

Lend Lease Pty Limited

Establishment of First use and Fit-out of Level 1-28 Commercial Building C4

Waste Management Plan

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It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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1 Introduction

This Waste Management Plan is submitted to the Minister for Planning pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) in support of the State Significant Development (SSD) Development Application for the Westpac fit-out (commercial office Levels 1-28) of Commercial Building C4.

1.1 Background

The 22 hectare Barangaroo site has been divided into three distinct redevelopment areas (from north to south) – the Headland Park, Barangaroo Stage 2 and Barangaroo Stage 1 (herein after referred to as Barangaroo South).

Lend Lease Pty Limited (herein after referred to as Lend Lease) was successfully appointed as the preferred proponent to develop Barangaroo South on 20 December 2009.

1.2 Site Description

Barangaroo is located on the north western edge of the Sydney Central Business District, bounded by Sydney Harbour to the west and north, the historic precinct of Millers Point (for the northern half), The Rocks and the Sydney Harbour Bridge approach to the east; and bounded to the south by a range of new development dominated by large CBD commercial tenants.

The 22 ha Barangaroo site is roughly rectangular in shape and has frontage to the harbour foreshore of 1.4km. Hickson Road delineates the eastern boundary.

The NSW Government held an international urban design competition for the site in 2005 and the winning entry was used as the basis for the original Barangaroo Concept Plan which was approved in February 2007 and sets out the urban design and policy initiatives to be employed in the redevelopment of the site.

The Concept Plan (as modified) is the statutory planning approval to guide the urban renewal of Barangaroo and currently provides for the development of mixed use precinct comprising commercial, retail, residential and community development and new public open space / public domain.

The Barangaroo Delivery Authority is the state government authority that manages and delivers the development of Barangaroo.

