

Waste Management Plan

Foresight Environment



Western Sydney Stadium

Stage 2 – Operational Waste Management Plan

March 2017

Prepared by Foresight Environmental
e. info@foresightenvironmental.com
w. www.foresightenvironmental.com

This report is based on information provided by **Lend Lease** coupled with Foresight Environmental's knowledge of operational waste generation practices and the waste industry in general. 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 **Lend Lease**.

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's negligence.

The contents of this report should be treated at all times as confidential, unless permission from **Lend Lease** is received.

The contents of this document may not be referenced or used in any way by parties other than **Lend Lease** without the written permission of Foresight Environmental.

Revision No.	Issue date	Author	Reviewed by	Reason/comments
1	14/2/2017	Scott Ebsary	Patrick Arnold	Initial Draft for review
2	3/3/2017	Scott Ebsary	Patrick Arnold	Update with current photos and standard text

Table of Contents

1.	INTRODUCTION	3
2.	OVERVIEW OF PROPOSED DEVELOPMENT	5
3.	BACKGROUND	5
4.	SITE DESCRIPTION	6
5.	WASTE ESTIMATE	9
6.	WASTE MANAGEMENT SYSTEMS	10
6.1	CENTRAL WASTE STORAGE AREA.....	10
6.2	SATELLITE WASTE STORAGE AREAS	12
6.3	SIGNAGE	14
6.4	COLOUR-CODING	14
7.	ONSITE MANAGEMENT PROTOCOLS	15
8.	COLLECTION	17
9.	STAKEHOLDER EDUCATION.....	19
10.	MONITORING AND PERFORMANCE	20
10.1	ONGOING MONITORING AND REVIEW	20
10.2	RECYCLING PERFORMANCE AND TARGETS	21

1. Introduction

This report supports a State Significant Development (SSD) Development Application (DA) submitted to the Minister for Planning pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

The Application (referred to as SSDA16_8175) follows the approval of a Stage 1 SSD DA (SSDA16_7534) in December 2016. The Stage 1 SSDA sets out a Concept Proposal for the redevelopment of the Western Sydney Stadium and future supporting uses. In summary, the Stage 1 Consent includes the following components:

- **Concept Proposal** for the Western Sydney Stadium, including building envelopes, a new 30,000 seat stadium, 500 surface car parking spaces, access, ancillary infrastructure and landscaping; and
- **Detailed works** for staged demolition and removal of the existing stadium and associated infrastructure and the Parramatta Swimming Centre

This document details the way in which the proposed Western Sydney Stadium (WSS) development will manage the waste and recycling generated from the ongoing operations of the stadium in line with industry best practice and in accordance with the relevant development controls. This plan confirms that the waste facilities provided in the proposed design will adequately cater for the projected waste generation rates at the completion of the development.

2. Overview of Proposed Development

The proposal relates to a detailed ('Stage 2') DA for the detailed design and construction of the stadium. This SSD DA seeks approval for the following components of the development:

- Detailed design of the stadium, public domain and car parking spaces;
- Construction and use of the 30,000 seat stadium including:
 - General Admission Facilities including bars, food and drink stalls, amenities and viewing areas;
 - A function centre and kitchen facility;
 - Associated Stadium facilities including player and coaching facilities, media and press conference rooms, security and stadium managers facilities;
 - Waste storage and loading dock;
- Construction and embellishment of the public domain including:
 - Outdoor sporting and recreation facilities;
 - Public plazas and entertainment areas;
 - General landscaping works;
- Provision of up to 500 car parking spaces with vehicle access to the development from O'Connell Street and internal roads for vehicular circulation;
- Provision of signage zones, lighting and other ancillary stadium elements;
- Pedestrian access and footpath upgrades along O'Connell Street; and
- Extension and augmentation of physical infrastructure / utilities as required.

3. Background

Stadia Strategy

The stadium is the first project to be delivered under the NSW Government's \$1.6 billion Stadia Strategy, the largest investment in sporting infrastructure since the 2000 Olympics. The new Western Sydney Stadium will:

- Be able to cater for bigger crowds, provide an improved game day experience and bring major benefits to the Western Sydney economy
- Generate approximately 1,200 jobs during construction and between 600 and 900 jobs once operational for sporting event days and major events
- Cater for a range of sporting and community uses within the precinct.

Concept Proposal (SSDA 16_7534)

Infrastructure NSW (iNSW) on behalf of Venues NSW submitted a State Significant Development Application (SSDA) for the Stage 1 concept proposal and demolition of the existing stadium in July 2016. Consent for the Stage 1 SSDA was granted by the Minister for Planning on 7 December 2016 and includes:

- a maximum total GFA of approximately 60,000 m² (excluding the playing pitch) for the stadium development, including:
 - additional seating for approximately 10,000 more spectators in a seating bowl with 30,000 seats, including 27,000 general admission seats and 3,000 corporate seats;
 - playing pitch;
 - five levels of premium box/terrace, function/lounge offerings and a number of suite offerings;
 - flood lighting, stadium video screens and other ancillary fittings;
 - additional facilities for team, media, administration and amenity, including:
 - police facility and security office;
 - players changing rooms;

- ticket gates and ticket boxes;
 - media interview rooms;
 - green room;
 - production suite and joint operation control room;
 - event briefing rooms;
 - hirers office and patron services offices;
 - first aid facilities;
 - loading docks for deliveries; and
 - food, beverage and retail facilities.
- a maximum GFA of approximately 20,000 m² for future development of ancillary uses within the northern corner of the Site;
 - transport, parking and accessibility;
 - public domain elements; and
 - landscaping elements throughout the Site.

