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Children's Medical Research Institute – Gene Technologies Building

Construction & Demolition Waste Management Plan

June 2024

Table of Contents

- 1. Introduction 3
- 2. Existing Structures on Site..... 4
 - 2.1 Site Description 4
 - 2.2 Project Background 4
 - 2.3 Description of Development 4
- 3. Waste Management Strategy 7
 - 3.1 Waste Management Principles 7
 - 3.2 Record Keeping 8
 - 3.3 Materials Storage 8
 - 3.4 Liquid Waste 10
 - 3.5 Asbestos 10
- 4. Demolition Phase 11
- 5. Construction Phase 13
- 6. Contractor Management 14
- 7. Training and Education..... 15

1. Introduction

Waste Audit & Consultancy Service (Aust) Pty Ltd has been engaged by Empire Project Management (EPM) on behalf of Children's Medical Research Institute (CMRI, the client) to prepare a Construction and Demolition Waste Management Plan (WMP) for construction of The CMRI Gene Technologies Building and associated infrastructure.

The WMP has been prepared to support an Environmental Impact Statement in response to waste management requirements for the project.

This WMP has been developed to address the Secretary's Environmental Assessment Requirements (SEARs) issued by the NSW Department of Planning and Environment (SSD-45576956), with regard to waste management practices associated with construction and demolition. Separate reports have been prepared to address operational waste and hazardous material handling. The SEARs waste management requirement is described in **Table 1** below.

Table 1: SEARs Requirements – Waste Management

SEARs Requirements	
Waste Management	<ul style="list-style-type: none"> • Identify, quantify and classify the likely waste streams to be generated during construction and operation. • Provide the measures to be implemented to manage, reuse, recycle and safely dispose of this waste. • Identify appropriate servicing arrangements for the site. • If buildings are proposed to be demolished or altered, provide a hazardous material survey.

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

- To minimise the generation of waste to landfill
- To maximise waste avoidance and reuse of materials on site
- To ensure that an efficient recycling procedure is applied to waste materials
- To make employees and subcontractors aware of their waste management responsibilities

Preparation of this Demolition and Construction Waste Management Plan has been undertaken with reference to industry best practices. In particular, compliance with *Australian Standard AS2601: The Demolition of Structures* is required under the Environmental Planning and Assessment Regulation 2021, which:

- Sets out requirements for the planned demolition of buildings and certain other structures so that the risk of injury to workers, other site personnel and the public, and the risk of damage to adjacent property and the immediate environment is minimised;
- Covers the methods and safety procedures applicable to demolition work in general as well as procedures for some types of structures;
- Deals with manual and mechanical demolition techniques including those employing specialised earth-moving type machinery;
- Includes appendices covering the demolition of pre-stressed concrete structures, some contractual considerations, a checklist for contractors and qualifications for site personnel;
- Addresses safety and health issues under the headings of:
 - Health and safety of the public - covering general requirements, lighting, falling materials, fencing, hoardings and warning notices, scaffolding, overhead protection for footpaths, and hazardous materials and conditions;

- Health and safety of site personnel - covering general safety, personal protective clothing and equipment, cutting and welding, fire protection, first aid, amenities, removal of hazardous material and electrical safety;
- Protection of adjoining buildings and protection of immediate environment - covering requirements relating to access and egress, damage and structural integrity, vibration and concussion, weatherproofing, burning, dust control, noise control, protection of public roads and protection of sewers and water courses; and
- General protection of the site.

Section 143 of the *Protection of the Environment Operations Act 1997* requires waste to be transported to a place that can lawfully accept it. It will be the responsibility of the site's developer to ensure that all contractors:

- Provide details of their operating licence to transport waste
- Clearly specify where all wastes are to be transported
- Confirm the capacity of the nominated facilities to receive/manage the waste
- Retain demolition, excavation, and construction waste/recycling dockets on site to confirm which authorised waste/recycling facilities received the material for recycling and disposal
- Provide reports on management aspects (types, quantities and disposal pathways).

2. Existing Structures on Site

2.1 Site Description

The Children's Medical Research Institute (CMRI) is located at 214 Hawkesbury Rd, Westmead within the City of Parramatta Local Government Area (LGA) in Sydney's West. The site is situated approximately 2km northwest of Parramatta CBD and 21km northwest of Sydney CBD. The site is legally known as Lot 101 in Deposited Plan 1119583.

