11-13 Mannix Parade Warwick Farm

Demolition & Construction Waste Management Plan

August 2020

Table of Contents

1. Introduction

This Operational Waste Management Plan has been prepared by Waste Audit & Consultancy Services (Aust) Pty Ltd (Waste Audit) to provide guidance to the Land and Housing Corporation (LAHC) development located at 11-13 Mannix Parade, Warwick Farm, NSW to document the management of general waste and recycling from Demolition and Construction activities, and compliance with Liverpool City Council's requirements, current legislation, and general best practice standards.

The development of this Plan has been based on the established principles of:

(a) The Waste Hierarchy: Ensuring all waste able materials are properly managed from generation to final reuse, recycling, treatment, or disposal;

(b) Source Segregation: Separating wastes and recyclables at the point of generation to ensure that contamination does not occur, and that resource recovery is maximised; and

(c) Due Diligence: Ensuring that all staff and contractors responsible for aspects of waste management do so in accord with all statutory and corporate responsibilities.

The intent of the Plan is to ensure that waste management practices are consistent across all stages, of the development with the maximum possible quantity of materials directed away from landfill disposal to more environmentally beneficial outcomes.

Please see the separate Waste Management Plan prepared by Waste Audit for details of management of general waste and recycling from the development's Operational phase.

2. The Development

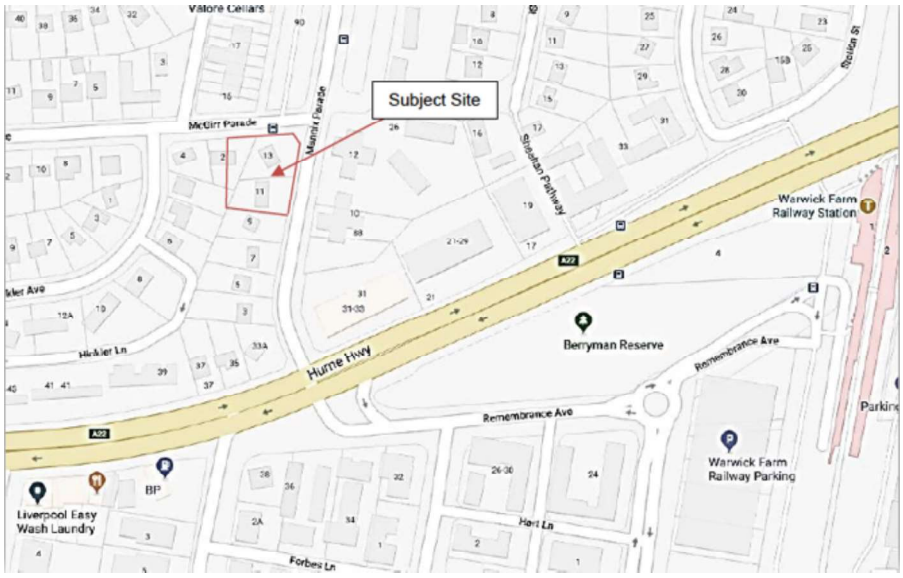
The development site will involve construction of 43 separate dwellings spread over four residential lots: 11-13 Mannix Parade, 2 Hinkler Avenue and 2 McGirr Parade in Warwick Farm. The proposed development will consist of the amalgamation and boundary adjustment of existing lots as follows:

- Lot 26 (11 Mannix Parade)
- Lot 27 (13 Mannix Parade)
- Part of the rear portion of Lot 8 (2 Hinkler Avenue)
- Part of the rear portion of Lot 9 (2 McGirr Parade)

The site is relatively irregular in shape and will have a combined total area of approximately 1,683 square metres and is currently occupied by free-standing/single-storey dwelling-houses, made of fibrocement material and tile roofing.

The site's location is shown in Figure 1 below.

Figure 1: Site Location



Figures 2 and 3 show the existing structures on site that will be demolished to make way for the development.

Figure 2: Site Aerial View

Figure 3: 11 & 13 Mannix Parade

Figure 4: 2 McGirr Parade

3. Reference Documents & Standards

- *Liverpool Development Control Plan 2008*, Part 25
- *Waste Management Services for Residential Flat Buildings & Multi Dwelling Housing* Fact Sheet
- NSW Department of Planning & Environment *Apartment Design Guide*
- Livable Housing Australia *Livable Housing Design Guidelines*

4. Waste Management Strategy

4.1 Waste Management Principles

The following waste hierarchy has been used to guide this waste management plan:

Reduce/Avoid
Adopt sound work practices that avoid the creation of waste products in the first place; reduce the use of materials that require treatment or disposal

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

- Identify and put systems in place to separate and store materials for reuse onsite
- Identify the potential applications for reuse offsite and facilitate this process

Recycle
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.

Recover Energy
If possible, send materials to a licensed waste to energy facility (e.g. in Sydney area, send organic food waste and vegetation to Earthpower in Camellia).

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 that minimises vehicle movements to and from the site

4.2 Record Keeping

Records will be kept of all waste materials 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 the relevant authorities on request.

