solid (non-putrescible) waste	Cardboard recycling at off-site licensed facility
Plastic packaging materials (including stretch wrap or LLPE)	General solid (non-putrescible) waste	Baled and sent for off-site recycling
Bulk polystyrene	General solid (non-putrescible) waste	Recycling at off-site licensed facility or disposal at landfill
Wooden crates / pallets	General solid (non-putrescible) waste	Reused for similar developments, returned to suppliers, or off-site recycling
Maintenance		
E-waste, batteries, printer toners and ink cartridges	Hazardous waste	Off-site recycling
Spent Smoke Detectors	General solid (non-putrescible) waste OR Hazardous waste (some Commercial varieties)	Disposal to landfill OR offsite disposal at licensed facility
Glass (other than containers)	General solid (non-putrescible) waste	Off-site recycling
Light bulbs	Hazardous waste	Off-site recycling
Maintenance waste (i.e. empty oil / paint drums, chemicals, solvents, area wash downs etc)	Hazardous waste if the containers were previously used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and from which residues have not been removed by washing or vacuuming. General solid (non-putrescible) waste if the containers have been cleaned by washing or vacuuming.	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility. (Note: Discharge to sewer subject to Trade Waste Agreement with Sydney Water.)
Air-conditioning parts and filters	General solid (non-putrescible) waste	Disposal to landfill
Garden organics (lawn mowing, tree branches, hedge cuttings, leaves etc)	General solid (non-putrescible) waste	Reuse on site or contractor removal for recycling at licensed facility
Amenities		

Waste Types	NSW Classification	Proposed Reuse / Recycling / Disposal Method
Grey water (from bathrooms)	Liquid waste	Discharge to sewer
Sewage	Liquid (trade) waste	Discharge to sewer
Sanitary Waste	General solid waste (putrescible)	Contractor disposal at licensed facility

Source: http://www.environment.nsw.gov.au/waste/envguidlns/index.htm

For further information on how to determine a waste's classification, refer to the EPA's *Waste Classification Guidelines* (2014).

6.2 Waste Generation Rates

Estimated commercial waste generation rates are published in the EPA's Better Practice Guidelines for Waste and Recycling Management in Commercial and Industrial Facilities (2012).

Table 13 Estimated Waste Generation Rates for Different Types of Premises

Type of Premises	Average L per 100m^2 per day	
	Waste	Recycling
Offices	8	6
Café	215	130

Source: EPA's Better Practice Guidelines (2012)

The above waste generation rates for 'Office' have been applied to estimate conservative waste arisings associated with the office and weighbridge kiosk areas of the Transfer Station operations building. Waste generation rates for 'Café" have been applied to mess hall and kitchen areas.

6.2.1 Estimation of Waste Volumes / Tonnages

The following waste are anticipated during the operational phase of the Development site.

Table 14 Anticipated Weekly Waste Generation – Operations

Type of Premises	Site Area (m^2)	Average L per day		Average L per week	
		Waste	Recycling	Waste	Recycling
Offices (1st Floor)	153	12	9	67	51
Weighbridge Kiosk (GF)	31	2	2	13	10
Mess Room (GF)	77	165	100	905	547
Kitchen (1st Floor)	38	82	50	453	274
Total Waste	**299**	**249**	**151**	**1,371**	**831**

It is recommended that scheduled waste audits be undertaken approximately one month into the operational phase of the Development to quantify actual waste generation rates generated by the Development.

The assessment of generated waste volumes will also be influenced by management and employee attitude to recycling and disposal. **Appendix B** includes an example of a WMP template for use by the Cleanaway.

6.3 Targets for Resource Recovery

The performance of each development will contribute to overall NSW State recycling targets, which for the commercial and industrial (C&I) sector, is 57% increasing to 70% by 2021-22.

Waste minimisation measures that can be implemented to assist in achieving this resource recovery target are provided in the following sections.