The site is located within the Westmead Health and Education Precinct and directly adjoins several medical research and clinical services buildings including the Westmead Hospital, the Children's Hospital at Westmead (CHW), the Kids Research building, the Westmead Institute for Medical Research and the site of the future Paediatric Services Building and the new KIDSPARK (CHW forecourt).

2.2 Project Background

CMRI is a biomedical research institute and Australia's first Paediatric medical research institution, located within the Westmead Health Precinct in Western Sydney. CMRI is a not-for-profit company where revenue from Research and Development (R&D) activities are reinvested into its R&D program for the benefit of the community.

CMRI premises currently comprise 9,660 m² of gross floor area (GFA) – of which 65% of this space is usable floor area (UFA) dedicated to research activities. CMRI's workforce is highly skilled and includes 170 full-time scientists and PhD students in addition to its skilled operational and administrative staff.

In 2011, CMRI initiated expansion plans for their site to accommodate additional staff and research activities. The Stage 1 redevelopment of the CMRI approved a redevelopment of the site to accommodate approximately 16,800m² additional floor space and 520-540 new research and support staff.

However, only a portion of the approved redevelopment was constructed. Since this time, the research activities of the CMRI have expanded further, requiring additional floor space. The 2011 Development Application has lapsed and as a result the applicant is seeking the current approval for the redevelopment of the site to support research activities of CMRI.

2.3 Description of Development

The redevelopment of the site will seek approval for:

- Demolition of the existing CMRI building (constructed in 1992);
- Construction of an 8-storey building including one subterranean basement level for dry workspace and wet laboratories (known as the "Phase A" building);
- Construction of a 10-storey building plus one subterranean basement level for wet laboratories, dry workspace, logistics and stores, communal space, discovery centre and end of trip facilities (known as the "Phase B" building);
- Overhead pedestrian connections between the Westmead Institute for Medical Research (WIMR) building (across Research Lane) and to the Kids Research Building;
- A basement carpark to accommodate approximately 47 vehicles;
- Vehicular access routes via Research Lane (servicing and car park access) and Ambulance Lane (shared zone and emergency access);
- Associated earthworks;
- Tree removal; and
- Landscaping.

Note: the CMRI building constructed in 1992 is proposed to be demolished, while the Ainsworth Tower (completed in 2009) is proposed to be retained and would directly adjoin the proposed building, see below figures 1-4 for demolition and construction staging details.

