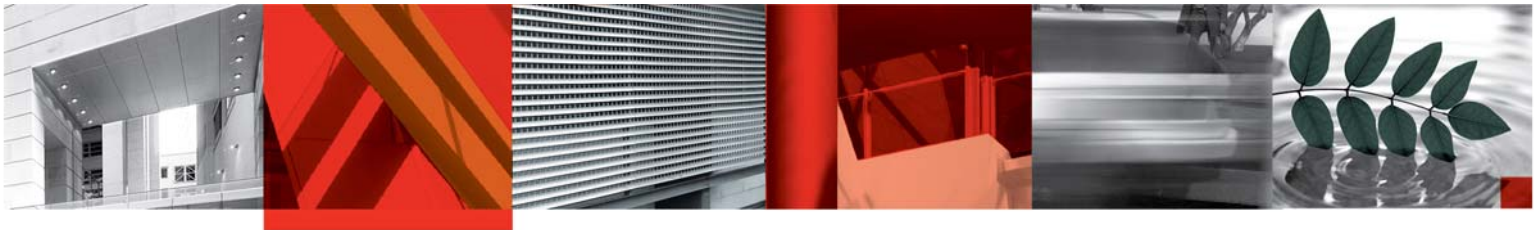


Environmental Assessment Report

Section 75W Modification



Barangaroo South

Concept Plan Modification 7

Submitted to Department of Planning and Infrastructure
On Behalf of Lend Lease (Millers Point) Pty Ltd

October 2013 ■ 10051

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This report has been prepared by: Michael Rowe

Signature Date 23/10/13

This report has been reviewed by: Tim Ward

Signature Date 23/10/13

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Wilkinson Murray

Statement of Validity

This Environmental Assessment has been prepared and submitted under Part 3A of the *Environmental Planning and Assessment Act 1979* (as amended) by:

Environmental Assessment prepared by

Name	Tim Ward
Qualifications	BSc, Masters of Environmental Management
Address	Level 7, 77 Berry Street, North Sydney
In respect of	Section 75W Modification to the Barangaroo Concept Plan

Concept Plan

Applicant name	Lend Lease (Millers Point) Pty Limited
Applicant address	The Bond, 30 Hickson Road, Millers Point NSW
Land to be developed	Barangaroo South – refer to Section 2.2
Proposed development	Mixed Uses

Environmental Assessment

Certificate	<p>I certify that I have prepared the content of this Environmental Assessment and to the best of my knowledge:</p> <ul style="list-style-type: none">■ It is in accordance with the <i>Environmental Planning and Assessment Act 1979</i> and <i>Environmental Planning and Assessment Regulation 2000</i>.■ It is true in all material particulars and does not, by its presentation or omission of information, materially mislead.
Signature	
Name	Tim Ward
Date	23 October 2013

Executive Summary

Background

Concept Plan approval (MP06_0162) for the redevelopment of the East Darling Harbour (now known as Barangaroo) was granted in February 2007. The Concept Plan covers urban design and policy initiatives and is the statutory planning approval to guide the urban renewal of Barangaroo.

The approved Concept Plan has been modified four times since originally approved and the Statement of Commitments has been revised accordingly. The most recent modification, Concept Plan (Mod 4) was approved on 16 December 2010 (Note: Concept Plan (Mod 5) was withdrawn).

A modification to the Basement Car Parking Approval (MP10_0023) sought approval for the construction and operation of a concrete batching plant as an ancillary use in relation to the construction of the Basement Car Park (the Basement Concrete Batching Plant). This modification was approved in November 2012. The Basement Concrete Batching Plant as approved under the Basement Car Park Approval cannot be used to supply concrete for the construction of other development within the Barangaroo South site.

In order to provide for the continued use of the approved Basement Concrete Batching Plant for the construction of other development at Barangaroo South Lend Lease sought the Director General's Environmental Assessment Requirements (DGRs) for a range of modifications, known as Concept Plan (Mod 6), which were issued on 21 December 2012.

The concrete batching component was removed from Concept Plan (Mod 6) and now forms part of the subject Modification Application being Concept Plan (Mod 7). Concept Plan (Mod 6) is currently being assessed by the Department of Planning and Infrastructure.

The Proposed Modification

This Modification Application proposes to modify the approved Concept Plan to provide for the use of a temporary concrete batching plant across the whole of the Barangaroo South site. This will allow the use of the approved Basement Concrete Batching Plant for the construction of other development at Barangaroo South approved pursuant to the Concept Plan.

The continued use of the Basement Concrete Batching Plant for remaining development at Barangaroo South will be the subject of a separate detailed development application (SSD 13_5967), lodged concurrently with this application.

Environmental Assessment

This Environmental Assessment (see Section 5.0) and the technical supporting investigations provide a detailed assessment of the environmental impact of proposed Concept Plan (Mod 7). It demonstrates that the proposed modifications are satisfactory, specifically with respect to the key environmental assessment issues set out in the DGRs.

A range of detailed technical investigations and studies to mitigate the potential environmental impacts of the future concrete batching plant use have been prepared as part of the detailed development application that has been lodged concurrently with this application.

The key benefit of Concept Plan (Mod 7) is that the use of the concrete batching plant will reduce the environmental impacts of the on-going construction process by minimising truck movements and it will make the redevelopment more environmentally sustainable.

Conclusion

Concept Plan (Mod 7) is the result of a commitment by Lend Lease to deliver sustainable development at Barangaroo South. Concept Plan (Mod 7) will minimise the impacts of the on-going construction process and is strongly in the public interest. In light of these planning merits, it is recommended that the proposed Concept Plan (Mod 7) be approved.

1.0 Introduction

This Environmental Assessment Report (EAR) has been prepared to modify the approved Concept Plan (MP06_0162) for the Barangaroo site. This report is submitted to the Minister for Planning and Infrastructure pursuant to clause 3C(1) of Schedule 6A to the *Environmental Planning and Assessment Act 1979* (EP&A Act) which provides for the continued application of the provisions of the now repealed Section 75W of Part 3A of the EP&A Act. This application seeks to modify the existing Concept Plan Approval.