6.4 Waste Avoidance, Re-use and Recycling Measures

The reduction, re-use and recycling of waste can be achieved by incorporating measures such as the below.

6.4.1 Waste Avoidance

Waste avoidance measures may include:

- avoiding printing where ever possible;
- printing double sided to avoid paper and printer toner / ink cartridge wastes;
- providing ceramic cups, mugs, crockery and cutlery rather than disposable items in kitchen and staff common areas;
- purchasing consumables in bulk to avoid unnecessary packaging;
- requesting options for packaging return to suppliers;
- presenting all waste reduction initiatives to staff as part of their induction program; and
- investigating leased office equipment and machinery rather than purchase and disposal.

6.4.2 Re-use

Establish systems with in-house and with supply chain stakeholders to transport products in re-useable packaging where possible.

6.4.3 Recycling

Recycling opportunities include:

- paper recycling trays provided in office areas for scrap paper collection and recycling;
- printer toners / ink cartridges collected in allocated bins for appropriate contractor recycling;
- development of ‘buy recycled’ purchasing policy; and
- providing recycling collections within each of the offices (e.g. plastics, cans and glass and also paper and cardboard if not collected separately).

A waste recycling/disposal proforma is presented within Appendix A, this document is typically used to track what materials are reused or recycled from the incoming waste stream and during the construction phase of the development.

6.5 Waste Storage and Servicing Requirements

6.5.1 Waste Storage Areas

The Office & Amenities building will have its own waste and recycling storage area where the recycling and garbage bins will be stored prior to collection. Bins will be provided in the Mess Room and beside printers on the first floor for paper and printer toner / ink cartridge recycling collection. Additional bins will be placed in the changing rooms and amenities areas for general waste collection.

The construction of garbage storage room will to comply with BCA (Building Code of Australia) requirements and Australian Standards. Refer to Section 2.6.3 of the EPA's *Better Practice Guidelines* (2012) for bin storage area specifications.

Waste/recycling storage areas will be constructed of an adequate size to accommodate all waste and recycling associated with operation of the site. Sufficient space will be provided for the segregation and storage of varying waste types including provision for the collection of fluorescent tubes, smoke detectors, e-wastes and other recyclable resources. Sufficient space will also be provided for reuse items such as crates and pallets for occupational safety purposes.

6.5.2 Waste Servicing

Recycling generated by the Office & Amenities building will be collected for off-site recycling. General operational residual waste will be collected from site for disposal to landfill. Sufficient clearance will be provided to enable waste and recycling collection vehicles to access the bin collection point. The collection point should be located away from pedestrian areas.

6.6 Special Wastes

6.6.1 Contaminated / Hazardous Wastes

- All contaminated and hazardous wastes (i.e. fluorescent tubing, batteries, e-wastes) will be recycled at an appropriately licensed facility.
- E-waste (electronic waste such as computers, mobile phones, printer toners and ink cartridges) and batteries containing heavy metal contaminants will be recycled at an appropriately licensed recycling facility.

6.6.2 Liquid Waste

- Liquid, semi-liquids or moist substances will not be placed in waste containers, unless securely wrapped or contained to prevent the substance from leaking.
- Any liquid wastes or dangerous goods wastes generated by the Development (e.g. due to damage or leakage of containment) should be disposed of by a suitably qualified contractor to an appropriately licensed disposal facility.
- No liquid wastes or wash down waters should be disposed of via the stormwater drainage system. Wastewater storage tanks (including stormwater collection tanks) should be carefully monitored to ensure overflow does not occur.

6.6.3 Stormwater Treatment

Car parking areas must drain to a stormwater treatment device capable of removing litter, oil, grease and sediment prior to discharge to the stormwater system.

All wastewater and stormwater treatment devices are required to be regularly maintained and cleaned to ensure these devices remain effective, with all solid and liquid wastes collected from these devices disposed of in accordance with this WMP and the POEO Act.