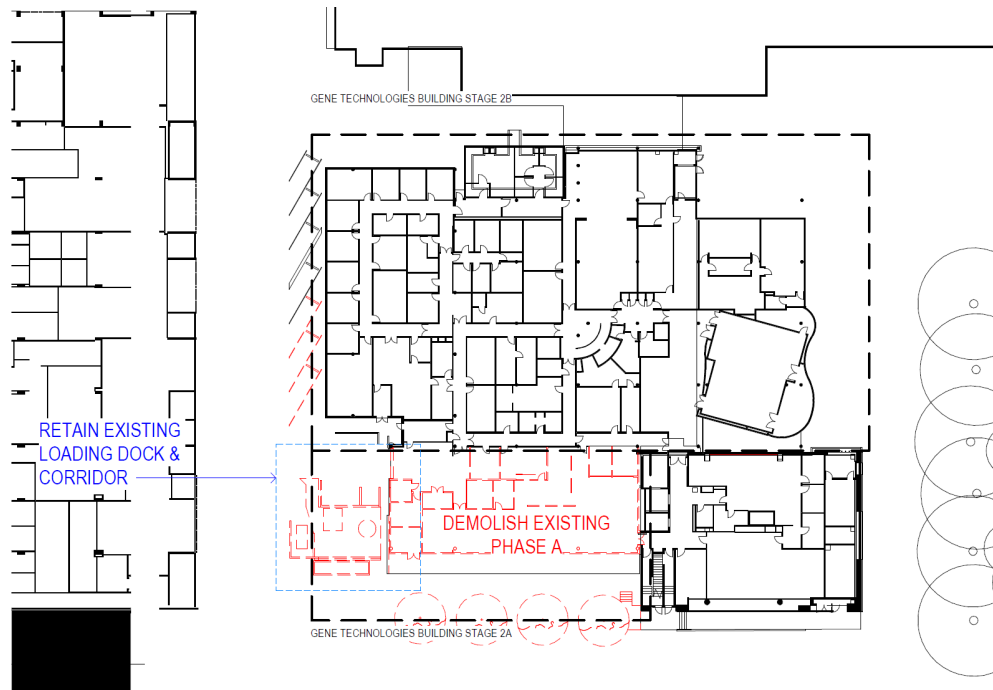


Figure 1: Demolition Phase A

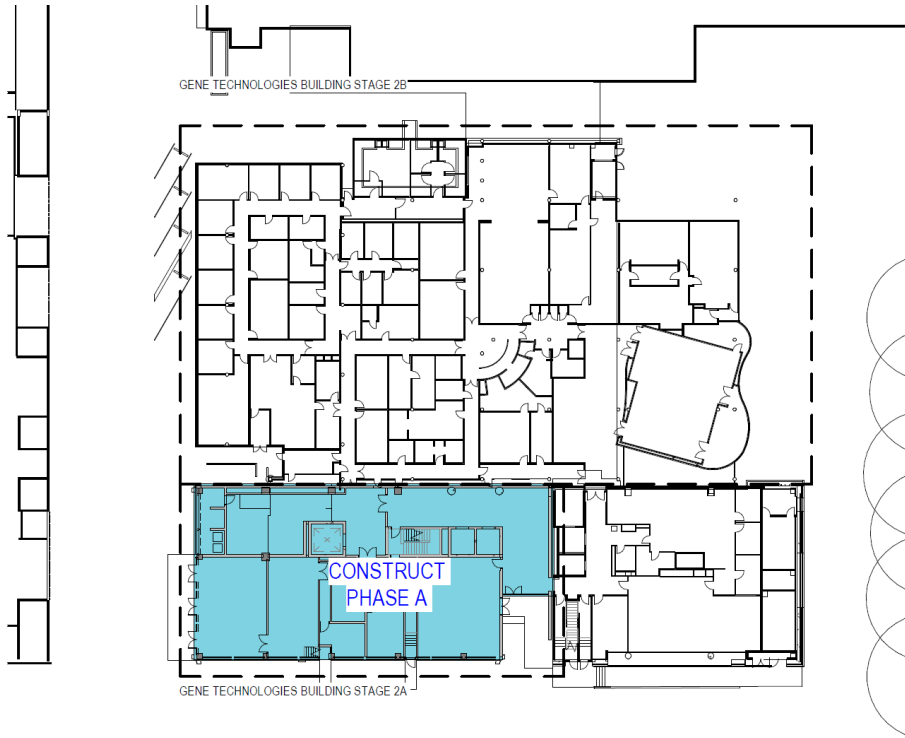


Figure 2: Construction Phase A

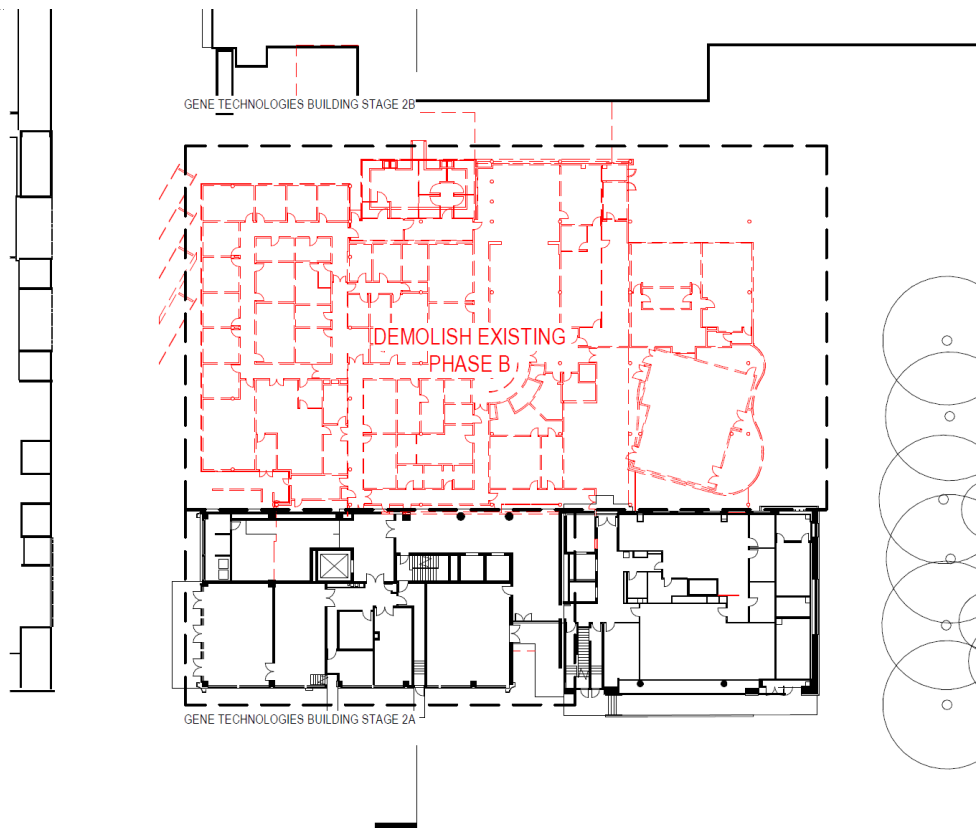


Figure 3: Demolition Phase B



Figure 4. Construction Phase B

3. Waste Management Strategy

3.1 Waste Management Principles

The waste management hierarchy below has been used to guide the waste management plan:



Avoid

Adopt sound work practices during the demolition and construction processes that avoid the creation of waste products in the first place

Reduce

Reduce the use of materials during the demolition process that require treatment or disposal

Reuse

Ensure that wherever possible, materials are reused either on site or offsite:

- Implement systems to separate and store materials that can be reused onsite
- Identify the potential applications for reuse offsite and facilitate this process

Recycle/Recover

Identify all recyclable waste products to be produced on site:

- Provide systems for separating and stockpiling of recyclables
- Provide clear signage to ensure recyclable materials are separated
- Process the material for recycling either onsite or offsite

Note: In some cases it may be more economical to send the unsorted waste to specialised waste contractors who will separate and recycle materials at an offsite location

Treat/Dispose

Waste products which cannot be reused or recycled will be removed and treated/disposed of at appropriately licensed facilities, ensuring the following:

- Chosen waste disposal contractor complies with OEH requirements
- Bins to be monitored for fullness and collected on an efficient schedule

3.2 Record Keeping

Records will be required to be kept of all wastes and recyclables generated and either re-used on site or transported off-site. It will be a condition of appointment that all contractors provide these records and that they also contain details of the facilities that the materials are transported to. These records will be made available to relevant authorities on request.

3.3 Materials Storage

All waste and recycling materials will be stored in bins provided by the appointed contractor(s). These bins will be appropriately coloured and signed to indicate what materials are to be deposited into them and located to maximise recovery of reusable/recyclable materials.

The storage space identified is close in proximity to Hawkesbury Road and Research Lane for easy site access and away from public space. The space is highlighted in figure 5 and 6 below with red boxes.