4.3 Materials Storage

All waste 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 so as to maximise the recovery of reusable/recyclable materials.

4.4 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

4.5 Asbestos

The process for managing any materials suspected of being, or containing, asbestos is[1]:

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 accidently 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 specialist/licensed asbestos contractor will be used. As required, only workers trained in asbestos removal techniques will be allowed to manage the removal of asbestos-contaminated soil and any 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, and then managed accordingly.

5. Demolition Phase

Table 1 shows expected materials streams resulting from the demolition process.

Specific disposal/recycling facilities have not been not 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 principles of the waste hierarchy are upheld and maximum diversion from landfill is achieved.

Table 1 details estimated quantities, in cubic metres, of demolition waste to be generated, and the recommended management strategy for each type of material.

No on-site reuse of materials generated from demolition activities is proposed, due to the small size of the site and limited storage space.

Table 1: Demolition Waste Materials & Volumes

Materials on Site		Destination/Treatment		
Type of Material	**Estimated Volume (m^3)**	**Onsite (Reuse/Recycle)**	**Offsite (Reuse/Recycle)**	**Disposal (Landfill)**
Excavation Material	**6300**	No onsite reuse/ recycling	Collect and use as clean fill if suitable with notification of location by waste contractor	Send unsuitable or contaminated material to appropriate landfill facility
Vegetation	**100**	No onsite reuse/ recycling	Collect separately for processing at dedicated recycling facility	No disposal to landfill
Fibre Cement	**60**	No onsite reuse/ recycling	No reuse or recycling	Establish whether material contains asbestos then manage appropriately depending on findings
Roof Tiles	**30**	No onsite reuse/ recycling	Remove intact if possible and arrange for reuse, or collect separately for processing at dedicated recycling facility	No disposal to landfill
Metal Fencing, Plumbing	**25**	No onsite reuse/ recycling	Remove intact if possible and arrange for reuse, or collect separately for processing at dedicated recycling facility	No disposal to landfill
Plasterboard	**20**	No onsite reuse/ recycling	Collect separately for processing at dedicated recycling facility (possible use as soil improver with gypsum etc. removed by recycler)	Any remaining unsuitable or contaminated material will be disposed of at landfill facility
Wood	**15**	No onsite reuse/ recycling	Collect separately for processing at dedicated recycling facility	Any remaining unsuitable or contaminated material will be disposed of at landfill facility
Bricks	**10**	No onsite reuse/ recycling	Collect separately for processing at dedicated recycling facility	Any remaining unsuitable or contaminated material will be disposed of at landfill facility
Concrete	**5**	No onsite reuse/ recycling	Collect separately for processing at dedicated recycling facility	No disposal to landfill
Carpet, Floor Coverings	**5**	No onsite reuse/ recycling	Remove intact if possible and arrange for reuse, or collect separately for processing at dedicated recycling facility	No disposal to landfill

Materials on Site		Destination/Treatment		
Type of Material	Estimated Volume (m^3)	Onsite (Reuse/Recycle)	Offsite (Reuse/Recycle)	Disposal (Landfill)
Electrical Wiring & Fixtures	**5**	No onsite reuse/ recycling	Remove intact if possible and arrange for reuse, or collect separately for processing at dedicated recycling facility	No disposal to landfill
Window Glazing	**4**	No onsite reuse/ recycling	Remove intact if possible and arrange for reuse, or collect separately for processing at dedicated recycling facility	No disposal to landfill
Light Fixtures	**3**	No onsite reuse/ recycling	Remove intact if possible and arrange for reuse, or collect separately for processing at dedicated recycling facility	No disposal to landfill
Bathroom Tiles	**2**	No onsite reuse/ recycling	Remove intact if possible and arrange for reuse, or collect separately for processing at dedicated recycling facility	No disposal to landfill
Glass, Metal, & Plastic Food & Drink Containers	**1**	No onsite reuse/ recycling	Collect separately for processing at dedicated recycling facility	No disposal to landfill
General Waste (All Other Materials)	**15**	No onsite reuse/ recycling	Collect separately for waste contractor to dispose of at landfill facility	Disposal to landfill
TOTAL VOLUME OF MATERIALS	**6,600 m^3**	**POTENTIAL RECOVERY**	**6,525 m^3**	**98.9%**

Demolition activities will produce around **6,600 cubic metres** of waste materials, of which around **6,300 cubic metres** or **95.5% by volume** will be excavated soil and rock. It is recommended that efforts be made to identify a sustainable disposal outcome for this material, assuming it is not contaminated (subject to soil testing) and can be reused instead of being disposed of to landfill.

Ideally, this would involve reuse at a suitable nearby site, to minimise the environmental impacts of transportation and disposal. Waste Audit can provide assistance with this initiative, one the timing of commencement of excavation works has been confirmed.

In total, **98.9% by volume** of all waste materials expected to be generated during excavation and demolition can potentially be reused or recycled through treatment at off-site processing facilities.