6.6.4 Spills Management

Containment measures for spillages should be provided at appropriate locations and in close proximity to staff car park areas, dangerous goods stores areas and main warehouse operation areas (e.g. a spill kit containing non-combustible absorbent material). Material Safety Data Sheets (MSDS) should also be located nearby spill kit areas for advice on spillage clean up and disposal.

6.7 Signage

Education and communication of the requirements of this WMP to employees and contractors (including cleaners) must be undertaken on a routine basis. The main signage aspects to consider are:

- garbage and recycling bins must be clearly and correctly labelled at all times;
- waste storage areas must have clear signage instructing cleaners and contractors/visitors how to correctly separate out recyclable materials (if required);
- the location of, and directions to, waste storage areas must be well signposted;
- all hazards or potential dangers associated with waste infrastructure should be clearly identified, especially those linked to compaction or other waste handling equipment; and
- emergency contact information should be displayed in case there are any issues with the waste and recycling systems/services in the building.

Coloured and labelled bin lids are necessary for identifying the bins. All signage should conform to the relevant Australian Standard and the EPA's standard recycling signs. Refer to the EPA's website for commercial use waste and recycling signs http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm.

The design and use of safety signs for waste rooms and enclosures should comply with AS 1319 Safety signs for the occupational environment. Australian Standards are available from the SAI Global Limited website (www.saiglobal.com).

6.8 Contract Clauses

Waste and recycling collection contracts and cleaning contracts should include clauses which specify waste servicing requirements. Refer to Appendix H of the EPA's *Better Practice Guidelines* (2012) for example clauses. Lease agreements should also outline and enforce proper use of waste equipment and storage areas.

6.9 Roles and Responsibilities

It should be the responsibility of Site Management to implement the WMP and a responsibility of the employees and cleaners to ensure that they comply with the guideline at all times.

Site Management should routinely check waste sorting and storage areas for cleanliness, hygiene and OH&S issues, and also ensure all monitoring and audit results are well documented and carried out as specified in the WMP.

An outline of waste management responsibilities are presented in **Table 15**.

Table 15 Waste Management Responsibility Allocation

Responsible Person	General Tasks
Site Management	Ensure the WMP is implemented throughout the life of the operation.
	Update the WMP on a regular basis (e.g. annually) to ensure the plan remains applicable.
	Undertake liaison and management of contractor collections.
	Organise internal waste audits on a regular basis.
	Manage any complaints and non-compliances reported through waste audits etc.
	Perform inspections of all waste storage areas and waste management equipment on a regular basis.
	Organise cleaning and maintenance requirements for waste equipment.
	Monitor bins to ensure no overfilling occurs.
	Ensure effective signage, communication and education is provided to alert employees / cleaners about the

Responsible Person	General Tasks
	provisions of this WMP and waste management equipment use requirements.
	Monitor and maintain signage to ensure it remains clean, clear and applicable.
	Ensure waste storage areas are kept tidy.
	Ultimately responsible for the management of all waste management equipment, cleaning requirements, waste transfer and collection arrangements.
	Responsible for ensuring statutory record-keeping, monitoring and reporting requirements are complied with.
Site Staff	Responsible for carrying out the provisions of this WMP and ensuring compliance with statutory requirements associated with the operation of the facility.
Cleaners	Removal of general waste, recyclables, cardboard waste and hazardous waste from offices and locations around the warehouse for transfer to centralised waste and recycling collection rooms or holding area as required.
	Transport of all bins to the holding areas / collection points as required.
	Cleaning of all bins and waste and recycling rooms on a weekly basis or as required.
Gardening Contractor	Removal of all garden organics waste generated during gardening maintenance activities for recycling at an off-site location or reuse as organic mulch on landscaped gardens.

Appendix A

Example Recycling/Disposal ProForma

Materials On-Site		**Destination**		
Waste Type	**Estimated Volume (m^3) or Weight (t)**	**Reuse** (on-site or off-site)	**Recycle** (specify recycling outlet)	**Disposal** (specify landfill site)