The EAR has been prepared by JBA for Lend Lease and is based on the supporting technical documents provided by the expert consultant team (see Table of Contents).

The EAR describes the site, its environs and the proposed Concept Plan (Mod 7) and includes an assessment of the proposal in accordance with the Director General's Environmental Assessment Requirements (DGRs) issued for Concept Plan (Mod 6) on 21 December 2012 pursuant to Part 3A of the EP&A Act (**Appendix A**). It should be read in conjunction with the studies and other information appended to this report. The studies provide a technical assessment of the environmental impacts of the proposed development.

It should also be read in conjunction with the Concept Plan Instrument of Approval MP06_0162 (Mod 4) and the original State Significant Site Study prepared by JBA (dated February 2007), the Barangaroo South Concept Plan Modification and Major Development SEPP Amendment Environmental Assessment Report prepared by JBA (dated August 2010), and the Barangaroo South Modification 6 Environmental Assessment Report prepared by JBA (dated June 2013).

1.1 Approved Concept Plan

An international design competition for Barangaroo was held in 2005, attracting 139 entries from around the world. The winning design by Hill Thalys Architecture + Urban Projects, Paul Berkemeier Architects and Jane Irwin Landscape Architecture was announced in March 2006 together with a naming competition for the new headland precinct. The jury recommended key changes to the winning proposal which were required to be incorporated into the Barangaroo Concept Plan development.

The Concept Plan was approved in February 2007. The Concept Plan covers urban design and policy initiatives and is the statutory planning approval to guide the urban renewal of Barangaroo.

The approved Concept Plan has been modified four times since originally being approved and the Statement of Commitments has been revised accordingly. The most recent modification, Concept Plan (Mod 4), was approved on 16 December 2010.

To accommodate Concept Plan (Mod 4), Schedule 3 of Part 12 of the Major Development SEPP was amended (Amendment). The Amendment rezoned parts of the Barangaroo site and adjoining areas of land from RE1 Public Recreation, W1 Maritime Waters and Transport to B4 Mixed Use and RE1 Public Recreation. The Amendment also modified the distribution of gross floor area and building heights within the Barangaroo site.

The Concept Plan approval (Mod 4) provides for:

- a 563,965m² mixed use development across the entire Barangaroo site, comprising:
 - a maximum of 514,465m² mixed uses GFA, including residential, commercial and retail uses which includes;
 - a maximum of 128,763m² of residential uses (a minimum of 99,763m² of which will be in Barangaroo South);
 - a maximum of 50,000m² of tourist uses GFA;
 - a maximum of 39,000m² of retail uses;
 - a maximum of 4,500m² of active uses GFA (3,000m² of which will be in Barangaroo South); and
 - a maximum of 12,000m² of community uses GFA (10,000m² of which will be in Barangaroo South);
- approximately 11 hectares of new public open space/public domain, with a range of formal and informal open spaces serving separate recreational functions and includes a 2.2km public foreshore promenade;
- built form principles, maximum building heights and GFA for each development block within the mixed use zone;
- public domain landscape concept, including parks, streets and pedestrian connections; and
- alteration of the existing seawalls and creation of a portion of the new shoreline to the Harbour.

A further modification, Concept Plan (Mod 5), was lodged in February 2011 but later withdrawn.

1.2 Concept Plan (Mod 6)

As part of the on-going design and development of the Barangaroo South site, Lend Lease identified a range of opportunities to improve the relationship of the built form with the public domain and also to reduce the impacts of the construction process by allowing for a temporary concrete batching plant use on site as part of the overall construction methodology. Accordingly, Lend Lease sought the DGRs for a range of modifications, known as Concept Plan (Mod 6), which were issued on 21 December 2012.

At the request of the Department of Planning and Infrastructure, in order for the assessment of the modification to the Concept Plan to allow for the concrete batching to occur concurrently with the detailed application for the concrete batching plant itself, the concrete batching component was removed from Concept Plan (Mod 6). Concept Plan (Mod 6) is currently being assessed by the Department of Planning and Infrastructure.

The scope of Concept Plan (Mod 6) includes:

- Realignment of the development block boundaries for Blocks 3, 4A and 4B.
- Revisions to the approved Urban Design Controls to reflect the realigned block boundaries.
- Amendment to Condition B4(2) 'Built Form' to clarify the wording of the condition relating to the distribution of community uses floorspace at Barangaroo.
- Amendment to Condition B4 'Built Form' to allow for architectural roof elements and building management units to be excluded from the maximum height limits.
- Amendment to Condition C4 'Car Parking' to replace the reference to 'City of Sydney Council rates' for 'other uses' with the specific rates used for other uses in

Sydney Local Environmental Plan 2005, which applied at the time of Concept Approval.

Whilst it is the intention that the future concrete batching plant will be used for the construction of the future buildings to be developed in accordance with Concept Plan (Mod 6), Concept Plan (Mod 7) does not rely on the approval of Concept Plan (Mod 6).

1.3 Other Barangaroo South Approvals

The lodgement of Concept Plan (Mod 7) by Lend Lease follows Project Approvals for the Bulk Excavation and Basement Car Park (Basement Car Park Approval) (MP10_0023), Commercial Buildings C3, C4 and C5 (MP11_0044, MP10_0025, MP10_0227), and Residential Buildings R8 and R9 (MP11_0002) within the Barangaroo South site.

In November 2012, the Director-General, as delegate of the Minister for Planning and Infrastructure, approved a modification to the Basement Car Park Approval for a temporary concrete batching plant (the Temporary Basement Concrete Batching Plant) to be constructed and used for the purpose of the construction of the Basement Car Park. The Basement Car Park Approval does not permit the Basement Concrete Batching Plant to supply concrete for the construction of other development within the Barangaroo site.

1.4 Summary of Concept Plan (Mod 7)

As part of the on-going design and development of the Barangaroo South site, Lend Lease has identified a range of opportunities to reduce the impacts of the construction process by allowing for a temporary concrete batching plant use on site as part of the overall construction methodology.

Accordingly this Modification Application seeks to provide for the temporary concrete batching plant use in association with construction of development at Barangaroo approved pursuant to the Concept Plan.