5. Construction Phase

Table 2 shows materials streams expected to be generated during the construction process. Specific disposal/recycling facilities have not been shown, as a waste contractor has not yet been appointed for the project.

All waste 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.

The following table details the estimated composition, in cubic metres, of construction waste to be generated, and the recommended management strategy for each type of material.

Priority will be given to separating and saving materials for on-site reuse during construction, where possible, in accordance with waste hierarchy principles, working within the space constraints of the site during this phase.

Table 2: Construction Waste Materials & Volumes

Materials on Site		Destination		
Type of Material	Estimated Volume (m^3)	Onsite (Reuse/Recycle)	Offsite (Reuse/Recycle)	Disposal (Landfill)
Used Pallets	**20**	Reuse on site for storage where possible	Collect separately for processing at dedicated recycling facility	No disposal to landfill
Soft Plastics (Pallet Wrap etc.)	**15**	No onsite reuse/ recycling	Collect separately for processing at dedicated recycling facility	No disposal to landfill
Paper/Cardboard Recycling	**10**	Reuse cardboard boxes for storage on site where possible	Collect separately for processing at dedicated recycling facility	No disposal to landfill
Excess Concrete	**10**	No onsite reuse/ recycling	Collect separately for processing at dedicated recycling facility	No disposal to landfill
Wood Offcuts	**5**	Reuse onsite for formwork where possible	Collect separately for processing at dedicated recycling facility	No disposal to landfill
Plasterboard Offcuts	**2**	No onsite reuse/ recycling	Collect separately for processing at dedicated recycling facility (possible use as soil improver with gypsum etc. removed by recycler)	Any remaining unsuitable or contaminated material will be disposed of at landfill facility
Excess Glass	**2**	No onsite reuse/ recycling	Recyclers consulted as to potential for recycling	No disposal to landfill
Floor Coverings	**1**	No onsite reuse/ recycling	Collect separately for processing at dedicated recycling facility	No disposal to landfill
Metal Offcuts, Wiring, etc.	**1**	No onsite reuse/ recycling	Collect separately for processing at dedicated recycling facility	No disposal to landfill
Glass, Metal, & Plastic Food & Drink Packaging	**1**	No onsite reuse/ recycling		
General Waste (All Other Materials)	**3**	No onsite reuse/ recycling	Collect separately for waste contractor to dispose of at landfill facility	Disposal to landfill
TOTAL VOLUME OF MATERIALS	**70 m^3**	**POTENTIAL RECOVERY**	**67 m^3**	**95.7%**

In total, **95.7% by volume** of all waste materials expected to be generated during construction can potentially be reused or recycled through treatment at suitable off-site processing facilities.

6. Work Plan

The following summarises the principles for the work plan to be provided for demolition activities for the development; a comprehensive work plan will be developed and submitted to the relevant authorities after the demolition contractor(s) have been appointed.

It will be a condition of appointment that the contractor(s) will develop a work plan and the requirement for submitting it following the appointment will be conditioned in the DA for lodgment with the reviewing authority.

A copy of AS 2601-2001 *The Demolition of Structures* will be kept on site, and during site induction all workers will be advised as to the requirements contained within the Standard.

It is recommended that the following requirements are included in the work plan:

Proposed Demolition Methods

- The contractor will detail all machinery that will be used on-site as well as for transporting materials off-site, including vehicles to be used by waste/recycling contractors
- All operators of machinery will be required to provide evidence of licences and insurances to operate machinery
- All machinery will have to be demonstrated to be in good working order
- Safe work method statements will be required for all aspects of the demolition

Estimated Time for Work to be Completed

It is difficult to state with accuracy the actual time for the demolition activities to occur (i.e., be completed), due to issues such as weather and other unforeseen issues. Once the contractor(s) have been appointed a timeframe for demolition activities will be developed.

Hours of Operation

Hours of all demolition activities will be restricted to what is required by Council and any other relevant obligations.

There are a large number of residences in close proximity to the site, so all contractors will be required to ensure that hours of operation, noise, dust and other adverse impacts, do not cause nuisance to these other premises.

Sediment Control Measures

All drains located on or off-site that could have any sediment flow to them will be protected by bunding. The type of bunding used will depend on the location.

Contractors will be responsible for undertaking activities that minimise sediment generation and this will be required to be included in their work plan as to the methodologies to be used. All measures used for sediment control will be inspected daily.

Site Access

The site will be protected by fencing, and all gates locked when the site is not occupied. Access during working hours will be controlled by a gatekeeper, and there will be clearly signed and controlled entry and exit points. Site access will only be granted to those who have attended site induction and/or required to be on site due to their employing organisations' requirements (e.g., Council or WorkCover officers).

7. Contractor Management

Each subcontractor working on the site will adhere to this waste management plan.

The head contractor will ensure each subcontractor:

- Takes practical measures to prevent waste being generated from their work
- Implements procedures to ensure 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 waste management plan

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.

8. Training and Education

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

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.