Design Excellence and Project Tender Phase

Since receiving the development consent for Stage 1, Venues NSW have appointed Lendlease as the contractor for the Stage 2 detailed design and the demolition and construction of the stadium. The tender process also served as a competitive design process in accordance with the Director General's Design Excellence Guidelines and Clause 7.10 of the *Parramatta Local Environmental Plan 2011*.

Site Establishment works Modification

A modification application (MOD 1) was made to the Stage 1 DA pursuant to Section 96(2) of the EP&A Act in February 2017. The modification seeks to expand the approved range of site preparation works to include piling and remediation/earthworks, as outlined below:

Remediation works comprising the excavation and storage of contaminated materials and bulk excavation.

Contaminated materials will be stored on site and capped below ground in accordance with the recommendations outlined in the Remedial Action Plan.

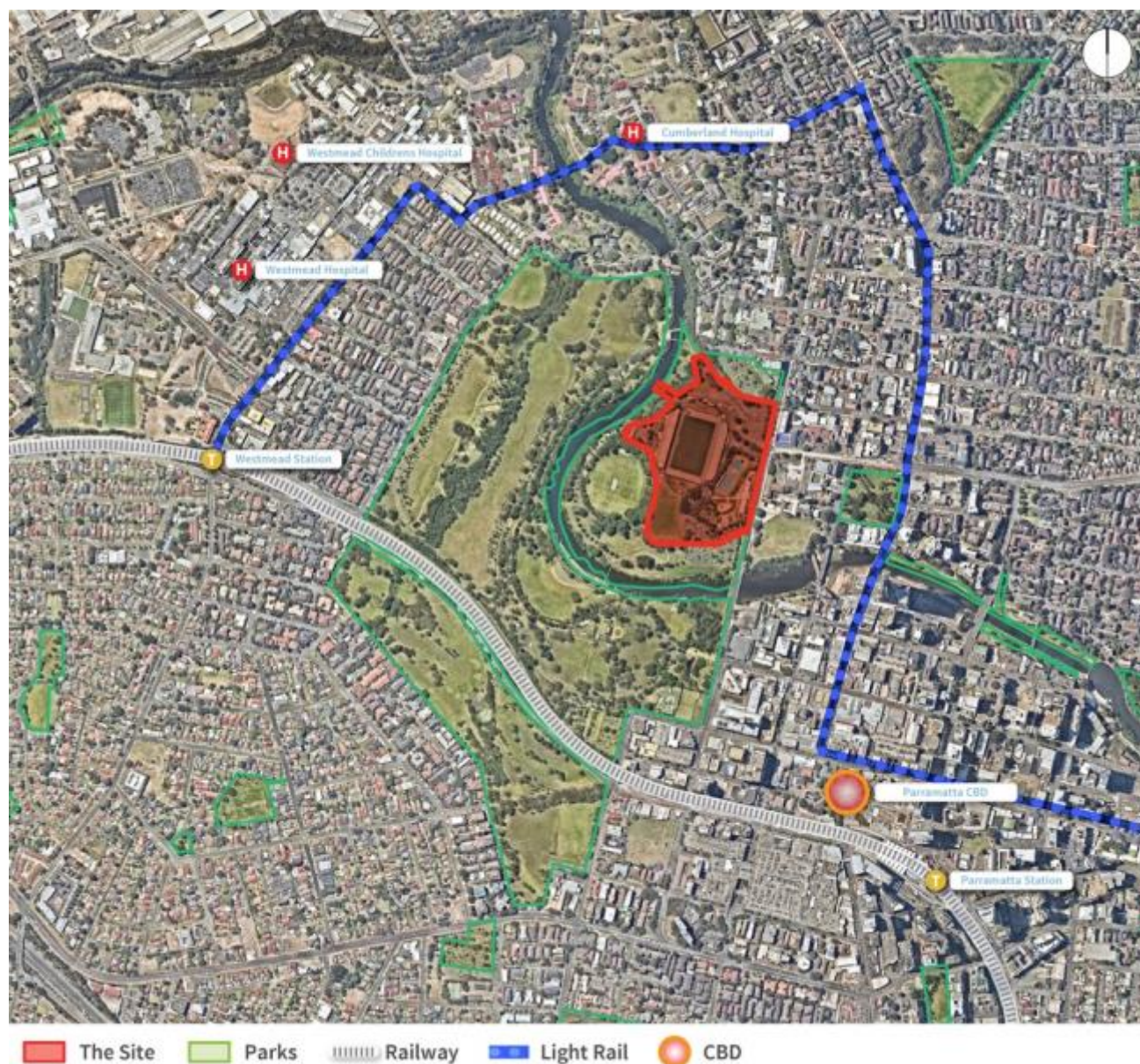
Piling works which will comprise the driving and drilling of concrete piles to establish foundations for the construction of a stadium located within the Stage 1 building envelope

The modification application is currently under assessment by the Department of Planning and Environment (DPE) and is awaiting determination.