The modification seeks to insert into the Development Description (Condition A1), a reference to this Environmental Assessment Report and a reference to the use of a temporary concrete batching plant for the construction of development approved at Barangaroo South pursuant to the Concept Plan.

1.5 Consultation

The proposed modified development will be placed on public exhibition for 30 days in accordance with *Environmental Planning and Assessment Regulation 2000*. During the public exhibition period City of Sydney Council (Council), State agencies and the public will have an opportunity to make submissions on the modification application.

In addition to the above, Lend Lease met with senior officers from Council on 6 December 2012. The meeting included a presentation on the proposed modification which was then followed by questions and discussion.

Lend Lease also met with the Environmental Protection Authority (EPA) to discuss the batching plant on 11 December 2012, and has been engaged in on-going discussions with the EPA in relation to the Basement Concrete Batching Plant. As part of that application the EPA provided comments that were incorporated into the design and management plans that accompanied the application.

2.0 Site Analysis

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 a range of new development dominated by major commercial tenants to the south.

The 22ha Barangaroo site is generally rectangular in shape and has a 1.4 kilometre harbour foreshore frontage, with an eastern street frontage to Hickson Road. The site location of Barangaroo is shown at **Figure 1**.

The site has been divided into three distinct redevelopment areas (from north to south) – the Headland Park, Barangaroo Central and Barangaroo South - and has been subject to multiple investigations that detail the physical and natural characteristics of the site.

For a detailed description of the existing and surrounding development refer to Section 2.0 of Environmental Assessment Report prepared by JBA dated November 2010.

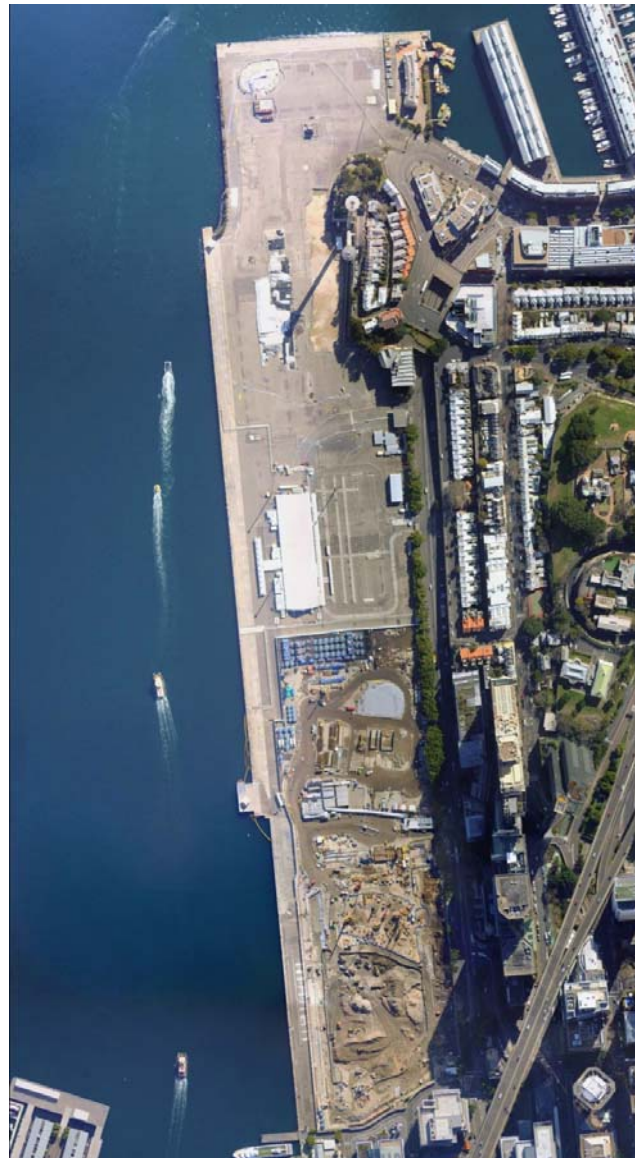


Figure 1 – Site Location

2.1 Concept Plan Modification Area

Barangaroo South predominantly comprises an open apron which is largely reclaimed over water and identified in the existing approved Concept Plan as Blocks 1 – 4, X and Y, and the immediately adjacent public recreation area (see **Figure 2**).



Figure 2 – Barangaroo South

2.2 Land Ownership and Legal Description

The site is legally described as Lots 1-6 DP 876514, Lot 7 DP 43776, Lot 100 DP 83823, Lots 6 and 7 DP 869022 and Lot 110 DP 1061311. The specific area affected by this modification is wholly within the ownership of the Barangaroo Delivery Authority.

3.0 Barangaroo South Concept Plan Modification

Lend Lease is seeking the Minister's approval under Section 75W of Part 3A of the EP&A Act in force pursuant to the transitional provisions in Schedule 6A of the EP&A Act to amend the approved Concept Plan (Mod 4) as it applies to Barangaroo South, or should it be approved, Concept Plan (Mod 6), which is currently being assessed by the Department of Planning and Infrastructure.

Concept Plan (Mod 7) seeks to amend the Concept Plan to allow for a temporary concrete batching plant use for all development across the whole Barangaroo South site (construction and operation of a temporary concrete batching plant is the subject of a separate but concurrent State Significant Development Application (SSD 13_5967)).

As the modification only provides for an additional land use to facilitate the construction of the end development, the key elements of the Concept Plan remain unchanged. Concept Plan (Mod 7) has no impact on the broader Concept Plan Approval which will still result in:

- a 563,965m² mixed use development across the entire Barangaroo site, comprising:
 - a maximum of 514,465m² mixed uses GFA, including residential, commercial and retail uses which includes;
 - a maximum of 128,763m² of residential uses (a minimum of 99,763m² of which will be in Barangaroo South);
 - a maximum of 50,000m² of tourist uses GFA;
 - a maximum of 39,000m² of retail uses;
 - a maximum of 4,500m² of active uses GFA (3,000m² of which will be in Barangaroo South); and
 - a maximum of 12,000m² of community uses GFA (10,000m² of which will be in Barangaroo South);
- approximately 11 hectares of new public open space/public domain, with a range of formal and informal open spaces serving separate recreational function and including a 2.2km public foreshore promenade;
- built form principles, maximum building heights and GFA for each development block within the mixed use zone;
- public domain landscape concept, including parks, streets and pedestrian connections; and
- alteration of the existing seawalls and creation of a portion of the new shoreline to the Harbour.