During the construction and demolition phases of the development, each floor will be equipped with waste and recycling receptacles to enable interim handling of materials that will be brought down to the central storage areas identified in the below two figures (5 and 6).

3.4 Liquid Waste

- Ensure water is used in moderation and no taps are left continuously running
- Use any grey water produced on site for irrigation or for dust suppression
- Only discharge clean water into storm water
- Manage all wastewater and runoff in accordance with Sydney Water requirements

3.5 Asbestos

The Pre-Demolition Building Materials Survey provided by JBS&G and Remediation Action Plan by Douglas Partners accompanies this report and is required by clause 18 (Waste Management) SEARs number SSD-45576956, whereby if buildings are proposed to be demolished or altered, to provide a hazardous material survey.

The general management process for materials suspected of containing asbestos is¹:

- i. Treat the material as asbestos unless proven otherwise
- ii. Do not disturb the material (i.e., shift or place into a container)
- iii. Seek advice from a suitably qualified laboratory to test the material(s) to determine if it is or is not asbestos
- iv. If determined not to be asbestos, then it can be managed as an inert waste
- v. If determined to be asbestos then it must be managed by a licenced contractor for packaging, removal and disposal
- vi. If the material has accidentally been uncovered, then the area should be cleared, barriers erected to prevent access, NSW WorkCover and EPA notified, and if the material is broken, it should be covered with a fine spray/mist of water.

For what has been conclusively identified as asbestos-containing materials (including soils), a licensed contractor will be used to manage the removal of any asbestos-contaminated soil and other material contained in the buildings.

There are strict regulatory requirements under Clause 42 of the *Protection of the Environment Operations (Waste) Regulation 2005* that apply to management of asbestos waste, including:

- Waste must be stored on the premises in an environmentally safe manner.
- Non-friable asbestos material must be securely packaged at all times.
- Friable asbestos material must be kept in a sealed container.
- Asbestos-contaminated soil must be wetted down.
- All asbestos waste must be transported in a covered, leak-proof vehicle.
- It is illegal to re-use, recycle or dump asbestos waste.