4. Site Description

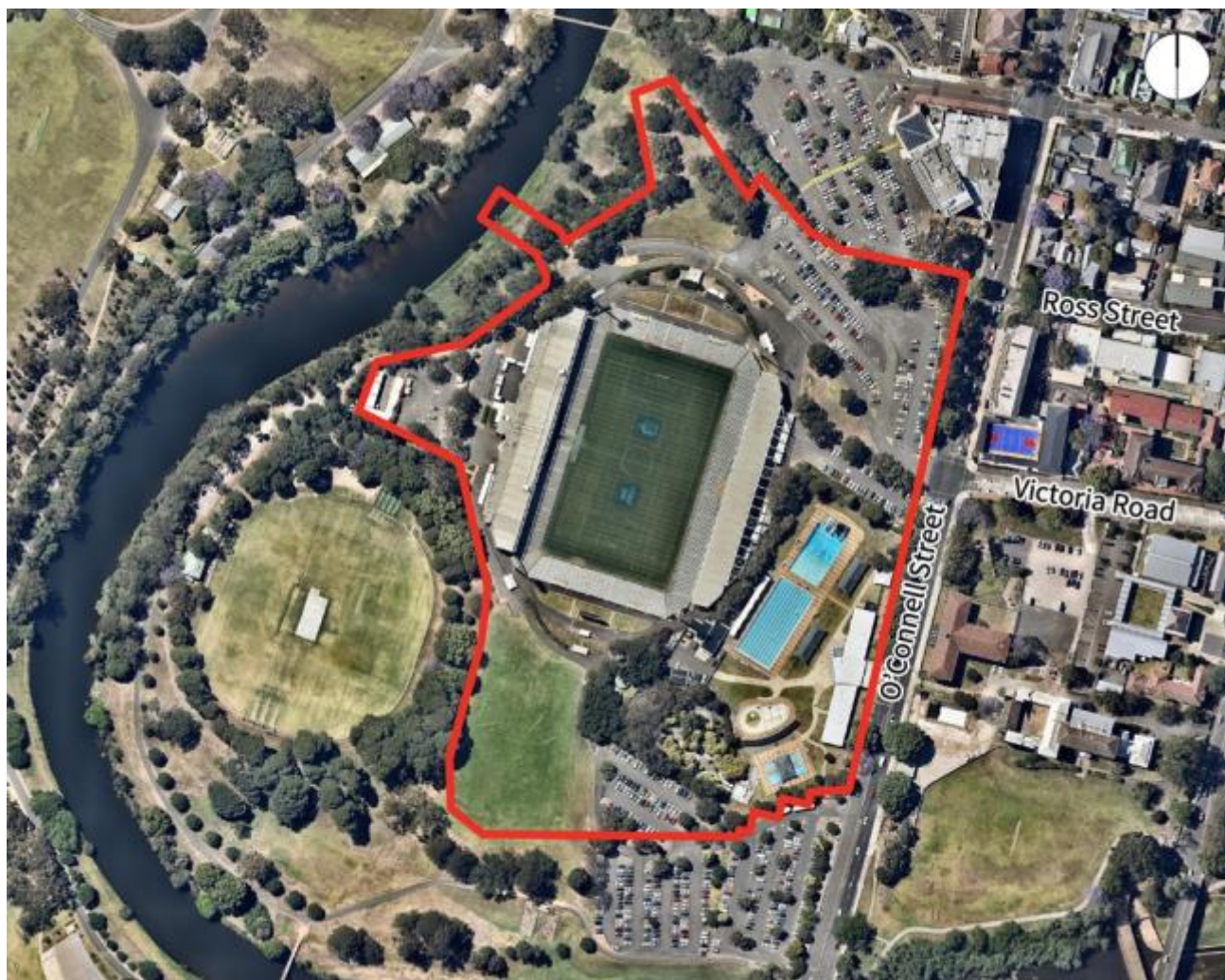
The Western Sydney Stadium is located at 11-13 O'Connell Street, within the Parramatta Park on the north-eastern edge of the Parramatta CBD. It is bound to the south and west by the Parramatta Park and the Parramatta River, the Parramatta Leagues Club to the north and O'Connell Street to the east. The Site is located within the City of Parramatta local government area (LGA). A locational context plan is provided at **Figure 1** below.

Figure 1 – Site context Plan



The site has an area of approximately 95,000m² and owned by Venues NSW and The Parramatta Park Trust. The site is irregular in shape and is illustrated in **Figure 2** below.

Figure 2 – Site Aerial Plan



 The Site

5. Waste Estimate

The following waste estimates are based on benchmark data from similar developments combined with the projected onsite activities. The waste estimates are based on peak waste generation rates associated with capacity event-day usage:

- 27,000 general admission patrons
- 3,000 premium product patrons

The waste estimates include both post-consumer generation (front of house - patrons) and pre-consumer generation (back of house – main kitchen prep, packaging etc). By projecting total peak waste generation for capacity event-days the recommended waste systems can be determined to ensure sufficient capacity is delivered through the waste systems to handle maximum waste generation.

The streams generated onsite and dealt with in this document include:

- General waste (landfill)
- Cardboard/paper
- Mixed recycling (plastics, glass, aluminium, steel)
- Food Organics
- Bulky waste

Table 1 below summarises the expected quantities and composition of waste and recyclables generated through the ongoing operation of the WSS.

Table 1 – Waste generation estimate (common waste streams)*

Material Streams	Kg/event day	L/event day
Organics (food) Recycling	418	5,619
Cardboard Recycling	1,615	10,609
Mixed Recycling	1,180	16,957
Landfill	1,816	18,315
Cooking Oil Recycling	100	110
TOTAL	5,129	51,611

6. Waste Management Systems

The following tables in this section detail the recommended equipment and collection frequency required to service the WSS based on the estimated waste profile.