Concept Plan (Mod 7) does not propose any changes to the Approved Statement of Commitments.

3.1 Proposed Modifications

As part of the on-going development of the construction methodology for the site, Lend Lease identified the opportunity to produce 'pre-mixed' concrete on-site. In order to produce the concrete on-site a temporary concrete batching plant is required.

A modification to the Basement Car Parking Approval sought approval for the construction and operation of the Basement Concrete Batching Plant as an ancillary use. This modification was approved in November 2012, however, the Basement Concrete Batching Plant as approved under the Basement Car Park Approval cannot be used to supply concrete for the construction of other development within the Barangaroo South site.

Concept Plan (Mod 7) seeks approval for a temporary concrete batching plant use within the Barangaroo South site and its use is limited for the purpose of the construction of development on Barangaroo South only. The temporary concrete batching plant use will include activities that are generally comparable to the approved and on-going building construction activities that will occur concurrently and in an integrated fashion. These activities will include: handling and storing construction materials (e.g. sand and aggregates); mixing concrete; and delivering concrete around the site. Concept Plan (Mod 7) proposes the use of the concrete batching plant only.

The continued use of the Basement Concrete Batching Plant for the construction of the other development on Barangaroo South is the subject of a separate detailed development application (SSD 13_5967).

3.2 Proposed Modifications to Instrument of Approval

The modification seeks to insert into the Development Description (Condition A1), a reference to this Environmental Assessment Report and a reference to the use of a temporary concrete batching plant for the construction of development approved at Barangaroo South pursuant to the Concept Plan. Words proposed to be deleted are shown in ~~**bold italics strike through**~~ and words to be inserted are shown in **bold**.

Condition A1. Development Description

*Concept approval is granted only to the carrying out of the development solely within the Concept Plan area as described in the documents titled "East Darling Harbour State Significant Site Proposal, Concept Plan & Environmental Assessment (Volume 1 & 2)" prepared by JBA Urban Planning Consultants & SHFA (dated October 2006) and amended by Barangaroo Part 3A Modification Report (Volume 1 & 2) prepared by MG Planning Pty Ltd & SHFA (dated June 2008) and amended by Barangaroo Part 3A Modification Report – Headland Park and Northern Cove prepared by MG Planning Pty Ltd on behalf of Sydney Harbour Foreshore Authority and dated January 2009 and amended by Barangaroo South Concept Plan Modification and Major Development SEPP Amendment Environmental Assessment Report prepared by JBA Urban Planning Consultants (dated August 2010) and amended by Barangaroo South Concept Plan Modification Environmental Assessment Report prepared by JBA (dated June 2013) **and amended by Barangaroo South Concept Plan Modification Environmental Assessment Report prepared by JBA (dated July 2013)** including:*

- (1) A mixed use development involving a maximum of 563,965sqm gross floor area (GFA), comprised of:

 - (a) a maximum of 128,763sqm and a minimum of 84,595sqm residential GFA;*
 - (b) a maximum of 50,000sqm GFA for tourist uses;*
 - (c) a maximum of 39,000sqmGFA for retail uses;*
 - (d) a maximum of 4,500sqm GFA for active uses in the Public Recreation zone (3,000sqm of which will be in Barangaroo South); and*
 - (d) a minimum of 12,000sqm GFA for community uses (10,000sqm of which will be in Barangaroo South).**
- (2) Approximately 11 hectares of new public open space/public domain, with a range of formal and informal open spaces serving separate recreational functions and including an approximate 2.2km public foreshore promenade.*
- (3) Built form design principles, maximum building heights and GFA for each development block within the mixed use zone.*
- (4) Public domain landscape concept, including parks, streets and pedestrian connections.*

(5) Alteration of the existing seawalls and creation of a partial new shoreline to the harbour.

(6) Use of a concrete batching plant for the purpose of supplying concrete for the construction of future development under this Concept Plan at Barangaroo South.

Reason for Modification:

The condition has been updated to refer to this application in the development description.

Condition A2. Development in Accordance with Plans and Documentation

A2. Development in Accordance with Plans and Documentation

(1) The following plans and documentation (including any appendices therein) are approved as part of the Concept Plan:

- (a) East Darling Harbour State Significant Site Proposal Concept Plan and Environmental Assessment (Volume 1) and Appendices (Volume 2) prepared by JBA Urban Planning Consultants Pty Ltd on behalf of Sydney Harbour Foreshore Authority and dated October 2006.*

Except as modified by

- (b) Barangaroo Part 3A Modification Report (Volume 1) and Appendices (Volume 2) prepared by MG Planning Pty Ltd on behalf of Sydney Harbour Foreshore Authority and dated June 2008.*
- (c) Barangaroo Part 3A Modification Report – Headland Park and Northern Cove prepared by MG Planning Pty Ltd on behalf of Sydney Harbour Foreshore Authority and dated January 2009;*
- (d) Barangaroo South Concept Plan Modification and Major Development SEPP Amendment Environmental Assessment Report prepared by JBA Urban Planning Consultants and dated August 2010; and*
- (e) Barangaroo South Concept Plan Modification Environmental Assessment Report prepared by JBA and dated June 2013.*

(f) Barangaroo South Concept Plan Modification Environmental Assessment Report prepared by JBA and dated July 2013.

