Manly Wharf Redevelopment – Construction and Demolition Waste Management Plan

A Submission to Artemus Group

25th October 2024

MRA Consulting Group

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Prepared by

MRA Consulting Group (MRA)
Registered as Mike Ritchie & Associates Pty Ltd
ABN 13 143 273 812

Suite 408 Henry Lawson Building
19 Roseby Street
Drummoyne NSW 2047

+61 2 8541 6169
info@mraconsulting.com.au
mraconsulting.com.au

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Disclaimer

In the spirit of reconciliation MRA Consulting Group acknowledges the Traditional Custodians of Country throughout Australia and their connection to land, sea and community. We pay our respects to Aboriginal and Torres Strait Islander peoples and to Elders past, present and emerging.

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Glossary

Terminology	Definition
AS	Australian Standard
C&D	Construction and Demolition
C&I	Commercial and Industrial
DA	Development Application
DCP	Development Control Plan
ENM	Excavated Natural Material
EPA	Environment Protection Authority
ILU	Independent Living Unit
LGA	Local Government Area
MGB	Mobile Garbage Bin
MRA	MRA Consulting Group
MSW	Municipal Solid Waste
MDCP	Manly Development Control Plan 2013
MLEP	Manly Local Environmental Plan 2013
VENM	Virgin Excavated Natural Material
C&DWMP	Construction and Demolition Waste Management Plan
WSP	Waste Service Provider
WSRA	Waste Storage and Recycling Area

1 Introduction

MRA Consulting Group (MRA) was engaged by Lewis Advisory c/o Artemus Group to prepare a Construction and Demolition Waste Management Plan (C&DWMP) related to the proposed redevelopment located at Manly Wharf in NSW. The site is located within the Northern Beaches Local Government Area (LGA).

The proposed redevelopment includes:

- The removal of existing features including:
  - balustrades,
  - existing gas fired pizza oven,
  - solid fuel grill, and
  - timber and concrete bench seats around the water's edge.
- Construction of proposed redevelopment including:
  - retractable glass balustrades,
  - pizza preparation area,
  - machinal exhaust plant,
  - children's play area, and
  - extension of Manly Wharf Bar deck (84 sqm).

This C&DWMP addresses the requirements of the Consent Authority (Council) and conforms to the following environmental planning instruments and reference documents:

- Manly Development Control Plan (MDCP) 2013.
- Manly Local Environmental Plan (MLEP) 2013.

Consideration has also been given to the following supplementary documents in the preparation of the C&DWMP:

- NSW EPA (2019) *Better Practice Guide for Resource Recovery in Residential Developments.*

A Waste and Recycling Management Plan has been prepared in accordance with the MDCP 2013, and states the following objectives for Construction and Demolition (C&D) waste management:

1. To facilitate sustainable waste management in a manner consistent with the principles of Ecologically Sustainable Development (ESD).
2. Encourage environmentally protective waste management practices on construction and demolition sites which include:
   - sorting of waste into appropriate receptors (source separation, reuse and recycling) and ensure appropriate storage and collection of waste and to promote quality design of waste facilities;
   - adoption of design standards that complement waste collection and management services offered by Council and private service providers;
   - building designs and demolition and construction management techniques which maximises avoidance, reuse and recycling of building materials and which will minimise disposal of waste to landfill; and
   - appropriately designed waste and recycling receptors are located so as to avoid impact upon surrounding and adjoining neighbours and enclosed in a screened off area.
3. To minimise risks to health and safety associated with handling and disposal of waste and recycled material, and ensure optimum hygiene.
4. To minimise any adverse environmental impacts associated with the storage and collection of waste.
5. To discourage illegal dumping.

This C&DWMP is used to inform the building design to deliver best practice waste management and promote sustainable outcomes at the demolition and construction phases of the development. The C&DWMP addresses waste generation and storage associated with demolition and construction works through redevelopment.

2 Background

2.1 Description of the Proposed Development

The proposed redevelopment will involve the:

- The removal of existing features including:
  - balustrades,
  - existing gas fired pizza oven,
  - solid fuel grill, and
  - timber and concrete bench seats around the water's edge.
- Construction of proposed redevelopment including:
  - retractable glass balustrades,
  - pizza preparation area,
  - mechanical exhaust plant,
  - children's play area, and
  - extension of Manly Wharf Bar deck (84 sqm).