Table 2 - Recommended equipment and collection frequency

	Bin Type	Bin size	No. of Bins	Weekly Clearance Frequency*	Capacity per event	Estimated volume/ weight per event	Footprint per bin (m2)	Total Footprint
Cardboard/ Paper	Baler	n/a	1	1	Ample - approx 4 bales per event	5619L	8	8
	MGB	240	30	Internal transfer only – emptied into baler	7200L		0.43	12.9
Food organics	MGB	240	60	1	14400L	10609L	0.43	25.8
Comingled recycling	MGB	240	80	1	19200L	16957L	0.43	34.4
General waste	Compactor	23m3	1	1	4000Kg	1816Kg/ 18,315L	16	16
	MGB	240	40	Internal transfer only – emptied into compactor	9,600L		0.43	17.2
Oil Recycling	Oil silo		1	1	1000L	110L	2	2
Total								99.1

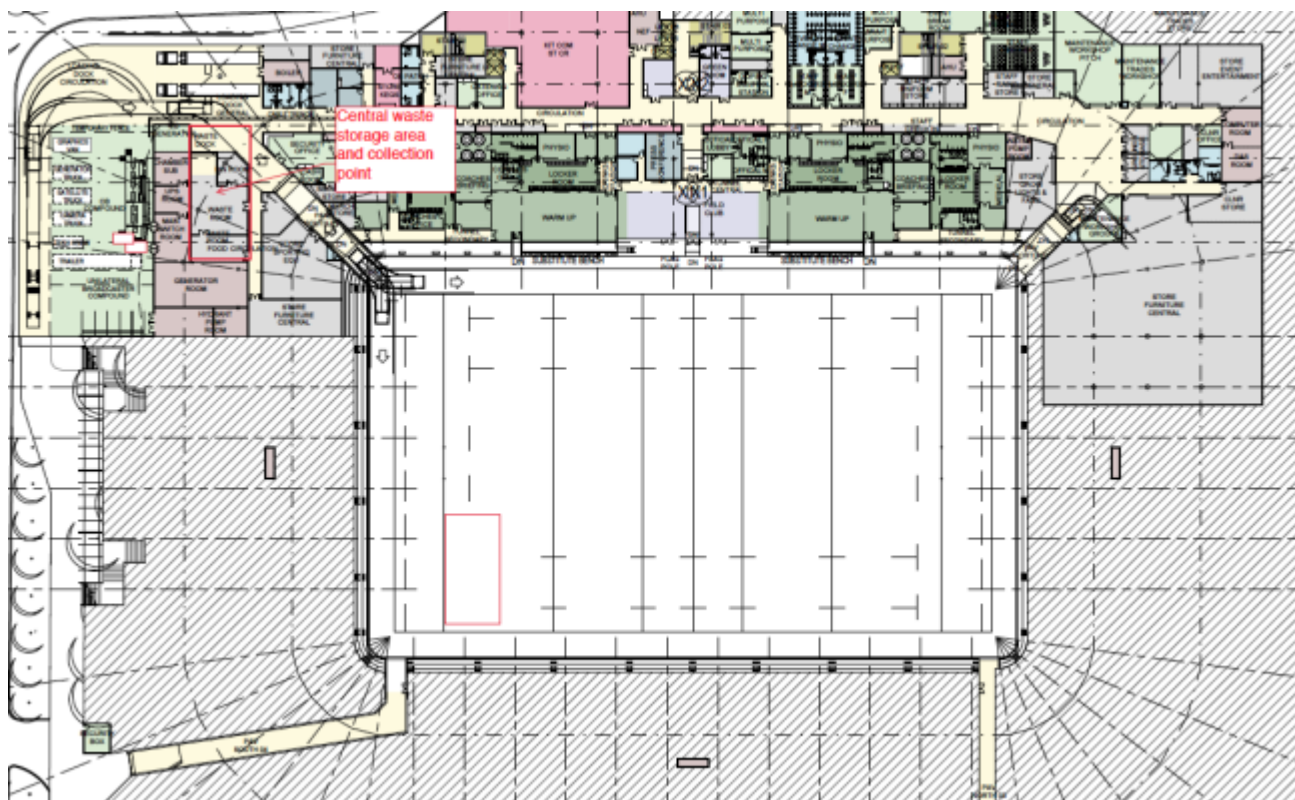
*note – the collection frequency can be adjusted depending on operational requirements. For the purposes of this exercise it has been set at 1/week to demonstrate the capacity of the recommended systems to service the total waste generation from one event day.

6.1 Central Waste Storage Area

A dedicated central waste storage area has been provided on the service level to house all waste systems. The waste storage area will be the waste contractor collection point for all streams. All bins deployed throughout public areas will be brought back to the central waste storage area by cleaning staff as required for storage prior to collection.

Figure 2 below shows the location of the waste storage area on the service level.