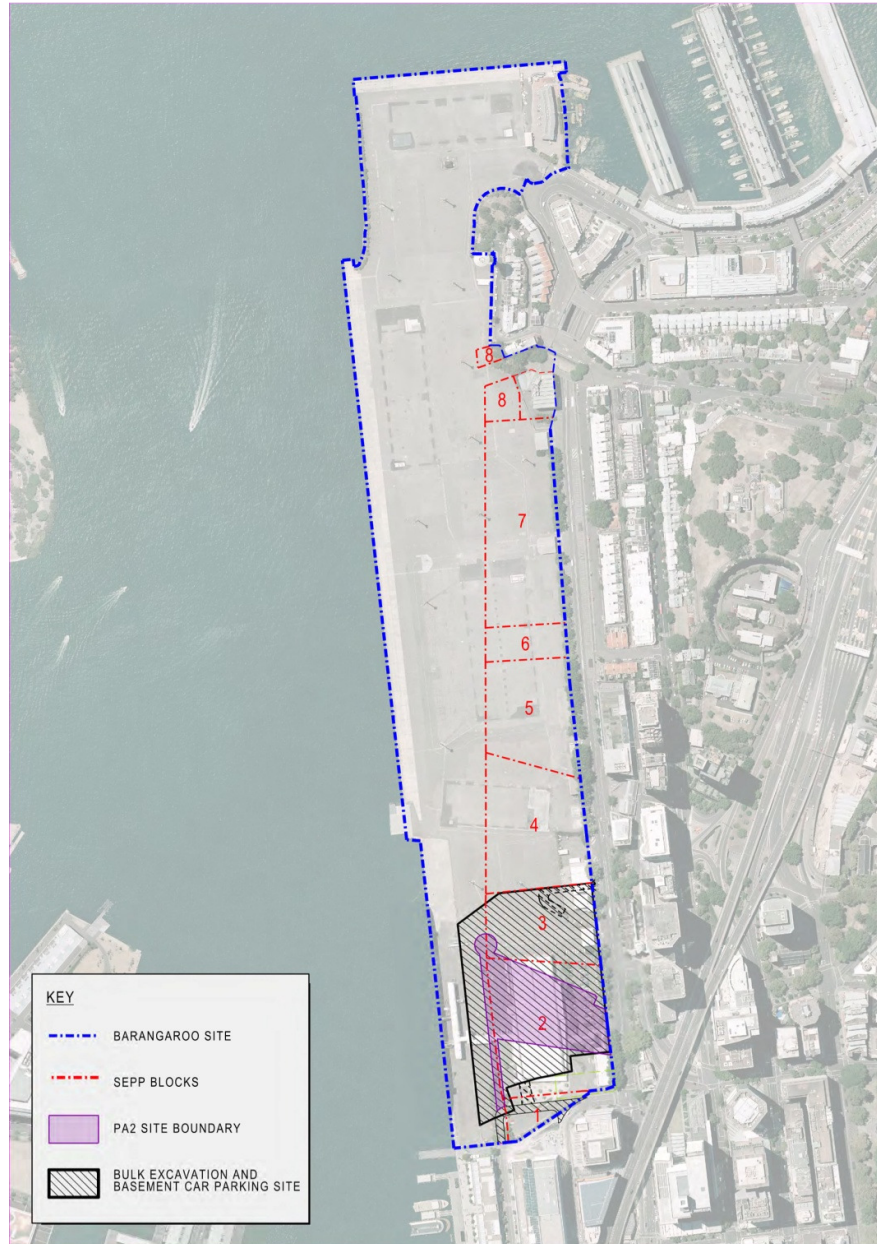


Figure 1: C4 Commercial Building Project Application (MP10_0025) Aerial Site Location Plan

1.3 Westpac Tenancy Description

The Development Application seeks approval for the construction of a fitout within the C4 Commercial building tower. The tenancy will comprise 27 floors totalling 59,304m² and will occupy podium levels 1 and 2 and tower levels 3 through to Level 28 (not including level 16) which is a plant floor.

1.4 Purpose of this Report

This Waste Management Plan (WMP) is prepared to meet the DGR's for the Establishment of the First Use and Fit-out of Commercial Building C4 (SSD 12_5582) in regards to tenancy by Westpac. These DGR's are discussed in the Environmental Impact Statement that has been prepared to support the Development Application.

A previous Project Application has been made for construction of the 43 storey commercial building (known as Building C4) and associated works at Barangaroo South.

The requirements outlined in this WMP will be incorporated into the first use and fit-out of the described Westpac tenancy of building C4. This WMP for first use and fit-out is made with reference to the C4 Commercial Building WMP for Project Application (Nov 2010) which was later updated in October 2011 in regards to a proposed modification (Section 75W submission for MP10_0025) and further Section 75W submission in December 2012.

The WMP identifies waste sources during operation and proposes measures to manage waste in a way that generally satisfies all legislative requirements.

In summary, the key purposes of the WMP are to:

- Nominate effective waste separation, recycling and re-use measures;
- Inform the required ESD report;
- Develop management requirements; and
- Comply with and assist in the meeting of the overall waste goals for the C4 Commercial Building.

1.5 Assumptions and Limitations

All figures and calculations are based on the building layout as set out in the *C4 Wharf Tower DA Plan Documentation (Rev A) 11.10.12*. Waste generation estimations have been made using industry estimates and where appropriate devised from the waste estimation tables contained within City of Sydney's Policy for Waste Minimisation in New Developments 2005 (CoS Waste Policy).

All waste facilities and equipment will be designed and constructed in accordance with City of Sydney requirements as outlined in their Waste Policy where appropriate, the BCA, and Australian Standards.

Green Star rating tools have been used to inform this WMP however a certified rating will not be sought.

2 Legislative Requirements

2.1 NSW State Legislation

2.1.1 The Protection of the Environment Operations Act 1997

The Protection of the Environment Operations Act 1997 covers the requirements for waste generators in terms of storage and correct disposal of waste and establishes the waste generator as having responsibility for the correct management of waste, including final disposal.

2.1.2 Waste Avoidance and Resource Recovery Act 2001

The object of the Waste Avoidance and Resource Recovery Act 2001 is to encourage the most efficient use of resources, to reduce environmental harm, and to provide for the continual reduction in waste generation in line with the principles of ecologically sustainable development (ESD).

This Waste Management Plan relates to a new development in NSW and is therefore written with reference to the NSW Waste Avoidance and Resource Recovery Strategy 2003, made under the Act.

The following hierarchy for managing waste, from most desirable to least desirable, meets the objectives of the Act:

- Avoid unnecessary resource consumption;
- Recover resources (including reuse, reprocessing, recycling and energy recovery); and
- Dispose (as a last resort).

2.1.3 The NSW Waste Reduction and Purchasing Policy (WRAPP) 1999

The NSW Waste Reduction and Purchasing Policy (WRAPP) requires all state government agencies and state owned corporations to develop and implement a WRAPP plan to reduce waste in four scheduled areas:

- Paper products;
- Office equipment and components;
- Vegetation material; and
- Construction and demolition materials.