(2) The following Preferred Project Report including a revised Statements of Commitment are approved:

- (a) Response to Department of Planning and Revised Statement of Commitments prepared by JBA Urban Planning Consultants Pty Ltd on behalf of Sydney Harbour Foreshore Authority and dated January 2007.*

Except as modified by

- (b) Preferred Project Report Barangaroo Part 3A Modification – Commercial Floor Space and Revised Statement of Commitments and Preferred Project Report Addendum prepared by Sydney Harbour Foreshore Authority and dated October 2008.*
- (c) Preferred Project Report Barangaroo Part 3A Modification Report – Headland Park and Northern Cove prepared by MG Planning Pty Ltd on behalf of the Barangaroo Development Authority and dated September 2009 and Preferred Project Report Addendum Map prepared by the Barangaroo Development Authority dated September 2009 (Revision F); and*
- (d) Preferred Project Report Concept Plan Modification 4 (MP 06_0162 MOD 4) Barangaroo Stage 1 prepared by JBA Urban Planning Consultants on behalf of Lend Lease and dated November 2010 and revised Statement of Commitments (December 2010).*

(3) In the event of any inconsistencies,

- (a) the Statement of Commitments referenced in A2(2)(d) of this approval prevails to the extent of any inconsistency in the plans and documentation identified in (1), and*
- (b) the modifications of the Concept Plan approval identified in Part B & C Schedule 2 prevail over the documentation listed in (1), (2) and (3)(a) above.*

Reason for Modification:

The condition has been updated to refer to this application in the development description.

4.0 Director General's Environmental Assessment Requirements

Table 1 provides a detailed summary of the individual matters listed in the DGRs and / or identifies where each of these requirements has been addressed in this report and the accompanying technical studies.

The DGRs require consideration of a range of specific environmental issues associated with a temporary concrete batching plant use on the site. These issues have been addressed at a conceptual level in Section 5.0 and where appropriate expert technical assessments have been provided. An associated development proposal for the continued operation of the temporary concrete batching plant approved under MP10_0023 (the Plant) and an environmental impact assessment of the development, having regard to interactions with other construction activities on the Barangaroo site, is the subject of a separate but concurrent State Significant Development Application (SSD 13_5967).

When Lend Lease sought the DGRs for the temporary concrete batching plant use, they were also seeking DGRs for a range of design modifications to the approved Concept Plan (Mod 4). As detailed in Section 1.2, these design modifications formed part of Concept Plan (Mod 6) and as such, these DGR's have not been addressed within this application.

The Department sent an email to Lend Lease on 5 June advising that the DGRs issued for Concept Plan (Mod 6) remained valid and relevant, to the extent that they apply to the temporary concrete batching plant use, and accordingly no new DGRs would not be issued for Concept Plan (Mod 7).

Table 1 - Director General's Environmental Assessment Requirements

Director General's requirements	Location in Report
Relevant EPI's, policies and guidelines	
Address the provisions of State environmental planning policies that would apply as if those provisions applied to the carrying out of the project, including the following: <ul style="list-style-type: none"> – State Environmental Planning Policy (State & Regional Development) 2011. – State Environmental Planning Policy (Major Development) 2005. – State Environmental Planning Policy No 55 - Remediation of Land. – Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005. 	Section 5.1
Development controls and land uses	
An analysis of and justification for the changes to the existing Concept Plan approval (as amended) including built form controls (building envelopes etc), building heights, zoning, GFA distribution and any subsequent changes that will be required to the MD SEPP for future applications (Part 4 or otherwise).	N/A
Analysis of proposed bulk and scale of the buildings affected by the changes to Globe. Street as well as the bulk and scale of the building management units.	
View Impacts	
Assess the visual impacts of the changes to building envelopes and building management units on key surrounding residential properties.	N/A
A view analysis is to be undertaken inclusive of photomontages and perspectives of: <ul style="list-style-type: none"> – Key elements and views of the building management units from Kent Street, Pyrmont, Darling Harbour and Millers Point. – Key elements and views of the changes to the buildings affected by the changes to 'Globe Street taken from Pyrmont, Hickson Road, Southern Cove and Globe Street. 	
Streetscape and Public Domain	
Outline the changes to Globe Street and its relationship with the proposed modified building envelopes	N/A
Outline the changes to public street and public pedestrian connections, in particular the east-west connections between Hickson Road and the foreshore, and north-south connections through large street blocks.	
Clearly identify and distinguish the changes between public spaces and streets, and private spaces/commercial spaces.	

Director General's requirements		Location in Report
Detail the amendments to the foreshore promenade as a result of building envelope changes.		
Transport Management and Accessibility Impacts		
Prepare Traffic Impact Assessment (TIA) that evaluates: <ul style="list-style-type: none">– Daily and peak movements likely to be generated by the concrete batching plant and any vehicle movement changes caused by amendments the building envelopes (Le. a reduction in GFA).– Cumulative impacts associated with other construction activities at Barangaroo.– Details of service arrangements for workers to/from the site, emergency vehicles and service vehicle movements.	Section 5.3 & Appendix B	
Soil and Water		
Under an assessment on surface and groundwater, including: <ul style="list-style-type: none">– The potential impacts due to construction and operations of the concrete batching– plant on water quality, marine vegetation and aquatic ecology.– Prepare an erosion and sediment control plan for the works and operations.– Prepare a stormwater management plan for the concrete batching plant, including bunding of dangerous goods and services.– Groundwater management, including measures for preventing groundwater pollution.– Details on wastewater disposal.	Section 5.4 & Appendix B and C	
Air Quality and Odour		
The application must include an Air Quality Impact Assessment, including: <ul style="list-style-type: none">– The identification of the pollutants of concern, including individual toxic air– pollutants, dust and odours.– The identification and assessment of all relevant fugitive and point source– emissions, including cumulative impacts of the operation of the plant in relation to Other construction activities.– Proposed air quality management and monitoring procedures.	Section 5.5 & Appendix B and D	
Waste Management		
Provide details of the scheduled, liquid and non-liquid wastes, and quantities, storage, treatment and 'disposal or re-use' of waste generated.	Section 5.6 & Appendix B	
Noise		
The application must include an assessment of noise and vibration impacts, including construction, operation, traffic and cumulative noise. The assessment must also outline proposed noise mitigation and monitoring.	Section 5.7 & Appendix B and E	
Utilities		
Consider how the concrete batching plant can be satisfactorily serviced for utilities and green infrastructure services such as the supply of potable and non potable water, sewerage, stormwater, gas and electricity	Section 5.8	
Staging		
Provide an updated staging plan for Barangaroo South.	N/A	
Greenhouse Gas and Energy		
Undertake a quantitative assessment of the potential gas emissions of the plant and a qualitative assessment of the potential impacts of these emissions on the environment.	Section 5.9 & Appendix B	
Outline the measures that would be implemented on site to ensure that the plant is energy efficient.		
Consultation		
Undertake an appropriate and justified level of consultation in accordance with the Department's Major Project Community Consultation Guidelines October 2007. In particular, you should consult with City of Sydney and the EPA.	Section 1.5	

5.0 Environmental Assessment

This section of the report assesses and responds to the environmental impacts of the Concept Plan (Mod 7) proposal. It addresses the matters for consideration set out in the DGRs.