¹ Alternatively, any material suspected of being asbestos can simply be classified as such, without testing, and then managed accordingly.

4. Demolition Phase

Table 2 shows estimated quantities in m³ of demolition waste to be generated, and the recommended management strategy for each type of material. It is recommended that opportunities for reusing this material either on site or at an off-site location, or locations, be further investigated.

Specific disposal/recycling facilities have not been shown, as a waste contractor has not yet been appointed for the project. All contractors and sub-contractors, once appointed, will be required to detail all intended and actual disposal facilities used, in order to ensure the guiding principles of the waste hierarchy are upheld and maximum diversion from landfill is achieved.

Table 2: Demolition Waste - Expected Materials Streams

Materials on Site		Destination/Treatment		
Type of Material	Estimated Volume (m ³)	Onsite (Reuse/Recycle)	Offsite (Reuse/Recycle)	Disposal (Landfill)
Structural Concrete	40 m³	Separated onsite and crushed for use in pavement and/or temporary access road construction	Collected by contractor and taken to recycling facility	No disposal to landfill
Structural Steel	20 m³	No onsite reuse or recycling	Collected by contractor and taken to recycling facility	No disposal to landfill
Plasterboard	20 m³	No onsite reuse or recycling	Separated and stockpiled onsite and collected by contractor for recycling. Possible use as soil improver with gypsum removed by recycler	Material that cannot be recycled will be disposed of at landfill facility
Carpet & Vinyl Flooring	15 m³	No onsite reuse or recycling	Disposed of into a designated bin and collected for recycling if of the required quality, or disposal to landfill if not	Material that cannot be recycled will be disposed of at landfill facility
Ceiling Tiles	10 m³	No onsite reuse or recycling	Separated and stockpiled onsite and collected by contractor for recycling. Possible use as soil improver with gypsum removed by recycler	Material that cannot be recycled will be disposed of at landfill facility
Wood	10 m³	No onsite reuse or recycling	Collected by contractor and taken to recycling facility	No disposal to landfill
Bricks/Pavers	10 m³	Separated onsite and crushed for use in pavement and/or temporary access road construction	Collected by contractor and taken to recycling facility	No disposal to landfill
Misc. General Waste	10 m³	No onsite reuse or recycling	Separated onsite into dedicated receptacles and collected by the waste contractor for disposal	Disposal to landfill

Materials on Site		Destination/Treatment		
Type of Material	Estimated Volume (m ³)	Onsite (Reuse/Recycle)	Offsite (Reuse/Recycle)	Disposal (Landfill)
Window Glass	5 m ³	No onsite reuse or recycling	Collected by contractor and taken to recycling facility	No disposal to landfill
Cabinetry	5 m ³	No onsite reuse or recycling	Removed if still serviceable and sold for reuse to an appropriate contractor, or collected by specialist contractor for recycling	No disposal to landfill
Bathroom Tiles	5 m ³	No onsite reuse or recycling	Removed if still serviceable and sold for reuse to an appropriate contractor, or collected by specialist contractor for recycling	No disposal to landfill
Garden Organics	5 m ³	No onsite reuse or recycling	Collected by contractor and taken to recycling facility	No disposal to landfill
Metal Ductwork, Lighting Fixtures	3 m ³	No onsite reuse or recycling	Collected by contractor and taken to recycling facility	No disposal to landfill
Plumbing Pipework, Fixtures	3 m ³	No onsite reuse or recycling	Collected by contractor and taken to recycling facility	No disposal to landfill
Electrical Wiring	3 m ³	No onsite reuse or recycling	Collected by contractor and taken to recycling facility	No disposal to landfill
Electrical Pipework, Fixtures	2 m ³	No onsite reuse or recycling	Removed if still serviceable and sold for reuse to an appropriate contractor, or collected by specialist contractor for recycling	No disposal to landfill
TOTAL VOLUME OF MATERIALS	166 m³			
POTENTIAL RECOVERY	>96%			

In total, the development's demolition phase will produce around **166 cubic metres** of waste materials, of which over **96% by volume** can potentially be diverted from landfill if the demolition process is properly managed.

5. Construction Phase

Table 3 shows estimated quantities in m³ of construction waste to be generated, and the recommended management strategy for each type of material. Please note that this phase includes excavation of the Basement Level, which will produce a significant volume of material requiring disposal.

All contractors and sub-contractors, once appointed, will be required to detail disposal facilities used, in order to ensure the guiding principles of the waste hierarchy are upheld and maximum diversion from landfill is achieved.