The WRAPP is not directly applicable to the project, but has been used as a suitable guiding document for waste initiatives.

2.2 City of Sydney Council Policy

2.2.1 City of Sydney Council Policy for Waste Minimisation in New Developments 2005

The Council of the City of Sydney Policy for Waste Minimisation in New Developments 2005 (CoS Waste Policy) supports the Department of Environment, Climate Change and Water's (DECCW) NSW Waste Avoidance and Resource Recovery Strategy 2003. This Waste Policy is the guiding document for many of the waste initiatives and requirements for the Barangaroo development.

3 Goals / Targets

3.1.1 Overall Project Commitments

Lend Lease are committed to minimising waste to landfill and greenhouse gas emissions associated with waste generation and movement of waste from the C4 Commercial Building.

The C4 Commercial Building has been designed to achieve a high rating under the Green Star Office (V3) rating tool with these requirements discussed in the C4 Commercial Building WMP for Project Application (Nov 2010).

The C4 Commercial Building Section 75W Application included key sustainability commitments. The sustainability commitment of C4 with regards to waste is for 'zero waste'.

Commitment	Action Item	Commitment for C4
Zero Waste	Establish at-source segregation through precinct waste management practices including consideration for glass, co-mingled recyclables, paper and cardboard, soft plastics, cooking oil, green garden waste and residual materials.	Recycling segregation areas allowed for in basement design.

Detailed goals within the 'zero waste' commitment consist of;

- Greater than 97% diversion of construction waste from landfill;
- Greater than 80% diversion of operational waste from landfill.

The first use and fit-out of C4 by Westpac will assist in the meeting of the overall waste goals for the C4 Commercial Building. Waste management measures to assist with the specified goals are described below.

Greater than 97% diversion of construction waste from landfill

This target has not been addressed here as the WMP for first use and fit-out is concerned with operational waste management only. Construction waste management is addressed within the Lend Lease Construction Management Plan.

Greater than 80% diversion of operational waste from landfill

Westpac will undertake waste management with the aim of achieving high source separation of recyclables to assist with meeting the C4 target for diversion of waste from landfill. Measures to be undertaken within its commercial tenancies will include and build upon existing Westpac waste practices. With existing source separation commercial tenancies in Sydney currently achieve in the order of 65-70% diversion of waste from landfill. Westpac will implement a range of waste management measures in order to increase this standard diversion rate for commercial tenancy (refer to Section 4.2 for Waste Management Measures in Operation).

For the proposed café tenancies of the Westpac lease, a series of organic waste diversion measures will be implemented in addition to efficient comingled recyclables collection in order to increase waste diversion from landfill.

Once in operation, Westpac will undertake regular waste audits to determine the waste diversion being achieved.

4 Operational Waste

The importance of both minimising the generation of waste and the value of waste as a resource is reflected in the commitments for the Barangaroo project and this WMP. The Barangaroo integrated waste strategy is based on the principles of reduce, reuse, recycle and recover. It is designed to deliver the following outcome for operational waste;

- Greater than 80% diversion of operational waste to landfill.

This target involves cooperation between various third parties and authorities, and will require these partnerships to meet these commitments and work toward this target. This goal will be evaluated, measured and reviewed progressively throughout the project life.

Westpac will contribute to the target by implementing the waste management measures described in Section 5.1 and by meeting the terms of its Lease agreement (22 June 2012) which states;

6.5(v) the Lessee must;

(A) establish and utilise at source waste segregation, including at a minimum collection areas for glass, co-mingled recyclables, paper and cardboard, soft plastics, cooking oil, e-waste, hazardous/special waste and residual materials; and

(B) deposit the materials referred to in paragraph (v)(A) in the centralised collection area for the Precinct waste operator to collect and process.

This paragraph (v) does not apply to secured waste.

4.1 Waste Management Measures

Waste management measures of the Westpac tenancy will aim to reduce the total volume of waste produced and to maximise diversion of waste from landfill through effective source separation and recycling. The proposed waste management measures are described below.

4.1.1 Source segregation, storage and collection

The resource recovery target for C4 will be delivered through an at source waste segregation solution with all waste streams arising being transported to the common basement waste area of C4.

Separated wastes are a more valuable resource. Waste streams will be separated within the Westpac tenancy where possible to save double handling and time and labour intensive sorting. On-site solutions will involve setting up waste handling systems, including a bin coding system on site, to segregate the waste into separate streams as it is produced.

A number of initiatives could be incorporated in the tenancy to reduce waste generation. These include:

- Under Desk Bin (Recycling) for recyclable material.