The Development Application seeks to make alterations to existing features and extend the Manly Wharf Bar area. There will be no change of use or increases in site capacity associated with the proposed redevelopment. Demolition plans and proposed redevelopment plans are outlined in Appendix A and Appendix B

2.2 Location

The site is legally known as Lot 1 DP1170245. The proposed redevelopment site is located at the junction of East and West Esplanade, and The Corso leading to Manly Beach. Figure 1 depicts the location of the site in relation to the surrounding land uses and roadways.

Figure 1: Site and surrounding area

Source: SixMaps 2024

2.3 Strategies

Waste management for the site considers better practice, necessary equipment, and integration with other guidance documents including the NSW Waste and Sustainable Materials Strategy (NSW EPA, 2021), and National Waste Policy: Less Waste, More Resources (DAWE, 2018). The key policy aims that are considered are:

- Avoidance (to prevent the generation of waste);
- Reduce the amount of waste (including hazardous waste) for disposal;
- Manage waste as a resource; and
- Ensure that waste treatment, disposal, recovery and re-use are undertaken in a safe, scientific and environmentally sound manner.

Management of waste generated onsite according to directives of the NSW Strategy will assist in achieving the target of 80% diversion from landfill in the C&D sector.

2.4 Assumptions

This report is a Construction and Demolition Waste Management Plan (C&DWMP), forming part of the development documentation and assumes:

- Drawings and information that have been used in waste management planning for this C&DWMP are the final design set for the development plan from the project architect, Little Boat Projects, 03/09/2024.
- This C&DWMP is a living document and therefore, waste management equipment and systems described in this report are subject to change based on future operations and available technology.

3 Construction and Demolition

Demolition and construction activities at the site will generate a range of construction and demolition (C&D) waste. Throughout the development process, all materials will be reused and recycled where possible, minimising the disposal (landfilling) of materials other than those that are contaminated or unsuitable for reuse or recycling processes.

Waste storage during construction operations will involve some stockpiling of reusable material, as well as placement of wheeled bins for the separation of construction materials for recycling. A bin for residual waste or contaminated material will also be made available at the site for disposal where necessary. Bins may require alternative placement across construction operations to facilitate the safe and efficient storage of materials and will be retained within property boundaries to avoid illegal dumping.

A waste storage area shall be designated by the demolition or construction contractor and shall be sufficient to store the various waste streams expected during operations. Waste storage areas will be kept clear to maintain access and shall also be kept tidy to encourage separation of waste materials and for WHS reasons. The waste storage area will retain multiple bins to allow for source separation of waste to allow for ease of recovery and reuse of materials.

Waste management principles, management measures and facilities in use on the site shall be included as part of the site induction for all personnel working on the site.

3.1 Demolition Waste

The proposed development will require demolition of existing structures prior to commencement of construction operations. Demolition works will include the removal of existing features including:

- balustrades,
- existing gas fired pizza oven,
- solid fuel grill, and
- timber and concrete bench seats around the water's edge.

Table 1 outlines the expected demolition waste quantities to be generated at the site, in addition to the appropriate management methods for each material type. Other materials with limited reuse potential either on or offsite will be removed in bulk bins for recycling at an appropriately licenced and capable recycling facility.

Table 1: Demolition waste generation estimates

Type of Material	Estimated volumes (m^3)	Re-use on-site	Recycle (Separate collection)	Recycle (Off-site)	Disposal	Estimated % Landfill	Estimated % of landfill diversion	Methods for re-use, recycling or disposal
Concrete	20 – 30	✓	✓	✓	-	<5%	>95%	Onsite: Separated wherever possible and reused or crushed for filling, levelling or road base. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Glass	<5	✓	✓	✓	-	<10%	>90%	On site: to be separated wherever possible to enhance resource recovery. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Bricks/pavers	10 - 15	✓	✓	✓	-	<5%	>95%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. The development will be able to reuse a number of existing building bricks as paving in landscaped areas. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Tiles	<5	✓	✓	✓	-	<5%	>95%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. Offsite: Removed to C&D facility for crushing and recycling for recovered products.