Table 3: Construction Waste - Expected Materials Streams

Materials on Site		Destination		
Type of Material	Estimated Volume (m ³)	Onsite (Reuse or Recycle)	Offsite (Reuse or Recycle)	Disposal (Landfill)
Excavation Material	7089 m ³	No on-site reuse or recycling	Collected by contractor and disposed of at recycling facility	No disposal to landfill Contaminated fill will be disposed to an appropriately licenced facility as per Remediation Action Plan
Used Pallets	20 m ³	Reused on site for storage where possible	Collected by contractor and disposed of at recycling facility	No disposal to landfill
Mixed Recyclables	20 m ³	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by contractor for recycling	No disposal to landfill
Plasterboard Offcuts	20 m ³	No on-site reuse	Separated and stockpiled onsite and collected by contractor for recycling. Possible use as soil improver with gypsum removed by recycler	Material that cannot be recycled will be disposed of at landfill facility
Concrete (Excess)	15 m ³	Separated on site and crushed for use in temporary access road construction	Collected by contractor and taken to concrete recycling facility	No disposal to landfill
General Waste (All Other Materials)	10 m ³	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by contractor for disposal	Disposal to landfill
Timber Offcuts	10 m ³	Reuse for formwork where possible	Untreated recyclable timber will be collected and recycled at appropriate timber yard. Unrecyclable (treated) timber will be disposed of at landfill	Material that cannot be recycled will be disposed of at landfill facility
Floor Coverings	10 m ³	No on-site reuse	Collected in designated bin and sent for recycling if of required quality; otherwise sent to landfill	Material that cannot be recycled will be disposed of at landfill facility

Materials on Site		Destination		
Metal Offcuts, Sheeting, Wiring, etc.	10 m ³	No on-site reuse	Collected by specialist metal subcontractor for separation into different metal types for recycling	No disposal to landfill
Glass (Excess)	10 m ³	No on-site reuse	Recyclers consulted as to potential for recycling	No disposal to landfill
TOTAL VOLUME OF MATERIALS	7224 m³			
POTENTIAL RECOVERY	>99%			

In total, the development's construction phase will produce around **7224 cubic metres** of waste materials, of which **over 99% by volume** should be able to be diverted from landfill disposal, either by being reused on or off site, or recycled off-site at a specialised facility.

6. Contractor Management

Each subcontractor working on the site will be required to adhere to this Waste Management Plan and develop a more detailed plan which will be regularly updated. The Head Contractor will ensure each subcontractor:

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

The Site Manager will be responsible for:

- Ensuring there is a secure location for on-site storage of materials to be reused on site, and for separated materials for recycling off site
- Engaging qualified contractors to remove waste and recycling materials from the site
- Coordinating subcontractors to maximise on site reuse of materials
- Regular monitoring of bins by site supervisors to detect any contamination or leakage
- Ensuring the site has clear signs directing staff to the correct location for recycling and stockpiling, and that each bin/skip/stockpile is clearly signposted
- Providing training to all site employees and subcontractors in regard to the WMP as detailed in Section 7 below

Should a subcontractor cause a bin to be significantly contaminated, the Site Manager will be advised through a non-conformance report and the offending subcontractor will then be required to take corrective action, at their own cost. The non-conformance process would be managed by the Head Contractor's Quality Management System.

7. Training and Education

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

1. Induction and training outlining the waste management hierarchy to all staff and its practical use across the site
2. Training for key personnel defining responsibilities regarding waste management
3. Site specific waste management practices relevant to the project stages that include
 - Waste storage and stockpiling locations
 - Waste disposal requirements
 - Hazardous or special wastes handling, disposal and transport requirements as per the hazardous material survey conducted by JBS&G
 - Record keeping of all waste and recycling disposal dockets and receipts
4. Emergency response training and contracts for all personnel required to be on site
5. Appropriate waste management signage aligning with the waste hierarchy and materials identified in section 4 & 5 of this report dispersed across the site to ensure waste management measures are communicated across the site during the staging of this project for contractors/visitors who are not regulars on site. Signage highlighting correct procedures for:
 - Separating wastes
 - Location of bins and waste storage areas
 - Labelling of designated bins
 - Potential hazards associated with the handling of all waste streams
 - Contact details if issues are encountered
6. All signage located on site will be in accordance with the Australian Standard (AS 1319) for safety signs, and the NSW EPA and Australian Standard for waste/recycling signage.

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