Figure 3: Central waste storage area within service zone

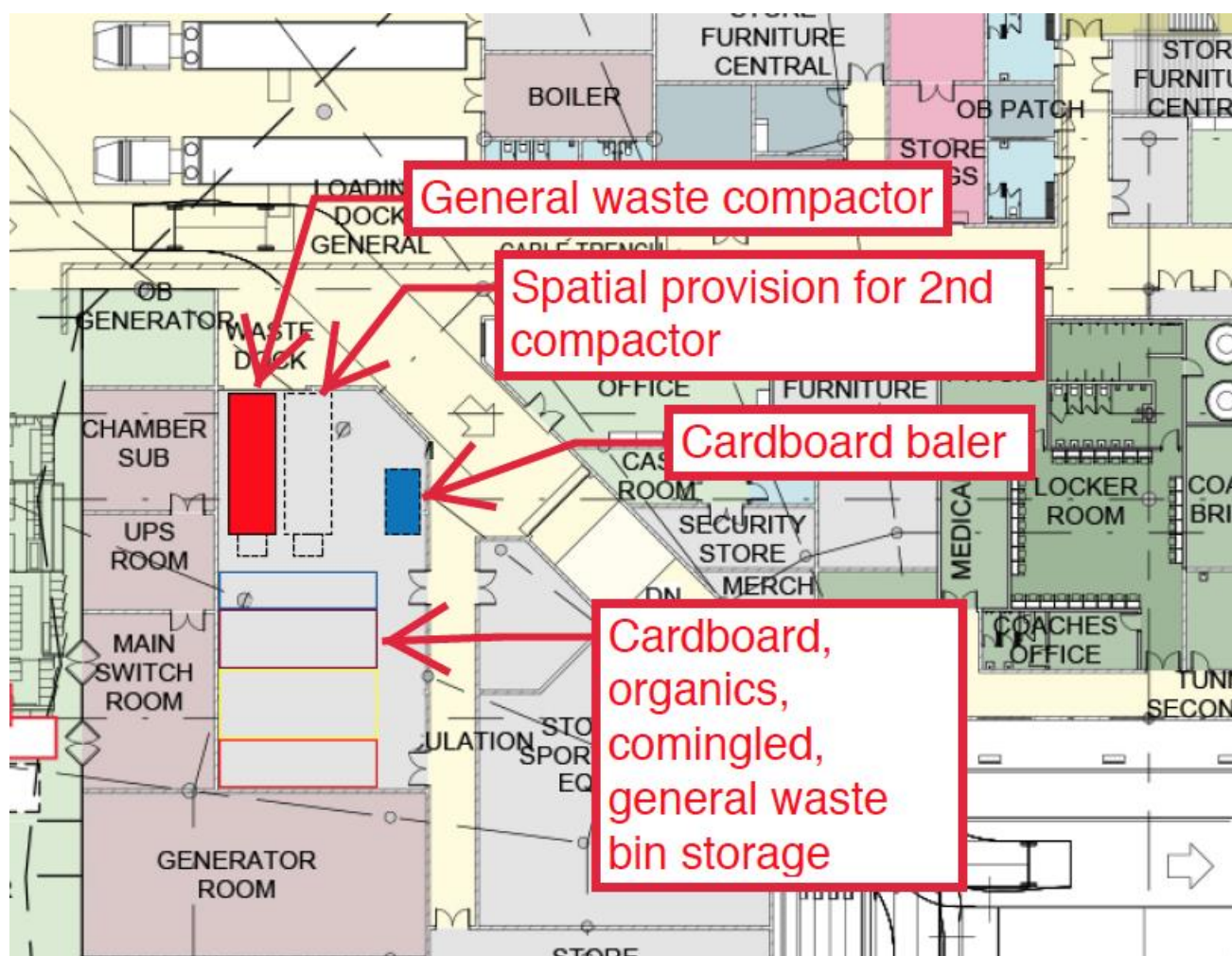


The central waste storage area construction/finishes will have the following features:

- Precast external walls
- Blockwork internal walls
- Epoxy floor and wall finishes to a height of approximately 2500mm
- Coved wall and floor intersections
- Graded floor drains connected to onsite retention sump – fitted with in-floor dry basket arrestor
- Mechanical exhaust in accordance with AS 1668.2

Figure 3 shows the indicative internal layout of the waste storage area showing the proposed equipment as per table 2. There is spatial provision for a second compactor should the operator prefer to manage one of the recycling streams through this system as opposed to individual bin collections.

Figure 4: Waste storage area indicative layout



6.2 Satellite Waste Storage Areas

Satellite waste storage are located on each level to provide additional bin storage capacity and convenience to operators and cleaners servicing these floors. Waste from these areas will typically come from PP patron activities and the satellite kitchen activities associated with servicing these function areas. Operational staff (cleaners, kitchen staff, waiters) will utilise the bins stored in the satellite waste storage rooms as required – when full, these bins will be

transferred to the central waste storage area to be stored ready for collection, empty bins can then be collected from the central waste storage area and brought back to the satellite waste storage room for continued use as required.