Where appropriate letters from specialist consultants confirming that the proposed modified development remains within the scope of Concept Plan (Mod 4) and that no further investigation or analysis is required in relation to each of these environmental assessment matters at this stage are appended to this report.

As required by the DGRs, the impacts of the proposed temporary concrete batching plant use with respect to traffic, soil and water, air quality and odour, waste management, noise, utilities and greenhouse gas and energy emissions are addressed. The level of assessment presented relates to the proposed inclusion of a temporary concrete batching plant use at Barangaroo South, and recognises that the construction of the concrete batching plant has already been approved and the extended operation of the temporary concrete batching plant is the subject of a separate but concurrent State Significant Development Application (SSD 13_5967).

5.1 Consistency with Relevant EPIs, Policies and Guidelines

The DGRs require the following planning instruments to be addressed:

- State Environmental Planning Policy (State & Regional Development) 2011;
- State Environmental Planning Policy (Major Development) 2005; State Environmental Planning Policy No 55 - Remediation of Land; and
- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005.

The Project Application's consistency with the relevant strategic and statutory plans and policies is provided in **Table 2**.

Table 2 – Summary of consistency with key statutory plans and policies

Instrument/Strategy	Comments
State & Regional Development SEPP	The Barangaroo site is listed in Schedule 2 of the State and Regional Development SEPP, which identifies sites where development has a capital investment value of more than \$10 million become State Significant Development. As the concrete batching plant does not have a capital investment value of more than \$10 million, the Minister declared the construction and operation of the concrete batching plant to be State Significant Development under section 89C(3) of the EP&A Act.
Major Development SEPP	<div> <div>The Barangaroo site is listed as a State Significant Site under Part 12 of Schedule 3 of the Major Development SEPP.</div> <div> <div>Clause 7 - Land use zones</div> <div>The temporary concrete batching plant is defined as 'light industry' and is not permissible in either the B4 Mixed Use zone or the RE1 Public Recreation Zone. This Concept Plan modification seeks approval for a temporary concrete batching plant use.</div> </div> </div>
SEPP 55	<div>The Overarching Remedial Action Plan (prepared by ERM – refer to Basement Project Application) and the Remedial Action Plan, Barangaroo – Other Remediation Works (South) Area (prepared by ERM – refer to Basement Project Application) have been prepared in accordance with SEPP 55 and set out the detailed methodology for remediating Barangaroo South to make it suitable for the proposed uses.</div> <div>The provisions of SEPP 55 and the contaminated land planning guidelines will be appropriately satisfied as part of the future Development Applications on the site.</div>

Instrument/Strategy	Comments
Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005	<p>Barangaroo is located within the boundaries of the Sydney Harbour Catchment and as such is subject to the provisions of Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 (Sydney Harbour REP). The Sydney Harbour REP aims to provide a clear and consistent planning framework to protect and enhance the unique attributes of the Harbour.</p> <p>Within the Sydney Harbour REP, Barangaroo is identified as being within the Foreshores & Waterways Area Boundary.</p> <p>Part 3, Division 2 of the Sydney Harbour REP refers to matters which are to be taken into consideration by consent authorities before granting consent for development. The matters for consideration set out in Clauses 20 to 27 of the Sydney Harbour REP are not generally relevant to the proposed modification to allow for a temporary use in order to facilitate construction.</p>

5.2 Need for and Alternatives to the Concrete Batching Plant

As part of the on-going development of the construction methodology for the site, Lend Lease identified the opportunity to produce 'pre-mixed' concrete on-site. In order to produce the concrete on-site a temporary concrete batching plant is needed. The benefits of on-site batching of concrete include:

- The reduction in concrete volumes transported through surrounding public streets – on-site concrete batching will remove approximately 40% of heavy vehicles that would otherwise be associated with delivery of concrete to support construction activities.
- Concrete in-put materials (sand and aggregates) will be delivered in bulk, minimising the need to make deliveries during peak hours.
- Reduction of on-site truck movements of between 50 - 100% via use of direct line concrete delivery to workplace.
- More efficient accommodation of small pours because truck delivery of volumes less than 6m³ will be avoided.
- A resultant reduction in the amount of CO₂ generated by the development in the order 9,511 tonnes of CO₂-e over the life of the project.

There are two alternatives to on-site concrete batching:

- Do Nothing, (i.e.) the approved construction methodology, which is to bring premixed concrete on site in cement mixers. This method involves considerably greater heavy vehicle traffic on the surrounding road network, more traffic during peak times, and higher green house gas emissions.
- A dedicated off-site concrete batching plant. Whilst the development of an off-site concrete batching plant would prevent impacts on existing concrete supplies to other building projects in Sydney, it does not achieve any of the potential benefits associated with on-site batching. That is, concrete would still be required to be delivered to the site with concrete agitator trucks, with the associated traffic implications.

The approval of this Concept Plan modification in order to facilitate approval of a development application for the continued use of the Temporary Basement Concrete Batching Plant at Barangaroo South is therefore strongly considered to be in the public interest.

5.3 Traffic

Under the approved Concept Plan (Mod 4), a Transport Management and Access Plan (TMAP) was required to be prepared prior to submission of the first Project Application,

and was required to address public transport, traffic and pedestrian access and car parking provision. A TMAP was prepared in September 2008 by the NSW Government, which has subsequently been amended with recent project applications for the site.

A Transport Impact Assessment has been prepared by ARUP to support the concurrent detailed application for the Plant. A summary of the assessment is provided below. A copy of the Transport Impact Assessment has been appended for information (see **Appendix B**).