Type of Material	Estimated volumes (m^3)	Re-use on-site	Recycle (Separate collection)	Recycle (Off-site)	Disposal	Estimated % Landfill	Estimated % of landfill diversion	Methods for re-use, recycling or disposal
Timber (Clean)	10 – 15	✓	✓	✓	-	0	100	Onsite: To be separated wherever possible to enhance resource recovery. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Metals (ferrous & non-ferrous)	5 – 10	-	✓	✓	-	<10%	>90%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Removed to C&D facility for recovery and recycling.
Floor covering	<5	-	✓	✓		50%	50%	Should be removed in bulk and sent to carpet recycler or C&D facility for recovery where possible.
Residual waste	10 – 20	-	-	-	✓	100%	-	Resource recovery dependant on facility destination capability.
Hazardous Waste	Unknown	-	-	-		100%	-	Existing buildings may contain potentially hazardous materials. Should contaminated or potentially hazardous materials be discovered they would be handled according to the demolition and/or materials management plan
Total % Diversion from Landfill Estimated							**>80%**	

3.2 Construction Waste

The proposed redevelopment seeks to make alterations to existing features and extend the Manly Wharf Bar area. There will be no change of use or increases in site capacity associated with the proposed redevelopment. The proposed works are expected to involve the construction of:

- retractable glass balustrades,
- pizza preparation area,
- machinal exhaust plant,
- children's play area, and
- extension of Manly Wharf Bar deck (84 sqm).

Table 2 outlines indicative volume to weight conversion factors for common construction materials.

Table 2: Indicative volume to weight conversion factors for common construction materials

Building waste material	Tonnes per m^3	Waste as % of the total material ordered
Soil/aggregate	1.4 – 1.6	–
Bricks	1.2	5–10%
Concrete	1.5	3–5%
Tiles/ceramics	0.5 – 1	2–5%
Timber	0.3	5–7%
Plasterboard	0.2	5–20%
Metals	0.15 – 0.9	–

Source: Green Building Code of Australia C&D Waste Criteria.

Table 3 outlines the estimated waste generation rates for materials through construction of the proposed development, in addition to the appropriate management methods for each material type.

The information below presents multiple options for materials reuse, recycling and disposal where applicable (e.g. return to manufacturer, recycled at construction and demolition (C&D) processor, or disposed to landfill if contaminated).

Table 3: Construction waste generation estimations

Type of Material	Estimated Volumes (m^3)	Re-use on-site	Recycle (Separate collection)	Recycle (Off-site)	Landfill	% of landfill diversion	Methods for re-use, recycling or disposal
Bricks/pavers	<5	✓	✓	✓	<10%	>90%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. Offsite: Returned to supplier for reuse or removed to C&D facility for crushing and recycling for recovered products.
Concrete	5 - 10	✓	✓	✓	<10%	>90%	Onsite: Separated wherever possible and reused or crushed for filling, levelling or road base. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Tiles	Minor	✓	✓	✓	<10%	>90%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. Offsite: Returned to supplier for reuse or removed to C&D facility for crushing and recycling for recovered products.
Timber (clean)	<5	-	✓	✓	<10%	>90%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Returned to supplier for reuse removed to C&D facility for recovery where possible.
Glass	Minor	✓	✓	✓	<10%	>90%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways.

Type of Material	Estimated Volumes (m^3)	Re-use on-site	Recycle (Separate collection)	Recycle (Off-site)	Landfill	% of landfill diversion	Methods for re-use, recycling or disposal
							Offsite: Returned to supplier for reuse or removed to C&D facility for crushing and recycling for recovered products.
Metals (ferrous) Metals (non-ferrous)	<5	-	✓	✓	<10%	>90%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Returned to supplier for reuse or removed to C&D facility for recovery and recycling.
Floor covering	5 - 10	✓	✓	✓	<10%	>90%	On site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse where possible. C&D processor: recovery and recycling.
Fixtures and fittings	Minor	✓	✓	✓			On site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse where possible. C&D processor: recovery and recycling.
Residual waste	10 - 15	-	✓	✓	100%	-	Resource recovery dependant on facility destination capability.
Total % Diversion from Landfill Estimated						**>90%**	

3.3 Waste Contractors and Facilities

To ensure best practice waste management, appropriate contractors and facilities have been proposed based on their location and service offerings (Table 4).