Figure 5: Level 2 satellite bin room and path to goods lift

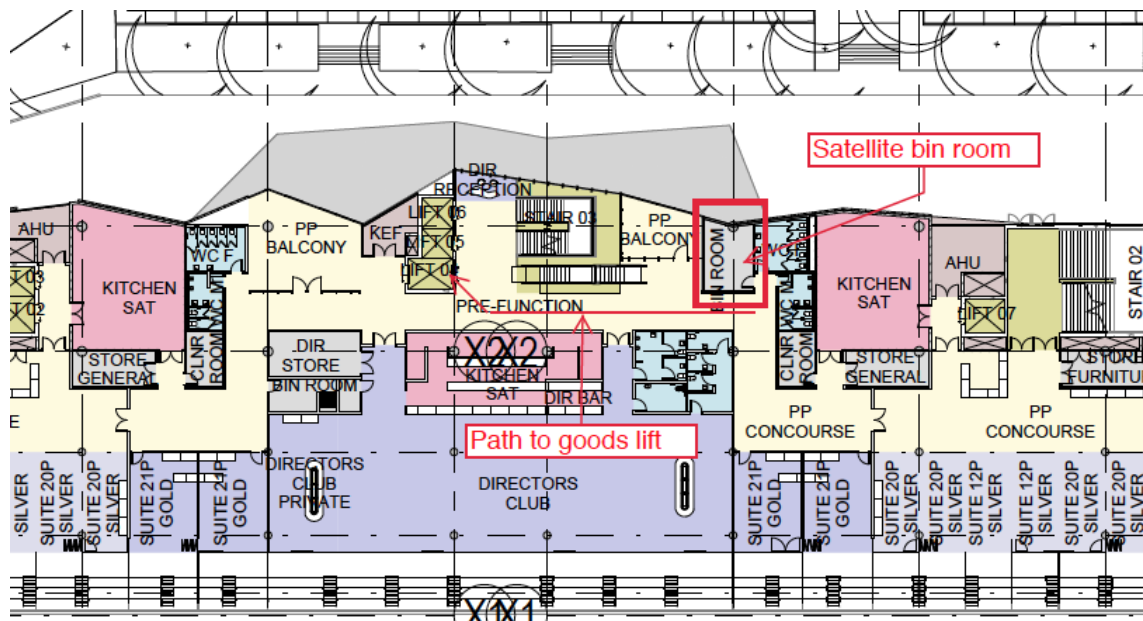
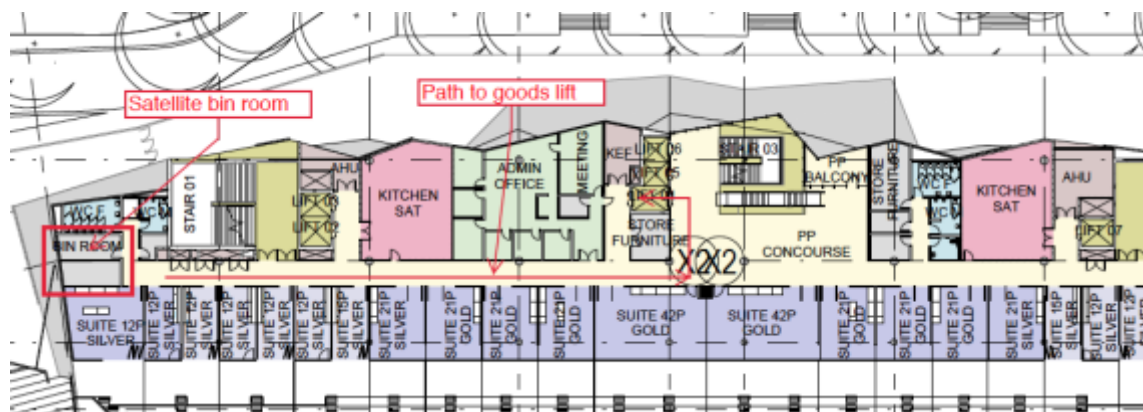


Figure 6: Level 3 satellite bin room and path to goods lift



6.3 Signage

All waste and recycling streams should be differentiated with clear signage on all equipment, bins and on walls within the waste storage area. Below are examples of appropriate signage incorporating textual information, pictures and colour-coding to communicate the message. Signage would be used throughout the WSS where relevant to ensure consistent messaging is delivered from the point of generation through to the disposal/storage point.

Figure 7: Signage examples



6.4 Colour-coding

To further reinforce the differentiation between waste and recycling streams, it is highly recommended that the central waste storage room and satellite waste rooms be colour-coded to ensure bins are stored in the correct area and to enable easy identification of the streams provided. This can be done by painting borders on the floor indicating where

bins should be stored. The colour of the paint should be consistent with the waste stream e.g. yellow paint for mixed recycling, red paint for general waste. The waste room walls can also be painted.

Figure 8: Colour-coded dock area - Example 1



Figure 9: Colour-coded dock area - Example 2



7. Onsite Management Protocols

The following table provides a high-level overview of the onsite management protocols for each stream.

Table 3 – Management Protocol for waste streams and equipment on site

Waste Stream	Bin Type	Additional Notes
General Waste	23m Compactor supported by 240L MGBs throughout precinct	General waste will be managed throughout the WSS using 240L MGBs (both in front of house areas for GA Patron use and back of house areas for operational staff). It will be the responsibility of operations staff (cleaners) to monitor bins in public spaces and transfer to the central waste storage area as required where it will left to be emptied into the compactor (either by a dock manager or at the end of the event by cleaning staff). Empty bins will be retrieved from the central waste storage area and returned to the area for continued use as required. Operational staff managing the PP areas will be responsible for managing waste internally within the suites and function areas by utilising the bins stored within the satellite bin rooms. When full, these bins will be taken to the central waste storage area and swapped for an empty bin for continued use in the PP area.
Cardboard/ Paper	Baler supported by 240L MGBs throughout precinct	The majority of cardboard will be generated in back of house areas and will be captured by operational staff directly from the point of delivery or unpacking i.e. bulk store, main kitchen etc cardboard will be transferred directly into baler where possible or captured utilising 240L MGBs throughout the precinct and then transferred to the central waste storage area to be fed into the baler as required.
Organics	240L MGB	Organics will be captured directly from main kitchen operations and satellite kitchen activities in 240L MGBs which will then be transferred to the central waste storage area to be left for collection.
Comingled Recycling	240L MGB	Comingled recycling will be managed throughout the WSS using 240L MGBs (both in front of house areas for GA Patron use and back of house areas for operational staff). It will be the responsibility of operations staff (cleaners) to monitor bins in public spaces and transfer to the central waste storage area as required where they will left for collection and swapped with empty bins for continued use as required. Operational staff managing the PP areas will be responsible for managing waste internally within the suites and function areas by utilising the bins stored within the satellite bin rooms. When full, these bins will be taken to the central waste storage area and swapped for an empty bin for continued use in the PP area.