- Recycling (dry) bin located in kitchens and prominent areas.
- Secure Paper Bin (recycling) located at points throughout each floor.
- Organic Food Bin (Recycling) located in café areas.
- Landfill (wet) bin located in kitchens and landmarks.
- Implementing a Used Toner Collection Process, similar to processes already in place in other Westpac Sydney CBD sites.
- Producing a Waste and Recycling Guide for C4, similar to that currently used at Westpac Place. The guide should clearly state the waste targets for C4 and describe a waste hierarchy; and
- A method to maximise the use of organic waste bins in café areas would be developed, as organic waste forms a large component of general waste from food preparation under a business as usual case. Methods may include; preferred placement of organic waste bins over general waste bins in food preparation areas, including organic waste chutes on food preparation bench tops leading to enclosed organic waste containers for later removal.

4.1.2 Sustainable consumption and resource minimisation

A number of initiatives could be incorporated in procurement to reduce waste generation. These include:

- Implementing the existing Westpac Group Paper Purchasing Policy (11 Jan 2010). This policy includes the objectives to;
 - Identify and implement opportunities to reduce paper consumption;
 - Ensure paper products are sourced from producers employing sustainable forestry management practices and clean production processes;
 - Reduce total consumption for virgin wood pulp, in a manner consistent with reducing overall environmental footprint; and
 - Support the goal of significantly reducing Green House Gas (GHG) emissions.
- Procurement and re-use of materials from a waste partner or approved waste manager/operator. The approved waste manager/operator can provide materials including recycled aggregates and glass fines that can be reused into new materials on site.

4.1.3 Training

Education of staff on the waste initiatives being undertaken within the tenancy will be provided including the broader zero waste goals for C4 and Barangaroo South.

Through the site induction training process, site staff will be made aware of the placement of the bins and their responsibility to separate materials. Staff will be given access to the Waste and Recycling Guide developed for the Westpac tenancy.

Operators and staff of café and food preparation areas will be trained in importance of waste separation at source, in particular organic waste.

4.1.4 Monitoring and Reporting

Documentation of waste removal, deliveries and final disposal is required for confirmation of waste recycling targets for C4 and Barangaroo South. To assist with this requirement Westpac will keep records where applicable to demonstrate the actual percentage of waste recycled, including volume of all wastes. The Westpac Group Record Management Policy (March 2007) or similar would be implemented for tenancy within C4.

All documentation of materials disposed, including receipts, contracts and waste plans, will be kept and maintained.

4.1.5 Previously stated for C4 Commercial Building

The General, Space, Access and Amenity requirements detailed in Section A (All Developments) and Section D (Mixed Use Developments) in the CoS Waste Policy have generally been followed in determining waste management and storage requirements for C4. The following measures of relevance to the tenancy are repeated from the *C4 Commercial Building WMP for Project Application* (Nov 2010).

The following is likely to be adopted for commercial waste management in C4:

- General waste will be stored in a dedicated waste storage area;
- Recyclables will typically be stored in a dedicated recyclables waste storage area;
- Compactors will be provided in the common basement for the general waste and cardboard/paper waste where appropriate;
- Waste collection is assumed to be by private contractor.

The final management requirements will be subject to design development.

The following is likely to be adopted for retail (food areas) waste management in C4:

- General waste will be stored in a dedicated waste storage area;
- Retail wet waste will typically be stored in a separate semi enclosed area;
- Recyclables will typically be stored in a dedicated recyclables waste storage area;
- Compactors will be provided for the general waste and cardboard/paper waste where appropriate;
- Waste collection is assumed to be by private contractor.

4.2 Waste Estimation

Waste volumes for the entire C4 Commercial Building have been previously estimated in order to determine the waste storage area and waste storage bins which will be required. These waste storage areas and bins have been allowed for in the design of the basement and are detailed in the WMP for Barangaroo South - Bulk Excavation and Basement Car Parking (MP10_0023).

For the purpose of this WMP, waste generated from the Westpac tenancy has been quantified. All waste estimates are based on the waste generation rates for commercial and retail development provided in the CoS Waste Policy. The waste storage area required is calculated based on the Plan Area Bin sizes provided in the CoS Waste Policy:

Table 1: Bin Sizes

Bin Capacity (L)	Plan Area Bin (m ²)
240	0.43
660	0.96
1000	1.58
1500	1.87
3000	2.77

The breakdown of the Gross Floor Area (GFA) for the Westpac tenancy of the C4 Commercial Building is presented in the table below. These estimates have been used for the waste calculations presented in this WMP.