Table 4: Waste service contractors and facilities

Role	Details
Recommended Waste Collection Contractor	The following are local skip bin operators for consideration in the management of excavation and construction waste for the site: • Brown Bros Skip Bins; • Northern Beaches Skip Bins; • Any Rubbish; • Mobile Skips Balgowlah; and • Green Corp Skips Bins. Or another supplier as elected by the building contractor.
Principal Off-Site Recycler	The following are local C&D processing facilities for consideration in the management of C&D waste generated at the site: • Cleanaway Belrose Resource Recovery Centre. • Benedict Recycling Belrose. • Kimbriki Resource Recovery Centre. Or another appropriate facility as elected by the waste management contractor.
Principal Licensed Landfill Site	• Greenwood Landfill & Waste Resource Recovery Centre. • Kimbriki Resource Recovery Centre. Or other appropriate facility as elected by the waste management contractor.

3.4 Site Documentation

This C&DWMP will be retained on-site during the construction phases of the development, along with other waste management documentation (e.g. contracts with waste service providers).

Responsibility for the C&DWMP, waste documentation and processes during the excavation and construction phases will be with the site manager or builder.

A logbook that records waste management and collection will be maintained on site, with entries including:

- Time and date of collections;
- Description of waste and quantity;
- Waste/processing facility that will receive the waste; and
- Vehicle registration and company name.

Waste management documentation, the logbook and associated dockets and receipts must be made available for inspection by an authorised Council Officer at any time during site works.

4 Waste Management Systems

4.1 Waste Storage, Handling, Transport, and Disposal

4.1.1 Storage

Considering the nature of proposed works, waste management infrastructure should include retention of several mobile garbage bins for the storage of separated construction waste material. Waste should be placed in designated bins and collected on a regular schedule, as bins become full.

Recyclable materials would be source-separated onsite where possible in labelled bins according to the type of material (e.g. masonry, metals, paper and plastics) to enable improved recovery rates.

All problem and hazardous wastes would be stored in separate areas or bins as they may require special treatment. Asbestos must be stored in a separate container and wrapped in thick plastic. Any flammable liquids would be stored in a bunded area; however, this is not likely to be necessary at the site.

4.1.2 Handling

The handling of waste would be dependent on waste type.

- Inert waste would be collected for recycling or disposal, as appropriate.
- Problem wastes include paint, oils and chemicals would be disposed of at facilities which are able to receive these materials.

The Business Recycling website (businessrecycling.com.au) provides a directory of locations where wastes can be recycled or safely disposed of.

All material generated would be separated where possible, to maximise resource recovery potential and reduce the need for disposal of residual materials to landfill. Any material deemed unsuitable for reuse or recovery would be disposed of to an appropriately licensed landfill. Reuse and recovery potential for expected waste product includes (but is not limited to) the methods outlined in Table 5.

4.1.3 Recycling of Materials

Table 5: Expected waste streams during C&D activities related to fit-out works

Waste Material	Reuse or recovery Potential
Brick, Rubble, Stone, Ceramic, Tile, etc.	Sent to C&D processing facility for crushing and reuse as fill material.
Timber (treated and non-treated)	Sent to organics processor or C&D processing facility for mulching for reuse.
Metals (ferrous & non-ferrous)	Fixtures and fittings returned to manufacturer for reuse (if applicable) or recycling at materials recycling facility.
Plastic	Recycling at materials recycling facility.
Paper & cardboard	Recycling at materials recycling facility.
Eligible residual or non-recoverable material	Processing at appropriately licensed energy from waste (EfW) as technology becomes readily available.

Waste Material	Reuse or recovery Potential
Hazardous and problem waste streams	Disposal/recycling at a facility which is able to accept the particular type of waste.

4.1.4 Transport

Section 143 of the *Protection of the Environment Operations Act 1997* requires that waste is transported to a place that can lawfully accept it. Both the owner of the waste and the transporter are legally responsible for proving the waste was transported to a lawful place.

To show that waste has been lawfully disposed of records should be kept of the following:

1. All demolition and construction waste dockets must be kept which show which facility received the material for recycling or disposal.
2. Who transported the waste (company name, ABN, vehicle registration and driver details, date and time of transport, description of waste).
3. Copies of waste dockets/receipts from the waste facility (date and time of delivery, name and address of the facility, its ABN, contact person).
4. Transport of waste materials is managed by a licensed operator.

Audits may be conducted by Council to verify that dockets have been kept and waste recycled and disposed of as described within the C&D Waste Management Plan.

4.1.5 Disposal

The disposal of waste is recommended after recycling options have been implemented. Materials may only be disposed of materials to a facility which is licensed to take the particular type of waste.