8. Collection

All waste collections conducted by external waste contractors will occur at the central waste storage area within the services zone as per figure 10 below.

Figure 10: Waste dock and collection zone

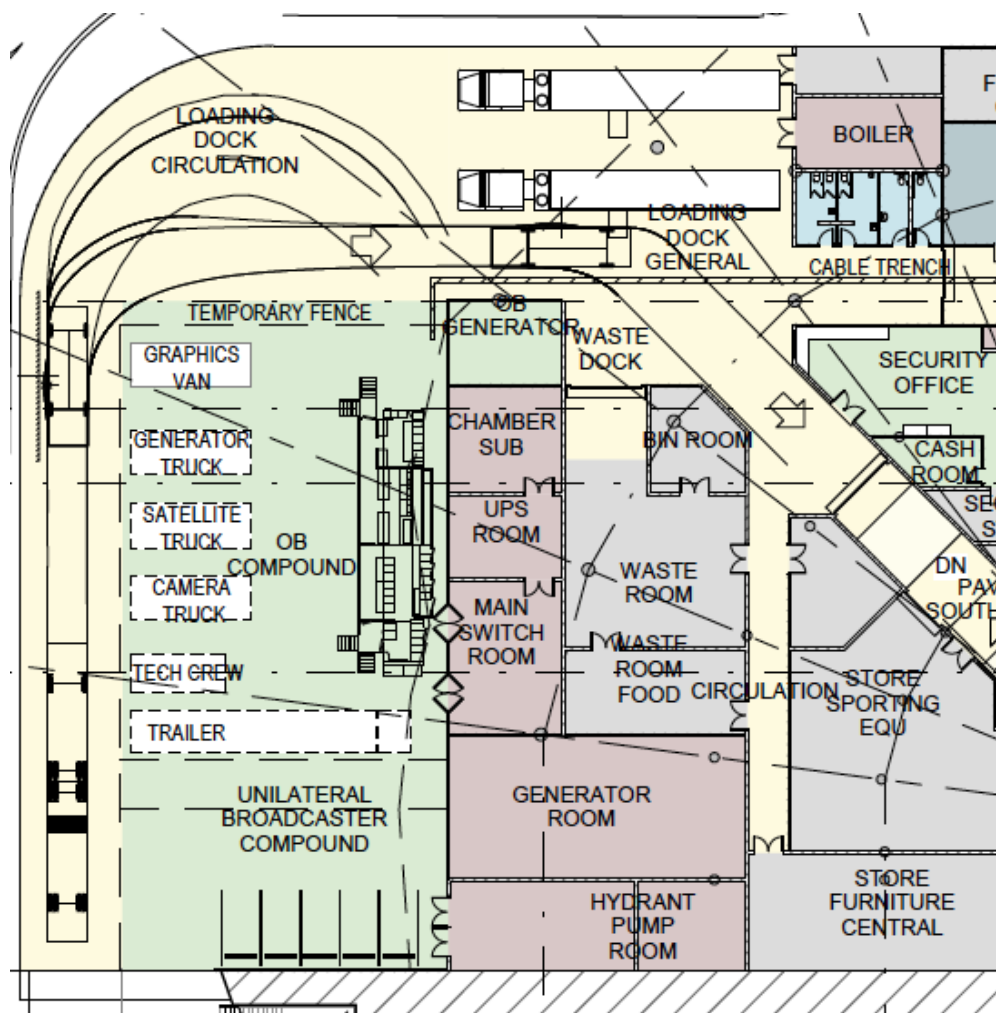
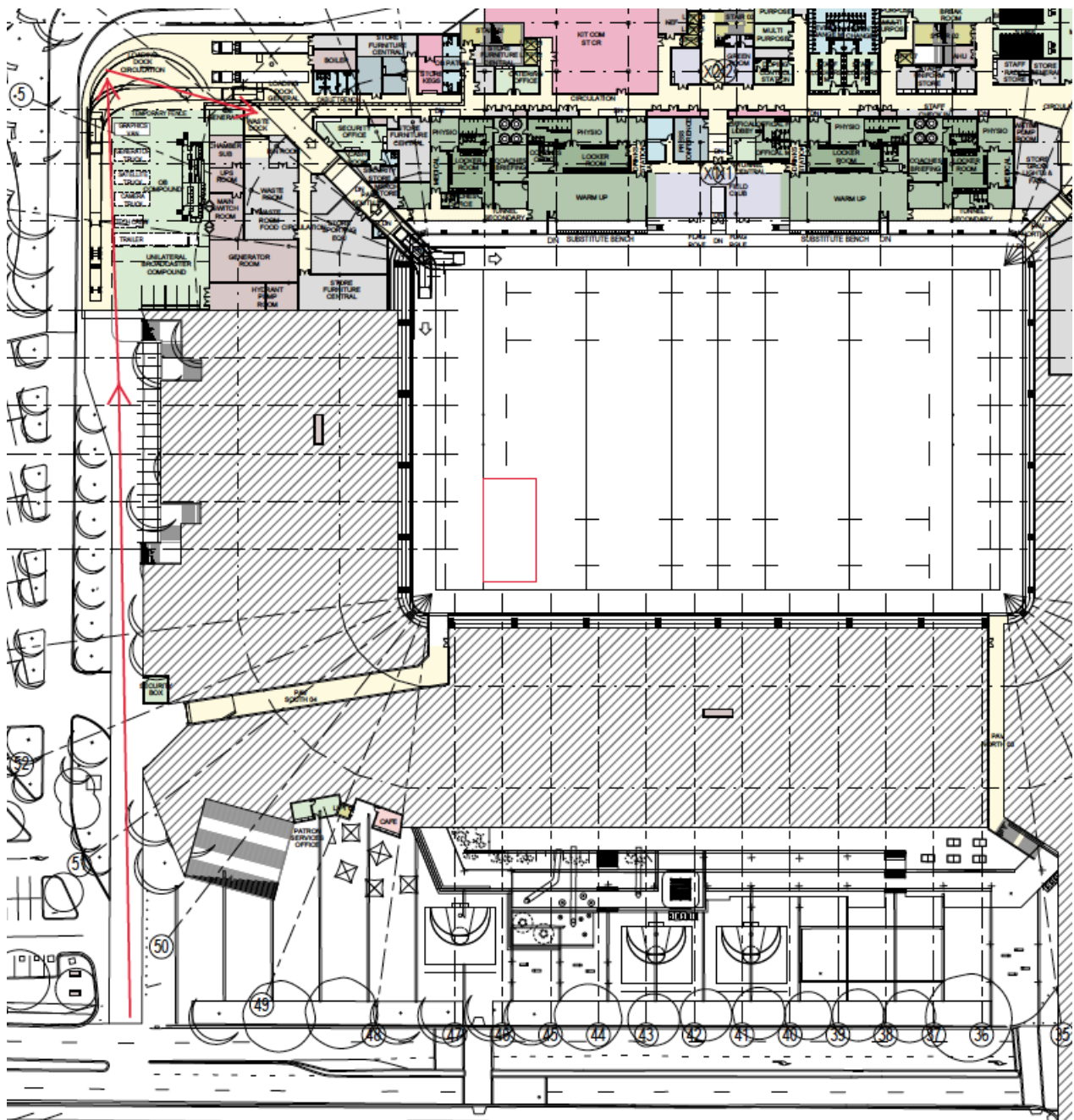