Table 2: Barangaroo, C4 Commercial Building Westpac Tenancy GFA's

Description	GFA (m ²)	Waste generation rate source
Commercial (Office)	59,304	CoS Waste Policy generation rate for office
Satellite kitchen Level 03	65	CoS Waste Policy generation rates for restaurant
Commercial style kitchen Level 28	115	CoS Waste Policy generation rates for restaurant
Office zone and café Level 03	40	CoS Waste Policy generation rates for takeaway
Café Level 15	65	CoS Waste Policy generation rates for takeaway

Waste Estimation for C4 Commercial Building is described in the tables below. All estimates are based on the applicable waste generation rates in the CoS Waste Policy and do not take into account additional management measures to maximise recycling. Waste generation is calculated from Gross Floor Area (GFA) using the figures from Table 2.

Table 3: Barangaroo C4 Commercial Building Westpac Tenancy General Waste Estimation

Description	General Waste Generation Rate		General Waste (L/day)
Commercial (Office)	10	L/100m ² /day	5930
Satellite kitchen level 03	10	L/1.5m ² /day	433
Commercial style kitchen level 28	10	L/1.5m ² /day	767
Office zone and café level 03	80	L/100m ² /day	32
Café level 15	80	L/100m ² /day	52
TOTAL	-	-	7214

Table 4: Barangaroo C4 Commercial Building Westpac Tenancy Recyclables Estimation

Description	Recyclables Waste Generation Rate		Recyclables (L/day)
Commercial (Office)	10	L/100m ² /day	5930
Satellite kitchen level 03	2	L/1.5m ² /day	87
Commercial style kitchen level 28	2	L/1.5m ² /day	153
Office zone and café level 03	0	L/100m ² /day	0
Café level 15	0	L/100m ² /day	0
TOTAL	-	-	6170

4.3 Waste Storage

The provisions included within the Council of the City of Sydney Policy for Waste Minimisation in New Developments 2005 (Section A, All Developments - Construction) will generally be followed for Waste Storage Design where appropriate.

The waste storage areas and rooms will be provided in the Basement.

Wherever possible recyclables and general waste are planned to be stored in separate areas within the basement to prevent waste streams being inadvertently mixed. Final space, access and amenity requirements will be subject to design development.

The expected space requirement within the basement for all of the C4 Commercial areas has been previously estimated as;

- General waste – 2 x 3000L bins
- Recyclables – 9 x 660L bins

The waste generated from the Westpac tenancy (Tables 3 and 4) would form a component of this waste. Waste would be removed from site each day, with compaction of 2:1 ratio of general waste and paper and cardboard.

Using a combination of 3000L and 660L bins with a plan area of 15m² would require waste storage areas to have at least twice this amount of floor area (e.g.

30m²). This is to allow for access to the waste room and movement of bins, cleaning etc. This does not allow for space for a compactor(s).

The appropriate space allocation has been made in the Basement for the C4 Commercial Building based on the waste generation figures presented above.

4.3.1 Compactors

It is likely that compactors will be provided for the general waste and cardboard/paper recycling for C4 Commercial Building and storage areas described above assume that compaction is being used. The type and size of compactor will be subject to design development and they will be provided in the Basement.

The final management requirements will be subject to design development.

4.3.2 Waste Management Responsibility

The following measures outline the general responsibilities associated with waste management for C4;

- The responsibility for cleaning the waste storage area will be on the building manager;
- Removal of waste to the waste storage rooms is the responsibility of building management;
- Waste to be moved to the waste storage areas via the goods lifts;
- Labelling of the bins will be the responsibility of the building manager. This includes adequate signage identifying the waste and recycling area, and instructions outlining how to use the waste management system and what materials are acceptable for recycling;
- Transfer of bins from the storage area to the collection truck will be carried out by the waste collection contractors. After emptying the bins the contractors will return them immediately to the waste storage room within the premises;
- If truck access is limited, loading dock areas have provision for some bins to be moved here by building management (for a short period) prior to collection by waste contractors; and
- The final allocation of responsibilities will be subject to design development.

5 Conclusion

This Waste Management Plan concludes that waste management practices can be implemented under the proposal to achieve a significant reduction in waste going to landfill in operation.

Adequate storage and handling facilities for the project waste streams from the Westpac fit-out of commercial building C4 are catered for within the central basement facility.