- The majority of waste onsite is inert, dry, non-putrescible waste which may be taken to any licensed landfill.
- Stabilised asbestos in a bonded matrix may be taken to an inert waste Class 1 landfill or a solid waste landfill class 1 or 2.
- The Planet Ark Business Recycling directory or “Recycling Near You” websites can be consulted to find facilities that accepts a particular type of waste for recycling or disposal.

4.2 Management Measures

4.2.1 General Measures

The following general site management measures are recommended for the proposed fit-out works:

- Materials would be reused or recycled wherever possible;
- Separate bins would be provided for source separation of waste types where possible;
- Residual waste would be disposed of to a licensed landfill;
- Litter on the site would be managed daily to maintain a tidy environment;
- Transport of waste would be managed by a licenced operator; and
- Records would be kept of transport and disposal of materials.

4.2.2 Hazardous Waste Management

The existing development features proposed to be demolished or removed are not expected to contain any hazardous or potentially hazardous materials that will require specialised management or treatment. Should any hazardous or potentially hazardous materials be discovered through any stage of works, these will be reported to the site foreman/construction manager and handled in accordance with appropriate handling methods for specific hazardous materials.

4.3 Signage

Signage that promotes resource recovery, waste minimisation, safety and amenity follows the Australian Standard for safety signs for the occupational environment (Standards Australia 1994). Illustrative graphics must form a minimum 50% of the area of the signage. Signage is to be prominently posted in each waste storage area or where waste materials will be separated at the source. At a minimum, signage should indicate:

- Details regarding acceptable recyclables;
- No standing and danger warnings apply to the area surrounding waste storage areas;
- Contact details of the waste contractor; and
- The area is to be kept tidy.

Standard signage requirements and guidance for application apply (see Appendix B).

4.4 Prevention of Pollution and Litter Reduction

To minimise dispersion of litter and prevent pollution (to water and land via contamination of runoff, dust and hazardous materials), building management and the waste caretaker will also be responsible for:

- Maintenance of open and stockpile areas;
- Ensuring waste storage areas are well maintained and kept clean;
- Securing the waste storage area from vandalism and the escape of litter;
- Identification and appropriate disposal of goods with hazardous material content;
- Taking action to prevent dumping and unauthorised use of waste areas; and
- Requiring contractors to clean up any spillage that may occur during waste servicing or accessing the site.

5 References

Australian Department of Sustainability, Environment Water, Population and Communities (2011) Construction and Demolition Waste Guide - Recycling and Re-use Across the Supply Chain.

Australian Standards 4123.7 Mobile Waste Containers.

Manly Development Control Plan 2013

Manly Local Environmental Plan 2013

NSW EPA (2012) Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities.

NSW EPA (2021) NSW Waste and Sustainable Materials Strategy 2041.

NSW EPA (2014) Waste Classification Guidelines.

NSW EPA (2016) Recycling Signs, Posters and Symbols. Available at: http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm.

NSW EPA (2019) Better Practice Guide for Resource Recovery in Residential Developments.