Figure 11 below shows the path of access to the collection zone for waste contractor vehicles entering from O’Connell Street.

Figure 11: Waste vehicle access from O’Connell Street



9. Stakeholder education

The ongoing waste program should include regular updates to Staff with particular emphasis placed on the capture of organics and separation of cardboard to ensure these primary recycling streams are being managed effectively and landfill diversion is maximised.

It is recommended that Staff are educated periodically about the onsite waste management program to ensure all stakeholders are aware of their responsibilities to separate recyclables from the general waste stream and to follow general waste management protocols. The program should specifically address:

- what materials are appropriate for each stream,
- the procedures involved in the onsite sorting activities
- recommendations on how to minimise waste generation, and
- instruction on how to operate the machinery safely.

10. Monitoring and Performance

10.1 Ongoing monitoring and review

It is recommended that ongoing monitoring of the waste and recycling program is conducted by the operator in conjunction with the appointed waste contractor and cleaning contractor if appropriate. The monitoring and review process should incorporate the following elements:

- Clear roles and responsibilities
 - Define roles and responsibilities for all key stakeholders that will manage waste on site. This includes the property owner/facilities management, tenants, cleaning and waste contractor.
- Data integrity and transparency
 - Weight-based reporting provides greater accuracy in waste data. This can be achieved through on-site weighing systems (scales or weighing-compactors), contractor weighing systems on vehicles or facility weighbridges (compactors sent to facilities).
 - Where weights cannot be obtained, knowing the density through ongoing audits of the material can also improve accuracy.
 - Use of the Better Building Partnership Waste Data Integrity Rating Protocol will assist in understanding the quality of data integrity for the asset.
- Contamination and facility reviews
 - Ongoing monitoring and annual reviews for on-site contamination rates and compliance of disposal facilities. This is conducted by onsite staff (cleaners and centre management) and through independent audits.
- Rapid feedback and communication
 - Appropriate communication channels for all stakeholders will allow for rapid feedback and greater responsiveness. This will assist in resolving issues quickly when they arise.

Guidance on the above can be found in the Better Building Partnership Operational Waste Management Guidelines.

<http://www.betterbuildingspartnership.com.au/resource/guidelines-for-operational-waste-procurement-management-and-reporting/>

10.2 Recycling performance and targets

Based on theoretical waste estimates and benchmark data from similar facilities, approximately 35% of the total waste profile could be practically recycled using the proposed recycling systems onsite – it should be noted that these targets are based on practical and achievable outcomes as the theoretical waste profile assumes 100% separation of recyclables which in reality is ambitious and likely unfeasible.

A more achievable target should be set which allows for progressive improvements to be made to the waste program each year.

The table below outlines an indicative target progression.

Table 4: Year-on-year target progression

	Year 1	Year 2	Year 3
Recovery Target	15%	25%	35%
Primary focus	Paper/cardboard recycling as a minimum and some comingled recycling	Maximised paper/cardboard capture, increased comingled capture and some organics recycling	Maximised paper/cardboard and comingled capture, and increased organics recycling

These targets are provided as an indicative guide which should be reviewed and adjusted in light of actual onsite practices once operational as greater diversion opportunities may be available. These targets are also based on onsite primary separation of recyclables into separate streams (as per table 2). Additional secondary recovery of recyclables should be pursued through engaging the waste contractor to ensure the general waste stream is sent via a materials recycling facility prior to disposal at landfill to maximise and additional recycling opportunities available.