On days of large concrete pours, up to 2,000m³ of pre-mixed concrete will be required to service the site, previously requiring more than 600 truck movements over the course of the day. If these were to be spread evenly over the 10 hour working day (7am to 5pm), this would result in more than 60 concrete agitator truck movements per hour during the commuter peak periods.

Delivery of bulk raw materials to the concrete batching plant can be more easily scheduled to occur outside the commuter peak hours, reducing the impact on the local road network. Confining the delivery of raw materials to after 9am and prior to 4pm would result in less than 15 concrete related truck movements per hour during the main commuter peak periods, whilst also resulting in less hourly truck movements during the day (i.e. 9am to 4pm) when compared with the traditional methods of delivery of pre-mixed concrete from off-site, with less than 50 concrete related truck movements per hour during this period. As such, the use of a concrete batching plant will deliver a significant benefit to the operation of the road network.

Intersection modelling has been undertaken to quantify the benefit of permitting the use of a concrete batching plant to service the entire site during the peak construction traffic period expected in mid 2014. It confirms that key intersections surrounding the site would operate at improved levels of service should the batch plant be utilised on site. The most significant improvement is forecast at the Sussex Street / Erskine Street intersection in the PM peak hour, with average vehicle delays reducing by 13 seconds if the concrete batching plant were to be in operation.

The cumulative impacts of construction traffic activity associated with all construction works currently planned in the precinct have been assessed with the use of an on-site concrete batch plant. The concrete batching plant will allow for the delivery of bulk raw materials to occur outside the commuter peak hours, reducing the impact on the local road network. Traffic modelling indicates intersections in the precinct will operate at improved levels compared with the previous approvals. No mitigation measures are necessary.

5.4 Soil and Water

A conceptual Marine Ecology, Water Quality and Contaminated Sediment Impact Assessment was undertaken by Worley Parsons as part of Concept Plan (Mod 4).

Worley Parsons has considered the implications of the concrete batching plant use on the site, and has concluded that the proposed modification to incorporate this additional use as part of the Concept Plan does not change the assessment and recommendations made previously by Worley Parsons (see **Appendix C**).

With respect to soil and water issues, the DGRs issued for Concept Plan (Mod 6) require the assessment of potential impacts of the construction and operation of the concrete batching plant on surface and groundwater and water quality, and the preparation of an erosion and sediment control plan for the works and operations.

No construction, works or operations in relation to the concrete batching plant are proposed as part of this modification application. A Soil and Water Management Plan has been prepared and submitted with the detailed development application for the on-going operation of the concrete batching plant. A copy of the Soil and Water Management Plan has been appended for information (see **Appendix B**).

On this basis, Worley Parsons concludes that the proposed Concept Plan (Mod 7) does not require any additional supporting information, analysis or commentary.

5.5 Air Quality and Odour

A conceptual Air Quality Impact Assessment was undertaken by AECOM as part of Concept Plan (Mod 4).

AECOM has considered the implications of a concrete batching plant use being provided on the site, and has concluded that the proposed modification to incorporate this additional use does not change the assessment and recommendations made previously by AECOM in relation to Concept Plan (Mod 4) (see **Appendix D**). It is noted that each of the DGRs for the modification (dated 21 December 2012) were also addressed in Concept Plan (Mod 4) Air Quality Impact Assessment.

No construction, works or operations in relation to the concrete batching plant are proposed as part of this modification application. On this basis, AECOM is of the opinion that the proposed Concept Plan (Mod 7) amendments do not require any additional supporting information, analysis or commentary in relation to potential air quality impacts at this stage of the design.

The specific air quality impacts of the concrete batching plant are being considered as part of the detailed development application that has been lodged concurrently with this modification. A copy of the Air Quality Impact Assessment has been appended for information (see **Appendix B**).

5.6 Waste Management

Concrete has always been anticipated as a necessary construction material at Barangaroo South. The waste management principles and targets that have been adopted in the detailed project applications for works that have been approved to date at Barangaroo South will be applied to the waste streams that will be generated by the future concrete batching plant.

Anticipated waste streams from the concrete batching plant are (as per the approved Basement Concrete Batching Plant) rejected (non-compliant) concrete, alkaline cementitious water, silt from water settlement basins; and domestic refuse.

It is considered that these identified waste streams can be appropriately managed by implementation of the measures adopted for the Basement Concrete Batching Plant approved on the site.

The concurrent application for the concrete batching plant (SSD 13_5967) includes details of the waste, quantities, storage and treatment of waste generated by the concrete batching plant and further detailed consideration of waste management requirements. A copy of the Waste Management Plan has been appended for information (see **Appendix B**).

5.7 Noise

A conceptual Noise and Vibration Assessment was undertaken as part of Concept Plan (Mod 4). Wilkinson Murray has reviewed and assessed the proposed modification, see **Appendix E**.

Wilkinson Murray concluded that the proposed Concept Plan Mod 7 does not require any additional supporting information, analysis or commentary at this stage of the design.

The DGRs issued for Concept Plan (Mod 6) require an assessment of noise and vibration impacts during construction and operation of the temporary concrete batching plant. As no construction, works or operations in relation to the temporary concrete batching plant are proposed as part of this modification application, the detailed

assessment of these matters are addressed in the concurrent application for the concrete batching plant (SSD 13_5967). A copy of the Acoustic Assessment has been appended for information (see **Appendix B**).

5.8 Utilities

The future concrete batching plant will utilise the existing utilities and services being supplied to the Barangaroo South site to support the construction process. Specifically the concrete batching plant will utilise the existing water and electricity provided to the construction site. No gas or sewer utilities are required.

5.9 Greenhouse Gas and Energy

A Greenhouse Gas & Energy Report has been prepared by Lend Lease to support the concurrent detailed application for the concrete batching plant. A copy of the Greenhouse Gas & Energy Report has been appended for information (see **Appendix B**) and is summarised below.

The Report provides a quantitative assessment of the potential greenhouse gas emissions resulting from the operation of the future concrete batching plant and outlines details of the energy efficiency measures to be implemented as part of the plant's design and operation.