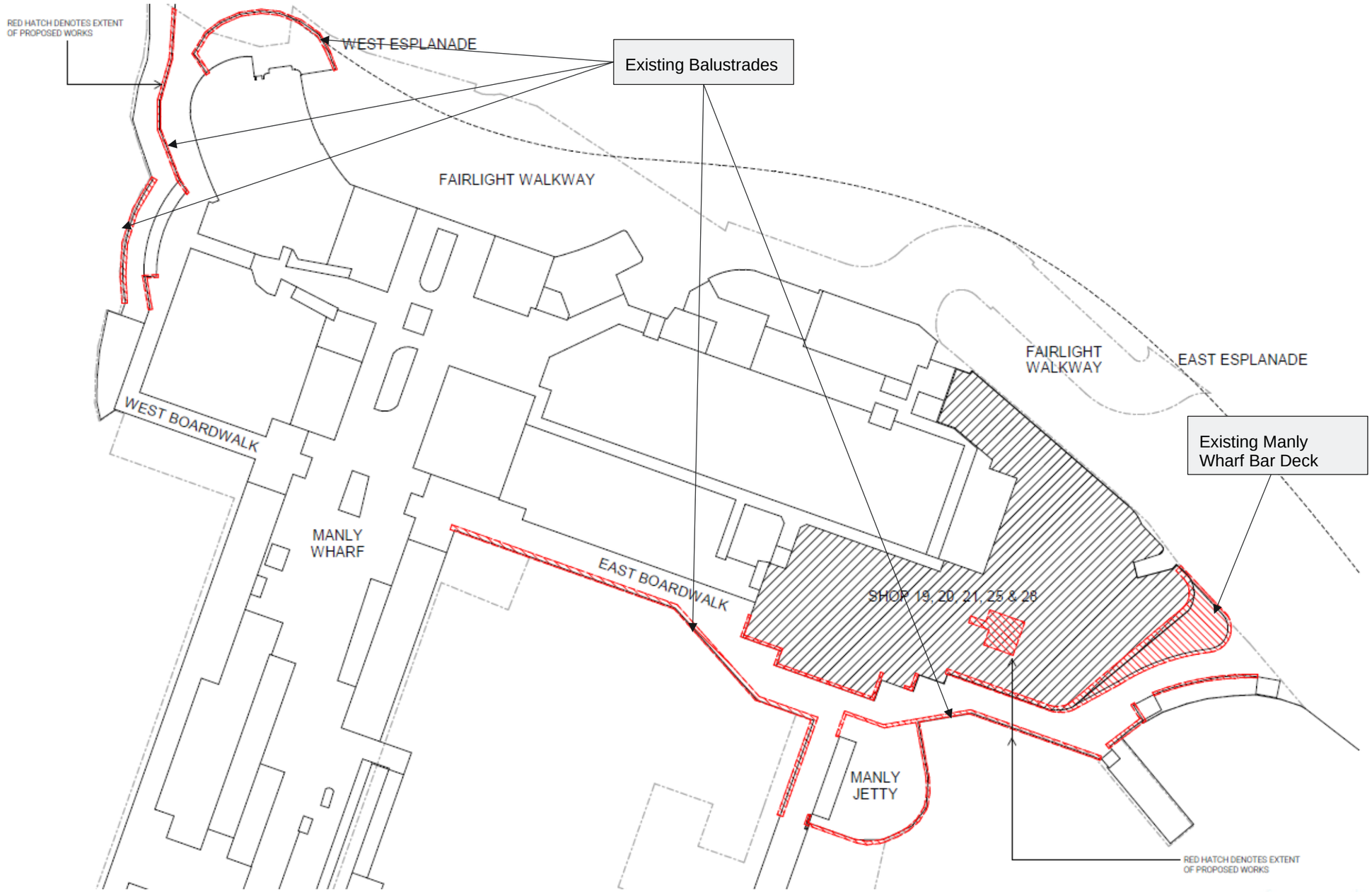
NSW Government (1979) Environmental Planning and Assessment Act.

NSW Government (1997) Protection of the Environment Operations Act.

NSW Government (2000) Environmental Planning and Assessment Regulation.

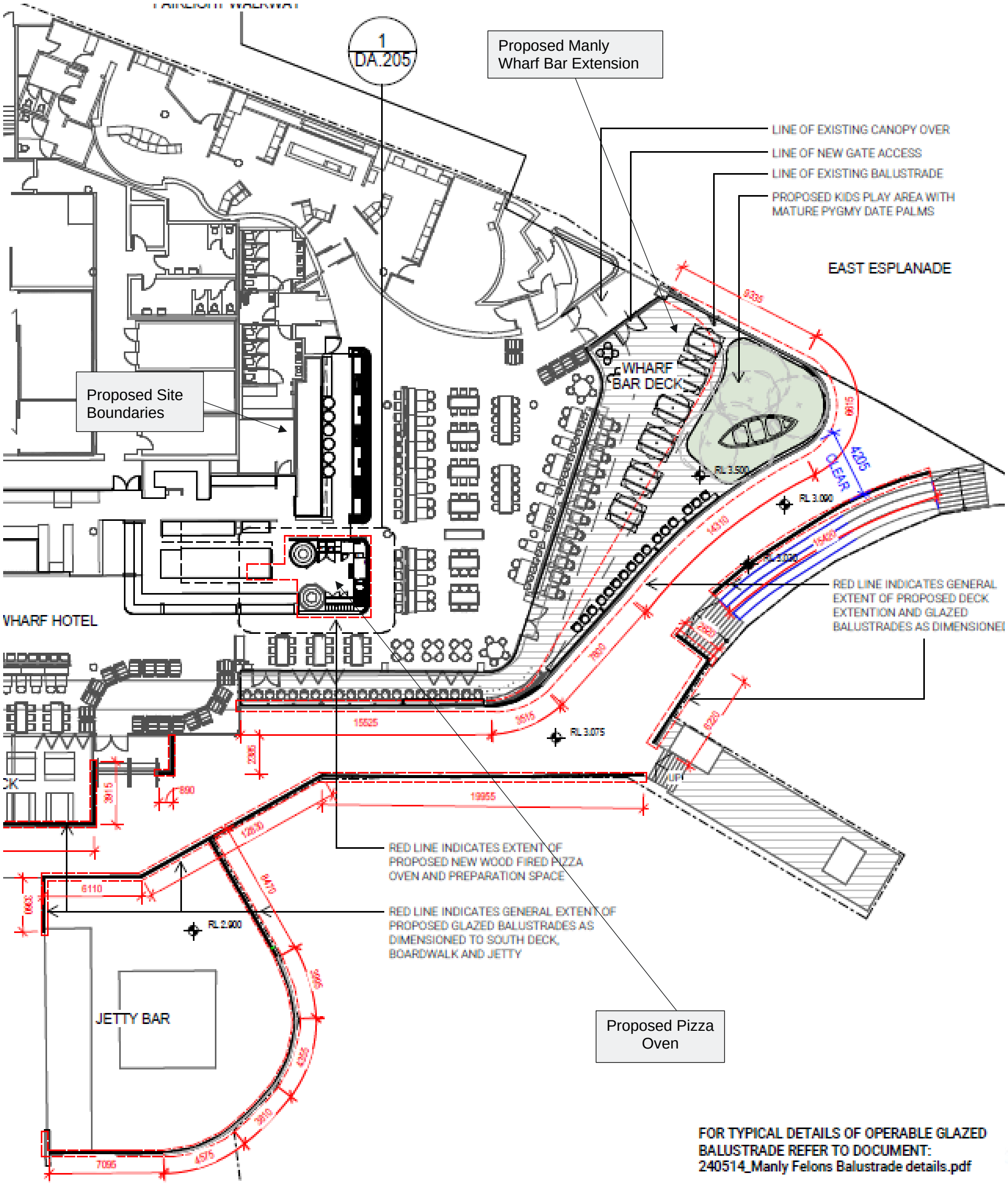
NSW Government (2001) The Waste Avoidance and Resource Recovery Act

Appendix A Proposed Demolition Plans



Source: Little Boat Projects, 2024

Appendix B Proposed Redevelopment Plans



Source: Little Boat Projects, 2024

Appendix C Standard Signage

Waste Signage

Signs for garbage, recycling and organics bins should comply with the standard signs promoted by the NSW EPA.

Standard symbols for use in signage, bin facade and educational materials are promoted through the NSW Environment Protection Authority. They are available for download from the NSW EPA website (NSW EPA 2016b), in black and white and colour versions. The Australian Standard series AS 4123 (Part 7) details colours for mobile waste containers (Standards Australia 2008).

Figure 2: Examples of standard signage for bin uses

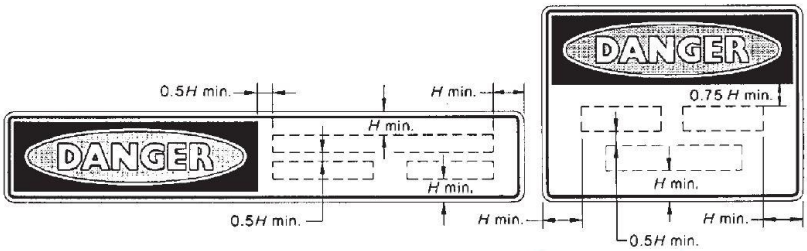
Safety Signs

The design and use of safety signs for waste and recycling rooms and enclosures should comply with AS 1319 (Standards Australia 1994). Safety signs should be used to regulate, and control safety related to behaviour, warn of hazards and provide emergency information, including fire protection information. Below are some examples. Clear and easy to read 'NO STANDING' and 'DANGER' warning signs must be fixed to the external face of each waste and recycling room where appropriate.

Figure 3: Example and layout of safety signage

(d) Horizontal

FIGURE D5 TYPICAL ARRANGEMENTS OF DANGER SIGNS



MRA Consulting Group

Suite 408 Henry Lawson Building
19 Roseby Street
Drummoyne NSW 2047

+61 2 8541 6169
info@mraconsulting.com.au
mraconsulting.com.au

MRA Consulting Group