The future concrete batching plant is predicted to generate 2,005t CO₂-e of Greenhouse Gas (GHG) emissions for the duration of the project. These emissions are estimated to be generated primarily through the use of electricity and from the consumption of diesel used in equipment for raw materials loading.

Traditionally, concrete for a project such as Barangaroo would be supplied from nearby concrete batching plants such as those operated by Boral at Alexandria and Artarmon. This concrete would be delivered to the construction site via concrete agitator vehicles before being pumped and placed onsite. The installation of an onsite concrete batching plant will effectively avoid the need for delivery of premixed concrete to site and will therefore significantly reduce transport requirements and associated GHG emissions.

Although there will be a requirement to deliver raw materials such as cement sand and aggregates to the onsite concrete batching plant, the GHG emissions generated with this activity would still occur under a traditional supply scenario. This is because raw materials would still require transport to both the Artarmon and Alexandria plants. In some cases aggregates sourced from areas South of Sydney would pass the construction site on route to the Artarmon batching plant before being transported back to the construction site as premixed concrete.

Approximately 380,000m³ of concrete is required for the Barangaroo South site over the life of the proposed concrete batching plant. The concrete batching plant will therefore result in a net reduction of more than 58,000 agitator truck movements over the life of the project. GHG Emission savings shown in the table below are based on a traditional supply of premixed concrete with 30% coming from Alexandria and with the remaining 70% being supplied from the Artarmon facility (based on current supply of concrete to Barangaroo).

Avoided transport emissions due to the utilisation of onsite batching are estimated to be 9,500t CO₂-e over the life of the project. This represents more than double the onsite batching plant's operational emissions and is equivalent to removing 2,500 cars from the road annually. The graph at **Figure 3** below displays the overall onsite emissions related directly to the batching operations as well as the predicted emission savings due to avoided transport.

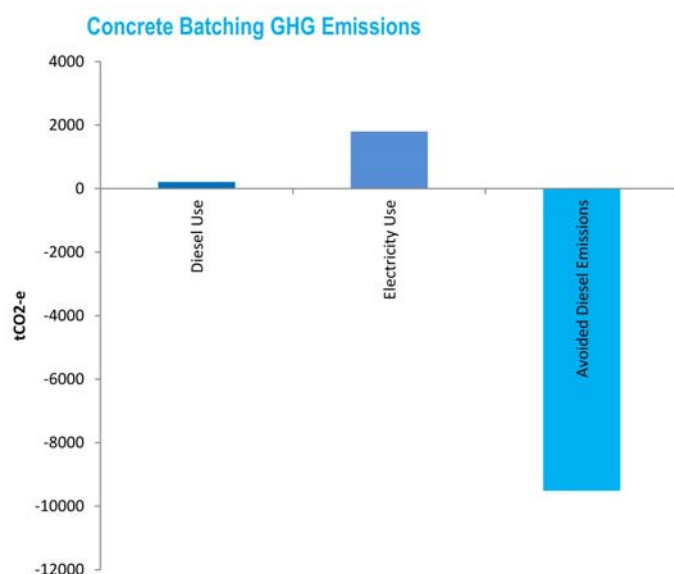


Figure 3 – Concrete Batching and Avoided Transport Emissions

5.10 Ecologically Sustainable Development

The EP&A Regulation lists four principles of ecologically sustainable development to be considered in assessing a project. They are:

- the precautionary principle;
- intergenerational equity;
- conservation of biological diversity and ecological integrity; and
- improved valuation and pricing of environmental resources.

An analysis of these principles follows.

5.10.1 Precautionary Principle

The precautionary principle is utilised when uncertainty exists about potential environmental impacts. It provides that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. The precautionary principle requires careful evaluation of potential environmental impacts in order to avoid, wherever practicable, serious or irreversible damage to the environment.

This Environmental Assessment has not identified any serious threat of irreversible damage to the environment if the use of a plant was undertaken. Therefore the precautionary principle is not relevant to the proposal.

5.10.2 Intergenerational Equity

Inter-generational equity is concerned with ensuring that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations. The proposal has been designed to benefit both the existing and future generations by:

- improving the sustainability performance with the delivery of buildings and infrastructure at Barangaroo South; and
- improving the efficiency of the construction methodology for the delivery of buildings and infrastructure at Barangaroo South.

The Modification has integrated short and long-term social, financial and environmental considerations so that any foreseeable impacts are not left to be addressed by future

generations. Issues with potential long term implications such as waste disposal will be avoided and/or minimised through construction planning and the application of safeguards and management measures described in the concurrent EIS and the appended technical reports for the use of the concrete batching plant.

5.10.3 Conservation of biological diversity and ecological integrity

The principle of biological diversity upholds that the conservation of biological diversity and ecological integrity should be a fundamental consideration.

The Modification will not have any significant effect on the biological diversity and ecological integrity of the area.

5.10.4 Improved valuation, pricing and incentive mechanisms

The principles of improved valuation and pricing of environmental resources require consideration of all environmental resources which may be affected by a proposal, including air, water, land and living things. Mitigation measures for avoiding, reusing, recycling and managing waste will be implemented as part of the detailed application for the concrete batching plant to ensure resources are used responsibly in the first instance.

The use of a concrete batching plant will also improve the efficiency of the construction methodology for the delivery of buildings and infrastructure at Barangaroo South, with a resultant benefits in terms of cost effectiveness and affordability of the development.

6.0 Conclusion

Concept Plan (Mod 7) is the result of a commitment by Lend Lease to deliver the most sustainable development possible at Barangaroo South.

This Environmental Assessment and the technical supporting investigations demonstrate that the proposed modifications are satisfactory, specifically with respect to those key environmental assessment issues set out in the DGRs.

The key benefits of the Concept Plan (Mod 7) include reducing the environmental impacts of the development of Barangaroo South, and making the on-going construction process more environmentally sustainable, and is therefore in the public interest.

A range of detailed technical investigations and studies to mitigate the potential environmental impacts of the future concrete batching plant use have been prepared as part of the detailed development application that has been lodged concurrently with this Modification Application.

In light of these planning merits, it is recommended that the proposed Concept Plan (Mod 7) be approved.